



Automotive

AEC-Q100 Solutions

ADAS | Digital Cockpit | Lighting | Body Electronics | Electrification

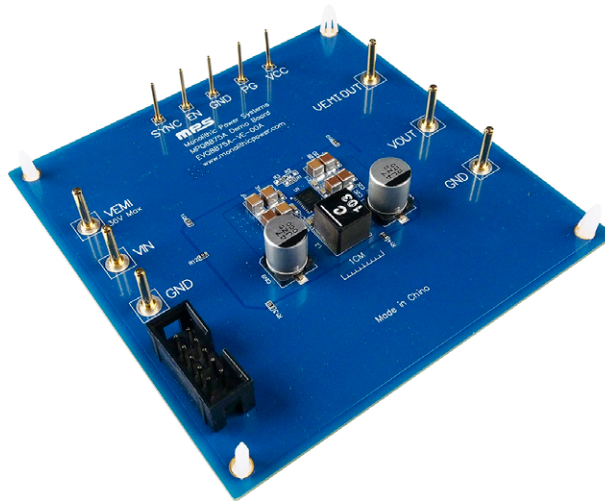


Automotive-Qualified Products

When only the best will do, MPS offers its automotive-grade AEC-Q100 products. These solutions are rigorously stress-tested to ensure optimum reliability under demanding AEC-Q100 Grade 1 temperature conditions. Additionally, each part is put through a comprehensive, industry-leading, 300-point application “road test” to ensure robustness in the face of harsh automotive conditions such as load dump and cold crank transients.

Evaluation Boards

Evaluation boards are available for all automotive-grade products. Contact MPS for details.



Quality Assurance & Reliability Commitment

Quality is the bedrock of everything that we do at MPS, and we zealously pursue continuous improvement programs to maintain a zero-defect mentality across the company. Our mission is to design, develop, manufacture, and deliver products to our customers with world-class quality and reliability that go above and beyond customer expectations.

Quality Control and Monitoring:

- On-Site Foundry and Assembly Teams
- Daily Short-Term Reliability Monitoring
- Quarterly Long-Term Reliability Monitoring
- Quarterly Reliability Monitoring Reports and Supplier Quality Review
- Annual Supplier Audits

MPS and Its Subcontractor Quality Systems and Certificates:

- ISO 9001
- EU RoHS/HF/REACH Compliant (MPS)
- Sony Green Partner
- IATF 16949 (Subcontractors)
- ISO 14001
- Member, Responsible Business Alliance (RBA)
- TISAX Level 3
- ISO 27001
- ISO 26262
- ISO 45001
- Member, Responsible Mineral Initiative



Table of Contents

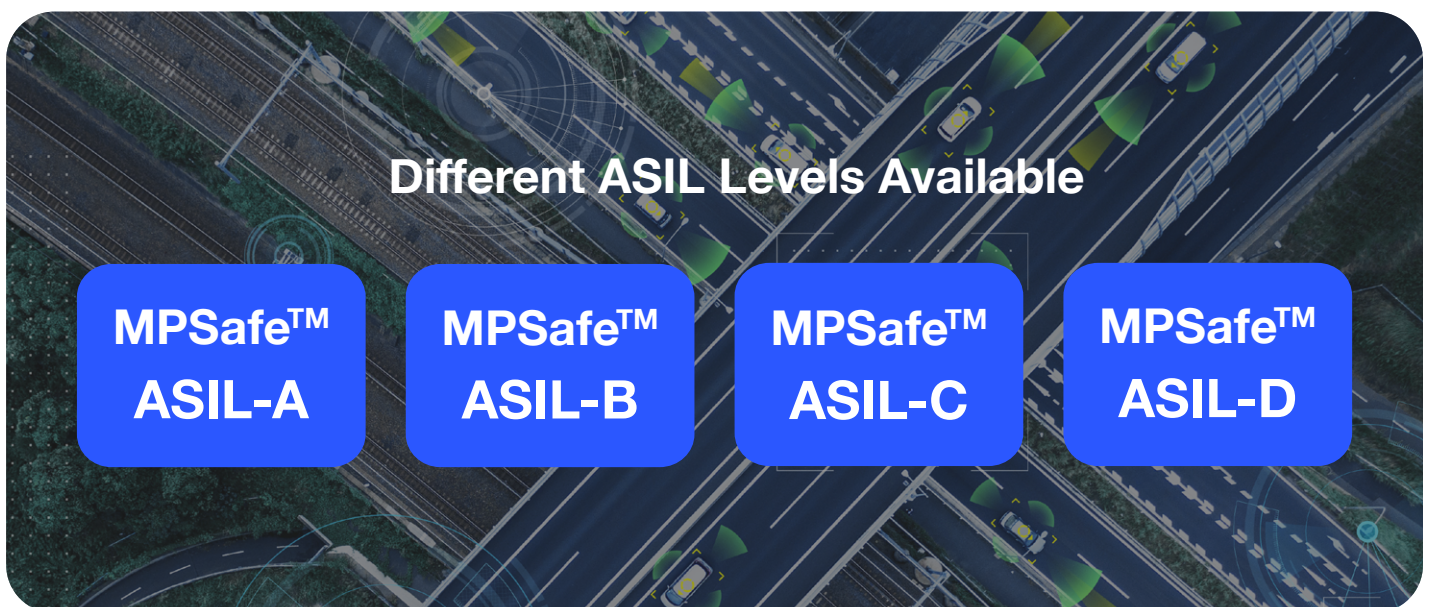
Overview	4 - 5
EMC/EMI CISPR 25 Testing	6 - 7
Typical Applications	8 - 9
Buck Regulators	10 - 34
Boost & Buck-Boost Regulators	35 - 39
Automotive Compute Core Power	40 - 44
PMICs	45 - 52
Linear Regulators & DDR Memory	53 - 54
Monitoring & Supervision	55 - 59
LED Lighting	60 - 71
Display Power & Control	72 - 74
USB & Wireless Charging	75 - 80
Electrification Solutions	81 - 86
Motor Drivers	87 - 91
E-Fuse and Load Switches	92 - 99
Class-D Audio	100 - 101
Position & Current Sensors	102 - 105
Why Choose MPS	106
Contact & Ordering	107



MPSafe™ products are safety-oriented, automotive-qualified products developed through our ISO 26262 functional safety product development process.

These solutions are purpose-built for functional safety, and are engineered with a system-oriented approach. We consider not only how a device itself may handle various safety cases, but how the system can be better engineered to achieve its safety goals. The result for customers is excellent safety coverage, more thorough documentation, pre-approved third-party safety analysis, and a cost- and schedule-optimized solution.

For systems and products needing ASIL-A to ASIL-D, choose MPSafe™.

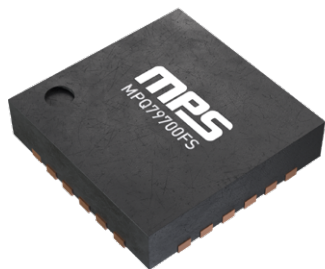


Meet ISO 26262 Goals Faster

- Safety Manuals, FMEDA, and More
- Consultation with Resident Safety Experts
- Pre-Vetted Safety-Assessed Subsystems



Featured Products



MPQ79700FS-AEC1

MPSafe™, 12-Channel ASIL-D
Power Sequencer with Watchdog



MPQ79500FS-AEC1

MPSafe™, 6-Channel ASIL-D
Voltage Monitor with
Differential Sensing



MPQ70240FS-AEC1

MPSafe™, ASIL-B PMIC
for Camera Modules



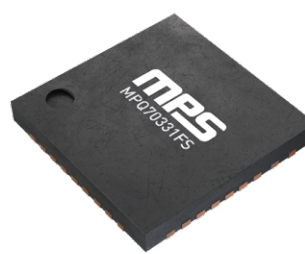
MPQ2967FS-AEC1

MPSafe™, ASIL-D Digital
Multi-Phase Controller
for Core Power



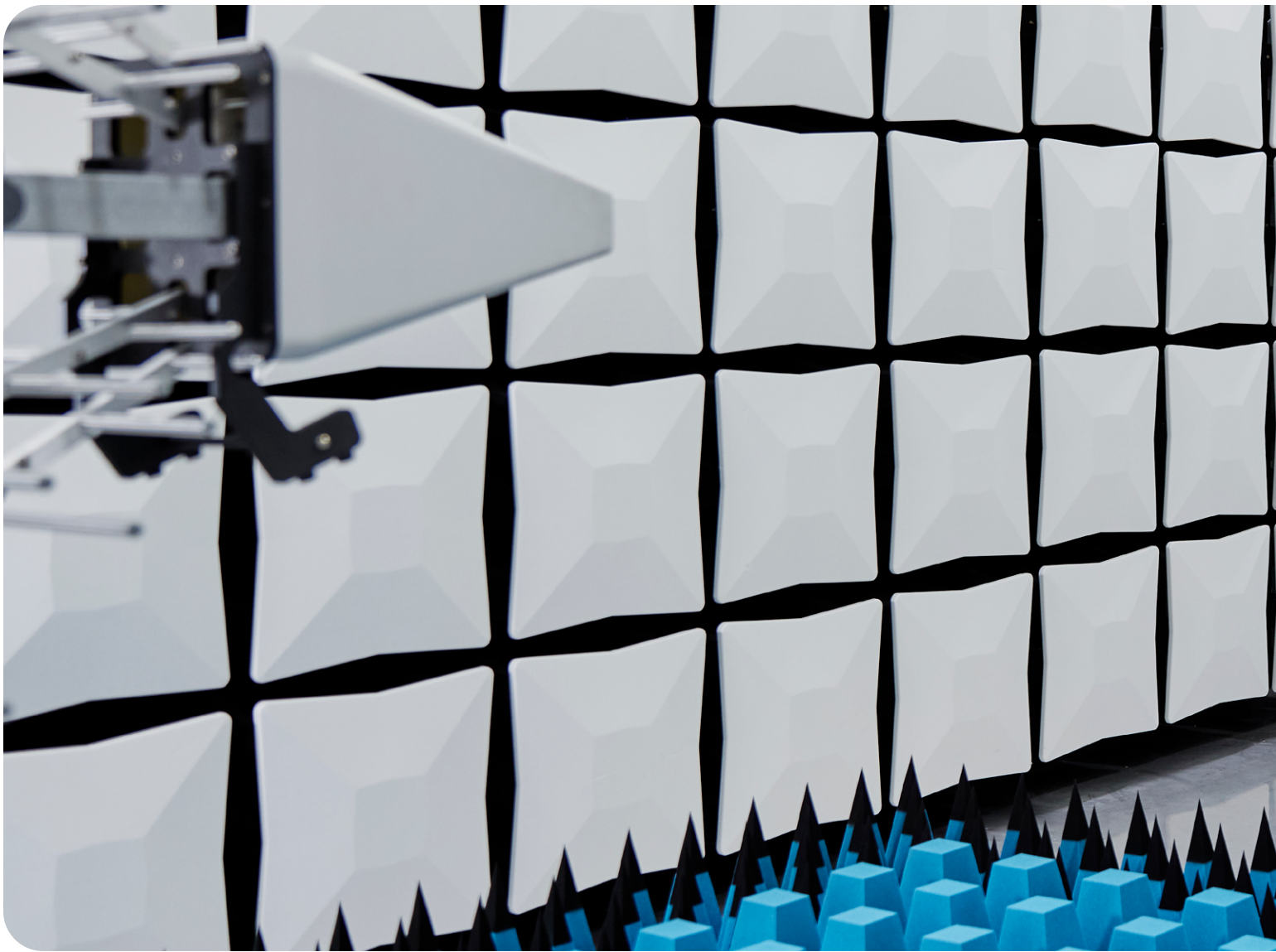
MPQ70160FS-AEC1

MPSafe™, 6-Channel ASIL-D
PMIC with 6 Bucks



MPQ70331FS-AEC1

MPSafe™, ASIL-D PMIC
for Safety Applications



EMC/EMI CISPR 25 Testing

Meeting tough OEM electromagnetic compatibility and immunity requirements is one of the biggest challenges in automotive electronics design. Minor schematic and layout choices can make a big impact on how well a design passes these tests, and early system testing can help avoid major project schedule and cost setbacks.

MPS now offers pre-compliance EMC/EMI testing for CISPR 25 and more in our purpose-built customer labs in Livonia, Michigan, USA and Ettenheim, Germany. Our team of onsite experts helps customers build experience in EMC-related topics and solve design problems during early product development stages. These state-of-the-art measurement chambers and work stations enable exact results and detailed test reports during emissions and immunity testing.

Tests Conducted

- Radiated Emissions
- Conducted Emissions
- Radiated Immunity
- Conducted Immunity
- Bulk Current Injection
- Electostatic Discharge (ESD)

Equipment

- 3.6GHz Receivers
- Rod Antenna (9kHz to 30MHz)
- Bi-Con Antenna (20MHz to 300MHz)
- Log Antenna (200MHz to 3.5GHz)
- Horn Antenna (1GHz to 18GHz)
- Horn Antenna (450MHz to 6GHz)

Services

- Design Analysis and Optimization
- Testing
- Debugging

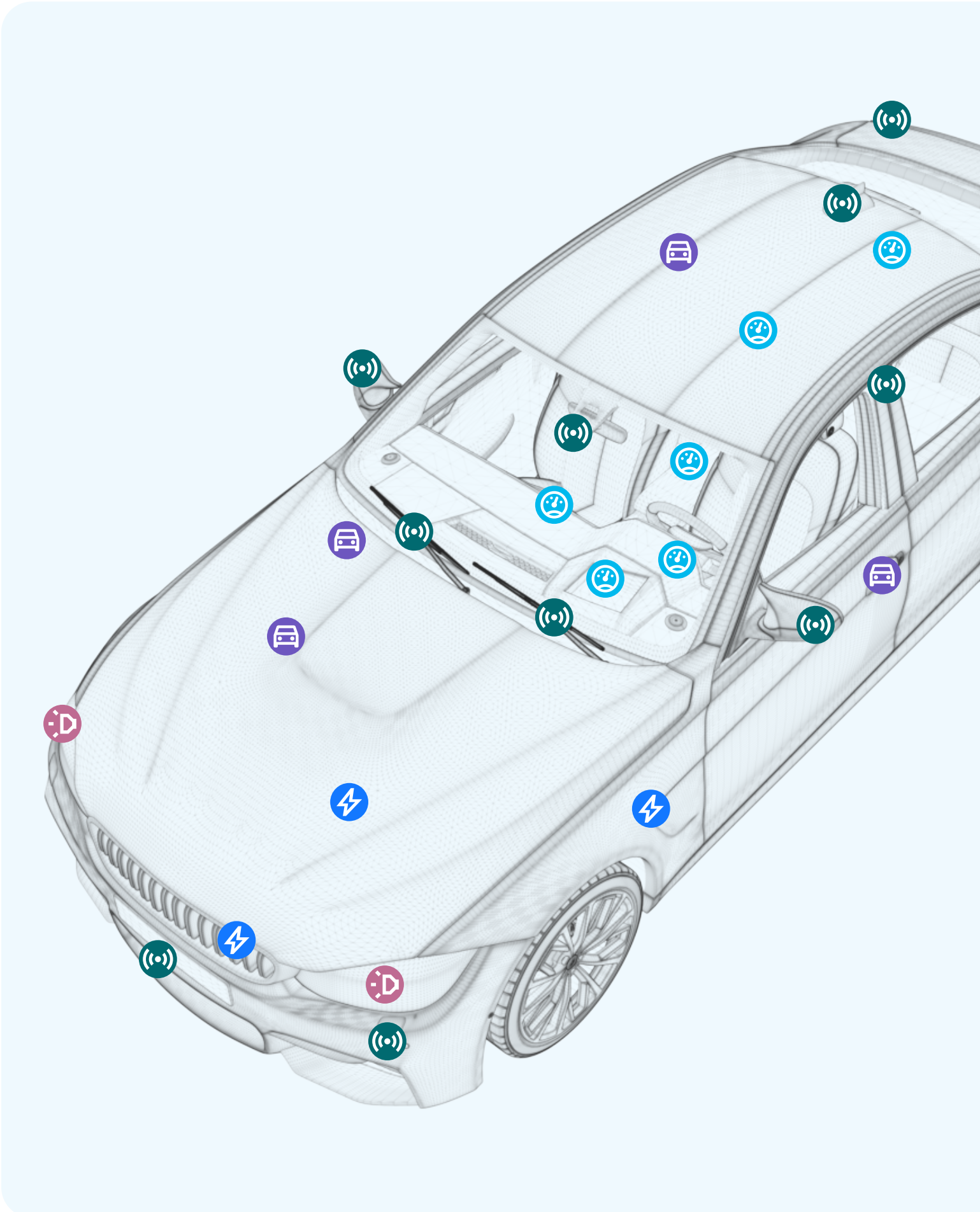
Chambers

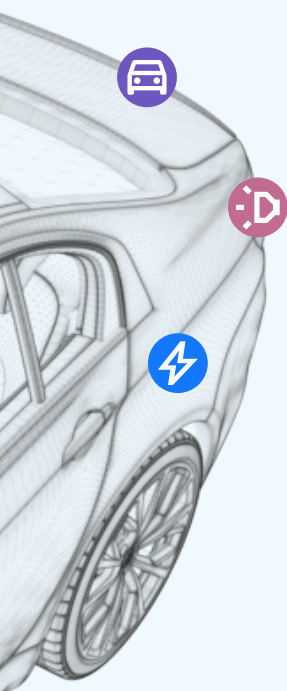
- CISPR
- 3-Meter Chamber
- BCI



EMC Lab Locations







ADAS

- ADAS Computing
- 360° Cameras
- Front Cameras
- Backup Cameras
- Thermal Cameras
- Driver Monitoring
- Occupancy Sensing
- Sensor Fusion
- Radar
- LiDAR
- Ultrasonic

Digital Cockpit

- High-Performance Computing
- Infotainment
- E-Calls
- Digital Mirrors
- USB Charging
- Wireless Charging
- Telematics/V2X
- Heads-Up Displays (HUDs)
- Clusters
- Ambient Lighting
- Display

Lighting

- Daytime Running Lights (DRLs)
- Matrix Lights
- Fog Lights
- Headlamps
- Brake Lights/CHMSL
- Turn Indicator Lights

Zonal Control & Body Control

- Zonal Control Units
- Body Control Modules
- Shutters (AAF, ARS)
- Seat Cooling
- Thermal Management
- Cooling Fan Controls
- Motor Modules
- Door Latches & Locks
- Keyless Entry
- Junction Boxes
- HVAC Systems
- Gateways
- Liftgates
- Power-Assisted Steering
- Suspension Sensors
- Wiper Motors
- Electronic Braking Systems
- Fluid Pumps
- Electronic Parking Systems
- Power Seats
- eShift

Electrification

- Onboard Chargers (OBCs)
- Traction Inverters
- Onboard DC/DC
- 48V DC/DC
- Belt Start Generators
- DC Fast-Charging Stations
- Virtual Engine Noise

Buck Regulators

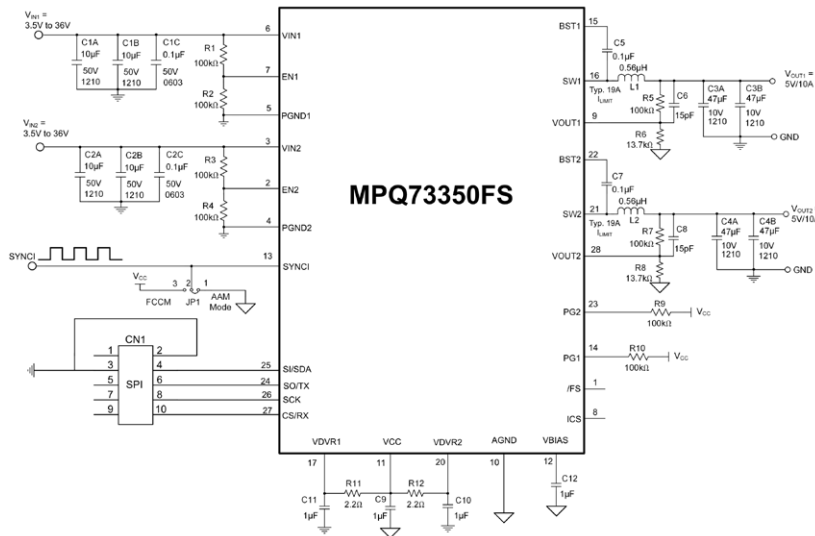
MPS offers a full variety of DC/DC step-down solutions designed to operate directly from a 12V/24V battery or at the point-of-load (PoL). Choose from power-dense integrated converters with low- $R_{DS(ON)}$ MOSFETs, or flexible controllers with external MOSFETs to easily address high current requirements. Our solutions help address common automotive design challenges such as load-dump tolerance, EMI limits, and operation above or below the AM band.



High Efficiency | EMI-Optimized | Compact Solution

MPQ73350FS-AEC1 SAMPLING

MPSafe™, ASIL-B, 42V Digital Dual Buck Converter



Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3V
- Zero-Delay PWM™ (ZDP™)

Enables High Power Density

- 14A (20A with heatsink) output current (I_{OUT}) with two channels in parallel
- 7A (10A with heatsink) I_{OUT} for each channel
- Integrated ultra-low $R_{DS(ON)}$ MOSFETs using advanced MPS BCD process
- MeshConnect™ (flip-chip package)

Designed for Functional Safety

- Built-in self-testing (BIST)
- 8-bit analog-to-digital converter (ADC) monitors I_{OUT} , output voltage (V_{OUT}), and input voltage (V_{IN})
- Individual PG for each channel and /FS pin
- Open-circuit protection, short-circuit protection (SCP), under-voltage protection (UVP), over-voltage protection (OVP), over-current protection (OCP) with latch-off, thermal shutdown (TSD)

Key Specifications:

3.5V to 42V	21.4mΩ/9mΩ	2X 7A	QFN-28 (5mmx6mm)
Input Voltage	MOSFET $R_{DS(ON)}$	2X 10A (with Heatsink)	Wettable Flanks
		Output Current	Package

Versions:

MPQ73350FS	ASIL-B
MPQ73351FS	ASIL-D
MPQ4390	QM

Ideal for Off-Battery Applications

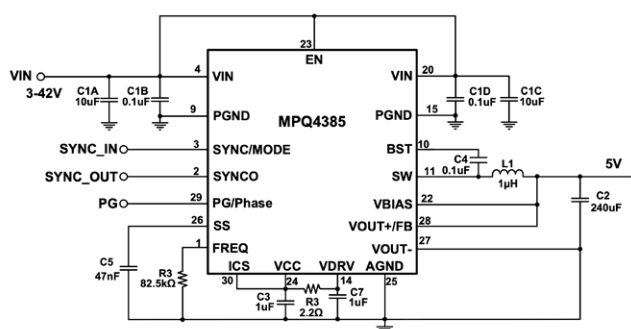
- Low quiescent current (I_Q) and shutdown current (I_{SD})
- Selectable advanced asynchronous modulation (AAM) mode or forced continuous conduction mode (FCCM)

Optimized for EMI/EMC

- Frequency spread spectrum (FSS)
- 250kHz to 2.5MHz switching frequency (f_{SW})

Vast Flexibility through Digital Configurability

- Adjust parameters including voltage, slew rate, f_{SW} , protection thresholds and more
- I²C/SPI interface with optional cyclic redundancy check (CRC)

MPQ4385-AEC1 SAMPLING**42V, 25A, 1kW, Multi-Phase, Sync Buck Converter with ZDP™ Control and Quiet FET™****Key Specifications:****3.3V to 42V**

Input Voltage

200kHz to 2.5MHzSwitching
Frequency**12A to 25A**Output
Current**TQFN-30
(5mmx6mm)**

Package

Available in Pin-Compatible Family:

25A	25A Multi-Phase Up to 8 Phases, 1kW
MPQ4385-5XY0	MPQ4385-5XY1
22A	20A
MPQ4385-2XYZ	MPQ4385-0XYZ

Features**Designed for Automotive Transients**

- 3.3V to 36V input voltage (V_{IN}) range
- Load dump up to 42V
- Low-dropout (LDO) mode with soft recovery

Designed for High Performance and Reduced Component Overhead

- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and minimal output capacitance
- >3X better transient performance vs. peak current mode
- 200kHz to 2.5MHz configurable frequency
- Differential voltage sense for high-accuracy regulation
- $\pm 1\%$ output accuracy, $\pm 1\%$ PG accuracy

Cooler Thermals

- Integrated low- $R_{DS(ON)}$ FETs using MPS's BCD process
- High efficiency (>95% at 25A)
- Thin QFN package to facilitate top-side cooling

Scalable with Multi-Phase Capability

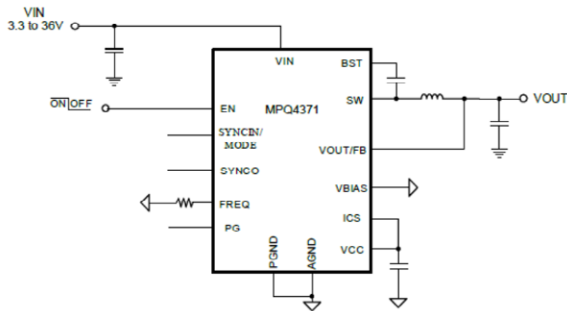
- Single 25A continuous output current (I_{OUT}), 30A peak I_{OUT}
- Up to 200A, 1kW in multi-phase operation

Optimized for Low EMC/EMI

- Symmetric V_{IN} pinout placement
- Low noise at high frequency bands using Quiet FET™ advanced switching technology
- Frequency spread spectrum (FSS) modulation
- Synchronizable to an external clock
- CISPR 25 Class 5 compliant
- Available in a MeshConnect™ TQFN-30 (5mmx6mm) package with wettable flanks

MPQ4371-AEC1/MPQ4372-AEC1

42V, 11A to 6A, Zero-Delay PWM (ZDP™) Multi-Phase Sync Buck Converter



Key Specifications:

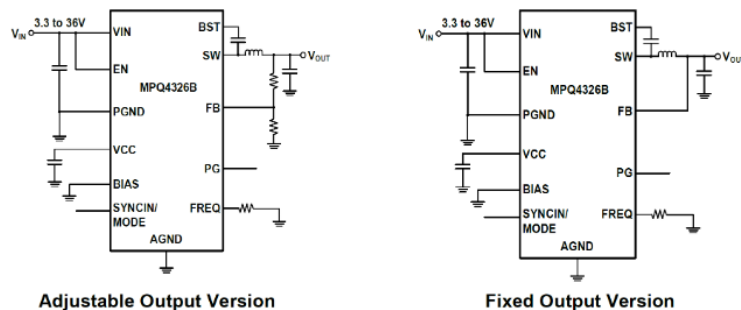
3.3V to 42V	200kHz to 2.5MHz	11A to 6A	QFN-23 (4mmx5mm)
Input Voltage	Switching Frequency	Output Current	Package

Available in Pin-Compatible Family:

11A	11A Multi-Phase	10A
MPQ4371-1000	MPQ4372-1001	MPQ4371-0000
8A	6A	
MPQ4371-8000	MPQ4371-6000	

MPQ4326B-AEC1

42V, 7A to 3A, Ultra-Compact, Low- I_Q Buck Converter



Key Specifications:

3.3V to 42V	350kHz to 2.5MHz	7A to 3A	QFN-14 (4mmx4mm)
Input Voltage	Switching Frequency	Output Current	Package

Available in Pin-Compatible Family:

7A	6A	5A
MPQ4326B-7XYZ	MPQ4326B-6XYZ	MPQ4326B-5XYZ
4A	3A	
MPQ4326B-4XYZ	MPQ4326B-3XYZ	

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3.3V
- Low-dropout (LDO) mode with soft recovery

Scalable and Multi-Phase Capability

- 11A to 6A output current (I_{OUT}) versions in pin-compatible family
- Multi-phase capable up to 8 phases

Designed for High Performance and Reduced Component Overhead

- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and minimal output capacitance
- $\pm 1\%$ output accuracy
- 200kHz to 2.5MHz configurable frequency
- Internal soft start (SS)
- Output discharge from SW

Increased Battery Life

- 1.8 μ A shutdown current (I_{SD}), 3.5 μ A standby current

Optimized for Low EMC/EMI

- Symmetric V_{IN} pinout placement
- Low EMI at high frequency bands with Quiet FET™ advanced switching control technology
- Frequency spread spectrum (FSS) modulation

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3.3V
- Low-dropout (LDO) mode with soft recovery

Increased Battery Life and High Efficiency

- 1 μ A shutdown current (I_{SD}), 24 μ A standby current
- Advanced asynchronous modulation (AAM) mode increases efficiency under light loads

Optimized for Low EMC/EMI and System Noise

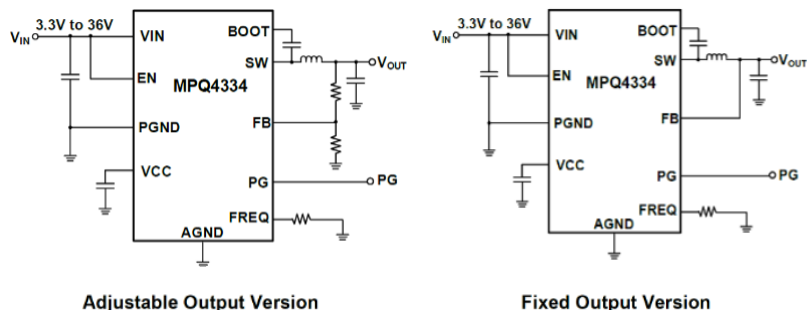
- Frequency spread spectrum (FSS) modulation
- Symmetric V_{IN} pin placement
- MeshConnect™ flip-chip packaging
- 350kHz to 2.5MHz configurable switching frequency (f_{SW})
- Internal soft start (SS)
- Output discharge from SW
- 50ns minimum on time

Protections

- Power good (PG) output
- Hiccup over-current protection (OCP)

MPQ4334 -AEC1

42V, 4A to 0.5A, Ultra-Compact, Low- I_Q Buck Converter



Key Specifications:

3.3V to 42V	200kHz to 2.5MHz	0.5A to 4A	GDE: QFN-12 (2x3mm) GLE: QFN-12 (3x4mm) GRHE: QFN-14 (2.5x3.5mm)
Input Voltage	Switching Frequency	Output Current	Package

Available in Pin-Compatible Family:

500mA	1A	2A
MPQ4334-0xxx	MPQ4334-1xxx	MPQ4334-2xxx
3A	4A	
MPQ4334-3xxx	MPQ4334-4xxx	

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3.3V

Designed for High Performance and Reduced Component Overhead

- 200kHz to 2.5MHz configurable switching frequency (f_{SW})
- Low-dropout (LDO) mode with soft recovery
- 50ns minimum on time and 50ns minimum off time

High Efficiency for Increased Battery Life and Improved Thermals

- Low quiescent current (I_Q , 20 μ A) and shutdown current (I_{SD} , 1 μ A)
- Integrated low- $R_{DS(ON)}$ HS-FETs and LS-FETs (55m Ω /35m Ω)
- 95%+ system efficiency at 12V V_{IN}
- Advanced asynchronous modulation (AAM) mode for higher efficiency at light loads

Built to Fit Space- and Cost-Limited Automotive Systems

- Scalable 1A to 4A output current (I_{OUT}) versions in pin-compatible family
- Compact 2mmx3mm, 3mmx4mm or 2.5mmx3.5mm package options
- P2P with the MPQ4323~MPQ4320 and MPQ4324-WXYZ series

Optimized for EMI/EMC

- Frequency spread spectrum (FSS)
- Symmetric V_{IN}
- MeshConnect™ flip-chip package technology
- Synchronizable to an external clock (orderable option)
- Configurable f_{SW} (orderable option)

2.7V to 6V	2MHz to 4MHz	FCLGA (3mmx4.5mm)
Input Voltage	Switching Frequency	Package
30A Continuous	3mΩ/2mΩ	
Output Current	HS-FET/LS-FET $R_{DS(ON)}$	

MPQ71020FS-WXYZ	40A Peak, 30A, ASIL-D/
MPQ2290-WXYZ	ASIL-B QM
Part Numbers	Output Current

- Up to 40A peak, 30A continuous high-power capability
- Fast transient performance
- 1% output accuracy

- Integrated, low-resistance high-side and low-side MOSFETs (HS-FET and LS-FET, respectively)

- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and reduced output capacitance
- Low noise at high frequency bands by Quiet-FET™ advanced switching technology
- 2MHz to 4MHz configurable switching frequency (f_{sw})
- Frequency spread spectrum (FSS)
- Synchronization input
- Differential output voltage (V_{out}) sense

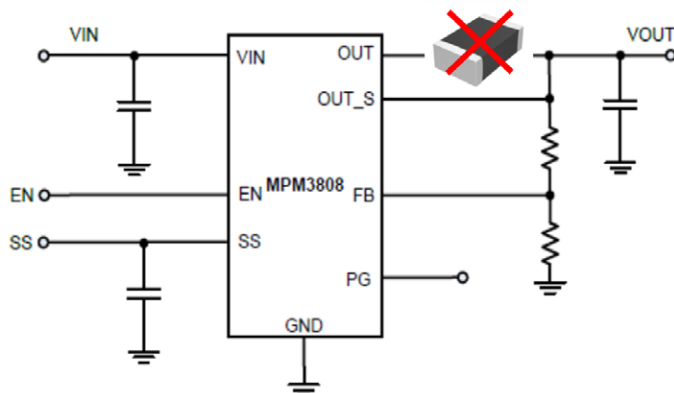
- ASIL-D/ASIL-B rated with redundant bandgap
- Digital independent safety fault indicator
- Start-up and online analog built-in self-testing (ABIST) and logic built-in self-testing (LBIST)
- V_{OUT} open detection, power good (PG) readback
- Output over-voltage protection (OVP) and under-voltage protection (UVP), short-circuit protection (SCP), and over-current protection (OCP)
- Thermal warning and thermal shutdown

- Configurable I²C interface
- Dynamic Voltage Scaling (DVS)
- Factory-programmable multi-page one-time programmable (OTP) memory
- Write protection and cyclic redundancy check (CRC)

- MPSafe™ – Functional Safety rating of ASIL-D/ASIL-B

MPM3808-AEC1 Module Series

5.5V, 3A, Synchronous Step-Down Module Series with Integrated Inductor



Key Specifications:

2.5V to 5.5V	2.4MHz	1A to 3A	Fixed: 1V, 1.1V, 1.2V 1.5V 1.8V, 2.5V, 2.8V, 3.3V Adj: From 0.6V	QFN-15 (3mmx4mm)
Input Voltage	Switching Frequency	Output Current	Output Voltage	Package

Available in Pin-Compatible Family:

MPM3806C	1A FCCM	MPM3806	1A AAM Mode
MPM3807C	2A FCCM	MPM3807	2A AAM Mode
MPM3808C	3A FCCM	MPM3808	3A AAM Mode

Features

Built to Fit Space-Limited Automotive Systems

- Compact step-down converter with 470nH integrated inductor

Fast Response and Easy Loop Stabilization

- Fast transient response and simple control loop
- Constant-on-time (COT) control

Excellent System Performance

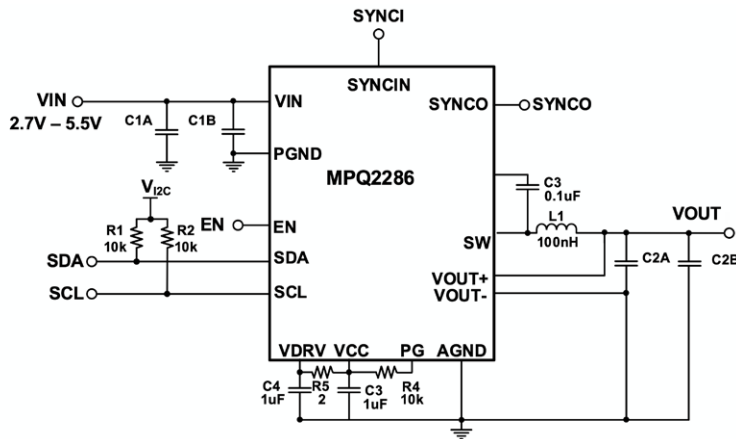
- Integrated low-ohmic FETs
- 1% FB accuracy
- External soft-start control

Digital and Rich Protections

- EN and power good (PG) for sequencing
- Output discharge
- Output over-voltage protection (OVP)

MPQ2286-AEC1

6V, 16A to 6A, Zero-Delay PWM™ (ZDP™) Control Sync Buck Converter



Key Specifications:

2.7V to 6V	2MHz to 4MHz	16A to 6A	6mΩ/3mΩ	QFN-18 (3mmx4mm)
Input Voltage	Switching Frequency	Output Current	HS-FET/ LS-FET $R_{DS(ON)}$	Package

Available in Pin-Compatible Family:

6A	8A	10A
MPQ2283	MPQ2284	MPQ2285
12A	14A Peak	16A Peak
MPQ2286	MPQ2287	MPQ2288

Features

Built to Handle Tough Automotive Core Power Requirements

- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response
- 1% output accuracy
- 0.2V to 3.6V output voltage (V_{OUT}) setting range

Designed for High Performance and Reduced Component Overhead

- ZDP™ control for minimal output capacitance and BOM cost
- 2MHz to 4MHz configurable switching frequency (f_{SW})

Optimized for for Low Noise

- Frequency spread spectrum (FSS)
- Input/output synchronization
- Differential V_{OUT} sense
- MeshConnect™ flip-chip packaging

Rich Digital Protections

- Soft-start timing
- Power good (PG) timing
- Forced continuous conduction mode (FCCM) or advanced asynchronous modulation (AAM) mode
- Configurable digital interface
- Factory-programmable multi-page one-time programmable (MOTP) memory
- Output over-voltage protection (OVP) and under-voltage protection (UVP)
- Short-circuit protection (SCP)
- Thermal warning and thermal shutdown

Buck Regulators

5V Synchronous Buck

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPM3805A-AEC1	2.6	6	0.6	1.2	485	3500	120/70	-	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
N	MPM3805B-AEC1	2.5	6	0.6	2.1	485	3500	100/60	1.2	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
	MPM3808-AEC1	2.5	5.5	3	5	21	2400	65/35	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3808C-AEC1	2.5	5.5	3	5	460	2400	65/35	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3807-AEC1	2.5	5.5	2	3.5	21	2400	70/40	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3807C-AEC1	2.5	5.5	2	3.5	460	2400	70/40	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3806-AEC1	2.5	5.5	1	2.5	21	2400	75/45	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPM3806C-AEC1	2.5	5.5	1	2.5	460	2400	75/45	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
	MPQ2177-AEC1	2.5	5.5	1	2.5	460	2400	90/50	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2177A-AEC1	2.5	5.5	1	2.5	21	2400	90/50	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPM3810A-AEC1	2.6	6	1.2	2.1	485	3500	110/60	-	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
	MPQ2178-AEC1	2.5	5.5	2	3.5	460	2400	80/40	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2178A-AEC1	2.5	5.5	2	3.5	21	2400	80/40	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2123-AEC1	2.7	6	2	6.3	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
	MPQ2179-AEC1	2.5	5.5	3	5	460	2400	65/35	-	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
	MPQ2179A-AEC1	2.5	5.5	3	5	21	2400	65/35	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
N	MPQ2177F-AEC1	2.5	6.5	1	2.5	21	2500	55/31	1.2, 1.8	Ext	✓	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good

	Part Number	V _{IN} (Min) (V)		V _{IN} (Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
N	MPQ2178F-AEC1	2.5	6.5	2	3.5	21	2500	55/31	1.2, 1.8	Ext	✓	-	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good
N	MPQ2179F-AEC1	2.5	6.5	3	5	21	2500	55/31	1.2, 1.8	Ext	✓	-	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good
N	MPQ2177H-AEC1	2.5	6.5	1	2.5	21	2500	55/31	1.2, 1.8	Ext	✓	✓	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good
N	MPQ2178H-AEC1	2.5	6.5	2	3.5	21	2500	55/31	1.2, 1.8	Ext	✓	✓	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good
N	MPQ2179H-AEC1	2.5	6.5	3	5	21	2500	55/31	1.2, 1.8	Ext	✓	✓	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, power good
S	MPQ2277-AEC1	2.5	6.5	1/1	2.5	930	2500	50/26	-	Ext	✓	✓	-	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good
S	MPQ2277A-AEC1	2.5	6.5	1/1	2.5	42	2500	50/26	-	Ext	✓	-	✓	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good
S	MPQ2279-AEC1	2.5	6.5	3/3	5	930	2500	50/26	-	Ext	✓	✓	-	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good
S	MPQ2279A-AEC1	2.5	6.5	3/3	5	42	2500	50/26	-	Ext	✓	-	✓	✓	✓	✓	✓	✓	QFN-16 (2.5x3.5)	6V, power good
N	MPQ2183-xxxx-AEC1	2.5	6.5	3	5	21	2400	50/26	-	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, 1A to 3A, FSS
N	MPQ2183A-xxxx-AEC1	2.5	6.5	3	5	21	2500	50/26	0.8, 1.1, 1.2, 1.35, 1.7, 1.8, 1.9	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-8 (1.5x2.5)	6V, 1A to 3A, 2.5MHz fixed output, FSS
	MPQ2124-AEC1	2.7	6	3	6.3	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
	MPQ2167-AEC1	2.7	6	4	6.7	42	300 to 2200	35/25	-	Ext	-	✓	✓	-	✓	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
	MPQ2167B-AEC1	2.7	6	4	6.7	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
	MPQ2180-AEC1	2.7	6	6	12.7	285	850 to 2200	38/21	0.8, 1	Int	-	✓	✓	-	-	-	-	-	QFN-14 (2.5x3)	-
	MPQ8847A-AEC1	2.7	6	6	12.7	285	850 to 2200	22/40	-	Int	-	✓	✓	-	-	-	-	-	QFN-14 (2.5x3)	-
	MPQ2167A-AEC1	2.7	6	6	9	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	✓	QFN-14 (3x3)	MPQ2167 scalable series
N	MPQ2176-4000-AEC1	2.4	6	4	7	15	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
N	MPQ2176-4001-AEC1	2.4	6	4	7	15	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
N	MPQ2176-5000-AEC1	2.4	6	5	9	15	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
N	MPQ2176-5001-AEC1	2.4	6	5	9	15	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-

	Part Number	V _{IN}	V _{IN} (Min) (V)	V _{IN} (Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _o (Typ) (μA)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
N	MPQ2176-6000-AEC1	2.4	6	6	10.5	15	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-	
N	MPQ2176-6001-AEC1	2.4	6	6	10.5	15	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-	
N	MPQ2176A-600x-AEC1	2.4	5.5	6	10.5	15	2200	18/9	-	Int	-	✓	✓	✓	✓	✓	-	TLGA-13 (2x2.5)	-	
S	MPQ2176B-400x-AEC1	2.4	5.5	4	7	15	2200	15/9	-	Int	-	✓	✓	✓	✓	✓	-	TLGA-9 (2x3)	P2P with the MPQ2244	
S	MPQ2176B-600x-AEC1	2.4	5.5	6	10.5	15	2200	15/9	-	Int	-	✓	✓	✓	✓	✓	-	TLGA-9 (2x3)	P2P with the MPQ2246	
	MPQ2169A-AEC1	2.7	6	2.8 (Dual)	4	65	350 to 3000	60/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 2.8A total with 2A single-channel max	
	MPQ2169B-AEC1	2.7	6	2.8 (Dual)	4	65	350 to 3000	60/25	-	Ext	✓	✓	-	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 2.8A total with 2A single-channel max, FCCM only	
	MPQ2166A-AEC1	2.7	6	4 (Dual)	4.5	65	350 to 3000	55/20	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 4A total with 3A single-channel max	
	MPQ2166B-AEC1	2.7	6	4 (Dual)	4.5	65	350 to 3000	55/20	-	Ext	✓	✓	-	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 4A total with 3A single-channel max, FCCM only	
N	MPQ2283-AEC1	2.7	6	6	7	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}	
N	MPQ2284-AEC1	2.7	6	8	9.3	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}	
N	MPQ2285-AEC1	2.7	6	10	12	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}	
	MPQ2286-AEC1	2.7	6	12	15	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}	
	MPQ2287-AEC1	2.7	6	14	17	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}	
	MPQ2288-AEC1	2.7	6	16	19	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable V _{OUT}	
S	MPQ71017FS-xxxx-AEC1	2.7	6	15	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control	
S	MPQ71018FS-xxxx-AEC1	2.7	6	20	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control	

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
S	MPQ71019FS-xxxx-AEC1	2.7	6	25	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control
S	MPQ71020FS-xxxx-AEC1	2.7	6	30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-25 (3x4.5)	MPSafe™, ZDP™ control
S	MPQ2295-xxxx-AEC1	2.7	6	30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	ZDP™ control
S	MPQ71411FS-xxxx-AEC1	2.7	6	30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	MPSafe™, ZDP™ control
S	MPQ2294-xxxx-AEC1	2.7	6	30	45	2000	2000, 2200, 3000, 4000	3/2	-	✓	✓	✓	✓	-	-	-	-	TLGA-22 (3.5x5)	ZDP™ control
N	MPQ2211-AEC1	4	6	12	-	650	2200	13.3/3.8	-	✓	-	✓	✓	✓	-	✓	-	LGA-19 (3x3.5)	Configurable current limit
S	MPQ2247-AEC1	2.5	6	4	-	20	2200 to 4000	35/12	-	✓	✓	✓	✓	-	-	✓	-	SOT583	FSS, synchronization
S	MPQ2248-AEC1	2.5	6	8	-	20	2200 to 4000	12/8	-	✓	✓	✓	✓	-	-	✓	-	SOT583	FSS, synchronization

18V to 24V Synchronous Buck

Part Number	V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)		I _{OUT} (A)		I _{SW} Limit (Typ) (A)		I _O (Typ) (μA)		V _{FB} (V)		f _{SW} (kHz)		R _{DS(ON)} (mΩ)		Fixed-Output Versions (V)		Soft Start		Ext Sync		FCCM		AAM Mode		COT Control		Fixed Frequency		Wettable Flank QFN Option		Package	Notes
	4	24	0.9	1	600	0.807	450 to 2200	90/50	-	Int	✓	✓	-	-	✓	✓	QFN-13 (2.5x3)	-																
MPQ4409-AEC1	4	24	0.9	1	600	0.807	450 to 2200	90/50	-	Int	✓	✓	-	-	✓	✓	QFN-13 (2.5x3)	-																
MPQ3524-0500-AEC1	3.3	22	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-0501-AEC1	3.3	22	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-1000-AEC1	3.3	22	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-1001-AEC1	3.3	22	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-1500-AEC1	3.3	22	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-1501-AEC1	3.3	22	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-2000-AEC1	3.3	22	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-2001-AEC1	3.3	22	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-3000-AEC1	3.3	22	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-																
MPQ3524-3001-AEC1	3.3	22	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-																
MPQ8861-AEC1	2.85	18	12	14	420	0.6	500 to 1250	15/4.5	-	Ext	-	-	-	✓	✓	✓	QFN-14 (3x4)	Can be used for 5V/3.3V input or regulated 12V _{IN} , integrated telemetry for voltage and current readout																

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	FCCM	AAM Mode	COT Control	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
N	MPQ4110-0XYZ-AEC1	3	22	0.5	1	20	0.8	450 to 2200	300/200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	-	TSOT23-8	-
N	MPQ4110-1XYZ-AEC1	3	22	1	1.7	20	0.8	450 to 2200	300/200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	-	TSOT23-8	-
N	MPQ4111-0XYZ-AEC1	3	22	0.5	1.35	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-1XYZ-AEC1	3	22	1	2	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-2XYZ-AEC1	3	22	2	3.4	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-3XYZ-AEC1	3	22	3	5.8	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-
N	MPQ4111-4XYZ-AEC1	3	22	4	6.5	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	-

40V to 50V Synchronous Buck with Frequency Spread Spectrum

	Part Number	V _{IN} (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank PWM™	Package	Notes
	MPQ4320-AEC1	3.3	42	0.5	1.2	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
	MPQ4321-AEC1	3.3	42	1	2	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
	MPQ4322-AEC1	3.3	42	2	3.4	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
	MPQ4323-AEC1	3.3	42	3	5.8	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
	MPQ4324E-AEC1	3.3	42	3 (4 Peak)	6.5	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
	MPQ4323M-AEC1	3.3	42	3	5.8	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (3.5x3.5)	MPQ4320 series, ultra-compact, int. input capacitors
N	MPQ4331-0XYZ-AEC1	3	40	0.5	1	20	0.8	450 to 2200	300/200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	-	TSOT23-8	-
N	MPQ4331-1XYZ-AEC1	3	40	1	1.7	20	0.8	450 to 2200	300/200	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	-	TSOT23-8	-
	MPQ4334-0XYZ-AEC1	3	40	0.5	1.35	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series
	MPQ4334-1XYZ-AEC1	3	40	1	2	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series
	MPQ4334-2XYZ-AEC1	3	40	2	3.4	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_d (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (m Ω)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
MPQ4334-3XYZ-AEC1	3	40	3	5.8	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series
MPQ4334-4XYZ-AEC1	3	40	4	6.5	20	0.8	200 to 2500	65/45	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4324 series
MPQ4324-0500-AEC1	3.3	40	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
MPQ4324-0501-AEC1	3.3	40	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
MPQ4324-1000-AEC1	3.3	40	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
MPQ4324-1001-AEC1	3.3	40	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
N MPQ4324-1500-AEC1	3.3	40	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series
N MPQ4324-1501-AEC1	3.3	40	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series

	Part Number	V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)		I _{OUT} (A)	I _{SW} Limit (Typ) (A)		I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)		Soft Start		Ext Sync	Frequency Spread Spectrum		AAM Mode	Zero-Delay PWM™	Wettable Flank PWM™	Package	Notes
	MPQ4324-2000-AEC1	3.3	40	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-2001-AEC1	3.3	40	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-3000-AEC1	3.3	40	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-3001-AEC1	3.3	40	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-4000-AEC1	3.3	40	4 Peak	5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ4324-4001-AEC1	3.3	40	4 Peak	5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	-	✓	QFN-12 (2x3), QFN-12 (3x4), QFN-14 (2.5x3.5)	Pin-compatible with the MPQ4334 series			
	MPQ8883-AEC1	3.5	45	3	5	600	0.8	250 to 2500	95/50	-	Int	-	✓	✓	✓	-	-	-	-	QFN-16 (3x3)	Many features configurable via I²C and memory			
	MPQ4340-AEC1	3.3	42	4	7.7	2.5	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase, ultra-low I _Q			
	MPQ4341-AEC1	3.3	42	5	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase, ultra-low I _Q			
	MPQ4345-AEC1	3.3	42	2	5.8	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q			
	MPQ4346-AEC1	3.3	42	3	5.8	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q			
	MPQ4347-AEC1	3.3	42	4	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q			
	MPQ4348-AEC1	3.3	42	5	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I _Q			

Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _D (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
MPQ4340A-2XYZ-AEC1	3.3	42	2	4.4	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-3XYZ-AEC1	3.3	42	3	4.4	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-4XYZ-AEC1	3.3	42	4	5.9	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-5XYZ-AEC1	3.3	42	5	5.9	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4340A-6XYZ-AEC1	3.3	42	6	7.2	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
MPQ4312-AEC1	3.3	50	2	5.5	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
MPQ4313-AEC1	3.3	50	3	5.5	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
MPQ4314-AEC1	3.3	50	4	8	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
MPQ4315-AEC1	3.3	50	5	8	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
MPQ4316-AEC1	3.3	50	6	13	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
MPQ4317-AEC1	3.3	50	7	13	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
MPQ4436A-AEC1	3.3	50	6	13	18	0.815	420	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	Multi-phase, low I _D
MPQ4480-AEC1	4.2	40	6	17/22	1000	1	235 to 2200	20/15	-	Int	✓	✓	-	-	-	✓	QFN-25 (4x5)	Adjustable line drop compensation

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
N	MPQ8856-AEC1 (Hybrid)	4	40	5	11	400	0.825	450/1000	20	-	Int	-	✓	-	-	-	✓	QFN-16 (3x3)	Low-side int., supports 100% duty cycle and PMBus interface
S	MPQ8857-AEC1	4	40	5	11	400	0.825	450/1000	20/18	-	Int	-	✓	-	-	-	✓	QFN-16 (3x3)	Supports 100% duty cycle and PMBus interface
	MPM3551-AEC1	3.3	42	3	5.8	20	0.8	2200	70/50	-	Int	-	✓	-	✓	-	✓	QFN-20 (4x6)	Module with integrated inductor
	MPM3551C-AEC1	3.3	42	3	5.8	1200	0.8	2200	70/50	-	Int	-	✓	✓	-	-	✓	QFN-20 (4x6)	Module with integrated inductor
	MPQ4325-AEC1	3.3	36	5	8.5	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _O
	MPQ4326-AEC1	3.3	36	6	10	20	0.8	200 to 2500	45/25	3.3	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _O
N	MPQ4327-AEC1	3.3	36	7	11	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _O
	MPQ4328-AEC1	3.3	36	4	6.4	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I _O
	MPQ4326B-3000-AEC1	3.3	36	3	4.4	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
	MPQ4326B-4000-AEC1	3.3	36	4	5	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
	MPQ4326B-5000-AEC1	3.3	36	5	6	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
	MPQ4326B-6000-AEC1	3.3	36	6	7.5	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-

Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _D (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
MPQ4326B-7000-AEC1	3.3	36	7	8	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
MPQ4371-6000-AEC1	3.3	42	6	7.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
MPQ4371-8000-AEC1	3.3	42	8	9.6	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
MPQ4371-0000-AEC1	3.3	42	10	12	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
MPQ4371-1000-AEC1	3.3	42	11	13.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
MPQ4372-1001-AEC1	3.3	42	11	13.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	Multi-phase
S MPQ4373-1XYZ-AEC1	3.3	42	11	19	3.5	0.6	200 to 2500	22/11	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	-	LGA-16 (3.5x4.5)	-
S MPQ4374-2XYZ-AEC1	3.5	40	12	20.7	42	0.6	425 to 2200	11.5/5	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	-

Part Number		V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _O (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
S	MPQ4374-4XYZ-AEC1	3.5	40	14	24.7	42	0.6	425 to 2200	11.5/5	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	-
S	MPQ4374-6XYZ-AEC1	3.5	40	16	27.6	42	0.6	425 to 2200	11.5/5	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-28 (5x6)	-
S	MPQ4385-5XYZ-AEC1	3.3	40	25	37	10	0.8	200 to 2500	45780	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4385-2XYZ-AEC1	3.3	40	22	33	10	0.8	200 to 2500	45780	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4385-0XYZ-AEC1	3.3	40	20	30	10	0.8	200 to 2500	45780	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4384-2XYZ-AEC1	3.3	40	12	18	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4384-4XYZ-AEC1	3.3	40	14	22.5	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _D (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Zero-Delay PWM™	Wettable Flank QFN Option	Package	Notes
S	MPQ4384-6XYZ-AEC1	3.3	40	16	22.5	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase
S	MPQ4384-8XYZ-AEC1	3.3	40	18	27	10	0.8	200 to 2500	5/3	0.8, 1, 1.2, 1.8, 2.5, 3.3, 3.8, 4.5, 5	Int	✓	✓	✓	✓	✓	✓	QFN-32 (5x6)	Multi-phase

40V to 50V Synchronous Buck without Frequency Spread Spectrum

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _D (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions (V)	Soft Start	Ext Sync	Frequency Spread Spectrum	FCCM	AAM Mode	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPM3509B-AEC1	4	40	0.6	5	700	0.807	400	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
	MPQ9846-AEC1	3.3	40	0.6	1.2	14	0.8	350 to 2500	125/115	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	Compact, low I _D
	MPQ4418-AEC1	4	40	0.6	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
	MPQ4418A-AEC1	4	40	0.6	1.7	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
	MPM3509-AEC1	4	40	0.9	3	600	0.807	2200	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
	MPQ4419-AEC1	4	40	1	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
	MPQ4431-AEC1	3.3	40	1	2.5	10	0.8	350 to 2500	90/80	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I _D , low-dropout mode
	MPQ9840-AEC1	3.3	40	1	5.6	14	0.8	350 to 2500	90/40	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I _D , low-dropout mode

Part Number	V _{IN} (Min) (V)			V _{IN} (Abs Max) (V)			I _{OUT} (A)			I _{SW} Limit (Typ) (A)			I _O (Typ) (μA)			V _{FB} (V)			f _{SW} (kHz)			R _{DS(ON)} (mΩ)			Fixed-Output Versions (V)			Soft Start			Ext Sync			Frequency Spread Spectrum			FCCM			AAM Mode			Fixed Frequency			Wettable Flank			QFN Option			Package	Notes																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

60V to 80V Synchronous Buck

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Fixed-Output Versions	Soft Start	Ext Sync	FCCM	AAM Mode	Hysteretic Control	Fixed Frequency	Package	Notes
	MPQ4569-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	QFN-10 (3x3), SOIC-8E	Prog. soft start
	MPQ4569A-AEC1	4.5	80	0.3	0.72	20	1	-	1200/500	-	Ext	-	-	✓	✓	-	QFN-10 (3x3)	Prog. soft start, default enable on
	MPQ2420-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	TSSOP-16EP	Int. separate windowed watchdog die
	MPQ2420A-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	TSSOP-16EP	Int. separate windowed watchdog die, default enable on
	MPQ4576-AEC1	4.5	65	0.6	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I _Q , compact
	MPQ4571-AEC1	4.5	65	1	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I _Q , compact
	MPQ4572-AEC1	4.5	65	2	3.5	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I _Q , compact
	MPQ4573-AEC1	4.5	65	2.5	3.5	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I _Q , compact
	MPQ4570-AEC1	4.5	60	3	5.7	520	1	100 to 1000	90/70	-	Ext	✓	-	✓	-	✓	TSSOP-20EP	Prog. soft-start time, external sync
	MPM3901-AEC1	4.5	65	1	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	Low-I _Q , compact module with an integrated inductor
N	MPQ8880A-AEC1	4	60	4.5	5.5	8	0.15/0.6/0.999/1.5	150 to 2200	60/43	-	Int	✓	✓	✓	✓	✓	QFN-20 (4x5)	Prog. soft-start time, PG, multi-phase
S	MPQ8887-AEC1	4.5	70	9	12	180	0.5/1.6/2	200 to 600	14/28	-	Int	✓	✓	✓	✓	✓	QFN-24 (4x5)	Supports I ² C, 100% duty cycle

>100V Synchronous Buck

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _{SW} Limit (Typ) (A)	I _Q (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	R _{DS(ON)} (Ω)	Soft Start	Ext Sync	FCCM	AAM Mode	Hysteretic Control	Package	Notes
	MPQ4590-AEC1	7.5	700	0.4	0.66	200	2.55	-	13.5	Int	-	✓	-	✓	SOIC-8	Primary-side CV control, supports buck, buck-boost, boost, and flyback topologies

Buck Controllers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_O (Typ) (μA)	I_{SD} (Typ) (μA)	V_{FB} (V)	f_{SW} (kHz)	Fixed-Output Versions	Soft Start	Ext Sync	FCM	AAM Mode	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ2908A-AEC1	4	60	750	0.5	0.8	100 to 1000	-	Ext	✓	✓	✓	✓	✓	TSSOP-20EP, QFN-20 (3x4)	High max duty cycle (99.5%)
	MPQ2918-AEC1	4	40	750	0.5	0.8	100 to 1000	-	Ext	✓	✓	✓	✓	✓	TSSOP-20EP, QFN-20 (3x4)	High max duty cycle (99.5%)
S	MPQ2923-AEC1	3.6	42	20	2.2	1.2	200 to 2200	1.2, 1.8, 2.5, 3.3, 3.8, 5, 12, 15, 18	Ext	✓	✓	✓	✓	✓	QFN-24 (4x4)	Frequency spread spectrum, multi-phase
S	MPQ9934-AEC1	5.5	85	400	8 (Max)	0.17/0.5/0.667/1.2/1.6	100 to 1000	-	Ext	-	✓	✓	Prog.	✓	QFN-23 (4x4)	Multi-phase, GaN driver capability
S	MPQ2933-AEC1	3.6	42	20	2.2	1.2	200 to 2200	1.2, 1.8, 2.5, 3.3, 3.8, 5, 12, 15, 18	Ext	✓	✓	✓	✓	✓	QFN-38 (5x8)	Frequency spread spectrum, multi-phase

Non-Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_a (Typ) (μ A)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(on)}$ (m Ω)	Fixed-Output Versions	Soft Start	Ext Sync	FCCM	Fixed Frequency	Package	Notes
MPQ2459-AEC1	4.5	60	0.5	1.3	730	0.812	480	1000	-	Int	-	✓	✓	TSOT23-6	Superior light-load efficiency
MPQ2451-AEC1	3.3	40	0.6	1	130	0.794	2000	500	3.3, 5	Int	-	-	✓	TSOT23-6L, QFN-6L	Internal comp. and soft start
MPQ2454-AEC1	3.3	40	0.6	1.8	60	0.8	350 to 2300	200	-	Ext	✓	-	✓	QFN-10 (3x3), MSOP-10EP	Superior light-load efficiency
MPQ4558-AEC1	3.8	60	1	1.9	140	0.8	200 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4559-AEC1	3.8	60	1.5	2.3	140	0.8	200 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4561-AEC1	3.8	60	1.5	2.5	140	0.795	250 to 2000	300	-	Ext	-	-	✓	QFN-10 (3x3)	Superior light-load efficiency
MPQ4560-AEC1	3.8	60	2	3.2	140	0.797	250 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4462-AEC1	3.8	40	3.5	5.5	120	0.792	250 to 4000	150	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4467-AEC1	3.3	40	2.5	5.8	10	0.8	350 to 2500	90	-	Ext	✓	-	✓	QFN-16 (3x4)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ4468-AEC1	3.3	40	3.5	5.8	10	0.8	350 to 2500	90	-	Ext	✓	-	✓	QFN-16 (3x4)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ4469-AEC1	3.3	40	5	7.7	10	0.8	350 to 2500	110	-	Ext	✓	-	✓	QFN-20 (4x5)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ2362-AEC1	4.8	25	Dual 2	3.4	2000	1.2	380	180	-	Int	✓	✓	✓	TSSOP-20	Dual output

Boost & Buck-Boost Regulators

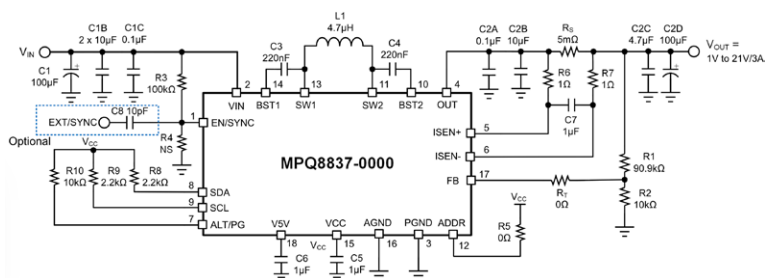
MPS offers a variety of DC/DC step-up solutions designed to operate directly from a 12V/24V battery or at the point-of-load (PoL). Choose from power-dense integrated converters with low- $R_{DS(ON)}$ MOSFETs, or flexible controllers with external MOSFETs to easily address high current requirements. Our solutions help address common automotive design challenges such as cold crank, EMI limits, and operation above or below the AM band.



High Efficiency | EMI-Optimized | Compact Solution

MPQ8837-AEC1 SAMPLING

40V, 8A Buck-Boost Converter with 4 MOSFETs



Key Specifications:

2.8V to 36V	8A	280kHz to 2.1MHz
Input Voltage	Output Current	Switching Frequency

FCTQFN-18 HTC (3mmx4mm)

Package

Features

Built to Handle Tough Automotive Transients and Applications

- Load dump up to 40V, cold crank down to 2.8V
- 1V to 26V output voltage (V_{OUT}) range

High-Power Capability and Efficiency

- 8A average inductor current (I_L) with four integrated low on resistance ($R_{DS(ON)}$) MOSFETs

Cooler Thermals

- Thin QFN with HTC molding facilitates top-side cooling

Optimized for EMI/EMC Performance

- Frequency spread spectrum (FSS)
- Selectable switching frequency (f_{SW}): 280kHz, 420kHz, 600kHz, 1.2MHz, or 2.1MHz
- External clock synchronization

Vast Flexibility through Digital Configurability and Protection

- Selectable automatic pulse-frequency modulation (PFM), pulse-width modulation (PWM), or forced PWM (FPWM) mode
- Integrated 5V/60mA low-dropout (LDO) regulator
- Configurable one-time programmable (OTP) memory for maximum flexibility
- Standard, configurable I²C interface
- Line drop compensation
- Power good (PG) indication
- Enable (EN) shutdown passive discharge
- Over-current protection (OCP), output and input over-voltage protection (OVP), and short-circuit protection (SCP), configurable input under-voltage lockout (UVLO), over-temperature protection (OTP)

2.8V to 3.6V	5V	0.25 to 0.5A	2.2MHz	TSOT23-8
Input Voltage	OutputVoltage	Output Current	Switching Frequency	Package

MPQ3413	250mA
MPQ3414B	500mA

MPQ3428A-AEC1

3V to 20V	<1μA	18mΩ	QFN-22 (3mmx4mm)
Input Voltage	Shutdown Current	Built-In FETs	Package

- True output disconnection to allow 0V output voltage (V_{OUT}) for 0A shutdown current (I_{SD})
- $<1\mu A$ I_{SD}
- Inrush current limiting at start-up

- Overload protection (OLP) and short-circuit protection (SCP)
- Over-voltage protection (OVP)
- Thermal shutdown

- 94% efficiency (4.2V to 12V, 2A)
- Low-ohmic MPS BCD FET technology

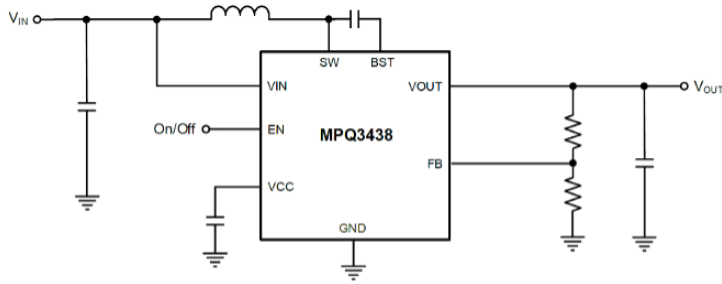
- MeshConnect™ flip-chip packaging
- Operates outside of AM radio band

- Integrated compensation network
- Fixed output voltage (V_{OUT}) options

- 19A internal switch current limit or externally configurable input current (I_{IN}) limit
- Supports external disconnect FET
- Cycle-by-cycle current limiting
- Configurable input under-voltage lockout (UVLO)
- Output over-voltage protection (OVP)

MPQ3438-AEC1

10V_{IN}, 16V_{OUT}, 2A Compact Boost Converter



Key Specifications:

2.7V to 10V	Up to 16V	2A	2.6MHz	QFN-8 (1.5mmx2mm)
Input Voltage	Output Voltage	Output Current	Switching Frequency	Package

PSM or FCCM Available in Pin-Compatible Family:

Power-Save Mode (PSM)
under Light Loads
MPQ3438-0000

Forced Continuous
Conduction Mode (FCCM)
MPQ3438-0001

Features

Flexible Input and Output Operating Range

- 2.7V to 10V start-up input voltage (V_{IN}), 0.8V to 10V operating V_{IN}
- 2A, 16V output voltage (V_{OUT}) range

Designed for High Power Efficiency and Performance

- Adaptive constant-on-time (COT) for fast transient response
- Power-save mode (PSM) at light loads
- >88% efficiency
- Automatic pass-through mode when $V_{IN} > V_{OUT}$
- Internal soft start (SS) and compensation

Cost-Effective, Compact System

- 2.6MHz fixed high switching frequency (f_{SW})
- Integrated low- $R_{DS(ON)}$ low-side MOSFET (LS-FET) and high-side MOSFET (HS-FET): 55mΩ and 100mΩ, respectively
- Available in a small QFN-8 (1.5mmx2mm) package

Protections

- Configurable under-voltage lockout (UVLO) and hysteresis
- Over-temperature protection (OTP), input and output over-voltage protection (OVP), and over-current protection (OCP)
- Thermal shutdown

Buck-Boost Regulators

Buck-Boost Converters

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Max) (V)	I_{OUT} (Typ) (A)	I_o (Typ) (μA)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Interface	Frequency Spread Spectrum	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ8873-xxxx-AEC1	2.2	36	0.5 to 30	3	180	200 to 1000	2x 10/25	I ² C	✓	✓	✓	QFN-34 (4x5)	20W prog. 4-switch converter with advanced protections
MPQ8875A-xxxx-AEC1	2.2	36	0.5 to 30	5	180	200 to 1000	2x 10/25	I ² C	✓	✓	✓	QFN-34 (4x5)	30W prog. 4-switch converter with advanced protections
S MPQ8874-xxxx-AEC1	4	42	1 to 30	4	20	200 to 2200	Buck 20/40, Boost 40/20	I ² C	✓	✓	✓	QFN-22 (4x5)	-
S MPQ8872-xxxx-AEC1	4	42	1 to 30	2	20	200 to 2200	Buck 20/40, Boost 40/20	I ² C	✓	✓	✓	QFN-22 (4x5)	-
S MPQ8835A-xxxx-AEC1	3	40	1 to 24	6	130	280, 420, 600, 1000	Buck 12/16, Boost 7/7	I ² C	✓	✓	✓	QFN-19 (4x5)	-

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	V _{OUT} (Max) (V)	I _{OUT} (Typ) (A)	I _Q (Typ) (μA)	f _{SW} (kHz)	R _{DS(ON)} (mΩ)	Interface	Frequency Spread Spectrum	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
S	MPQ8837-xxxx-AEC1	2.8	40	1 to 26	8	350	280, 420, 600, 1200, 2100	12, 24, 12, 12	I ² C	✓	✓	✓	QFN-18 (3x4)	-
S	MPQ8836-AEC1	3.6	40	1 to 36	5	135	280, 420, 600	20/14	I ² C	✓	✓	✓	QFN-20 (3x5)	100W, two int. FETs, 98% peak efficiency, high-side current sense
	MPQ4262-AEC1 (Hybrid)	3.6	40	1 to 36	5	130	280, 420, 600	20/14	I ² C	✓	✓	✓	QFN-20 (3x5)	USB, 100W, two int. FETs, 98% peak efficiency
	MPQ4263-AEC1	3.6	40	1 to 36	5	135	280, 420, 600	20/14	I ² C	✓	✓	✓	QFN-20 (3x5)	USB, 100W, two int. FETs, 98% peak efficiency, high-side current sense
	MPQ4232-AEC1	4.3	40	1 to 22	5	130	280, 420, 600, 1000	10/14/6/6	I ² C	✓	✓	✓	QFN-19 (4x5)	USB, 22V/5A, 4-switch converter with advanced protection
S	MPQ4232A-AEC1	3	40	1 to 24	6	130	280, 420, 600, 1000	Buck 12/16, Boost 7/7	I ² C	✓	✓	✓	QFN-19 (4x5)	USB, 36V/5A, 4-switch converter with advanced protection, P2P with the MPQ4232-AEC1

Boost Regulators

Boost Controllers

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	I _Q (Typ) (μA)	I _{SD} (Typ) (μA)	V _{FB} (V)	f _{SW} (kHz)	Gate Drive (A)	Soft Start	Sync	OVP	Wettable Flank QFN Option	Package	Notes
	MPQ3910A-AEC1	5	35	288	1	1.237	30 to 400	1	Ext	✓	✓	-	MSOP-10	Peak current mode, light-load operation, supports >10A, OVP, SCP, OTP
N	MPQ3445-AEC1	3	45	40	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, frequency spread spectrum, digitally prog. I ² C/SPI
N	MPQ3446-AEC1	6	60	60	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, frequency spread spectrum, digitally prog. I ² C/SPI
S	MPQ3447-AEC1	6	85	60	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, frequency spread spectrum, digitally prog. I ² C/SPI

Synchronous Boost

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Max) (V)	I_{SW} Limit (Typ) (A)	I_O (Typ) (μA)	I_{SD} (Typ) (μA)	V_{FB} (V)	f_{SW} (kHz)	Current Limit (A)	$R_{DS(on)}$ (mΩ)	Output (V)	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
N	MPQ3410-AEC1	1.8	6	6	1.3	360	0.15	1.19	550	1.3	530/300	Adj	✓	-	TSOT23-5	Output to input disconnect
	MPQ3413-AEC1	1.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	-
	MPQ3414B-AEC1	2.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	Mode
	MPQ3414C-AEC1	2.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	Sync/mode
	MPQ3428A-AEC1	3	20	22	25	110	1	1.225	600	25	18	Adj	✓	-	QFN-22 (3x4)	Input disconnect function, external high-side gate drive
	MPQ3431A-AEC1	0.8	13	16	21	450	25	1	450	25	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. input current limit, supports 40W peak power load from 3.3V, selectable PSM and FCCM, adaptive COT
	MPQ3431C-AEC1	0.8	13	16	Adj	450	25	1	450	10	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. internal switch peak current limit, supports 40W peak power load
	MPQ3432-AEC1	0.8	13	16	10	450	25	1	600	10	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. internal switch peak current limit, supports 40W peak power load
	MPQ3438-AEC1	0.8	10	16	2	150	2	1	2600	2	6/9.5	Adj	✓	✓	QFN-8 (1.5x2)	-

Non-Synchronous Boost

	Part Number	V_{IN} (Min) (V)	V_{SW} (Max) (V)	V_{OUT} (Max) (V)	I_{SW} Limit (Typ) (A)	I_O (Typ) (μA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(on)}$ (mΩ)	Soft Start	OCP	Wettable Flank QFN Option	Package	Notes
	MPQ3426-AEC1	3.2	45	35	8.5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis
	MPQ3425-AEC1	3.1	22	55	5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis
	MPQ3452-AEC1	3.1	22	22	5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis

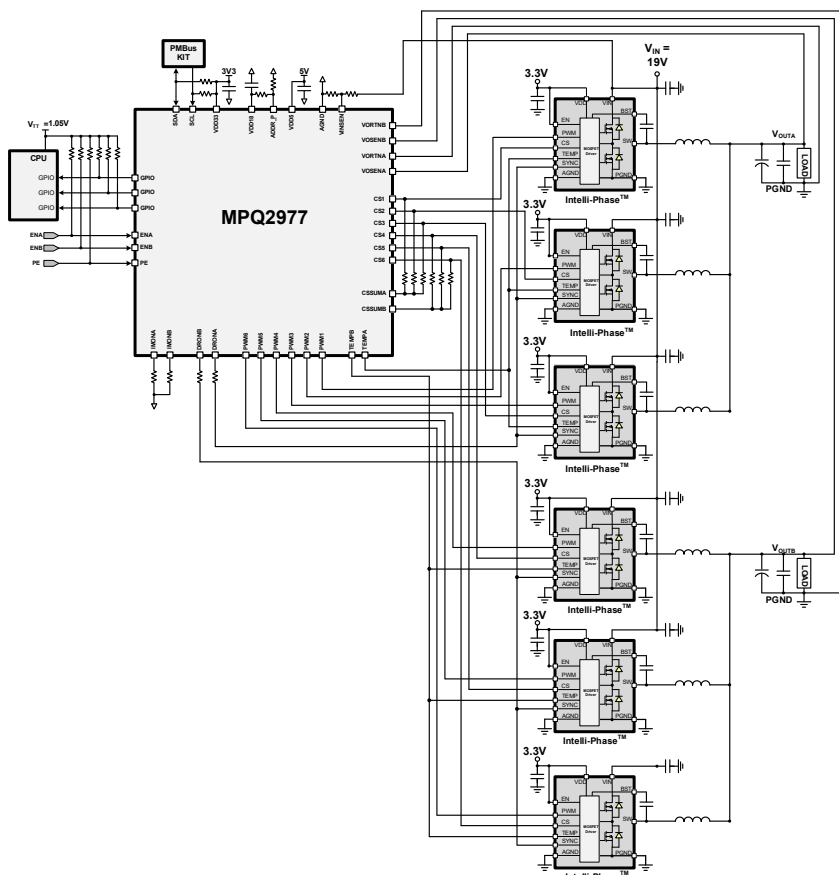
Automotive Compute Core Power

MPS offers best-in-class power conversion solutions for the core power rails of automotive SoCs, CPUs, and GPUs. The portfolio includes multi-phase digital controllers, Intelli-Phase™ DrMOS power stages, and high-current power converters. Our solutions offer scalability, configurability, and comprehensive monitoring and protection features to power the most advanced high-performance computing for automotive applications, such as ADAS and infotainment.



High Efficiency | Fast Transient Response | Compact Solution

Digital Multi-Phase Controllers + Intelli-Phase™ DrMOS to Power SoC Core Rails



Features

Digital Control

- Easy compensation
- Fast transient response
- Better current balancing
- Configurability and flexibility
- Real-time monitoring and reporting
- Comprehensive protection features

Monolithic DrMOS

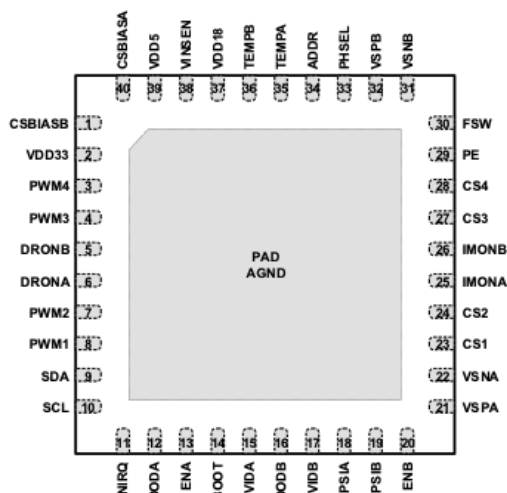
- Monolithic design means fewer components and improved robustness
- Reduced switching losses and higher efficiency
- Superior current-sense accuracy

Fewer External Components

- Lower cost
- More compact design

MPQ2967-AEC1

2-Rail, 4-Phase Digital Controller



QFN-40 (6mmx6mm), 0.5mm Pitch

Customer Benefits

- Proven design for Orin and other ADAS platforms
- Constant-on-time (COT) pulse-width modulation (PWM) scheme offers fast transient response to reduce output capacitance (C_{OUT})
- Digital control for flexibility, optimized tuning, and design cycles

Features

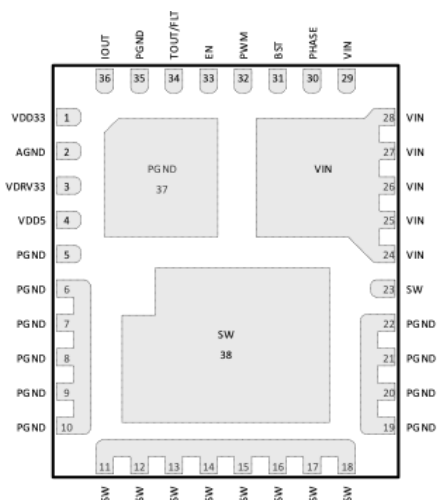
- Programming and monitoring
- PWM-VID interface compliant
- Built-in multiple-time programmable memory (MTP) to store custom configurations
- Automatic loop compensation, automatic phase-shedding, and phase-to-phase active current balancing
- Input voltage (V_{IN}), output voltage (V_{OUT}), output current (I_{OUT}), and regulator temperature monitoring
- Protections include under-voltage lockout (UVLO), over-voltage protection (OVP), under-voltage protection (UVP), over-current protection (OCP), and over-temperature protection (OTP)
- Runtime register cyclic redundancy check (CRC) and packet error checking (PEC) mismatch check
- Separate enable (EN) for each rail

Applications

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, and GPUs

MPQ86960

50A Intelli-Phase™ DrMOS



LGA (5mmx6mm)

Customer Benefits

- Proven design for Orin and other ADAS platforms
- Monolithic design offers higher switching frequency (f_{SW}) to reduce inductor and capacitor requirements
- Optimized process technology for best efficiency to extend EV battery range

Features

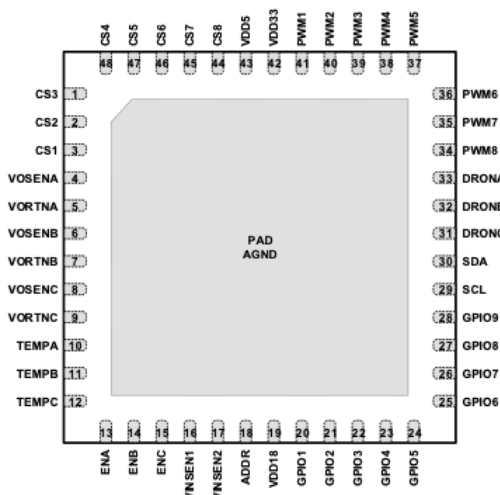
- Wide 3V to 22V operating input voltage (V_{IN}) range
- 5V VDD input
- VDRV33 and VDD33 supported by internal low-dropout (LDO) regulator
- Accu-Sense™ current-sense
- Temperature-sensing
- Accepts tri-state pulse-width modulation (PWM) input
- Current-limit protection
- Over-temperature protection (OTP)
- Fault reporting

Applications

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, and GPUs

MPQ2946

3-Rail, 8-Phase Digital Controller



QFN-48 (7mmx7mm), 0.5mm Pitch

Customer Benefits

- Advanced constant-on-time (COT) control pulse-width modulation (PWM) (ACP™) for lower output capacitance and predictable EMI
- Digital control for flexibility, optimized tuning, and fast design cycles

Features

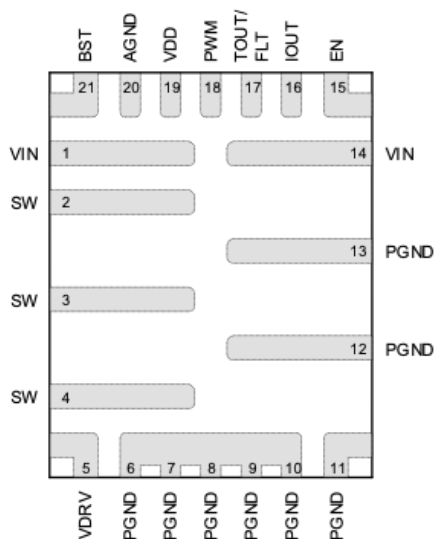
- Digital interface for programming and monitoring
- Built-in multiple-time programmable (MTP) memory to store custom configurations
- Automatic loop compensation, automatic phase-shedding, and phase-to-phase active current balancing
- Digital load-line regulation
- Input voltage (V_{IN}), output voltage (V_{OUT}), output current (I_{OUT}), and regulator temperature monitoring
- Protections include under-voltage lockout (UVLO), over-voltage protection (OVP), under-voltage protection (UVP), over-current protection (OCP), and over-temperature protection (OTP)
- Separate enable (EN) for each rail
- Separate V_{IN} sensing
- 9 configurable, general-purpose, open-drain output pins

Applications

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, GPUs, and other ASICs

MPQ86760

45A Intelli-Phase™ DrMOS



LGA (4mmx5mm)

Customer Benefits

- For 3.3V/5V inputs and monolithic design enable higher switching frequency (f_{SW}) to reduce passive components
- Size and cost
- Optimized process technology for best efficiency to extend EV battery range

Features

- 3V to 6V operating input voltage (V_{IN}) range
- 3.3V VDRV/VDD input
- 45A continuous output current (I_{OUT})
- Accu-Sense™ current-sense
- Temperature-sensing
- Accepts tri-state pulse-width modulation (PWM) input
- Current-limit protection
- Over-temperature protection (OTP)
- Fault reporting
- Ultra-low quiescent current (I_Q)

Applications

- Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, GPUs, and other ASICs

Automotive Compute SoC Core Power

Multi-Phase Digital Controllers

	Part Number	Control Method	System Interface	Memory Type	# of Rails	# of Phases	V_{CC} (Typ) (V)	I_o (Typ) (mA)	f_{SW} (Max) (kHz)	Wettable Flank QFN Option	Package	Notes
	MPQ2977-AEC1	Digital	Digital Interface/I ² C	MTP	2	6	5	15	1250	✓	TQFN-40 (6x6)	-
	MPQ2967-AEC1	Digital	Digital Interface/I ² C	MTP	2	4	5	20	2000	✓	TQFN-40 (6x6)	MPSafe™, ASIL-D
	MPQ2946-AEC1	Digital	Digital Interface/I ² C	MTP	3	8	5	20	2000	✓	TQFN-48 (7x7)	-
N	MPQ29125-AEC1	Digital	Digital Interface/I ² C	MTP	3	8	3.3	13	2000	-	TQFN-52 (6x6)	-
N	MPQ29164-AEC1	Digital	Digital Interface/I ² C	MTP	2	6	3.3	8	2000	✓	TQFN-48 (6x6)	-
N	MPQ72957-AEC1	Digital	Digital Interface/I ² C	MTP	4	8	5	20	2000	✓	TQFN-48 (7x7)	MPSafe™, ASIL-D
S	MPQ72963-AEC1	Digital	Digital Interface/I ² C	MTP	3	9	5	25	2000	✓	TQFN-48 (7x7)	MPSafe™, ASIL-D
S	MPQ29270-AEC1	Digital	Digital Interface/I ² C	MTP	3	11	5	35	2000	✓	TQFN-56 (8x8)	-
S	MPQ29260-AEC1	Analog	-	-	1	3	3.3	3.5	500	✓	TQFN-24 (4x4)	-

Intelli-Phase™ DrMOS

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Load Current (A)	V_{CC} (Typ) (V)	I_o (Typ) (mA)	Integrated Current Sense	Integrated Temp Sense	Fault Indicator	Wettable Flank QFN Option	Package
	MPQ86940-AEC1	3	22	40	3.3	25	✓	✓	✓	✓	QFN-21 (4x5)
	MPQ86960-A-AEC1	3	22	50	5	25	✓	✓	✓	-	LGA-38 (5x6)
N	MPQ86750-AEC1	3	22	50	5	25	✓	✓	✓	-	LGA-38 (5x6)
	MPQ86760-AEC1	3	6	45	3.3	25	✓	✓	✓	✓	QFN-21 (4x5)
	MPQ86970-AEC1	3	22	50	5	25	✓	✓	✓	-	LGA-41 (5x6)
S	MPQ86761-AEC1	3	6	60	3.3	25	✓	✓	✓	✓	QFN-21 (3.5x6)
S	MPQ86725-AEC1	3	6	25	3.3	25	✓	✓	✓	✓	QFN-17 (3.5x6)
S	MPQ86720-AEC1	24	70	20	3.3	20	✓	✓	✓	✓	QFN-22 (5x6)
S	MPQ86770-AEC1	3	6	45	3.3	25	✓	✓	✓	-	LGA-30 (4x5)
S	MPQ86771-AEC1	3	6	45	3.3	25	✓	✓	✓	-	LGA-38 (5x6)

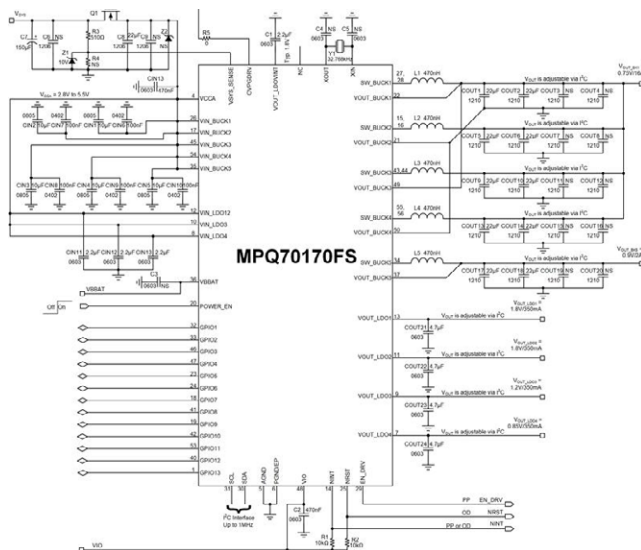
Intelli-Phase™ PoLs

	Part Number	Control Method		System Interface	Memory Type	V _{IN} (Min)		V _{IN} (Max)		Load Current (A)		V _{OC} (Typ)		I _D (Typ)		Integrated Current Sense	Integrated Temp Sense	f _{SW} (Max)	Wettable Flank QFN Option	Package
S	MPQ29240-AEC1	Digital	Digital Interface/I²C	MTP	4	22	40	3.3	25	✓	✓	1000	✓	✓	QFN-27 (5x6)					
S	MPQ29241-AEC1	Digital	Digital Interface/I²C	MTP	4	22	30	3.3	25	✓	✓	1000	✓	✓	QFN-27 (5x6)					
N	MPQ29261-AEC1	Digital	-	-	4.5	22	18	3.3	20	✓	✓	800	✓	✓	QFN-19 (3x4)					
N	MPQ81811-AEC1	Digital	-	-	2.5	22	8	3.3	4	✓	✓	900	-	✓	QFN-13 (2x3)					
S	MPQ82B55-AEC1	Digital	-	-	2.5	22	12	3.3	4	✓	✓	900	-	✓	QFN-23 (3x4)					

MPS's automotive PMICs make it easy to manage multiple power rails with integrated system power sequencing and digital configuration capabilities via I²C and SPI interfaces, as well as OTP/MTP memory. During development, system requirements may change; with our starter development/evaluation kits (EVKT/PKTs), customers can easily use MPS products to evaluate, make configuration changes, and finalize specs in a timely manner. Some of our PMICs also support multi-phase (parallel) capability to allow design scalability and minimize the number of BOM components.



MPSafe™, ASIL-D, 5.5V, 9-Channel PMIC for ADAS SoCs



2.8V to 5.5V	0.3V to 3.6V (Bucks) 0.3 to 3.3V (LDOs)	4X 4A/1X 2A (Bucks) 4X 350mA (LDOs)	QFN-56 (8mmx8mm) Wettable Flank
Input Voltage	Output Voltage	Output Current	Package

MPQ70170FS	MPQ70171FS
ASIL-D	ASIL-B

Built for Automotive ADAS SoCs

- 5X synchronous buck regulators (4X 4A, 1X 2A)
- 4X low-dropout (LDO) regulators (4X 350mA)
- Multi-phase operation (4X 4A bucks = up to 16A rail)
- Dynamic voltage scaling (DVS)
- Configurable power sequencing
- Zero-Delay PWM™ (ZDP™) enables fast transient response while reducing output capacitance (C_{OUT})
- Configurable soft start (SS) and soft shutdown
- Optimized for Qualcomm SA87xx SoCs

- MPSafe™ – ISO 26262 Functional Safety rated
- Analog and digital built-in self-testing (BIST)
- Power good, interrupt pin, and reset pin
- Integrated voltage supervisor with under-voltage (UV) and over-voltage (OV) monitoring
- Windowed or Q&A watchdog
- Cyclic redundancy check (CRC) for communication, memory, and SRAM ECC
- Over-current protection (OCP) and over-voltage protection (OVP) on VCCA supply voltage
- Input supply voltage monitor and OVP
- Thermal warning and thermal shutdown
- Redundant bandgap and clock

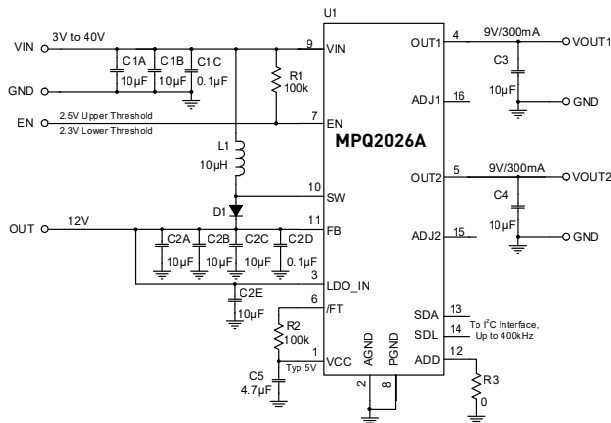
- 13 GPIOs: configurable, support 1.2V, 1.8V, and 3.3V I/O
- Multiple-time programmable (MTP) memory
- I²C Interface with packet error checking (PEC)

- 2MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)

monolithicpower.com

MPQ2026A-AEC1

40V, Dual LDOs with Pre-Boost Stage



Key Specifications:

3V to 40V **32μA**

Input Voltage I_Q in Standby Mode

400kHz to 2.2MHz **QFN-16 (4mmx4mm)**

Switching Frequency Package

3 Outputs:

2A	300mA	300mA
Pre-Boost	LDO 1	LDO 2

Features

Built to Handle Tough Automotive Transients

- Load dump up to 45V, cold crank down to 3V

Optimized for EMI/EMC

- Soft start (SS) for all regulator outputs
- Frequency spread spectrum (FSS)

Minimizes External Circuits

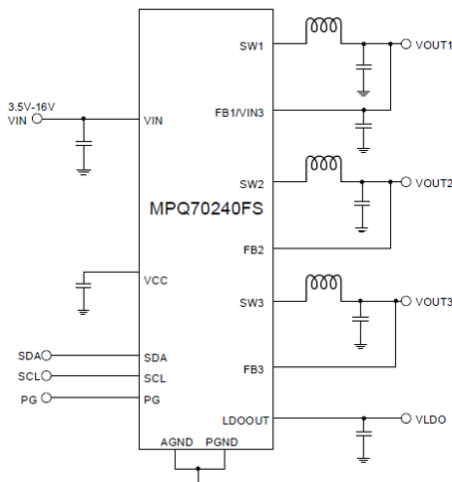
- No external resistor network required for output voltage (V_{OUT}) settings

Vast Flexibility through Digital Configurability

- I²C interface
- Analog-to-digital converter (ADC) for LDO output voltages and load currents
- Multi-page one-time programmable (MOTP) memory

MPQ70240FS-AEC1

MPSafe™, ASIL-B, 20V, 4-Channel PMIC Optimized for Cameras



Key Specifications:

3.5V to 16V	600mA	1A	200mA	ASIL-B	QFN-15 (2.5mmx3.5mm)
Input Voltage	2X MV Bucks	LV Buck	LV LDO	Functional Safety Rating	Package

Features

Optimized for Compact Automotive Camera Modules

- Ideal topology with 2X 600mA MV bucks + 1A LV buck + low-dropout (LDO) regulator
- Minimized external components for smaller footprint
- Superior system efficiency: 9V to 1.8V with a buck powered directly over coaxial
- Industry-leading, compact 2.5mmx3.5mm package

Optimized for EMI/EMC

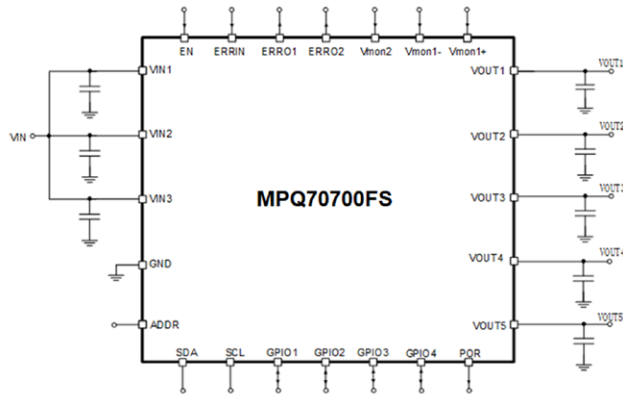
- 2.2MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)
- Symmetrical input capacitors
- MeshConnect™ flip-chip package

Protections

- Under-voltage lockout (UVLO), over-current protection (OCP), over-voltage protection (OVP), and thermal shutdown

Configurability for Flexibility in Application

- I²C-compliant interface

MPQ70700FS-AEC1 **NEW****MPSafe™, ASIL-D, 5.5V, 5-Channel PMIC****Key Specifications:**

2.7V to 5.5V	100mV @ 300mA Load	5X 350mA
Input Voltage	Dropout Voltage	Output Current

MPQ70700FS (ASIL-D)**MPQ70701FS (ASIL-B)****TQFN-24 (5mmx5mm)**

Versions

Package

Features**Do More with Less**

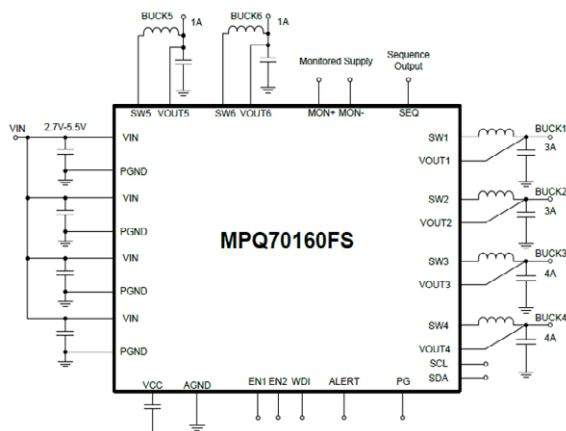
- 5 low-dropout (LDO) regulators
- Configurable outputs: 0.75V, 0.9V, 1.8V, 3.3V, 5V, or more
- 3 independent input pins to increase LDO efficiency
- 4 GPIO pins: Sync with other PMICs to achieve different power sequences
- Configurable as an input for different operation modes
- Integrated power sequencing

Built for Mission-Critical Safety Applications

- MPSafe™: ISO 26262 Functional Safety rating of ASIL-D
- Integrated monitor with under-voltage (UV) and over-voltage (OV) monitoring on all channels
- 2 auxiliary voltage monitors, including 1 differential monitor
- Analog and digital built-in self-testing (BIST)
- Cyclic redundancy check (CRC) for communication, memory, and OTP
- Clock monitoring
- Over-current protection (OCP), thermal warning and shutdown

Configurability for Flexibility in Application

- Multi-page one-time programmable (MOTP) memory
- I²C interface with packet error checking (PEC) for sequential read and write

MPQ70160FS-AEC1 **NEW****MPSafe™, ASIL-D, 5.5V, 6-Channel PMIC****Key Specifications:**

2.7V to 5.5V	ASIL-D
Input Voltage	Functional Safety Rating

0.2V to 3.6V (Adj.)**QFN-32 (5mmx5mm)**

Output Voltage

Package

Features**Do More with Less**

- 6 integrated synchronous buck regulators
- Multi-phase capable
- Integrated power sequencing
- Soft start (SS) and soft shutdown

Built for Mission-Critical Safety

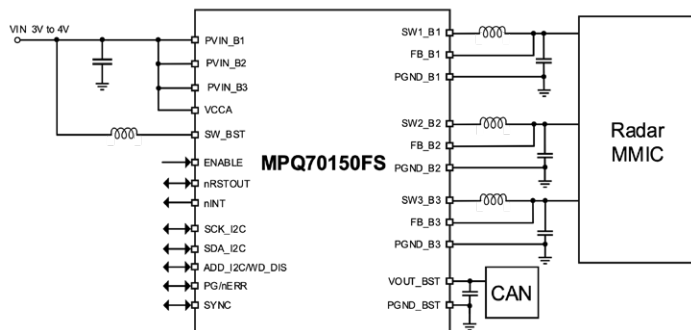
- Interrupt pin to MCU or SoC
- Integrated voltage supervisor with under-voltage (UV) and over-voltage (OV) monitoring
- Watchdog (windowed or Q&A)
- Analog and digital built-in self-testing (BIST)
- Cyclic redundancy check (CRC) for communication, memory, and one-time programmable (OTP) memory
- Auxiliary voltage monitor and clock monitoring
- Over-current protection (OCP), thermal warning and shutdown

Configurability for Flexibility in Application

- Multi-page one-time programmable (MOTP) memory
- I²C-compliant interface

Optimized for EMI/EMC

- 2MHz switching frequency (f_{sw})
- Frequency spread spectrum (FSS)
- 180° phase-shift between bucks 1/3/6 and bucks 2/4/5

MPQ70150FS-AEC1 **NEW****MPSafe™, ASIL-B, 5.5V, 18MHz Radar PMIC****Key Specifications:****3V to 5V**

Input Voltage

3X 3A + 500mA

Output Current

43mΩ/25mΩ (Buck)
100mΩ (Boost)MOSFET $R_{DS(ON)}$ **QFN-28 (5mmx5mm)**
Wettable Flank

Package

Applications:

Long-Range Radar | Mid-Range Radar | Short-Range Radar

Features**Optimized for Radar MMIC Loads**

- 3 configurable step-down DC/DC regulators
- Configurable 0.9V to 1.9V output voltage (V_{OUT})
- Output current (I_{OUT}) rated up to 3A
- 5V boost regulator up to 500mA
- Integrated low- $R_{DS(ON)}$ MOSFETs using advanced MPS's BCD process
- Minimal external BOM overhead

Focused Attention on EMI/EMC, Noise and Output Ripple Reduction

- Configurable switching frequency (f_{SW}) up to 18MHz (no need for lossy LDO-based architecture and minimizes output filters)
- Frequency spread spectrum (FSS) with optional pseudo-random pattern
- Excellent load step performance compared to current mode control

Achieve Functional Safety Goals

- MPSafe™ – ISO 26262 Functional Safety rating of ASIL-B
- Built-in self-testing (BIST)
- Configurable sequencing and monitoring
- Watchdog timer
- Protection features

Vast Flexibility through Digital Configurability

- Dynamically adjust V_{OUT} , f_{SW} , current slew rate, protection thresholds, and more
- I²C interface with optional packet error checking (PEC)

PMICs

40V PMICs

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	ADC	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
N	MPQ70430FS-AEC1	4.5	65	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
	MPQ70331FS-AEC1	4.5	42	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	MPQ70332FS-AEC1	4.5	42	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-B independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	MPQ70333FS-AEC1	4.5	42	2	1 Buck, 1 Boost	Buck: 3 Boost: 0.25	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
P	MPQ70350FS-AEC1	3.5	36	4	3 Bucks, 1 LDO	Buck: 1.5/0.6/2 LDO: 0.4	2.2	-	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for high-resolution camera modules powered off-battery
P	MPQ70355FS-AEC1	4	40	5	4 Bucks, 1 Boost	Buck: 3/4/3/2 Boost: 0.5	2.2/ 4.4/ 8.8	-	✓	✓	I²C	✓	QFN-26 (4x4)	ASIL-B, for radar modules powered off-battery
P	MPQ70372FS-AEC1	2.5	40	8	1 Boost, 2 Bucks, 6 LDOs	Boost Controller Buck: 3/4 LDO: 0.7/0.4/0.26/ 0.16/0.16/0.1	2.5	-	✓	✓	SPI	✓	TQFN-34 (6x6)	ASIL-D, for MCUs
N	MPQ7902-AEC1	4.5	42	3	2 Bucks, 1 Boost	Buck: 3/2 Boost: 0.25	2.5	-	✓	✓	SPI	✓	QFN-34 (6x6)	Independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	MPQ70336FS-AEC1	3.3	40	5	1 Buck, 4 Voltage Monitors	Buck: 4	2.5	✓	✓	✓	I²C	✓	TQFN-25 (3x6)	ASIL-D, 4x voltage monitors with 2 single-ended and 2 differential inputs
N	MPQ70340FS-AEC1	3.5	40	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules powered off-battery
N	MPQ70342FS-AEC1	3.5	40	3	3 Bucks	Buck: 0.6/0.6/1	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera or radar modules powered off-battery
S	MPQ73350FS-AEC1	3.5	40	2	2 Bucks	Buck: 7/12 (w/ Heatsink)	2.2	✓	✓	✓	SPI/ I²C	✓	QFN-28 (5x6)	ASIL-B, digital, dual outputs, ADC for diagnostics
S	MPQ73351FS-AEC1	3.5	40	2	2 Bucks	Buck: 7/12 (w/ Heatsink)	2.2	✓	✓	✓	SPI/ I²C	✓	QFN-28 (5x6)	ASIL-D, digital, dual outputs, ADC for diagnostics
S	MPQ4390-AEC1	3.5	40	2	2 Bucks	Buck: 7/12 (w/ Heatsink)	2.2	✓	✓	✓	SPI/ I²C	✓	QFN-28 (5x6)	QM version, digital, dual outputs, ADC for diagnostics

Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	ADC	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
MPQ2026A-AEC1	3	40	3	2 LDOs, 1 Pre-Boost	LDO: 0.3/0.3 Pre-Boost: 2.5	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Powers phantom active antenna supplies and ADAS modules, pre-boost enables cold/warm crank operation, digitally prog. V _{OUT}
MPQ2024A-AEC1	3	40	2	2 LDOs	LDO: 0.3/0.3	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Digitally programmable V _{OUT}
MPQ2022A-AEC1	3	40	2	1 LDO, 1 Pre-Boost	LDO: 0.3 Pre-Boost: 2.5	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Powers phantom active antenna supplies and ADAS modules, pre-boost enables cold/warm crank operation, digitally prog. V _{OUT}

18V PMICs

Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	Adj. Power Sequencing	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
P MPQ70250FS-AEC1	3.5	20	4	3 Bucks, 1 LDO	Bucks: 1.5/0.6/2 LDO: 0.4	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for high-resolution camera modules powered over coaxial cable
MPQ70240FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules powered over coaxial cable
N MPQ70241FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 1/0.6/1.5 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules, uprated current, powered over coaxial cable
N MPQ70244FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules, powered over coaxial cable, enhanced digital interface logic
N MPQ70245FS-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1.5 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules, uprated current, powered over coaxial cable, enhanced digital interface logic
N MPQ7929-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 1/0.6/1.5 LDO: 0.2	2.2	✓	✓	✓	I²C	✓	QFN-15 (2.5x3.5)	For camera modules, uprated current, powered over coaxial cable
MPQ7928-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	-	I²C	✓	QFN-15 (2.5x3.5)	For camera modules powered over coaxial cable
N MPQ7928A-AEC1	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓	✓	-	I²C	✓	QFN-15 (2.5x3.5)	For camera modules powered over coaxial cable, additional power sequencing options

5V PMICs

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	Multi-Phase Outputs	Frequency Spread Spectrum	MPSafe™ Interface	Wettable Flank QFN Option	Package	Notes	
N	MPQ70160FS-AEC1	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)	ASIL-D, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ70161FS-AEC1	2.7	5.5	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)	ASIL-D, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ70165FS-AEC1	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)	ASIL-B, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ70166FS-AEC1	2.7	5.5	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	✓	I²C	✓	QFN-32 (5x5)	ASIL-B, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
S	MPQ70170FS-AEC1	2.8	5.5	9	5 Bucks, 4 LDOs	Buck:4/4/4/4/2 LDO: 0.35/0.35/0.35/0.35	4.4	✓	✓	✓	I²C	✓	QFN-56 (8x8)	ASIL-D, 13x GPIOs, user-configurable state machine system OVP, DrMOS mode, Q&A watchdog timer
S	MPQ70171FS-AEC1	2.8	5.5	9	5 Bucks, 4 LDOs	Buck:4/4/4/4/2 LDO: 0.35/0.35/0.35/0.35	4.4	✓	✓	✓	I²C	✓	QFN-56 (8x8)	ASIL-B, 13x GPIOs, user-configurable state machine system OVP, DrMOS mode, Q&A watchdog timer
S	MPQ7907-AEC1	2.8	5.5	9	5 Bucks, 4 LDOs	Buck:4/4/4/4/2 LDO: 0.35/0.35/0.35/0.35	4.4	✓	✓	✓	I²C	✓	QFN-56 (8x8)	QM, 13x GPIOs, user-configurable state machine system OVP, DrMOS mode, Q&A watchdog timer
N	MPQ70700FS-AEC1	2.8	5.5	5	5 LDOs	LDO: 0.4/0.4/0.4/0.4/0.4	-	-	-	✓	I²C	✓	TQFN-24 (5x5)	ASIL-D, Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V _{OUT} , UVP/OVP and OCP, thermal shutdown
N	MPQ70701FS-AEC1	2.8	5.5	5	5 LDOs	LDO: 0.4/0.4/0.4/0.4/0.4	-	-	-	✓	I²C	✓	TQFN-24 (5x5)	ASIL-B, Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V _{OUT} , UVP/OVP and OCP, thermal shutdown
N	MPQ7970-AEC1	2.8	5.5	5	5 LDOs	LDO: 0.4/0.4/0.4/0.4/0.4	-	-	-	✓	I²C	✓	TQFN-24 (5x5)	Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V _{OUT} , UVP/OVP and OCP, thermal shutdown
N	MPQ70150FS-AEC1	3	5	4	3 Bucks, 1 Boost	Buck: 3.5/3.5/3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)	ASIL-B, ultra-low noise optimized for radars, advanced freq. spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring
S	MPQ70150FS-M-AEC1	3	5	4	3 Bucks, 1 Boost	Buck: 3.5/3.5/3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)	ASIL-B, ultra-low noise optimized for radars, advanced freq. spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring
N	MPQ70152FS-AEC1	3	5	4	2 Bucks, 1 Boost	Buck: 3.5/3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)	ASIL-B, ultra-low noise optimized for radars, advanced freq. spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	Max f _{SW} (MHz)	Multi-Phase Outputs	Frequency Spread Spectrum	MPSafe™ (Functional Safety) Interface	Wettable Flank QFN Option	Package	Notes	
N	MPQ70153FS-AEC1	3	5	4	3 Bucks	Buck: 3.5/3.5/ 3.5 Boost: 0.5	17.6	-	✓	✓	I²C	✓	QFN-28 (5x5)	ASIL-B, ultra-low noise optimized for radars, advanced freq. spread spectrum, window or Q&A watchdog timer, mount ID, ext. voltage monitoring
	MPQ7920-AEC1	2.7	5.5	9	4 Bucks, 5 LDOs	Buck: 4.5/4/ 2.5/2 LDO: 0.3/0.3/ 0.3/0.3/0.01	2.75	-	-	-	I²C	✓	QFN-16 (4x4)	MTP prog., selectable time slot sequencing, extensive adj. and protections for bucks, dedicated RTC for LDOs, COT
S	MPQ74201-AEC1	2.7	5.5	6	4 Bucks, 2 LDOs	Buck: 6/6/6/6 LDO: 0.4/0.4	3	✓	-	✓	I²C	✓	QFN-29 (5x5)	ASIL-D, watchdog, MOTP memory with 4 user-selectable OTP pages via PRESET pin
	MPQ7930-AEC1	2.7	5.5	6	6 Bucks	Buck: 3/3/4/ 4/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Prog. sequencing, integrated adj. compensation network, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ7931-AEC1	2.7	5.5	6	6 Bucks	Buck: 1/1/2/ 2/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Prog. sequencing, integrated adj. compensation network, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ7932-AEC1	2.7	5.5	6	6 Bucks	Buck: 3/3/4/ 4/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	MPQ7933-AEC1	2.7	5.5	6	6 Bucks	Buck: 1/1/2/ 2/1/1	2	✓	✓	-	I²C	✓	QFN-32 (5x5)	Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
S	MPQ7935-AEC1	2.7	5.5	5	4 Bucks, 1 LDO	Buck: 1/1/1/1 LDO: 0.3	2.2	✓	✓	-	I²C	✓	TLGA-29 (4.5x4.5)	MOTP
S	MPQ7936-AEC1	2.7	5.5	5	4 Bucks, 4 LDOs	Buck: 4.5/4.5/ 2.5/2 LDO: 0.55/0.55/ 0.3/0.3	2.2	✓	✓	-	I²C	✓	TLGA-29 (4.5x4.5)	Flexible system settings via I²C and MOTP

Linear Regulators & DDR Memory

MPS low-dropout (LDO) regulators are a great fit for lower-current automotive subsystems that need to minimize battery drain. Our LDOs are designed to run directly off of 12V batteries or 5V power rails, and offer excellent power supply rejection in a compact size.



Linear Regulators

5V LDO

	Part Number	V_{in} (Min) (V)	V_{in} (Max) (V)	I_{out} (mA)	Load Reg (%/mA)	PSRR @ 1kHz (dB)	V_{FB} (V)	I_q (Typ) (μA)	Enable Pin	Adjustable Option (V)	Fixed-Output Versions (V)	Power Good	Package
	MPQ20056-AEC1	2.5	5.5	250	0.0003	63	0.8	150	✓	0.8 to 5	1.8, 2.5, 3.3	-	QFN-8 (2x2), TSOT23-5
S	MPQ20033-AEC1	1.6	5.5	300	0.002	70	0.5	26	✓	0.5 to 5	0.75, 0.8, 0.85, 1, 1.2, 1.8, 2.5, 2.8, 3.3	✓	QFN-8 (3x3), QFN-8 (2x2), QFN-6 (2x2), TSOT23-5, SOT563
	MPQ8904-AEC1	2.5	6.5	500	0.005	26	0.5	140	✓	0.5 to 5	-	✓	QFN-8 (2x3)
S	MPQ20032-AEC1	1.6	5.5	500	0.002	70	0.5	26	✓	0.5 to 5	0.75, 0.8, 0.85, 1, 1.2, 1.8, 2.5, 2.8, 3.3	✓	QFN-8 (3x3), QFN-8 (2x2), QFN-6 (2x2), TSOT23-5, SOT563
S	MPQ20031-AEC1	1.6	5.5	1000	0.002	70	0.5	26	✓	0.5 to 5	0.75, 0.8, 0.85, 1, 1.2, 1.8, 2.5, 2.8, 3.3	✓	QFN-8 (3x3), QFN-8 (2x2), QFN-6 (2x2)
	MPQ20051-AEC1	2.5	5.5	1000	0.0003	63	0.8	130	✓	0.8 to 5	-	-	QFN-8 (3x3)
P	MPQ20054-AEC1	1	6	4000	0.0875	57	0.8	25	✓	0.8 to 4.5	-	✓	QFN-12 (2.2x2.5), QFN-20 (3.5x3.5)

40V LDO

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (mA)	Load Reg (%/mA)	PSRR @ 1kHz (dB)	V_{FB} (V)	I_o (Typ) (μA)	Enable Pin	Adjustable Option (V)	Fixed-Output Versions (V)	Power Good	Package
	MPQ2016-AEC1	4	40	30	0.003	65	1.23	12	✓	1.2 to 24	-	-	QFN-8 (2x3)
	MPQ2013A-AEC1	2.5	40	150	0.005	41	1.215	3.2	✓	1.215 to 15	QFN-8: 3.3, 2.5, 5, 1.8 QFN-6: 3.3, 5	-	QFN-6 (2x2), QFN-8 (3x3)
	MPQ2013D-AEC1	2.5	40	100	0.005	41	1.215	3.2	✓	1.215 to 15	2.5, 3.3, 5	-	TSOT23-4
	MPQ2019-AEC1	3	40	300	0.04	45	1.25	10	✓	1.2 to 15	3.3, 5	✓	SOIC-8EP
	MPQ2019A-AEC1	3	40	300	0.04	45	1.25	10	✓	1.2 to 36	-	✓	SOIC-8EP
	MPQ2022A-AEC1	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)
N	MPQ2023-AEC1	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4), QFN-14 (3x3)
	MPQ2024A-AEC1	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)
	MPQ2026A-AEC1	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)
N	MPQ71000FS-AEC1	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4), QFN-14 (3x3)
N	MPQ20082-AEC1	3	40	300	0.04	45	1.25	10	✓	1.25 to 36	3.3, 5	✓	MSOP-8EP
	MPQ2029-AEC1	3	40	450	0.04	45	1.25	10	✓	1.2 to 15	3.3, 5	✓	SOIC-8EP
S	MPQ20083-AEC1	3	40	150	0.105	77	0.65	1.4	-	-	3.3, 4, 5, 8	-	QFN-10 (3x3)
S	MPQ20084-AEC1	3	40	150	0.105	77	0.65	1.4	✓	1.5 to 18	3.3, 4, 5, 8	✓	QFN-10 (3x3), SOT-223
S	MPQ20085-AEC1	3	40	150	0.105	77	0.65	1.4	✓	-	3.3, 5	✓	SOT-223
S	MPQ20086-AEC1	3	40	500	0.003	60	0.65	2.5	✓	1.2 to 18	3.3, 5	✓	SOIC-8EP
S	MPQ20087-AEC1	3	40	500	0.005	60	-	2.5	-	-	3.3, 5	✓	SOIC-8EP
P	MPQ20088-AEC1	3	40	500	0.005	60	-	2.5	-	-	3.3, 5	-	SOT89, TO252-3

DDR Memory Power

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (A)	Accuracy for VTT, VTT _{REF} (mV)	V Driver (V)	Package	Notes
MPQ20073-AEC1	1.3	6	2	30	3.3	MSOP-8E	DDR2/3 termination regulator

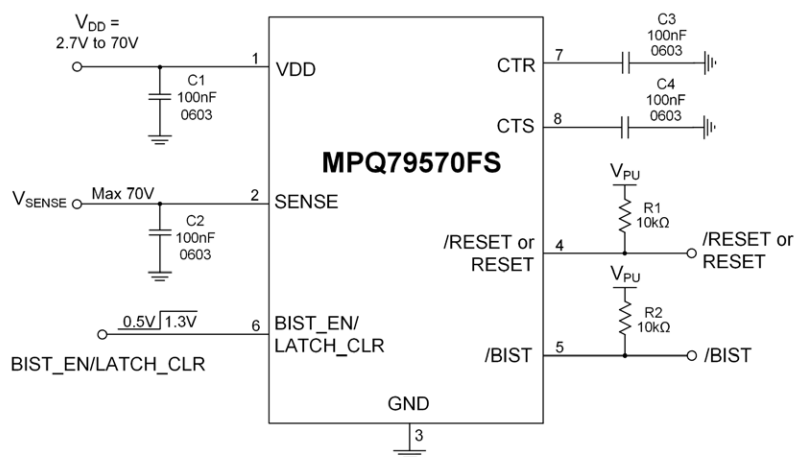
Monitoring & Supervision

MPS automotive monitoring and supervision ICs offer an easy way to enhance system oversight using minimal board space. Our power good (PG) supervisors accurately monitor for correct supply voltage conditions, and our watchdog timers help ensure that system microcontrollers (MCUs) are operating correctly. Power sequencers are used for complex systems that require precision enabling and disabling of multiple voltage rails.



MPQ79570FS-AEC1 PREVIEW

MPSafe™ ASIL-D, 70V, Window Voltage Supervisor (Reset IC)



Key Specifications:

2.7 to 70V	1
Supply Voltage	Channels
2.7 to 65V	TSOT-23-8
Monitored Voltage	Package

Features

Precisely and Accurately Monitor Voltage Rails

- Monitoring type: over-voltage (OV) and under-voltage (UV), OV only, or UV only
- 2.7V to 65V voltage monitoring range
- OV/UV threshold steps:
 - 2.7V to 5V input voltage (V_{IN}) range: 100mV
 - 5.5V to 10V V_{IN} range: 500mV
 - 11V to 18V, or 47V to 65V V_{IN} range: 1V
 - 20V to 42V V_{IN} range: 2V
- $\pm 0.9\%$ Threshold Accuracy (-40 to $+125^\circ\text{C}$)
- Hysteresis Options: $\pm 2\%$, $\pm 5\%$, $\pm 10\%$

Application Flexibility

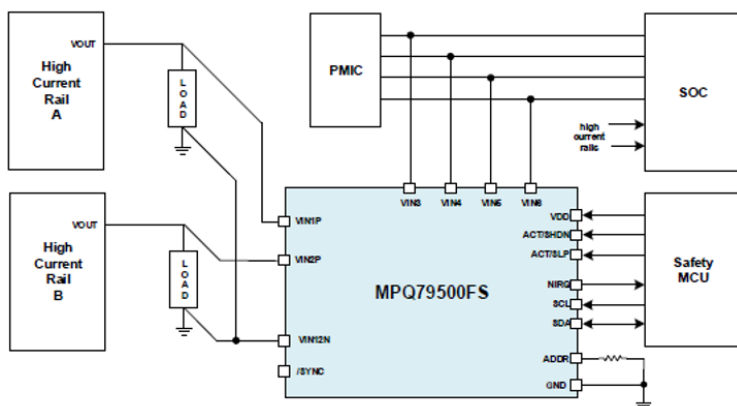
- 48V system compatible with a 2.7V to 70V supply voltage (V_{DD}) range
- Low 4 μA quiescent current (I_Q)
- Separate supply and sensing pins
- Built-in self-testing (BIST) enable and completion pins
- Output reset latching and clearing
- Open-drain and push-pull RESET topology options
- Active low and active high RESET logic options
- Configurable reset time delay
- Configurable deglitch time

Functional Safety Compliant

- ASIL-D
- BIST
- Reset output detection

MPQ79500FS-AEC1

MPSafe™, ASIL-D, 6-Channel Voltage Monitor



Key Specifications:

2.7V to 5.5V

Input Voltage

6

Channels

ASIL-D

Functional Safety Rating

QFN-16 (3mmx3mm)

Bandwidth

Features

Built for Mission-Critical Safety

- Built-in self-testing (BIST)
- SPFM: 99% coverage, LFM: 90% coverage
- Cyclic redundancy check (CRC) protection on registers
- Write protection on critical safety registers
- I²C interface includes packet error checking (PEC)
- Multi-page one-time programmable (MOTP) memory with error correction checking (ECC)
- Power sequence recording
- Thermal warning and thermal shutdown
- Interrupt output pin

Class-Leading Accuracy and Resolution

- >1V: voltage threshold accuracy of $\pm 0.5\%$ max
- <1V: voltage threshold accuracy of $\pm 5\text{mV}$ max
- 5mV steps (0.2V to 1.475V) or 20mV steps (0.8V to 5.5V)

Monitors SoC Power Rails with a Wide Range of Requirements

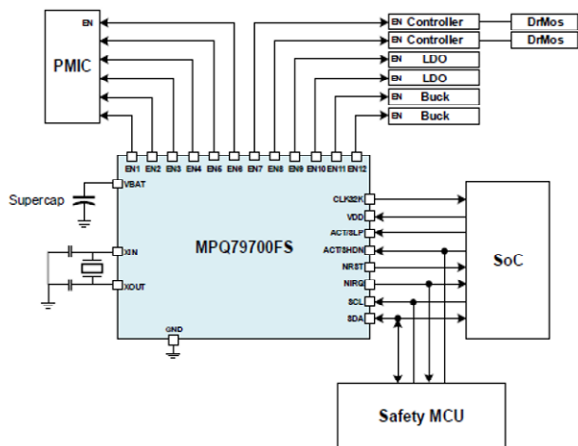
- 2 differential inputs for monitoring high-current rails
- 4 single-ended inputs for monitoring low-current rails
- Over-voltage (OV) and under-voltage (UV) monitoring

Scalability

- SYNC output to enable multiple devices to synchronize

MPQ79700FS-AEC1

MPSafe™, ASIL-D, 12-Channel Power Sequencer



Key Specifications:

2.7V to 5.5V

Input Voltage

12

Channels

ASIL-D

Functional Safety Rating

QFN-24 (3mmx3mm)

Package

Features

Built for Mission-Critical Safety

- Built-in self-testing (BIST)
- SPFM: 99% coverage, LFM: 90% coverage
- Cyclic redundancy check (CRC) protection on registers
- Window watchdog
- Write protection on critical safety registers
- I²C interface includes packet error checking (PEC)
- Multi-page one-time programmable (MOTP) memory with error correction checking (ECC)
- Power sequence recording
- Thermal warning and thermal shutdown
- System reset signal

Ensure High Accuracy when Sequencing System Power Rails

- 32kHz crystal oscillator driver
- Real-time clock (RTC)
- Time-slot based sequencing

Application Flexibility and Survivability

- Configurable sequencer order, I²C address, and watchdog timing
- Backup battery input

	Part Number	# of Channels	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Reset Threshold (V)	Threshold Accuracy (%)	I_a (Typ) (μ A)	Reset Delay	Package	Notes
S	MPQ79531FS-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I ² C
S	MPQ79534FS-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I ² C, watchdog timer
S	MPQ79535FS-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-D voltage monitor with prog. features via I ² C, watchdog timer
S	MPQ79540FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-D voltage monitor with prog. features via I ² C
S	MPQ79541FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I ² C
S	MPQ79544FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-B voltage monitor with prog. features via I ² C, watchdog timer
S	MPQ79545FS-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	MPSafe™ ASIL-D voltage monitor with prog. features via I ² C, watchdog timer
P	MPQ79570FS-AEC1	1	2.7	70	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-D, wide V_{IN} window voltage monitor, directly monitor 48V battery
P	MPQ79571FS-AEC1	1	2.7	40	Adj	± 0.9	4	Adj	TSOT-23-8 (2.9x1.6)	MPSafe™ ASIL-D, off-battery (12V) window voltage monitor
S	MPQ7940-AEC1	6	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C
S	MPQ7940W-AEC1	6	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C, watchdog timer
S	MPQ7942-AEC1	5	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C
S	MPQ7942W-AEC1	5	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C, watchdog timer
S	MPQ7943-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C
S	MPQ7943W-AEC1	3	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C, watchdog timer
N	MPQ7944-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C
S	MPQ7944W-AEC1	1	2.7	5.5	Adj	± 0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I ² C, watchdog timer

Watchdog Timers

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Reset Threshold (V)	Short Window Mode	Long Window Mode	Disable Input	I_a (Typ) (μ A)	Package
MPQ6411-AEC1	4.5	5.5	4.5	✓	✓	✓	16	SOIC-8
MPQ6411-33-AEC1	3	3.6	2.9	✓	✓	✓	10	SOIC-8

Power Sequencers

	Part Number	# of Channels	V_{in} (Min) (V)	V_{in} (Max) (V)	32kHz Crystal	RTC	Oscillator Driver	System Reset Signal	Watchdog Timer	Package	Notes
	MPQ79700FS-AEC1	12	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	MPQ79701FS-AEC1	12	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	MPQ79710FS-AEC1	10	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	MPQ79711FS-AEC1	10	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	MPQ79720FS-AEC1	8	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	MPQ79721FS-AEC1	8	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	MPQ79730FS-AEC1	6	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	MPQ79731FS-AEC1	6	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	MPQ7960-AEC1	12	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	MPQ7961-AEC1	10	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	MPQ7962-AEC1	8	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	MPQ7963-AEC1	6	2.7	5.5	✓	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C

Current-Sense Monitors

Part Number		Common-Mode Voltage (Max) (V)	Common-Mode Voltage (Min) (V)	Supply Voltage (Max) (V)	Supply Voltage (Min) (V)	Input Offset (±) (mV)	Voltage Gain (V/V)	Gain Error (Max) (%)	Common Mode Rejection (min) (dB)	Bandwidth (Typ) kHz	I_a (Max) (μA)	Package	Notes
MPQ8112-AEC1	60	2.7	60	2.7	1	50	2	65	300	360	TSOT-23-6	-	
MPQ8112A-AEC1	60	2.7	60	2.7	1	Adjustable	2	65	300	360	TSOT-23-6	-	
MPQ8113-AEC1	60	2.7	60	2.7	1	50	2	65	300	360	TSOT-23-6	-	Adjustable maximum output voltage
MPQ8113A-AEC1	60	2.7	60	2.7	1	Adjustable	2	65	300	360	TSOT-23-6	-	Adjustable maximum output voltage

LED Lighting

MPS offers robust, cost-effective LED drivers to address all types of automotive lighting needs, from headlamps to tail lights and everything inside. Most drivers integrate flexible dimming modes and fault detection features, and come in compact packages to help designers achieve cutting-edge lighting form factors.

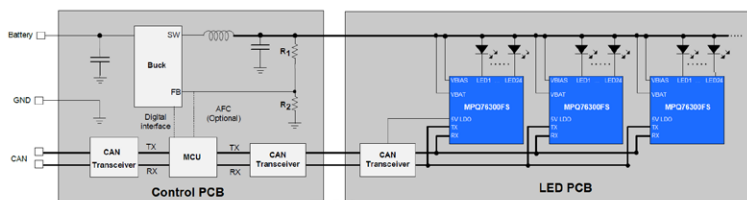


Flexible Dimming Modes | Compact Package | Modular Design

MPQ76300FS-AEC1 SAMPLING

MPSafe™, ASIL-B, 24-Channel, 100mA, Smart Linear/Current Sink LED Driver

Automotive LED Taillight



Key Specifications:

2.5V to 28V	24	100mA/Channel
Input Voltage	Channels	Current

TQFP-48 (7mmx7mm)

Package

Features

Optimized for Dynamic LED Lighting

- Capable of individually driving all 24 channels at 100mA simultaneously
- Supports channels in parallel
- Cascade up to 32 ICs to support up to 768 channels
- Supports up to 6 LEDs per channel
- Pin-configurable device address
- Supports up to 8 groups selections
- Flexible group settings:
 - Group pulse-width modulation (PWM) dimming frequency
 - Group PWM/analog dimming duty cycle %
 - Group slew rate
 - Group phase shift
 - Group fault behavior

Excellent Thermal Performance

- Digital adaptive feedback control (AFC™) optimizes pre-regulator output
- 450mV current sink headroom at 100mA

Robust Communication

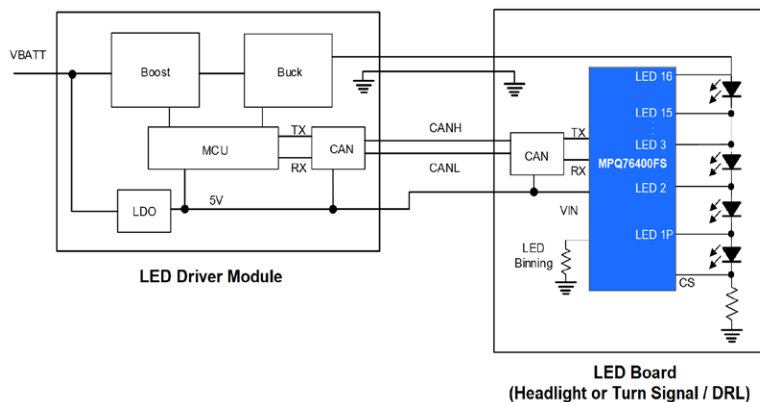
- 2Mbps UART over CAN interface

Built for Safety-Oriented Systems

- MPSafe™ – ISO 26262 Functional Safety rating of ASIL-B
- 8-bit SAR analog-to-digital converter (ADC) for telemetry and diagnostics
- One-fail-all-fail function
- Fault registers for system protection and diagnostics
- Analog and digital built-in self-testing (BIST)
- Cyclic redundancy check (CRC) for communication and memory
- Supports assembly line one-time programmable (OTP) memory
- Protection suite includes thermal warning, LED open/short protection, pin open/short protection
- Enter limp home state during watchdog timeout
- External limp home pin

MPQ76400FS-AEC1 SAMPLING

MPSafe™, ASIL-B, 16-Channel, 1.6A, LED Matrix Manager



Key Specifications:

16 **1.6A Continuous**
Channels Current

ASIL-B **TQFP-48 (7mmx7mm)**
Functional Safety Package

Features

Optimized for Adaptive Driving Beam Headlights

- 16 Integrated LED dimming switches
- Supports up to 1.6A continuous current
- 60V max voltage drop from switch to ground
- 20V max voltage drop from switch to switch
- 4 strings of 4 switches in series
- Independent control of each switch
- 10-bit resolution for 1Hz to 8kHz pulse-width modulation (PWM) dimming frequency
- PWM dimming synchronization across multiple devices

Fast Communication Speed for Precise LED Control

- Up to 2Mbps UART communication interface
- Compatible with CAN physical layer
- LED current (I_{LED}) dimming duty settings
- Communication watchdog

Easy Diagnostics with Integrated Analog-to-Digital Converter (ADC)

- LED voltage (V_{LED}) for each channel
- LED string current-sense
- Die temperature
- Multi-purpose ADC inputs (thermal compatible)

Optimized for EMI/EMC

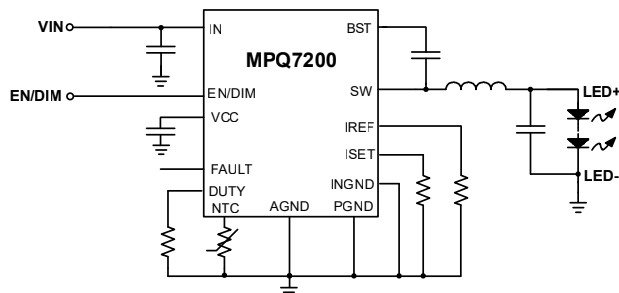
- Switch slew rate control
- Phase shift control for EMI reduction
- Frequency spread spectrum (FSS) with internal clock

Additional Features

- MPSafe™ – ISO 26262 Functional Safety rating of ASIL-B
- Enter limp home state during watchdog timeout
- External limp home pin
- Advanced diagnostics with fault indicator
- LED short/open detection and protection
- Thermal warning and thermal shutdown
- Multi-page one-time programmable (MOTP) memory
- Available in AEC-Q100 Grade 1

MPQ7200-AEC1

42V, 1.2A Buck-Boost or 3A Buck Synchronous LED Driver



Key Specifications:

6V to 42V	44mΩ/40mΩ	QFN-19 (3mmx4mm)
Input Voltage	MOSFET $R_{DS(ON)}$	Package

2.3MHz Buck
1.15MHz Buck-Boost
Switching Frequency

Features

Built for a Wide Range of Automotive LED Applications

- LED driver with integrated MOSFETs
- Configurable LED current (I_{LED}) without sensing resistor

Requires a Minimal Number of External Components

- Highly integrated functions
- High-efficiency synchronous operation

Enhanced EMI Reduction Layout Technique for Low EMI

- Cost-saving 2-layer PCB layout possible to achieve CISPR 25

Full Suite of Protection Features

- Over-current protection (OCP)
- Output over-voltage protection (OVP) and under-voltage protection (UVP)
- Thermal derating and shutdown
- LED short detector for GND
- Battery logic fault indicator

Fast Control Loop

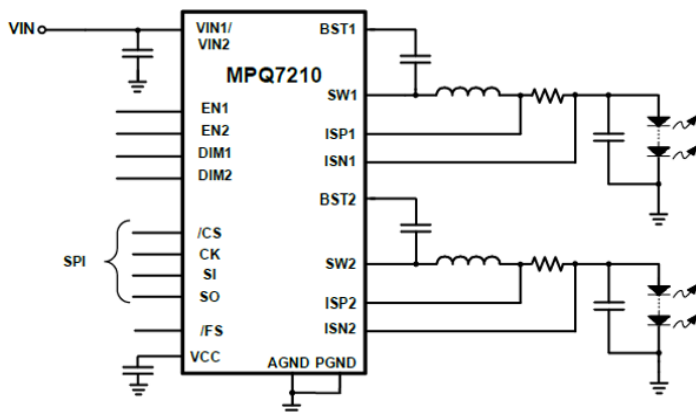
- Constant frequency hysteretic control yields fast transient response without loop compensation

Additional Features

- Pulse-width modulation (PWM) dimming with 100Hz to 2kHz dimming frequency
- Internal 500Hz 2-step dimming with configurable duty cycle
- Configurable thermal derating via negative temperature coefficient (NTC) remote temperature sensing
- Internal soft start (SS)

MPQ7210-AEC1

60V, Synchronous, Dual Buck LED Driver



Key Specifications:

4.5V to 60V	2A Dual Buck 4A Single Buck	QFN-24 (5mmx5mm)
Input Voltage	Output Voltage	Package

Versions:

MPQ7210 220kHz or 440kHz Switching Frequency
MPQ7211 1.1MHz or 2.2MHz Switching Frequency

Features

Built to Handle Tough Automotive Transients

- Load dump up to 60V
- Cold crank down to 4.5V

Do More with Less

- Integrated low- $R_{DS(ON)}$ 44mΩ HS-FETs and 40mΩ LS-FETs
- Configurable 4A dual buck or 2A single buck
- Minimal external BOM overhead

Built for LED Applications

- $\pm 3\%$ LED current (I_{LED}) accuracy
- 10-bit analog-to-digital converter (ADC) to monitor the input voltage (V_{IN}), output voltage (V_{OUT}), VCC voltage (V_{CC}), and junction temperature (T_J)
- Two-step dimming with range of duty cycle options, including 100% duty cycle
- Fast transient response
- Fault pins for LED open/short protection, under-voltage protection (UVP), over-voltage protection (OVP), over-current protection (OCP) with latch-off, TD, and thermal shutdown

Optimized for EMI/EMC

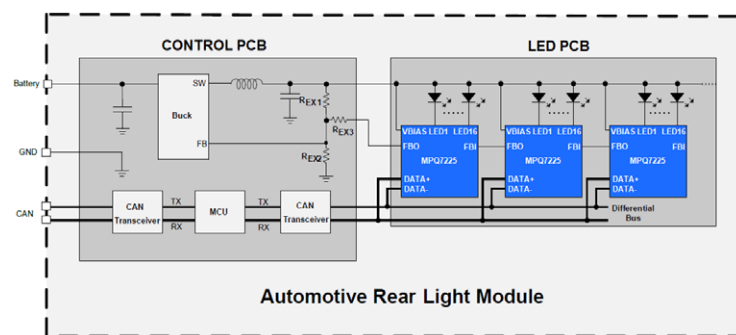
- Fixed-frequency band-to-band control
- Frequency spread spectrum (FSS)

Vast Flexibility with Digital Interface (SPI)

- Configurable current limit and interrupt mask
- 12-bit PWM dimming: 100Hz to 2kHz
- 8-bit analog dimming: 0% to 100%

MPQ7225-AEC1

16-Channel Current Sink LED Driver



Key Specifications:

2.5V to 18V	16	200mA per Channel	QFN-32 (5mmx6mm)
Input Voltage	Channels	Current	Package

Versions:

MPQ7224	w/o Interface
MPQ7225	Differential Interface
MPQ7228	UART Interface

Features

Class-Leading Brightness

- Capable of individually driving all 16 channels at 200mA simultaneously

Ease of Scalability

- Cascade up to 16 ICs to support up to 256 channels
- Capable of 6 LEDs per channel, supporting up to 1536 LEDs total
- Pin-configurable device address

Excellent Thermal Performance

- Adaptive feedback control (AFC™) dynamically optimizes pre-regulator output
- 300mV current sink headroom at 200mA

Robust Communication

- 2Mbps UART or differential interface (CAN-compatible)
- 12-bit PWM or 6-bit analog dimming

Optimized for EMI/EMC

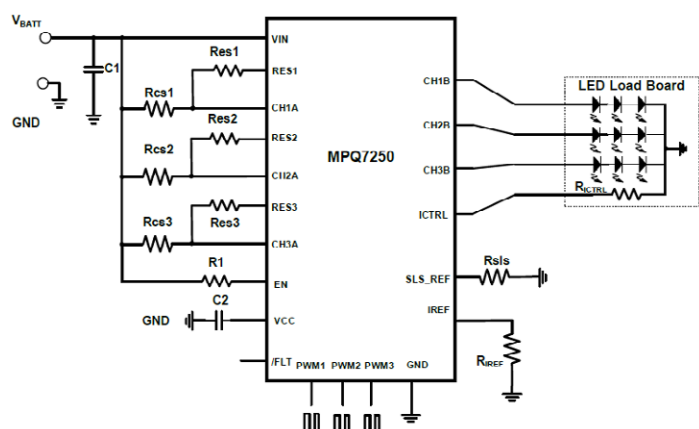
- Configurable phase shift and slew rate
- Frequency spread spectrum (FFS) via internal clock
- Selectable pulse-width modulation (PWM) dimming frequency

Safety-Oriented

- Can aid a system design to achieve functional safety
- Thermal warning, LED open/short protection, and pin open/short protection
- Failsafe pin and fault registers for system protection and diagnostics

MPQ7250-AEC1 NEW

3-Channel Current Source LED Driver



Key Specifications:

4.5V to 20V	3	200mA/Channel	QFN-20 (4mmx4mm) Wettable Flank
Input Voltage	Channels	Current	Package

Applications:

Reverse Lights | Rear Fog Lights | Side Markers | Puddle Lights

Features

Built to Handle Tough Automotive Transients

- Load dump up to 40V
- Cold crank down to 4.5V

Designed for Automotive LED applications

- Class-leading brightness with capability to drive 3 channels at 200mA simultaneously
- PWM dimming: 3x inputs from 100Hz to 1kHz
- Analog dimming
- LED binning resistor pin for manufacturing ease

Excellent Thermal Performance

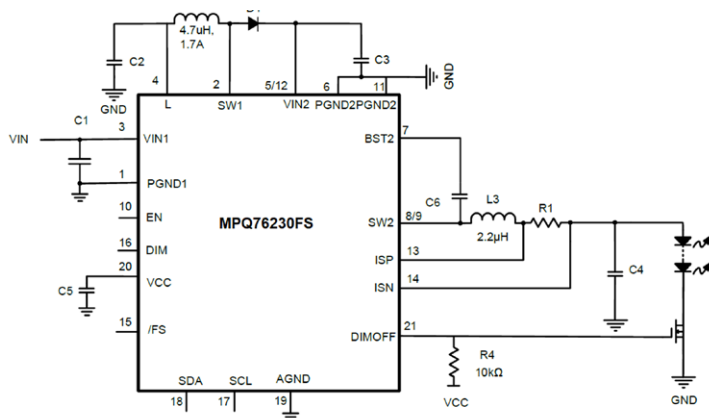
- External shunt resistors for thermal load balancing
- 300mV current sink headroom at 200mA

Built for Safety-Oriented Systems

- Single LED short (SLS) detection
- Fault pin for system protection and diagnostics
- Protection suite includes LED open protection, LED short-to-ground protection, and thermal shutdown
- Latch-off or hiccup fault modes
- Assists system design to achieve a Functional Safety rating of ASIL-B
- AEC-Q100 Qualified

MPQ76230FS-AEC1 SAMPLING

MPSafe™, ASIL-C, 36V, 10A IR LED or VCSEL Driver with Eye-Safety Features



Key Specifications:

6V to 42V	10A	ASIL-C
Input Voltage	Output Current	Functional Safety

QFN-21 (4mmx4mm)

Wettable Flank

Package

Applications:

Driver Monitoring Systems (DMS)
Occupant Monitoring Systems (OMS)

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3V

Do More with Less

- Pre-boost and buck integrated into a single package
- Integrated low- $R_{DS(ON)}$ MOSFETs using advanced MPS BCD process
- Delivers powerful 10A output in a compact solution
- Minimal external BOM overhead

Optimized for EMI/EMC

- 2.2MHz switching frequency (f_{SW}) above AM band
- Frequency spread spectrum (FSS)
- MeshConnect™ packaging

Achieve Functional Safety Goals

- MPSafe™ – ISO 26262 ASIL-C hardware capable rated
- Eye safety features include current, dimming on-time, and dimming frame rate frequency limit
- Compatible with common 30FPS, 60FPS, 120FPS dimming requirements
- LED and VCSEL short/open protection, string protection, and thermal shutdown

Enhanced System Oversight

- 8-bit SAR analog-to-digital converter (ADC) monitors for over-current (OC), under-voltage (UV), and over-voltage (OV) conditions, as well as input voltage (V_{IN}) and temperature

Enhanced System Oversight

- Instantly adjusts output current (I_{OUT}), current slew rate, dimming frequency, pulse width, dimming frequency, and more
- I²C interface with packet error checking (PEC)

LED Drivers (Lighting)

Backlighting

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Topology	# of Channels	I _{OUT} per Channel (mA)	f _{SW} (kHz)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface	Wettable Flank QFN Option	Package	Notes
	MPQ3386-AEC1	4.5	30	Boost	6	30	625 or 1250	PWM, Analog	Open, Short	3%	-	-	QFN-24 (4x4)	-
	MPQ3387L-AEC1	3	30	Boost	6	45	500 or 1250	PWM, Mixed	Open, Short	3%	-	-	QFN-24 (4x4)	-
	MPQ3362-AEC1	3	42	Boost	1	-	200 to 2200	PWM, Analog	Open, Short	-	-	-	TSOT23-8	4A current limit, low R _{DS(ON)} * soft start
	MPQ3359-AEC1	3.5	42	Boost/SEPIC	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	PWM	✓	QFN-20 (3x4)	Separated PWM and analog dimming pin
	MPQ3359A-AEC1	3.5	42	Boost/SEPIC	1/2/3/4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	PWM	✓	QFN-20 (3x4)	Separated PWM and analog dimming pin
	MPQ3364-AEC1	3.5	42	Boost/SEPIC	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	Three selectable IC addresses
N	MPQ3365-AEC1	3.5	42	Boost/SEPIC	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	Three selectable IC addresses, I ² C dimming
N	MPQ3365A-AEC1	3.5	42	Boost/SEPIC	5	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	Three selectable IC addresses, I ² C dimming
	MPQ3369-AEC1	3.5	42	Boost/SEPIC	6	100	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4), TSSOP-28EP	Frequency spread spectrum, thermal derating, fault pin, rich protection features
	MPQ3367-AEC1	3.5	42	Boost/SEPIC	6	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4), TSSOP-28EP	Frequency spread spectrum, thermal derating, fault pin, rich protection features
	MPQ3367A-AEC1	3.5	42	Boost/SEPIC	6	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	MPQ3367-AEC1 features, three prog. addresses
N	MPQ3359C-AEC1	3.5	42	Boost/SEPIC	4	160	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	PWM	✓	QFN-20 (3x4)	External FET, separated PWM and analog dimming
N	MPQ3366C-AEC1	3.8	42	Boost/SEPIC	6	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	External FET, four selectable IC addresses, I ² C dimming
S	MPQ3366A-AEC1	3.8	42	Boost/SEPIC	6	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	Supports 16-bit PWM dimming resolution based on the MPQ3366C (15 bits)
N	MPQ3368-AEC1	3.8	42	Boost/SEPIC	8	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	External FET, four selectable IC addresses, I ² C dimming
S	MPQ3368A-AEC1	3.8	42	Boost/SEPIC	8	200	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I ² C	✓	QFN-24 (4x4)	Supports 16-bit PWM dimming resolutions based on the MPQ33668 (15 bits)

RBG LED Drivers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Topology	# of Channels	I_{OUT} per Channel (mA)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface	Wettable Flank QFN Option	Package	Notes
	MPQ3323B-AEC1	4.5	16	Linear	4	320	PWM, Analog	Open, Short	2%	I ² C	✓	QFN-24 (4x4)	Independent channel control, daisy-chainable, digital config.
	MPQ3324-AEC1	4	16	Linear	8	100	PWM, Analog	Open, Short	2%	I ² C	✓	QFN-24 (4x4)	Independent channel control, daisy-chainable, digital config.
	MPQ3326-AEC1	4	16	Linear	16	50	PWM, Analog	Open, Short	2%	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.4V, V_{IH_MIN} : 1.3V)
	MPQ3326-AEC1-C03Q	4	16	Linear	16	50	PWM, Analog	Open, Short	2%	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.4V, V_{IH_MIN} : 1.3V)
	MPQ3326A-AEC1	4.5	16	Linear	16	80	PWM, Analog	Open, Short	2%	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.4V, V_{IH_MIN} : 1.3V)
	MPQ3326B-AEC1	4.5	16	Linear	16	80	PWM, Analog	Open, Short	2%	I ² C	✓	QFN-24 (4x4)	I ² C input logic voltage: (V_{IL_MAX} : 0.8V, V_{IH_MIN} : 1.5V)
N	MPQ3322-AEC1	3.5	22	Linear	24	100	PWM, Analog	Open, Short	3%	CAN	✓	QFN-24 (4x4)	LED current slew rate, phase shift, adaptive voltage feedback, failsafe mode
N	MPQ3621-AEC1	3	11	Linear	48	50	PWM, Analog	Open, Short	3%	SPI	✓	QFN-24 (4x4)	LED current slew rate, phase shift, adaptive voltage feedback
N	MPQ3321-AEC1	3	22	Linear	48	80	PWM, Analog	Open, Short	3%	SPI	✓	QFN-24 (4x4)	LED current slew rate, phase shift, adaptive voltage feedback
S	MPQ3321A-AEC1	3	22	Linear	48	80	PWM, Analog	Open, Short	3%	SPI	✓	QFN-24 (4x4)	Supports 10µA LED channel current option based on the MPQ3321
N	MPQ3327-AEC1	3.5	20	Switch	-	-	-	-	-	SPI, GPIO	✓	QFN-14 (3x3)	8A, 4 switching line scan driver for local dimming, combined with the MPQ3321 for scanning scheme

Exterior Lighting

Part Number	V_{in} (Min) (V)	V_{in} (Abs Max) (V)	Topology	Max Current (A)	Current Limit (Typ) (A)	$R_{DS(on)}$ (m Ω)	Dimming Modes	f_{sw} (kHz)	LED Protection	Frequency Spread Spectrum	Fault Pin	Wettable Flank QFN Option	Package	Notes
MPQ2489-AEC1	6	55	Low-Side Buck	1.4	Adj	500	PWM, Analog	200 to 600	Open, Short	-	-	-	QFN-6 (3x3)	-
MPQ2483A-AEC1	4.5	55	Buck, Buck-Boost	2.5	3	280	PWM, Analog	250 to 1350	Open, Short	-	-	-	QFN-10 (3x3), SOIC-14	Output SCP
MPQ24833-B-AEC1	4.5	55	Buck, Buck-Boost, Boost	3	6	150	PWM, Analog	420	Open, Short	-	-	-	SOIC-8E	Output SCP
MPM6010-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-17 (3x5x1.6)	Module with int. inductor and BST/VCC capacitors, sync operation, output OCP
MPQ4425A-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Synchronous operation, output OCP
MPQ4425B-AEC1	4	40	Buck	1.5	4	85/50	PWM	410	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Synchronous operation, output OCP
MPQ4425C-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Alternative fault indicator behavior at EN off and soft-start time
MPQ4425M-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	-	-	QFN-13 (2.5x3)	-
MPQ7200-AEC1	6	42	Buck, Buck-Boost	3 (Buck), 1.2 (Buck-Boost)	6	44/40	PWM	2300 Buck, 1500 Buck-Boost	Open, Short	✓	✓	✓	QFN-19 (3x4)	Int. current-sense resistor, band-band control loop, OCP with latch, OVP, thermal shutdown
MPQ7200A-AEC1	6	42	Buck, Buck-Boost	3 (Buck), 1.2 (Buck-Boost)	6	44/40	PWM	410	Open, Short	✓	✓	✓	QFN-19 (3x4)	Int. current-sense resistor, band-band control loop, OCP with latch, OVP, thermal shutdown
MPQ2484-AEC1	4.5	45	Buck, Boost, Buck-Boost	Controller	Adj	-	PWM, Analog	100 to 2200	Open, Short	✓	-	-	TSSOP-28EP	Cycle-by-cycle current limit, output OVP, fault flag output
N MPQ7260-AEC1	3.6	36	Buck-Boost	5	-	20/14	-	280, 420, 580	-	-	-	-	QFN-20 (3mmx5mm)	2x integrated LS-FETs, CC/CV operation
MPQ7210-AEC1	4.5	65	Dual Buck	2	3.5	235/235	PWM, Analog	220, 420, 1000	Short	✓	✓	✓	QFN-26 (5x5)	Dual outputs, UVP, OCP, failsafe (FS) pin, SPI interface
P MPQ7212-AEC1	4.5	70	Dual Buck	2	3.5	200/150	PWM, Analog	220, 420, 800, 1100, 2200	Open, Short	✓	✓	-	TQFP-48 (7x7)	Dual outputs, UVP, OCP, up to 7x MPIO pins, SPI or UART interface, top-side cooling, 48V compatible

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Topology	Max Current (A)	Current Limit (Typ) (A)	R _{DS(ON)} (mΩ)	Dimming Modes	f _{SW} (kHz)	LED Protection	Frequency Spread Spectrum	Fault Pin	Wettable Flank QFN Option	Package	Notes
P	MPQ7213-AEC1	4.5	70	Triple Buck	3	3.5	200/150	PWM, Analog	220, 420, 800, 1100, 2200	Open, Short	✓	✓	-	TQFP-48 (7x7)	Triple outputs, UVP, OCP, up to 6x MPIO pins, SPI or UART interface, top-side cooling, 48V compatible
S	MPQ76350FS-AEC1	3.5	40	Dual Buck	10	13	21/9	-	410, 2200	-	✓	✓	✓	QFN-28 (5x6)	MPSafe™, ASIL-B, digital, constant-voltage dual outputs, ADC for diagnostics, UART or SPI digital interface
S	MPQ76352FS-AEC1	3.5	40	Buck	10	13	21/9	-	410, 2200	-	✓	✓	✓	QFN-28 (5x6)	MPSafe™, ASIL-B, digital, constant-voltage single output, ADC for diagnostics, UART or SPI digital interface

Animated/Dynamic Lighting (Multi-Channel and Matrix Managers)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Topology	# of Channels	I _{OUT} per Channel (mA)	f _{SW} (kHz)	Dimming Modes	LED Protection	Frequency Spread Spectrum	Channel-to-Channel Current Accuracy (%)	Interface	Wettable Flank QFN Option	Package	Notes
	MPQ7220-AEC1	3.5	40	Boost + Linear	6	100	200, 400, 1000, 2200	PWM, Analog	Open, Short	✓	2.5%	-	-	QFN-24 (4x4), TSSOP-28EP	External sync SW function disconnects V _{OUT} from V _{IN} , cycle-by-cycle current limit
	MPQ7221-AEC1	4	18	Linear	16	80	-	PWM, Analog	Open, Short	-	2%	I ² C	✓	QFN-24 (4x4)	6-bit analog dimming per channel, 12-bit PWM dimming per channel, refresh signal output
N	MPQ7222-AEC1	3.5	22	Linear	24	100	-	PWM, Analog	Open, Short	✓	3%	Differential Interface	✓	QFN-40 (6x6)	Current-sink LED driver, adaptive feedback control (AFC™), 12-bit PWM or 6-bit analog dimming, safety suite

	Part Number	V _{IN} (Min) (V)		V _{IN} (Max) (V)	Topology	# of Channels	I _{OUT} per Channel (mA)	f _{SW} (kHz)	Dimming Modes	LED Protection	Frequency Spread Spectrum	Channel-to-Channel Current Accuracy (%)	Interface	Wettable Flank QFN Option	Package	Notes
S	MPQ7223-AEC1	3	20	Linear	48	80	-	PWM, Analog	Open, Short	-	-	-	Serial Interface	✓	QFN-68 (8x8)	Current-sink LED driver, adaptive feedback control (AFC™), 16-bit PWM or 7-bit analog dimming, safety suite
	MPQ7225-AEC1	2.5	20	Linear	16	200	-	PWM, Analog	Open, Short	✓	5%	-	Differential Interface	✓	QFN-32 (5x6)	Current-sink LED driver, adaptive feedback control (AFC™), 12-bit PWM or 6-bit analog dimming, safety suite
P	MPQ7226-AEC1	3.5	28	Linear	16	100	-	PWM, Analog	Open, Short	✓	3%	-	UART	-	TQFP-48 (7x7)	Current-sink LED driver, adaptive digital feedback control, limp home mode, ADC, enhanced UART protocol
P	MPQ7227-AEC1	3.5	28	Linear	24	100	-	PWM, Analog	Open, Short	✓	3%	-	UART	-	TQFP-48 (7x7)	Current-sink LED driver, adaptive digital feedback control, limp home mode, ADC, enhanced UART protocol
N	MPQ7250-AEC1	4.5	40	Linear	3	200	-	PWM	Open, Short	-	5%	-	-	✓	QFN-20 (4x4)	Current-sink LED driver, 3x independent PWM pins, shunt resistors for thermal sharing, single LED short, LED binning resistor input
S	MPQ76300FS-AEC1	6	30	Linear	24	100	-	PWM, Analog	Open, Short	✓	3%	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B current-sink LED driver, adaptive digital feedback control, limp home mode, ADC, enhanced UART protocol
P	MPQ76301FS-AEC1	6	30	Linear	16	100	-	PWM, Analog	Open, Short	✓	3%	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B current-sink LED driver, adaptive digital feedback control, limp home mode, ADC, enhanced UART protocol

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	Topology	# of Channels	I _{OUT} per Channel (mA)	f _{SW} (kHz)	Dimming Modes	LED Protection	Frequency Spread Spectrum	Channel-to-Channel Current Accuracy (%)	Interface	Wettable Flank QFN Option	Package	Notes
S	MPQ7241U-AEC1	4.5	60	Matrix Manager	12	1500	-	PWM, Analog	Open, Short	-	-	Differential Interface	✓	QFN-40 (6x6)	12 dimming switches, 10-bit or 8-bit PWM dimming, LED open/short protection, thermal shutdown
S	MPQ76400FS-AEC1	4.5	65	Matrix Manager	16	1600	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 16 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode
P	MPQ76401FS-AEC1	4.5	65	Matrix Manager	16	700	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 16 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode
P	MPQ76402FS-AEC1	4.5	65	Matrix Manager	12	1500	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 12 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode
P	MPQ76403FS-AEC1	4.5	65	Matrix Manager	12	700	-	PWM, Analog	Open, Short	-	-	UART	-	TQFP-48 (7x7)	MPSafe™, ASIL-B, 12 dimming switches, built-in charge pump, 20V switch to switch handling, 4x LED groupings, limp home mode

Infrared (IR) LED Drivers for Driver Monitoring Systems

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Topology	Max Current (A)	LED Current Accuracy (%)	R _{DS(on)} (mΩ)	Dimming Modes	f _{SW} (kHz)	LED Protection	Frequency Spread Spectrum	Wettable Flank QFN Option	Package	Notes
	MPQ7230-AEC1	6	50	Buck, Buck-Boost	3 (Buck), 2.4 (Buck-Boost)	5%	44/40	PWM	410	Open, Short	✓	✓	QFN-19 (3x4)	Integrated current-sense resistor, fast transient response
	MPQ7231-AEC1	6	50	Buck, Buck-Boost	3 (Buck), 2.4 (Buck-Boost)	5%	44/40	PWM	1150, 2400	Open, Short	✓	✓	QFN-19 (3x4)	Dimming on-time limit (1ms/3ms/5ms) for eye safety, low dimming frequency to 10Hz, int. current-sense resistor
N	MPQ7232-AEC1	4.5	40	Buck	6	5%	45/30	PWM	2250	Open, Short	✓	✓	QFN-15 (3x4)	10Hz to 2kHz PWM dimming frequency, compatible with 30FPS/60FPS/120FPS dimming
	MPQ7235-AEC1	4	40	Buck	3	5%	85/50	PWM	2200	Open, Short	-	✓	QFN-13 (2.5x3)	10Hz to 2kHz PWM dimming frequency, compatible with 30FPS/60FPS/120FPS dimming
S	MPQ76230FS-AEC1	4.5	40	Pre-Boost + Buck	10	5%	25/25	PWM	420, 2200	Open, Short	✓	✓	QFN-21 (4x4)	MPSafe™, ASIL-C, ADC for diagnostics, 2-stage design enables device to be powered off, power over coaxial DMS application
S	MPQ76233FS-AEC1	4.5	40	Buck	10	5%	25/25	PWM	420, 2200	Open, Short	✓	✓	QFN-21 (4x4)	MPSafe™, ASIL-B, ADC for diagnostics, designed for off-battery applications

Display Power & Control

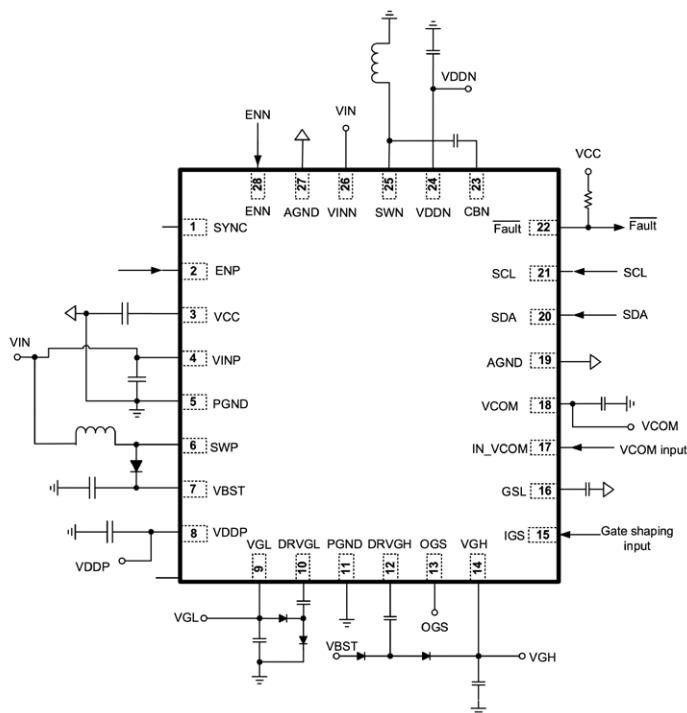
MPS display power and control backlight drivers provide a wide range of display power options of all your lighting display needs. With superior LED current regulation and highly integrated PMICs, you can be confident in high efficiency, high accuracy, deep dimming, small ripple, audible noise elimination, and increased protections.



Instrumenter | HUDs | LCD Bias | LCD Backlighting | Interior Ambient | Local Dimming

MPQ5613-AEC1 NEW

4-Channel LCD Bias with Gate Voltage Shaping and VCOM Buffer



Applications:

Car Navigation Displays | TFT LCD Displays

Features

Key Features

- 2.7V to 12V input voltage (V_{IN}) range
- 2.5A current limit for boost, 2.5A current limit for buck-boost
- 250mΩ MOSFET for boost
- 200mΩ/300mΩ power MOSFET for sync buck-boost
- Available in a QFN-28 (4mmx5mm) package with wettable flanks

4 Outputs with Gate Voltage Shaping and VCOM Buffer

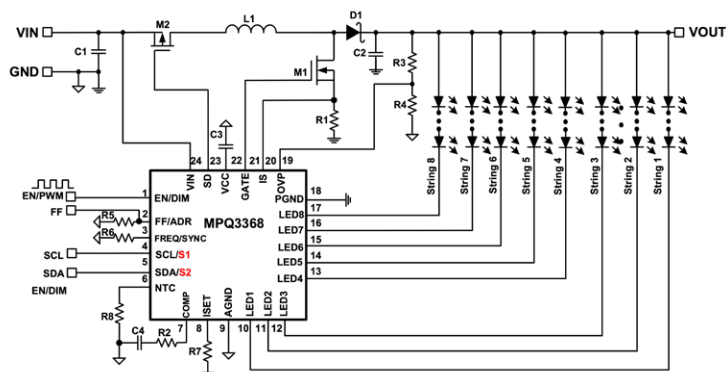
- Boost: 2.7 to 21.9V (VDDP)
- Buck-boost: 0V to -15.9V (VDDN)
- Adjustable positive charge pump, 5V to 43.2V, 50mA (VGH)
- Adjustable negative charge pump, 0V to -15.9V, 50mA (VGL)
- Gate voltage shaping with configurable falling time
- VCOM buffer, -13.21V to 19.8V, 25mA
- I²C interface with one-time programmable (OTP) memory

Optimized for EMI/EMC

- Configurable switching frequency (f_{SW}), up to 3MHz
- Frequency spread spectrum (FSS)
- Frequency synchronization and interleaved (180°) buck-boost and boost control

Integrated Protection Features

- Input and output disconnect
- Configurable power-on/off sequence
- Cycle-by-cycle over-current protection (OCP), under-voltage lockout (UVLO), and fault flag

MPQ3368-AEC1 **NEW****8-Channel, 200mA LED Controller****Applications:**

>15" LCD Panel Backlighting

Features**Key Features**

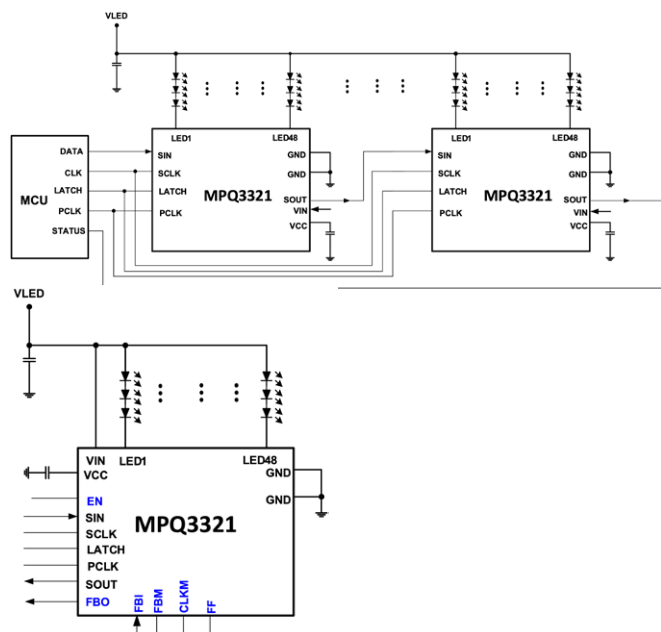
- 3.8V to 36V input voltage (V_{IN}) range
- 8 channels, max 200mA per channel
- 2.5% current matching
- Analog, pulse-width modulation (PWM), or mixed dimming via the I²C interface or PWM signal
- 10000:1 dimming ratio at dimming frequency (f_{DIM}) < 200Hz
- 10-bit analog dimming, 15-bit PWM dimming
- 4 selectable IC addresses support cascading
- Available in a QFN-24 (4mmx4mm) package with wettable flanks

Optimized for EMI/EMC

- External sync SW function
- Configurable switching frequency (f_{SW}) up to 2MHz
- Phase shift between LED channels
- Frequency spread spectrum (FSS)

Integrated Protection Features

- Disconnect V_{OUT} from V_{IN}
- Configurable LED short threshold
- Configurable over-voltage protection (OVP) threshold
- LED short/open, over-temperature protection (OTP), over-current protection (OCP), and inductor short protection
- Negative temperature coefficient (NTC) function to reflect external temperature
- Fault indicator signal output

MPQ3321-AEC1 **NEW****48-Channel Current-Source LED Driver****Applications:**

Automotive LCD Backlighting with Local Dimming | Mini LED LCDs
Tablet/Notebook LCD Backlighting | General LCD Backlighting

Features**Key Features**

- 3V to 22V input voltage (V_{IN}) range
- 48 channels, max 80mA per channel
- <3% current accuracy
- 20V voltage rating
- Independent 16-bit PWM dimming
- Independent 7-bit analog dimming
- Adaptive voltage feedback function
- 25MHz serial interface
- Supports daisy-chaining for multiple ICs
- Available in a QFN-68 (8mmx8mm) package with wettable flanks

Optimized for EMI/EMC

- Configurable LED current (I_{LED}) slew rate
- Phase shift

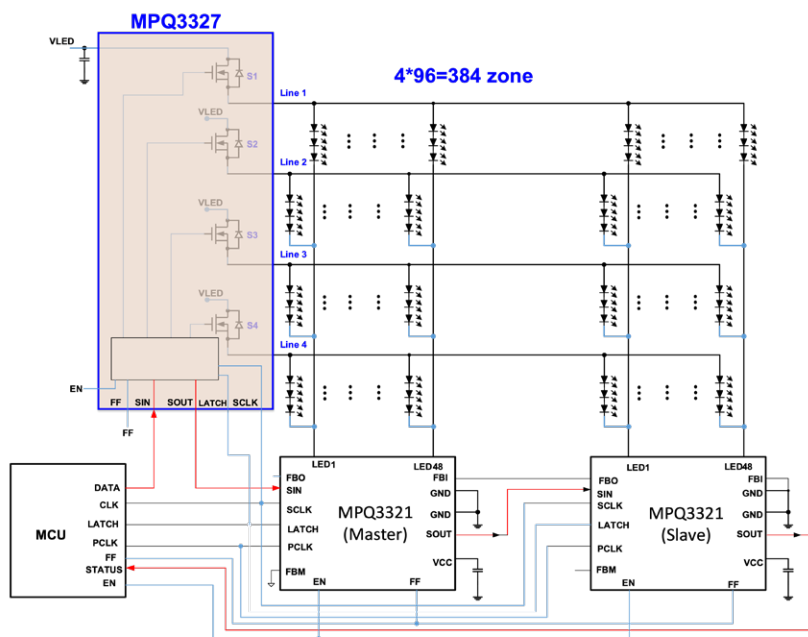
Integrated Protection Features

- LED short/open protection
- Over-temperature protection (OTP)
- Fault status indicator register

Features

- 3.5V to 20V input voltage (V_{in}) range
- Internal 4-line scan switching
- 20V SW voltage rating, 100mΩ $R_{DS(ON)}$
- 8A max current (depending on thermals)
- Fast discharge function
- Flexible extended SW line-scan
- 25MHz clock with daisy-chain
- Available in an FCQFN-16 (3mmx3mm) package with wettable flanks

- SW open/short protection
- Fault indicator signal output
- Free short for adjacent pins
- Over-temperature protection (OTP)



Automotive LCD Backlighting with Local Dimming Mini LED LCDs

USB & Wireless Charging

MPS automotive USB chargers are fully integrated USB charging solutions combining high-efficiency DC/DC converters and current limit switches, with the option of single- or dual-output Type-A and Type-C ports. These advanced charging port products incorporate many common protocols, such as USB Type-C (15W), USB Type-C Power Delivery (PD), downstream charging port (DCP), CDP, and BC1.2. They are engineered to help automotive customers design compact and thermally optimized USB charge ports for use throughout the vehicle.



Low EMI | High Efficiency | Thermally Optimized

USB PD Solutions | Buck-Boost for USB PD

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_O (Typ) (mA)	f_{SW} (kHz)	USB PD	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	I ² C	EN Shutdown Discharge	Load-Shedding Send Alert	Package	Notes
	MPQ4214-AEC1 (Controller)	4	45	-	-	Selectable	✓	✓	✓	-	-	✓	✓	-	QFN-27 (5x5)	Sync, FCCM
	MPQ4210-AEC1 (Controller)	4	45	-	-	Selectable	✓	✓	✓	-	-	✓	✓	-	QFN-27 (5x5)	Output current monitoring
	MPQ4262-AEC1 (Hybrid)	3.6	40	5	0.13	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency
	MPQ4263-AEC1 (Hybrid)	3.6	40	5	0.135	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency, high-side current sense
	MPQ4232-AEC1	4.3	40	5	0.13	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-19 (4x5)	22V, 60W, 4-switch converter with advanced protection, 1V to 22V V_{OUT} range
S	MPQ4232A-AEC1	3	40	6	0.13	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-19 (4x5)	36V, 60W, 4-switch converter, 1V to 24V V_{OUT} range, P2P with the MPQ4232-AEC1

USB PD Solutions | Buck for USB PD

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	USB PD	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	I ² C	EN Shutdown Discharge	Load-Shedding Send Alert	Package	Notes
	MPQ4272-AEC1 (Dual)	1	40	6 2x (3A)	0.3	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-21 (4x5)	Dual-channel
N	MPQ8880A-AEC1	4	60	4.5	0.093/ 0.008	Adjustable	✓	-	✓	-	✓	✓	-	-	QFN-20 (4x5)	Supports PD3.1 EPR 240W and AVS
S	MPQ4583-AEC1	4.5	95	0.8	0.009	400	✓	-	✓	-	-	✓	-	-	QFN-19 (3x5)	Ultra-low I _O
S	MPQ9934-AEC1 (Controller)	5.5	85	30	0.4	Adjustable	✓	-	✓	-	✓	-	-	-	QFN-23 (4x4)	GaN driver capability

USB PD Solutions | Controllers for USB PD

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	BC 1.2 CDP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Fault Indication	Client Mode	Wettable Flank QFN Option	Package	Notes
	MPQ5031-AEC1 (PD)	4.5	5.5	Single	5	0.1	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	✓	QFN-20 (4x4)	USB PD 3.0+ PPS controller, meets PowerShare specs	
N	MPQ5038-AEC1 (PD)	4.5	5.5	Single	5	0.1	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	-	-	✓	QFN-20 (4x4)	USB PD 3.0+ PPS controller, 7 LDOs, P2P with the MPQ5031, meets PowerShare specs	
	MPF52000-AEC2	4.6	5.5	Dual	-	0.007	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-24 (4x4)	USB PD3.1, MCU-based controller	
N	MPF52001-AEC2	4.6	5.5	Single	-	0.007	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-24 (4x4)	USB PD3.1, MCU-based controller, supports DP	
N	MPF52003-AEC2	4.6	5.5	Triple	-	0.007	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-40 (5x5)	USB PD3.1, MCU-based controller	

USB PD Solutions | All-in-One USB PD Solutions

Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP (PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Package	Notes
MPQ4242-AEC1	4	40	Single	3	0.1	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-22 (4x5)	Buck-boost int., supports PD3.0/QC4+ BC1.2/QC3+FCP protocols
MPQ4242B-AEC1	4	40	Single	3	0.1	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-22 (4x5)	Buck-boost int., supports PD3.1/QC4+ BC1.2/QC3+FCP protocols
MPQ4241-AEC1	4.5	24	Single	3	0.15	Selectable	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	QFN-21 (3x4)	Buck int., supports PD3.1/QC4+ BC1.2/QC3+FCP protocols

All-In-One USB Type-C/A Charging-Only Port Solutions | Dual USB Type-C/A Charging Port Solutions (Buck with Integrated CLS, Protocol Detection)

Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	USB Discharge	Package	Notes
MPQ4487A-AEC1	6	40	Dual	3 (x2)	1	Selectable	-	-	-	✓	✓	✓	✓	✓	✓	✓	QFN-26 (5x5)	Meets latest MFI3.3 specs
MPQ4488B-AEC1	6	40	Dual	3 (x2)	1	Adjustable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-26 (5x5)	Meets latest MFI3.3 specs
N MPQ4253-AEC1	6	40	Dual	3 (x2)	0.054	Selectable	✓	✓	✓	✓	✓	(Type-C)	-	✓	✓	✓	QFN-26 (5x5)	Low I _O
N MPQ4276-AEC1	6	40	Dual	3 (x2)	0.8	Adjustable	-	-	-	✓	-	✓	-	✓	✓	✓	QFN-26 (5x5)	USB 1/2 fault indication, PFM mode, EN and FAULT pins for USB 1/2
MPQ4253B-AEC1	6	40	Dual	3 (x2)	0.054	Selectable	✓	✓	✓	✓	✓	(Type-C)	-	✓	✓	✓	QFN-26 (5x5)	MFI OCP current > 4.8A
S MPQ4252-AEC1	6	36	Dual	3 (x2)	0.3	420	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-19 (3x5)	Smaller size, cost-effective
S MPQ4257	6	36	Dual	3 (x2)	0.3	420	-	-	-	✓	✓	✓	✓	✓	✓	✓	QFN-16 (3x4)	Separate enable control and fault indication, smaller size, cost-effective

All-In-One USB Type-C/A Charging-Only Port Solutions | Single USB Type-C/A Charging Port Solutions (Buck with Integrated CLS, Protocol Detection)

	Part Number	V_{IN} (Min) (V)		V_{IN} (Abs Max) (V)		Dual/Single Ports	I_{OUT} (A)	I_O (Typ) (mA)	f_{SW} (kHz)	BC 1.2 DCP 1.2V/1.2V Mode				Divider Mode 3 QC2.0		QC3.0		Type-C DFP (w/o PD) Type-A Mode		Load-Shedding	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Fault Indication	Wettable Flank QFN Option	Package	Notes
	MPQ4475-E-AEC1	7	40	Single	2.5	1.6	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-25 (4x4)	Prog. line drop compensation	
	MPQ4228-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x4)	Type-C 5V/3A, DFP port	
	MPQ4228-Q-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x4)	-	
S	MPQ4251-AEC1	6	36	Single	3	0.3	420	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-19 (3x5)	Smaller size, cost-effective	

All-In-One Data Port Products | Dual USB Type-C/A Charging Data Ports (Buck with Integrated CLS, USB 2.0 Data Switch, Protocol Detection)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 CDP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Int USB Switch	Line Drop Compensation	USB Discharge	Package	Notes
	MPQ4485-AEC1	6	40	Dual	3 (x2)	-	450	✓ (USB2)	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-26 (5x5)	FCCM

All-In-One Data Port Products | Single USB Type-C/A Charging Data Ports (Buck + Integrated CLS, USB 2.0 Data Switch, Protocol Detection)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 CDP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Low-Dropout Mode	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Wettable Flank QFN Option	Package	Notes
	MPQ4228-C-AEC1	4.2	40	Single	3	-	Selectable	✓	-	-	-	✓	✓	✓	-	✓	✓	(Adj)	✓	✓	✓	✓	QFN-22 (4x4)	Supports CDP mode
	MPQ4483-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	-	-	✓	-	✓	-	(Adj CC Limit)	✓	(Adj)	✓	-	✓	✓	QFN-25 (4x5)	Supports BC1.2 DCP and CDP modes, bidirectional USB 2.0 high-speed data switch, 3.55A/3.75A CC I _{OUT} limit

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	BC 1.2 DCP (Data)	BC 1.2 DCP 1.2V/1.2V Mode	Divider Mode 3	Type-C DFP	Type-A Mode	Load-Shedding	Battery Short Protection	Low-Dropout Mode	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Wettable Flank QFN Option	Package	Notes	
	MPQ4483-FD-AEC1	4.2	40	Single	3	-	Adjustable	✓	✓	-	-	-	✓	-	✓	✓	✓	✓ (Adj CC Limit)	✓ (Adj)	✓	-	✓	QFN-25 (4x5)	Supports BC1.2 DCP and CDP modes, bidirectional USB 2.0 high-speed data switch, 3.55A/3.75A CC I _{OUT} limit
S	MPQ4229-C-AEC1	4.2	40	Single	3	-	Selectable	✓	-	-	-	✓	✓	✓	✓	-	✓	✓ (Adj)	✓	✓	✓	✓	QFN-22 (4x4)	P2P with the MPQ4228-C, up to 1.5V line drop comp.

USB Type-C/A Port Controllers and Buck Products | Buck Only

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	I _{OUT} (A)	I _O (Typ) (mA)	f _{SW} (kHz)	Battery Short Protection	Low-Dropout Mode	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	Wettable Flank QFN Option	Package
	MPQ4480-AEC1	4.2	40	6	1	Selectable	✓	✓	✓ (Adj CC Limit)	✓	✓	✓	QFN-25 (4x5)
	MPQ4423C-AEC1	4	40	6	0.75	Selectable	-	-	-	-	✓	✓	QFN-16 (3x4)

USB Type-C/A Port Controllers and Buck Products | USB Type-C/A Charging Port Controllers

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Dual/Single Ports	I _{OUT} (A)	I _O (Typ) (mA)	BC 1.2 DCP (Data)	BC 1.2 DCP 1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Fault Indication	Client Mode	Wettable Flank QFN Option	Package	Notes
	MPQ5029-AEC1	2.7	24	Single	3	0.155	-	✓	✓	✓	✓	✓	✓	✓	✓ (Adj)	✓ (Adj)	✓	-	-	✓	QFN-14 (2x3)	NTC pin for thermal management, adj. OVP threshold, input OV shutdown protection
	MPQ5029-C-AEC1	3	24	Single	3	0.175	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-14 (2x3)	-

Wireless Charging Solutions | Step-Down/Step-Up Converters

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	Battery Short Protection	Frequency Spread Spectrum	Line Drop Compensation	PC	EN Shutdown Compensation	Load-Shedding Discharge	Load-Shedding Send Alert	Package	Notes
	MPQ4262-AEC1 (Hybrid)	3.6	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency
	MPQ4263-AEC1 (Hybrid)	3.6	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency, high-side current sense
	MPQ4232-AEC1	4.3	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	✓	QFN-19 (4x5)	22V/5A, 60W, 4-switch converter with advanced protection
S	MPQ4232A-AEC1	3	40	6	0.13	Selectable	✓	✓	✓	✓	✓	✓	✓	QFN-19 (4x5)	36V/6A, 60W, 4-switch converter, P2P with the MPQ4232-AEC1

Wireless Charging Solutions | Full-Bridge Power Stages for Highly Integrated Wireless Power Transmitters

	Part Number	H-Bridge V_{IN} (Min) (V)	H-Bridge V_{IN} (Abs Max) (V)	H-Bridge I_{OUT} (A)	H-Bridge f_{SW} (kHz)	I_Q (Typ) (mA)	Buck V_{IN} (Min) (V)	Buck V_{IN} (Abs Max) (V)	Buck I_{OUT} (A)	Amplifier Accuracy	Frequency Spread Spectrum	Package	Notes
N	MPQ4280-AEC1	4.7	40	15	Selectable	0.9	1	40	0.5	1%	-	QFN-22 (4x5)	Integrated 36V buck and 5V/65mA LDO
S	MPQ4282-AEC1	1	32	20	Selectable	0.08	4.5	40	1.5	1%	✓	QFN-27 (4x5)	Integrated 1.5A buck

Electrification Solutions

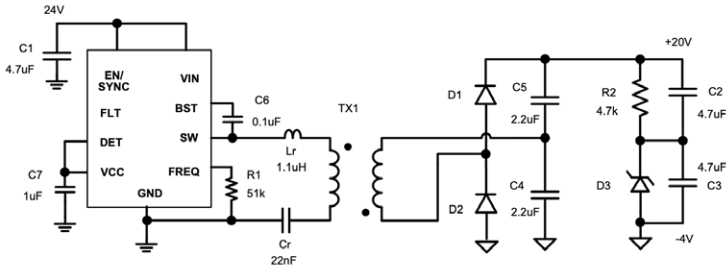
MPS offers a full family of isolated and non-isolated solutions for designing high-power electrification devices, from 11kW to 22kW onboard chargers to 300kW+ traction inverters. Choose from isolated gate driver power supplies — which can reduce solution size by over 40% — to isolated gate drivers optimized for driving higher power, or even current-sensing solutions. Our full suite of solutions for electric vehicles (EVs) that can meet reinforced isolation requirements.



ISO Gate Driver Bias Supplies | Isolated Gate Drivers | Isolated Current-Sensing | Digital Isolators
Half-Bridge Gate Drivers | Off-Battery Power | Voltage Monitors and Watchdogs

MPQ18913

6W, LLC Transformer Driver for Isolated Bias Supplies



Features

Optimized Solution Size

- 5MHz switching frequency (f_{sw}) minimizes transformer and capacitor size
- 40% reduction in total solution size vs. flyback solution
- 20% fewer components than a flyback solution

Ideal for 800V+ Systems

- Achieves 5kV reinforced isolation with low interwinding capacitance (2pF to 6pF)
- Utilizes leakage inductance as part of the resonant tank



5V to 30V

Input Voltage

Up to 6W

Power

500kHz to 5MHz

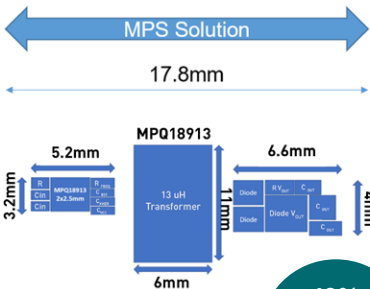
Switching Frequency

QFN-10 (2mmx2.5mm)

Package

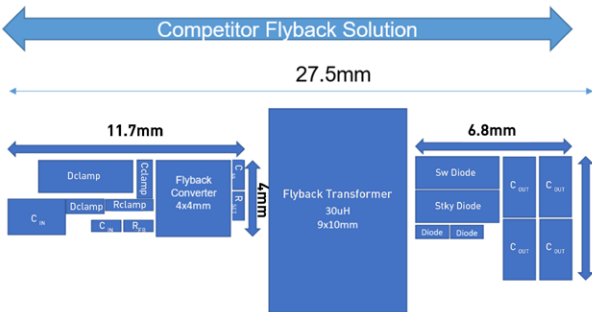
Automatic Resonant Frequency Detection
Frequency Spread Spectrum
LLC Resonant Topology

Features



Solution Size: 109mm²
Total Area: 196mm²
Components: 21

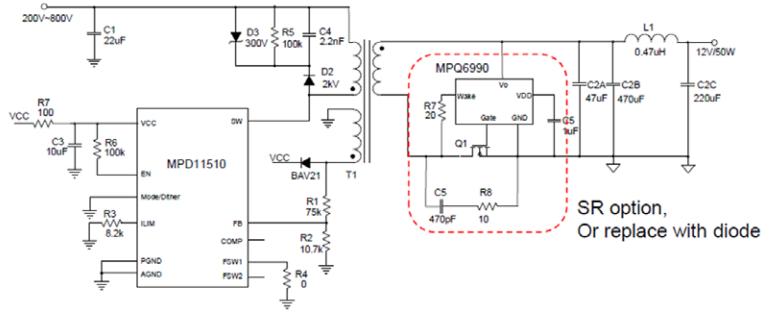
40%
Smaller
Solution
Size



Solution Size: 180mm²
Total Area: 275mm²
Components: 26

Applications:

IGBT/SiC Gate Driver Bias
Traction Inverters
Onboard Chargers (OBCs)
DC Fast-Charging Stations

MPDQ11510-AEC1 **PREVIEW****1200V Flyback Converter with Integrated SiC MOSFET****Features****Optimized Solution Size**

- Integrated 1700V SiC device (1.2Ω SiC FET for <50W designs)
- 60% fewer components compared to discrete flyback converter
- 89% peak efficiency with 800V_{IN}/15V_{OUT}

Ideal for 400V to 800V Systems

- QFN package with 5mm creepage
- SOIC-28 WB package with 7.5mm creepage

Key Specifications:**20V to 1200V****Up to 50W****Up to 140kHz**

Input Voltage

Power

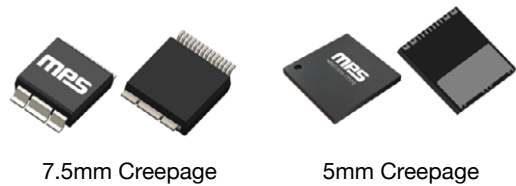
Switching Frequency

**QFN-12 (10mmx10mm),
SOIC-28 WB**

Packages

**PSR or SSR Feedback | Built-In HV Start-Up
Frequency Spread Spectrum**

Features

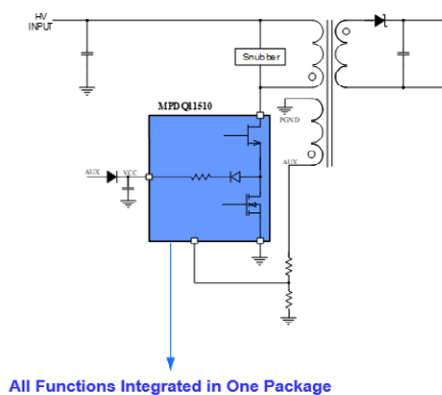


7.5mm Creepage

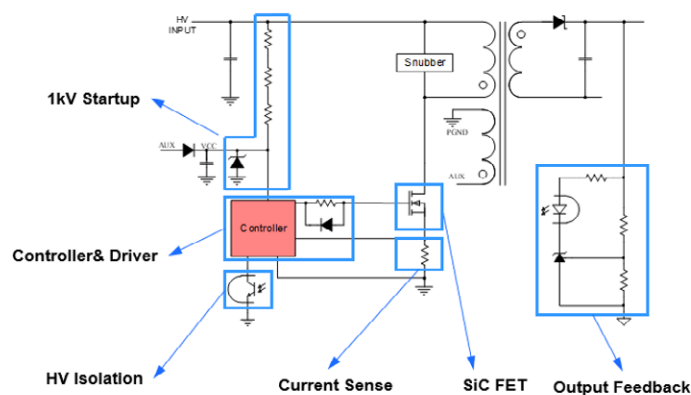
5mm Creepage

Applications:

Traction Inverters, Auxiliary Power Supplies | Battery Management Systems
DC/DC Converters | Energy Storage Systems (ESS)

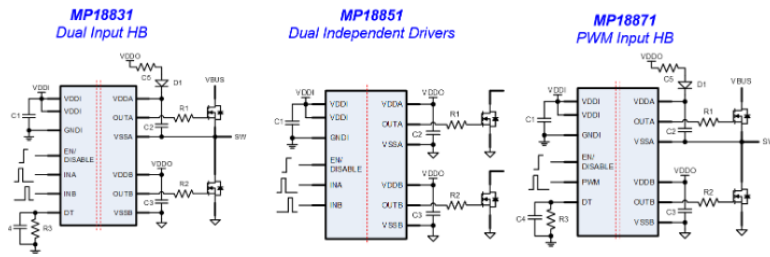
MPDQ11510

All Functions Integrated in One Package

Competition

MPQ18831-AEC1/MPQ18851-AEC1/ MPQ18871-AEC1 NEW

Dual-Channel Isolated Gate Driver Family



Features

Flexible Design

- Design systems for 2.5kV to 5kV of reinforced isolation
- Wide driver bias range enables more flexibility for FET selection
- Can support SiC, GaN, or IGBT
- P2P product to enable a more robust supply chain

Ideal for 400V to 800V Systems

- Achieves up to 5kV of reinforced isolation
- 4A/8A sink-source current enables usage of high-power FETs for higher efficiency

Key Specifications:

4A Source, 8A Sink

Source/Sink Current

>100kV/μs

CMTI

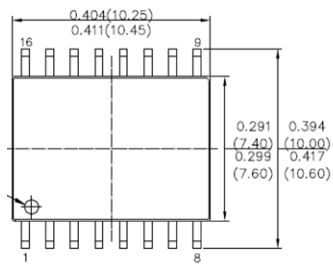
Up to 5kV

Isolation

SOIC-16 WB, SOIC-14 WB,
SOIC-16 NB, LGA-13 (5mmx5mm)

Packages

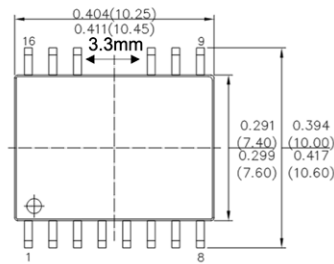
SOIC-16 WB



5kV_{RMS}

Isolation Rating

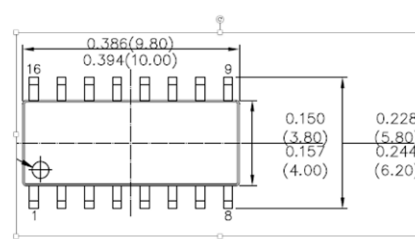
SOIC-14 WB



5kV_{RMS}

Isolation Rating

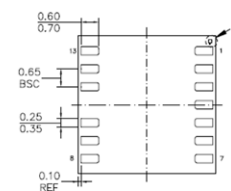
SOIC-16 NB



3kV_{RMS}

Isolation Rating

LGA-13



2.5kV_{RMS}

Isolation Rating

Electrification

Isolated Gate Drivers

	Part Number	Isolation Rating (kV _{RMS})	Configuration Type	# of Channels	CMTI (Min) (kV/μs)	Power Switch Type	Peak Source Current (A)	Peak Sink Current (A)	UVLO (V)	Input V _{DDI} (V)	Driver Output (Max) (V)	Package	Notes
N	MPQ18831-AEC1	2.5/3/5	Dual-Input Half-Bridge	2	100	SiC FET, IGBT, MOSFET, GaN FET	4	8	5/8/10/12	2.8 to 5.5	30	SOIC-16 NB, SOIC-16 WB, LGA-13	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress
N	MPQ18851-AEC1	2.5/3/5	Dual Input, Independent Dual-Channel	2	100	SiC FET, IGBT, MOSFET, GaN FET	4	8	5/8/10/12	2.8 to 5.5	30	SOIC-16 NB, LGA-13, SOIC-16 WB	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress
N	MPQ18871-AEC1	2.5/3/5	PWM Input Half-Bridge	2	100	SiC FET, IGBT, MOSFET, GaN FET	4	8	5/8/10/12	2.8 to 5.5	30	SOIC-16 NB, LGA-13, SOIC-16 WB	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress
N	MPQ18811-AEC1	3/5	Single-Channel Gate Driver	1	100	SiC FET, IGBT, MOSFET, GaN FET	6	10	5/8/10/12/15	2.8 to 5.5	30	SOIC-8 NB, SOIC-8 WB, SOIC-14 NB	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress, fault reporting
P	MPQ18815-AEC1	5	Single-Channel Gate Driver	1	100	SiCFET, IGBT, MOSFET	4	4	12/15/17	2.8 to 5.5	30	SOIC-16 WB	Desat. detection, active Miller clamp, soft shutdown, external buffer, AEC-Q100, UL1577 and VDE-0884 certified

Isolated Power Supplies

	Part Number	Topology	Device Type	Output Power (W)	V _{IN} (Min) (V)	V _{IN} (Max) (V)	V _{OUT} (Typ) (V)	Integrated Transformer	Package Type	Isolation Voltage (kV _{DC})	# of Outputs	Package Size: WxL (mm)	Notes
P	MPQ6007-AEC1	Flyback	Converter	10	4.5	42	12 to 24	-	QFN-11	5+ (Dependent on Transformer Design)	1, More Possible	3x3	Automotive active clamp primary-side regulated flyback, ultra-low EMI
P	MPDQ11510GRDE-171P2-AEC1	Flyback	Converter	15 to 50	20	1200	12 to 24	-	QFN-22	5+ (Dependent on Transformer Design)	1, More Possible	10x10	Automotive flyback converter with integrated 1700V SiC FET, 5mm creepage
P	MPDQ11510GY-171P2-AEC1	Flyback	Converter	15 to 50	20	1200	12 to 24	-	SOIC-28 WB	5+ (Dependent on Transformer Design)	1, More Possible	7.85x 7.5	Automotive flyback converter with integrated 1700V SiC FET, 7.5mm creepage
N	MPQ18913-AEC1	LLC Resonant	Converter	6	5	35	20	-	QFN-10	5+ (Dependent on Transformer Design)	1, More Possible	2x2.5	5MHz high-frequency SiC/IGBT bias supply, automatic resonant frequency detection
N	MID1W2424AGYE-AEC1	LLC Resonant	Isolated Module	1.5	5	35	24	✓	SOIC-16 WB	5	1	10.3x 10.3x 2.5	24V _{IN} , 1.5W, automotive isolated power module for SiC bias supplies
N	MIE1W0505BGY-AEC1	LLC Resonant	Isolated Module	1	2.6	5.5	5/3.3	✓	SOIC-16 WB	3	1	10.3x 10.3x 2.5	5V _{IN} , 1W, automotive isolated power module

Digital Isolators

	Part Number	Total Channel Count		# of Channels (Forward/Reverse)		Isolation Rating (kV _{RMS})		Data Rate	Propagation Delay (Typ) (ns)	Min CMTI (kV/μs)	Surge Voltage Level (V _{PK})		V _{IN} (Min) (V)	V _{IN} (Max) (V)	Package	Notes
N	MPQ27911-AEC1	2	1/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-8 WB, SOIC-8 NB					AEC-Q100
N	MPQ27920-AEC1	2	2/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-8 WB, SOIC-8 NB					AEC-Q100
N	MPQ27922-AEC1	4	2/2	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB					AEC-Q100
N	MPQ27931-AEC1	4	3/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB					AEC-Q100
N	MPQ27940-AEC1	4	4/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB					AEC-Q100
N	MPQ27933-AEC1	6	3/3	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB					AEC-Q100
N	MPQ27942-AEC1	6	4/2	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB					AEC-Q100
N	MPQ27951-AEC1	6	5/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB					AEC-Q100
N	MPQ27960-AEC1	6	6/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB					AEC-Q100

Non-Isolated Gate Drivers (Half-Bridge)

	Part Number	V _{IN} (Min) (V)	V _{IN} (Max) (V)	V _{SW} (Max) (V)	HS Gate Drive (Max) (V)	# of Channels	Peak Pull-Up Current (A)	Peak Pull-Down Current (A)	Rise Time (μs)	Fall Time (μs)	Turn-Off/On Delay (μs)	Wettable Flank Option	Package	Notes
N	MPQ1907-AEC1	4.5	20	105	18	1	2.5	3.5	0.012	0.009	0.018	-	QFN-10 (3x3)	100V H-bridge
	MPQ1918-AEC1	3.6	5.5	100	8	1	1.6	5	0.005	0.003	0.02	✓	FCQFN-14 (3x3)	100V half-bridge GaN/MOSFET driver
P	MPQ1919-AEC1	3.7	5.5	100	8	1	2	5	0.005	0.005	0.02	✓	FCQFN-15 (3x3)	Smart HB GaN driver with desat.
	MPQ1922-AEC1	4	15	100	15	1	3	4	Adj	Adj	0.3	✓	SOIC-8E, QFN-10 (4x4)	Int. current-sense amp, 9ns to 15ns rise/fall (2.2nF load)
	MPQ1923-AEC1	5	17	100	17	1	7	8	0.0072	0.0055	0.02	✓	QFN-10 (4x4), QFN-8 (4x4), SOIC-8	High-frequency
N	MPQ18024-AEC1	9	16	110	18	1	4.7	6	0.015	0.009	0.02	-	SOIC-8	-

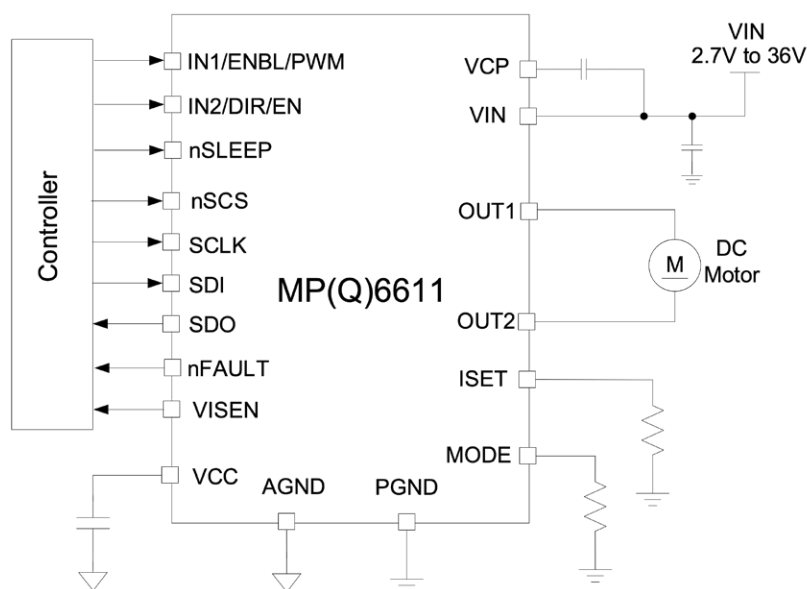
Motor Drivers

MPS offers a comprehensive portfolio of automotive motor driver solutions, including H-bridges, half-bridge drivers and pre-drivers, three-phase motor drivers, and more. Our solutions are engineered for maximum design flexibility, such as scalable product families that can drive single- to multiple-output channels.



MPQ6611-AEC1 SAMPLING

36V, 15A Peak, H-Bridge DC Motor Driver



Key Specifications:

2.7V to 36V	15A	40mΩ/40mΩ	QFN-20 (4mmx4mm)
Input Voltage	Output Voltage	MOSFET $R_{DS(ON)}$	Package

Features

Built to Handle Tough Automotive Transients

- Load dump up to 40V, cold crank down to 2.7V

Enables High Power Density

- 15A peak output current (I_{OUT})
- Integrated ultra-low $R_{DS(ON)}$ MOSFETs use MPS's advanced BCD process
- Internal full H-bridge driver supports 100% duty cycle
- Automatic synchronous rectification (SR)
- Internal current-sensing and configurable cycle-by-cycle current regulation

Ideal for Off-Battery Application

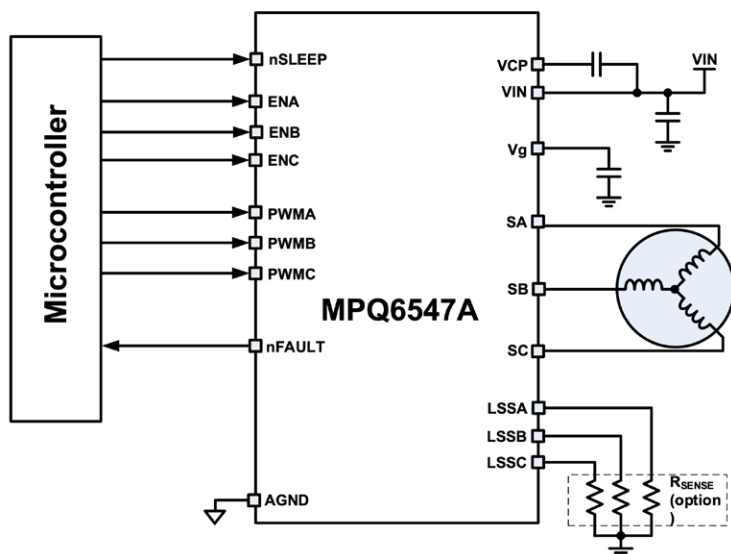
- Low quiescent current (I_Q) sleep mode and brake mode

Robust Protections, Digital Monitoring and Control

- Available serial control (SPI) interface
- 3.3V and 5V compatible logic supply
- Configurable charge pump frequency and slew rate
- Overload detection (OLD), over-current protection (OCP), under-voltage lockout (UVLO), over-voltage protection (OVP), over-temperature protection (OTP), and over-temperature warning (OTW)
- Fault indication output

MPQ6547A-AEC1 SAMPLING

36V, 3A, Three-Phase Power Stage



Key Specifications:

4V to 36V	3A Continuous, 6A Peak	70mΩ/60mΩ	QFN-18 (3mmx4mm)
Input Voltage	Output Current	MOSFET $R_{DS(ON)}$	Package

Features

Built to Handle Tough Automotive Transients

- Load dump up to 40V, cold crank down to 4V

Enables High Power Density

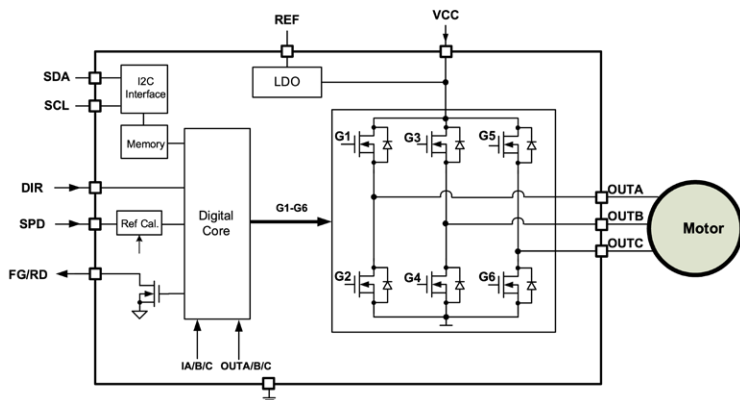
- 6A peak, 3A continuous output current (I_{OUT})
- Integrated ultra-low $R_{DS(ON)}$ MOSFETs using MPS's advanced BCD process
- 3 integrated half-bridge drivers
- Automatic synchronous rectification (SR)
- Internal charge pump supports 100% duty cycle operation

Easy Control and Streamlined Protection

- Pulse-width modulation (PWM) and enable (EN) inputs
- Under-voltage lockout (UVLO), over-voltage protection (OVP), over-current protection (OCP), and over-temperature protection (OTP)
- Fault indication output

MPQ6634-AEC1

35V, 1A RMS, 3-Phase, Sensorless BLDC Motor Driver



Key Specifications:

3.6V to 35V	1A RMS	500mΩ HS+LS	TQFN-12 (3mmx4mm)
Input Voltage	Output Current	MOSFET $R_{DS(ON)}$	Package

Features

Reduces Motor/Fan Design Complexity

- Sensorless field-oriented control (FOC)

Built to Handle Tough Automotive Transients

- Load dump up to 40V, cold crank down to 3.6V

Enables High Power Density

- 1A RMS output current (I_{OUT})
- 2A configurable current limit
- Integrated ultra-low $R_{DS(ON)}$ MOSFETs using MPS's advanced BCD process

Ideal for Off-Battery Applications

- <50μA power-save mode (PSM)

Robust Protection

- Short-circuit protection (SCP), over-voltage protection (OVP), over-current protection (OCP), over-temperature protection (OTP), and automatic recovery
- Phase loss protection and rotor-lock protection
- Selectable FG and RD output

Digital Monitoring and Control

- Configurable 6-point speed curve, align time, soft acceleration time
- Closed-loop or open-loop speed control
- Direction control
- Starting corner duty set with hysteresis
- I²C interface
- Digitally configurable one-time programmable (OTP) memory

Pre-Drivers

	Part Number	V _{IN} (Min) (V)		V _{IN} (Abs Max) (V)	Topology	# of Channels	I _{OUT} per Channel (mA)	f _{SW} (kHz)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface
N	MPQ6590A-AEC1	7.5	80	80	-	1	1	ENBL/ ON	✓	QFN-11 (3x4)		High-side MOSFET driver
	MPQ1922-AEC1	5	15	100	1	3	4	INH/ INL	✓	QFN-22 (4x5)		Gate driver, int. current-sense amp, interlock function
	MPQ1923-AEC1	5	17	100	1	7	8	INH/ INL	-	QFN-10 (4x4), QFN-8 (4x4)		High-frequency gate driver, 7.2ns/5.5ns rise/fall (1nF load)
	MPQ6528-AEC1	5	60	60	2	0.8	1	EN/ PWM	✓	QFN-28 (4x5)		H-bridge gate driver
	MPQ6641-AEC1	6	40	40	2	0.8	1	EN/IN, SPI	✓	QFN-32 (5x5)		H-bridge with SPI and internal current-sense amp
	MPQ6530-AEC1	5	60	60	3	0.8	1	EN/ PWM	✓	QFN-28 (4x5)		For BLDC motors
	MPQ6531-AEC1	5	60	60	3	0.8	1	HS/LS	✓	QFN-28 (4x5)		For BLDC motors
	MPQ6532-AEC1	5	60	60	3	0.8	1	PWM/ DIR, 3 Hall Inputs	✓	QFN-28 (4x5)		Hall inputs, for BLDC
	MPQ6533-AEC1	6	40	40	3	0.8	1	EN/IN, SPI	✓	QFN-32 (5x5)		Three-channel LDO regulator, current-sense amp
S	MPQ6633A-AEC1	5	50	50	3	0.7	1.1	HS/LS	✓	QFN-34 (4x5)		Integrated 50mA, 2% accurate LDO and 1-channel current-sense amp
S	MPQ6633B-AEC1	5	50	50	3	0.7	1.1	HS/LS	✓	QFN-48 (6x6)		Integrated 50mA, 2% accurate LDO and 3-channel current-sense amp
N	MPQ6539-AEC1	8	80	80	3	0.8	1	HS/LS	-	QFN-28 (4x5)		Internal LDO for external NPN, 1-channel current-sense amp, prog. OCP
N	MPQ6632-AEC1	6	50	55	3	1	1	PWM/ DC	✓	QFN-28 (5x5)		Prog. speed curve, open-/closed-loop control, 1/3 channel Hall inputs
N	MPQ6635-AEC1	6	35	40	3	1	1	PWM/ DC	✓	QFN-28 (5x5)		Prog. speed curve, open-/closed-loop control, sensorless
S	MPQ6620A-AEC1	6	40	-	8	0.064	0.064	SPI	✓	QFN-48 (7x7)		8 channels with 2x current-sense amps, AEC-Q100 qualified
S	MPQ6620B-AEC1	6	40	-	8	0.064	0.064	SPI	✓	QFN-40 (6x6)		8 channels, AEC-Q100 qualified

Single/Multi Half-Bridge Drivers (Integrated MOSFET)

	Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Half-Bridges	$R_{DS(ON)}$ (HS + LS) (mΩ)	Typ Shutdown I_{SD} (μA)	Peak Output Current (A)	Input Control Interface	Wettable Flank Option	Package	Notes
	MPQ6610-AEC1	4	55	1	220	1300	3	EN/IN	-	TSOT23-8, SOIC-8	Power driver
	MPQ8039-AEC1	7.5	28	1	100	2.5	9	PWM	-	SOIC-8E	General-purpose, high frequency, for audio amps wireless charging, etc.
	MPQ6614-AEC1	5	35	2	500	0.1	3	IN1/IN2	✓	QFN-8 (2x3)	H-bridge DC motor driver
	MPQ6519-AEC1	3	28	2	130	2	5	PWM	-	QFN-19 (4x4)	H-bridge current regulator
	MPQ6619-AEC1	2.7	28	2	130	1	5	IN1/IN2	✓	QFN-19 (4x4)	H-bridge DC motor driver
	MPQ6612A-AEC1	4	40	2	103	2.8	5 (RMS)	IN1/IN2	✓	QFN-18 (3x4)	H-bridge with current sense, IN1 and IN2 inputs
	MPQ6612A-D-AEC1	4	40	2	103	2.8	5 (RMS)	ENBL/DIR	✓	QFN-18 (3x4)	H-bridge with current sense, ENBL and DIR inputs
S	MPQ6611-AEC1	2.7	32	2	40	1	7	SPI	✓	QFN-20 (4x4)	H-bridge with configurable slew rate
S	MPQ6611B-AEC1	2.7	32	2	40	1	15	SPI	✓	QFN-20 (4x4)	H-bridge with prog. slew rate, AEC-Q100 qualified
S	MPQ6611H-B-AEC1	2.7	32	2	40	1	15	Prog Control Modes	✓	QFN-20 (4x4)	H-bridge with 3 configurable input logics and prog. slew rate, AEC-Q100 qualified
	MPQ6615-AEC1	4.75	40	2	22	1	8 (RMS)	Prog Control Modes	✓	TQFN-26 (6x6)	H-bridge motor driver, int. current-sense amp
	MPQ6523-AEC1	7	28	3	1100	1.5	0.9	SPI	✓	QFN-24 (4x4)	Independent half-bridge control, comprehensive protections, serial data interface up to 3MHz
	MPQ6524-AEC1	7	28	4	1100	1.5	0.9	SPI	✓	QFN-24 (4x4)	Independent half-bridge control, comprehensive protections
	MPQ6526-AEC1	7	28	6	1100	1.8	0.9	SPI	✓	QFN-24 (4x4), QFN-24 (5x5)	Independent half-bridge control, comprehensive protections
	MPQ6626-AEC1	5.5	40	6	1300	1	0.8	SPI	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, SPI interface up to 5MHz
	MPQ6628-AEC1	5.5	40	8	1300	1	0.8	SPI	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, SPI interface up to 5MHz
	MPQ6527-AEC1	5.5	40	10	1300	1	0.8	SPI	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, SPI interface up to 5MHz

Integrated BLDC Motor Drivers

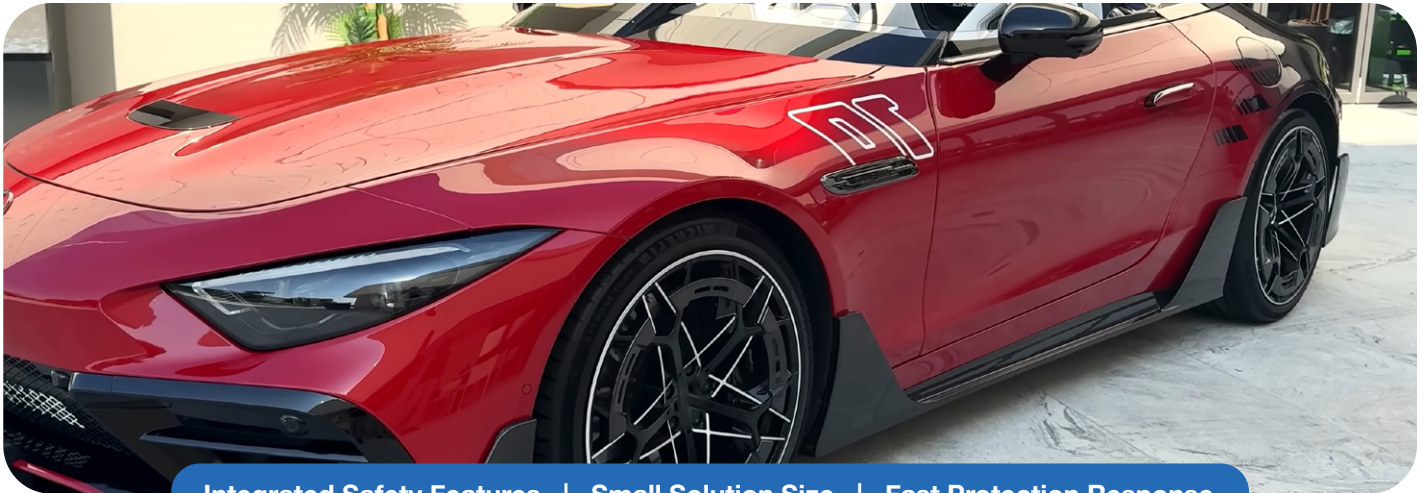
	Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Half-Bridges	$R_{DS(ON)}$ (HS + LS) (mΩ)	Typ Shutdown I_{DD} (μA)	Peak Output Current (A)	Input Control Interface	Wettable Flank Option	Package	Notes
	MPQ6517B-AEC1	3.3	16	2	850	-	2	PWM	-	TSOT23-6, TSOT23-6-SL	Single-phase, integrated Hall sensor, prog. speed curve, open-loop control
	MPQ6653A-AEC1	3.5	35	2	960	120 (Standby)	1.2	PWM/DC	-	TSOT23-6, TSOT23-6-SL, TQFN-6 (2x3)	Single-phase, integrated Hall sensor, prog. speed curve, open-/closed-loop control
N	MPQ6653B-AEC1	3.5	35	2	960	120 (Standby)	1.2	PWM/DC	-	TSOT23-6-SL	Add 2/3 FG option for 6-poles fan application based on the MPQ6653A
S	MPQ6653C-AEC1	3.5	35	2	960	120 (Standby)	1.2	PWM/DC	-	TSOT23-6-L, TSOT23-6-SL, TQFN-6 (2x3)	Add 2/3 FG option for 6-poles fan application based on the MPQ6653A
	MPQ6631H-AEC1	3.6	35	3	160	130 (Standby)	3	PWM/DC	✓	TQFN-26 (3x4)	3-phase, prog. speed curve, open-/closed-loop control, 1/3 Hall inputs
	MPQ6634-AEC1	4.5	35	3	500	40 (Standby)	2	PWM/DC	✓	TQFN-12 (3x4)	3-phase, sensorless, prog. speed curve, open-/closed-loop control
S	MPQ6547A-AEC1	4	32	3	90	1	3 (RMS)	PWM/ENBL	✓	QFN-18 (3x4)	3-phase power stage
	MPQ6541-AEC1	4.75	40	3	30	1	8 (RMS)	PWM/ENBL	✓	TQFN-26 (6x6)	3-phase power stage, PWM/ENBL inputs, int. current-sense amp
	MPQ6541A-AEC1	4.5	40	3	30	1	8 (RMS)	HS/LS	✓	TQFN-26 (6x6)	3-phase power stage, HS/LS inputs, int. current-sense amp

Stepper Motor Drivers

	Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Half-Bridges	$R_{DS(ON)}$ (HS + LS) (mΩ)	Typ Shutdown I_{DD} (μA)	Peak Output Current (A)	Step Mode	Input Control Interface	Wettable Flank Option	Package	Notes
N	MPQ6605D-AEC1	4.5	52	-	LS: 350	2	1.5	-	Parallel	-	QFN-24 (4x4)	4-channel, low-side driver
S	MPQ6606-AEC1	4.5	52	-	LS: 700	-	0.75	-	SPI	-	TSSOP-20EP	8-channel, low-side driver
N	MPQ6609-AEC1	4	32	4	580	1	1	1, 1/2, 1/4, 1/8, 1/16, 1/32	SPI	✓	QFN-18 (3x4)	Bipolar stepper, int. current sense, rotor stall detection, BEMF measurement
	MPQ6600L-AEC1	4.5	35	4	365	2.5	1.5	1, 1/2, 1/4, 1/8	Indexer	✓	QFN-24 (4x4)	Bipolar, microstepping, int. current sense and latch-off
S	MPQ6603-AEC1	8	55	4	115	1	5	1, 1/2, 1/4, 1/8	Parallel, Indexer	✓	QFN-25 (4.5x5)	Dual full-bridge driver, selectable input interface, AEC-Q100 qualified

E-Fuse and Load Switches

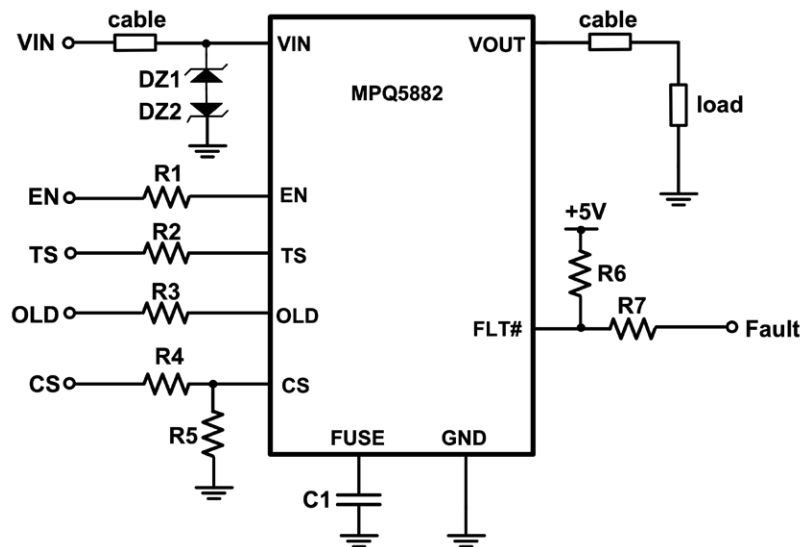
Automotive load switches enable precise power distribution control throughout the vehicle, and can protect against unwanted events, such as over-voltage and over-current faults.



Integrated Safety Features | Small Solution Size | Fast Protection Response

MPQ5882-AEC1 SAMPLING

80V, 2.5mΩ, E-Fuse & Smart High-Side Power Switch



Features

Built to Handle Tough Automotive Transients

- Load dump up to 80V
- -60V continuous reverse voltage self-protection

Extends Vehicle Battery Life

- 20μA low quiescent current (I_Q) mode
- Extremely low shutdown I_Q

Robust Protections and Monitoring

- Highly accurate current-sense and reporting
- Fuse-like over-current protection (OCP) and short circuit protection (SCP)
- Self-protection during reverse battery conditions
- Fault reporting
- Thermal monitoring
- Thermal shutdown
- Open-load detection (OLD)

Key Specifications:

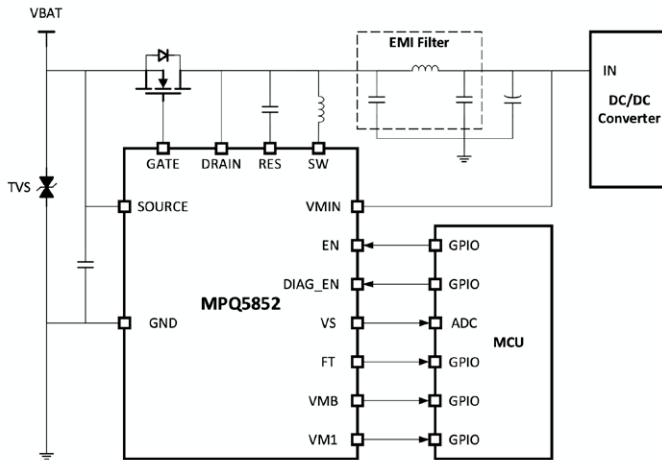
6V to 80V	-60V to +80V	2.5mΩ	25A	PQFN-30 (6mmx8mm)
Recommended Operation Range	Protected Input Voltage Range	$R_{DS(ON)}$	Nominal Current	Package

Versions:

MPQ5884	4.5mΩ	15A	
MPQ5887	7.5mΩ	10A	QFN-30 (5mmx6mm)
MPQ5889	15mΩ	7A	

MPQ5852-AEC1

42V, Ideal Diode Controller with Reverse Protection and 2 Voltage Monitors



Key Specifications:

0V to 42V	4 μ A	QFN-13 (3mmx3mm)
Input Voltage	I_Q in Standby Mode	Package

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 0V

Cooler Thermals

- Smaller switching loss with strong gate drive
- 20mV low-dropout (LDO)

Extends Vehicle Battery Life

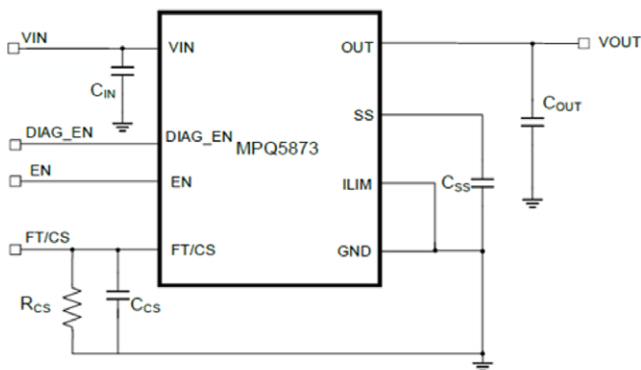
- Low 4 μ A shutdown current (I_{SD})
- Low 30 μ A supply current
- DIAG_EN for low quiescent current (I_Q) option

Additional Features

- Designed to meet similar system cost to TVS diode discrete architecture
- Strong gate driver ability: 170mA pull-up/430mA pull-down current
- Extremely fast response rectifies AC frequency up to 100kHz
- Meets stringent ISO 16750 requirements
- Fault (FT) indicator for DRAIN over-voltage (OV) with high accuracy
- Two high-accuracy under-voltage (UV) indicators for battery and downstream input voltage (V_{IN}) monitoring
- High-accuracy battery voltage sensing supports 3.3V/1.8V MCUs

MPQ5873-AEC1

42V, 60m Ω , 3A to 1A, Single-Channel Smart Switch



Key Specifications:

3.5V to 42V	0.5 μ A	QFN-8 (2mmx2.5mm)
Input Voltage	Standby Current	Package

Available in Pin-Compatible Family:

1A	2A	3A
MPQ5871	MPQ5872	MPQ5873

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 3.5V
- Adjustable start-up slew rate to help reduce inrush current during start-up

Cooler Thermals

- 60m Ω on resistance ($R_{DS(ON)}$)

High-Accuracy Current-Sense Capability

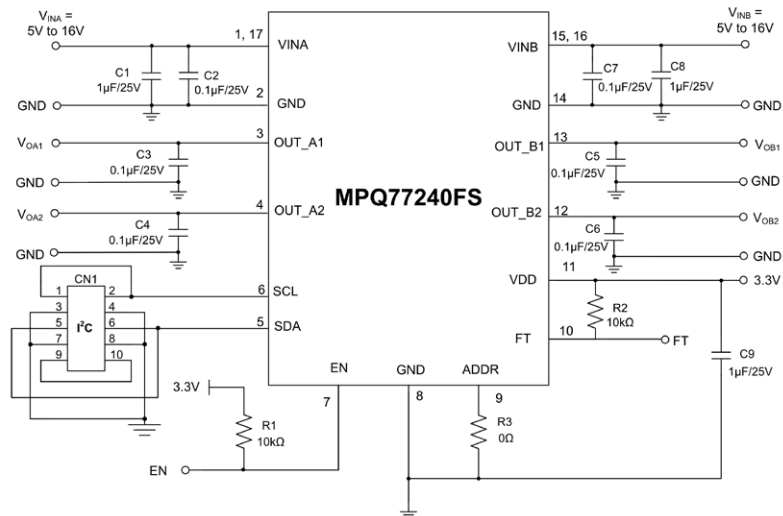
- $\pm 4\%$ at 1A and $\pm 6\%$ at 300mA

Full Protection and Diagnostics

- Can achieve accurate diagnostics in real time without additional calibration

Additional Features

- Supports internal and external current limiting
- Adjustable start-up slew rate
- Ability to distinguish different fault conditions
- Selectable input over-voltage protection (OVP) threshold

MPQ77240FS-AEC1 **NEW****ASIL-B, 18V, 180mΩ Quad High-Side Switch with Reverse Protection****Key Specifications:**

3V to 18V	0.8A/Channel	QFN-17 (3mmx4mm)	±3% at 1A
Input Voltage	Current	Package	Current-Sense Accuracy
			±5% at 300mA

Versions:

MPQ77240FS	4Ch, 0.8A/Ch	MPQ5864	4-Ch, 0.8A/Ch
MPQ77220FS	2Ch, 1.5A/Ch	MPQ5862	2-Ch, 1.5A/Ch
Part Numbers	ASIL-B	Part Numbers	QM

Features**Built to Handle Tough Automotive Transients**

- 26V reverse protection with back-to-back architecture
- Adjustable start-up slew rate

Extends Vehicle Battery Life

- Extreme low 6μA standby current

High-Accuracy Current-Sense Capability

- ±3% at 1.5A and ±5% at 300mA

Vast Flexibility

- Separate power supply design to support two power rails
- Supports output with parallel channels
- Configurable current limit and soft start (SS)

Robust Protection and Monitoring

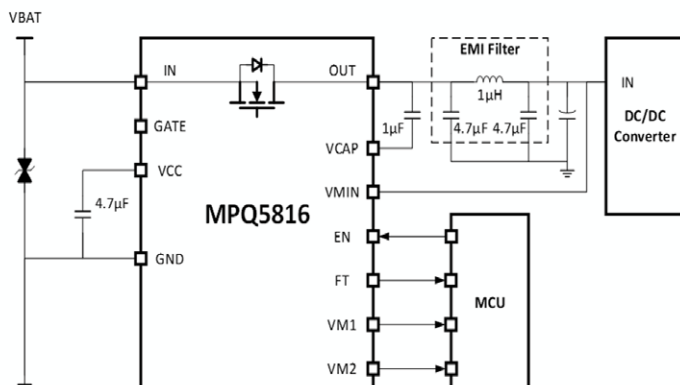
- Fault report via the FT pin and I²C interface
- I²C supports 8 addresses
- Input and output over-voltage (OV) and under-voltage (UV) detection
- Open-load and short-to-battery detection
- Peak and real-time current-sensing
- Channel short-circuit protection (SCP) and over-temperature protection (OTP)

ASIL-B Functional Safety

- Integrate an 8-bit analog-to-digital converter (ADC) to report channel voltage and current
- Multiple-pin design for VIN and GND

MPQ5816-AEC1 SAMPLING

42V, Integrated Ideal Diode Controller with Reverse Protection and UV Indicator



Key Specifications:

0V to 42V	4µA	QFN-21 (3mmx4mm)
Input Voltage	Shutdown Current	Package

Versions:

MPQ5817	5mΩ	15A	QFN-23 (4mmx5mm)
MPQ5816	10mΩ	9A	QFN-21 (4mmx3mm)
MPQ5836*	20mΩ	7A	QFN-21 (4mmx3mm)
Part Numbers	$R_{DS(ON)}$	Output Current	Package

*Up to 60V_{IN} for 24V battery systems

Features

Built to Handle Tough Automotive Transients

- Load dump up to 42V, cold crank down to 0V
- -40V reverse voltage blocking

Cooler Thermals

- 10mΩ on resistance ($R_{DS(ON)}$) for 9A applications
- Smaller switching loss with strong gate drive

Extends Vehicle Battery Life

- Low 4µA shutdown current (I_{SD})

Additional Features

- Extremely fast response rectifies AC frequency up to 100kHz
- Internal charge pump with 10mA pull-up/200mA pull-down current
- Meets stringent ISO 16750 requirements
- Fault indicator for output over-voltage (OV), over-temperature (OT), and over-current (OC) conditions
- Two under-voltage (UV) indicators for battery and load monitoring
- High-accuracy battery voltage sensing supports 1.8V/3.3V MCUs

Load Switches | 5V Load Switches

	Part Number	V _{CC} (Min) (V)	V _{CC} (Max) (V)	Load Current (A)	R _{DS(ON)} (mΩ)	I _a (Typ) (mA)	Adj. Current Limit	Power Good	Wettable Flank QFN Option	Package
	MPQ5071-AEC1	3	5.5	0.5	50	0.18	✓	✓	-	QFN-12 (2x2)
	MPQ5072-AEC1	3	5.5	1	50	0.18	✓	✓	-	QFN-12 (2x2)
	MPQ5073-AEC1	3	5.5	2	50	0.18	✓	✓	-	QFN-12 (2x2)
	MPQ5074-AEC1	3	5.5	3	10	0.22	✓	✓	✓	QFN-13 (2.5x3)
	MPQ5075A-AEC1	3	5.5	5	10	0.22	✓	✓	✓	QFN-13 (2.5x3)
	MPQ5077A-AEC1	3	5.5	7	10	0.22	✓	✓	✓	QFN-13 (2.5x3)
S	MPQ5073N-AEC1	3	5.5	2	50	0.18	-	-	-	SOT-563
S	MPQ5071N-AEC1	3	5.5	1	50	0.18	-	-	-	SOT-563

Load Switches | POC (16V) Load Switches

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Load Current (A)	R _{DS(ON)} (mΩ)	I _a (Typ) (mA)	Adj. Current Limit	ASIL-B	Wettable Flank QFN Option	Package	Notes
N	MPQ5862-AEC1	5	26.5	1.5	90	0.005	✓	-	✓	QFN-17 (3x4)	2-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections
N	MPQ5864-AEC1	5	26.5	0.8	200	0.005	✓	✓	✓	QFN-17 (3x4)	4-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections
N	MPQ77220FS-AEC1	5	26.5	1.5	90	0.005	✓	-	✓	QFN-17 (3x4)	2-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections, ASIL-B, ISO 26262 compliant
N	MPQ77240FS-AEC1	5	26.5	0.8	200	0.005	✓	✓	✓	QFN-17 (3x4)	4-ch, smart HSS, ±3% high-accuracy current-sensing, full diagnostics and protections, ASIL-B, ISO 26262 compliant

Load Switches | 40V Load Switches

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Load Current (A)	R _{DS(ON)} (mΩ)	I _D (Typ) (mA)	Adj. Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
	MPQ5066-AEC1	6	38	6	7	1	✓	✓	-	QFN-22 (3x5)	ISO 16750-1 compliant
	MPQ5068-AEC1	6	38	8	7	1	✓	✓	-	QFN-22 (3x5)	ISO 16750-1 compliant
	MPQ5069-AEC1	6	38	10	7	1	✓	✓	-	QFN-22 (3x5)	ISO 16750-1 compliant
	MPQ5871-AEC1	5	42	1	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±4% high-accuracy current-sensing
	MPQ5872-AEC1	5	42	2	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±4% high-accuracy current-sensing
	MPQ5873-AEC1	5	42	3	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±4% high-accuracy current-sensing
S	MPQ5870L-AEC1	4	28	0.5	300	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±1% high-accuracy current-sensing
S	MPQ5892-AEC1	4	42	5	30	0.8	✓	✓	✓	QFN-21 (4x5)	2-ch, 5A/ch smart HSS
S	MPQ5894-AEC1	4	42	3	65	0.8	✓	✓	✓	QFN-21 (4x5)	4-ch, 3A/ch smart HSS
P	MPQ5801-AEC1	6	42	40	1	1.45	-	✓	-	PQFN-28 (6x8)	36V, e-fuse and smart HSS
P	MPQ5801N-AEC1	6	42	30	1.7	1.45	-	✓	✓	QFN-30 (5x6)	36V, e-fuse and smart HSS

Load Switches | 60V Load Switches

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Load Current (A)	R _{DS(ON)} (mΩ)	I _D (Typ) (mA)	Adj. Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
S	MPQ5893-AEC1	4	65	5	30	0.8	✓	✓	✓	QFN-21 (4x5)	2-channel, 5A/ch smart HSS
S	MPQ5895-AEC1	4	65	3	65	0.8	✓	✓	✓	QFN-21 (4x5)	2-channel, 3A/ch smart HSS
S	MPQ5896-AEC1	4	65	3	65	0.8	✓	✓	✓	QFN-21 (4x5)	4-channel, 3A/ch smart HSS
P	MPQ5870-AEC1	4	42	0.5	300	0.5	✓	✓	✓	QFN-8 (2x2.5)	1-ch, smart HSS, ±1% high-accuracy current-sensing

Load Switches | 80V Load Switches

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	Load Current (A)	R _{DS(on)} (mΩ)	I _o (Typ) (mA)	Adj. Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
S	MPQ5882-AEC1	6	80	25	2.5	1.5	✓	✓	-	QFN-30 (6x8)	E-fuse and smart HSS
S	MPQ5884-AEC1	6	80	15	4.5	1.5	✓	✓	✓	QFN-30 (5x6)	E-fuse and smart HSS
S	MPQ5887-AEC1	6	80	10	7.5	1.5	✓	✓	✓	QFN-30 (5x6)	E-fuse and smart HSS
S	MPQ5889-AEC1	6	80	7	15	1.5	✓	✓	✓	QFN-30 (5x6)	E-fuse and smart HSS
P	MPQ5885-AEC1	3.5	80	15	4.5	1.5	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
P	MPQ5886-AEC1	3.5	80	10	8.5	1.5	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
P	MPQ5888-AEC1	3.5	80	7	15	1.5	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface
P	MPQ5886D-AEC1	3.5	80	10	8.5	1.5	✓	✓	✓	QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface
P	MPQ5888D-AEC1	3.5	80	7	15	1.5	✓	✓	✓	QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface
P	MPQ77415-AEC1	3.5	80	15	4.5	1.5	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
P	MPQ77416-AEC1	3.5	80	10	8.5	1.5	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
P	MPQ77418-AEC1	3.5	80	7	15	1.5	✓	✓	✓	QFN-33 (6x6)	E-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
P	MPQ77426-AEC1	3.5	80	10	8	1.5	✓	✓	✓	QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
P	MPQ77428-AEC1	3.5	80	7	15	1.5	✓	✓	✓	QFN-33 (6x6)	2-channel, e-fuse and smart HSS w/ SPI interface, ASIL-B, ISO 26262 compliant
P	MPQ5893H-AEC1	3.5	70	5	30	0.8	✓	✓	✓	QFN-21 (4x5)	2-channel, 5A/ch smart HSS
P	MPQ5895H-AEC1	3.5	70	3	65	0.8	✓	✓	✓	QFN-21 (4x5)	2-channel, 3A/ch smart HSS
P	MPQ5896H-AEC1	3.5	70	3	65	0.8	✓	✓	✓	QFN-21 (4x5)	4-channel, 3A/ch smart HSS
P	MPQ5897-AEC1	3.5	80	2	175	0.1	✓	✓	✓	QFN-21 (4x5)	4-channel, 2A/ch smart HSS

Reverse Battery Protection Controllers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Reverse Battery (V)	Min Gate Drive Current (mA)	Forward Voltage Drop (mV)	Shutdown I_o (Typ) (μ A)	Power Good Int Boost Converter	Package	Notes	
S	MPQ5816-AEC1	3	42	-40	110/2000	200	4	✓	-	QFN-21 (3x4)	Integrated diode, low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
S	MPQ5817-AEC1	3	42	-36	110/2000	200	4	✓	-	QFN-21 (4x5)	Integrated diode, low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
S	MPQ5836-AEC1	3	55	-36	110/2000	200	4	✓	-	QFN-21 (3x4)	Integrated diode, low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
	MPQ5850-AEC1	3	42	-36	170/430	20	4	✓	✓	TSOT23-8	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
	MPQ5852-AEC1	3	42	-36	170/430	20	4	✓	✓	QFN-13 (3x3)	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant, two voltage monitors
N	MPQ5852A-AEC1	3	42	-36	170/430	20	4	✓	✓	QFN-13 (3x3)	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant, two voltage monitors, different deglitch time for LVM and BVM available
N	MPQ5857-AEC1	4.5	42	-42	800/1300	20	8	✓	✓	QFN-16 (3x4)	Back-to-back FET control, AC rectification up to 100kHz, OCP/OVP and monitoring, ISO 7637 and ISO 16750 compliant
P	MPQ5858-AEC1	4.5	80	-80	800/1300	20	8	✓	✓	QFN-16 (3x4)	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant, 2 voltage monitors
N	MPQ5823-AEC1	5	40	-0.3	-	-	2.2	✓	-	QFN-24 (4x4)	-

Analog Switches

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Switch Current (A)	$R_{DS(ON)}$ (Ω)	I_o (Typ) (μ A)	t_{ON}/t_{OFF} (ns)	Bandwidth (MHz)	Wettable Flank QFN Option	Package	Notes
MPQ2735-AEC1	1.65	5.5	0.1	0.25	1	29/23	50	-	QFN-10 (2x2)	Low-voltage, 0.45 Ω dual SPDT analog switches, separate control inputs

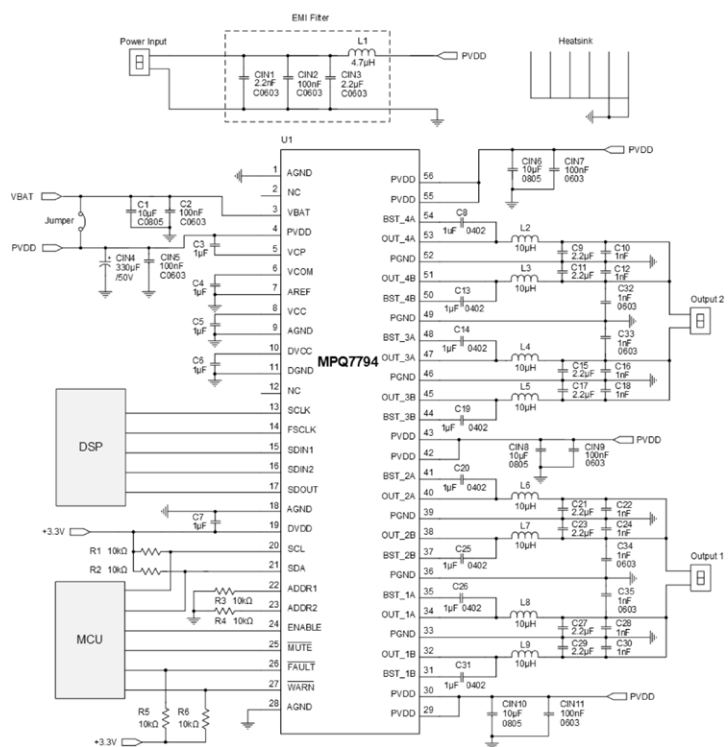
Class-D Audio

MPS's Class-D audio solutions provide highly efficient, innovative, easy-to-use amplifiers that increase performance and reliability. Find Class-D audio solutions for your e-call, cluster, virtual engine sound, and other automotive audio power projects.



MPQ7794-AEC1 SAMPLING

75W, 4-Channel, 470kHz, Digital Input Monolithic Class-D Amplifier



Key Specifications:

4V to 26V

THD+N = 0.01% @ 1W

2.5mΩ

90μV

Recommended
Operation Range

Audio Performance

$R_{DS(ON)}$

Output Noise

SSOP56-EPR
(18.4mmx7.5mm)

Package

Features

Full Diagnostics and Monitoring

- Input over-voltage (OV) and under-voltage (UV)
- Current limit per channel
- DC offset and clip detection
- Over-temperature (OT) shutdown and warning

Audio Inputs

- 44.1kHz, 48kHz, or 96kHz sampling rate
- 4-channel I²S or 4/8-channel TDM input
- 16-bit to 32-bit I²S or TDM

Audio Outputs

- 4-channel BTL/2-channel PBTL
- Delivers 25/60W into 4Ω at 14.4V/25V, BTL @ 1% THD+N
- Delivers 50/120W into 2Ω at 14.4V/25V, PBTL @ 1% THD+N

Extreme Low Power

- Low standby current, down to 5μA
- 1.2W quiescent power with 14.4V VBAT and PVDD

Low EMI/EMC Noise

- Meets CISPR 25 Class 5
- Frequency spread spectrum (FSS)
- PWM phase shift with multiple devices

Additional Features

- Supports AD/BD modulation
- Supports 384kHz and 470kHz operation
- 16 pin-configurable addresses
- Start-up/shutdown pop elimination
- Fault pin/I²C interface for diagnostics

	Part Number	V _{IN} (Min) (V)	V _{IN} (Abs Max) (V)	P _{OUT} (W)	R _{ON} (mΩ)	Idle Current (Typ) (mA)	f _{SW} (kHz)	Efficiency (%)	THD+N at 1kHz Input (%)	PSRR (dB)	SNR (dB)	Output Noise (μV)	Type	Load Diagnostics	Selectable Gain	Power Limiter	Digital Interface	Wettable Flank QFN Option	Package	Notes
	MPQ7795-AEC1	3.9	42	24.5 @ 14.4V, 4Ω Load	150	6.5	330 to 2.2M	92 @ 470kHz, 90 @ 2MHz	0.09 @ 1W, 470kHz	71 @ 100Hz	102	115	Mono, BTL	✓	✓	✓	I²C	✓	QFN-24 (4x4)	Low EMI, mono BTL with diagnostics
	MPQ7790-AEC1	5.5	18	9 @ 12V, 8Ω Load	300	5	300	90	0.15 @ 5W (8Ω), 300kHz	50	102	115	Mono, BTL	-	✓	✓	-	-	TSSOP -20EP	Low EMI, analog input, for mono speaker in bridge-tied load configuration
S	MPQ7793-AEC1	4	42	75W x 4 @ 14V, 4Ω Load	60	35	432 to 2.2M	90	0.01 @ 1W	75	110	40	BTL	✓	✓	-	I²C	-	SSOP56 -EPR	Low EMI with frequency spread spectrum
S	MPQ7794-AEC1	4	42	75W x 4 @ 14V, 4Ω Load	60	35	432 to 2.2M	90	0.01 @ 1W	75	110	40	BTL	✓	✓	-	I²C	-	SSOP56 -EPR	Low EMI with frequency spread spectrum

Position & Current Sensors

MPS's position and current sensors provide highly reliable, contactless angle sensing for position or speed control in automotive systems. Compact size, multiple angle output formats, and support for end-of-shaft and side-shaft magnet topology aid the implementation of cost-effective angle-sensing solutions. Typical applications include rotary controls in cabin user interfaces and motorized electronic actuators in vehicle body applications.



Contactless Sensing | High Reliability | Flexible Magnet Positioning

Integrated Current Sensors

	Part Number	Current Range (A)	V_{CC} (V)	Over-Temperature Accuracy	Temp Range (°C)	Isolation Voltage (V_{RMS})	Working Voltage (V_{RMS})	Working Voltage for Basic Isolation (V_{RMS})	Bandwidth (kHz)	Over-Current Detection for Reinforced Isolation (V_{RMS})	Voltage Reference	Primary Conductor Resistance (OCD)	UL Certification	Package	Notes
N	MCQ1805	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	3000	500	-	100	✓	-	0.9	✓ + TUV	SOIC-8	AEC-Q100, coreless, ratiometric analog output, immune to external magnetic field gradients
	MCQ1806	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	3000	500	-	100	-	-	0.9	✓	SOIC-8	AEC-Q100, coreless, ratiometric analog output
S	MCQ1810	±10, ±20, ±30, ±40, ±50, ±65, ±80, ±100	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	0.3	Planned	SOIC-10W	AEC-Q100, coreless, zero current reference, 0.3mΩ low primary conductor resistance, bi- or unidirectional sensing, ratiometric or absolute analog output, OCD with 1μs response time

	Part Number	Current Range (A)	V _{CC} (V)	Over-Temperature Accuracy	Temp Range (°C)	Isolation Voltage (V _{RMS})	Working Voltage (V _{RMS})	Working Voltage for Basic Isolation (V _{RMS})	Bandwidth (kHz)	Over-Current Detection Voltage Reference	Primary Conductor Resistance (mΩ)	UL Certification	Package	Notes	
S	MCQ1812	±10, ±20, ±30, ±40, ±50, ±65, ±80	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	0.45	Planned	SOIC-16W	AEC-Q100, coreless, zero current reference, bi- or unidirectional sensing, ratiometric or absolute analog output, prog. OCD with 1μs response time
S	MCQ1814	±5, ±10, ±20, ±30, ±40, ±50, ±65, ±80	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	0.45	Planned	SOIC-16W	AEC-Q100, coreless, zero current reference, bi- or unidirectional sensing, ratiometric or absolute analog output, prog. OCD with 1μs response time
	MCQ1823	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	100	100	-	120	✓	-	0.6	✓	QFN-12 (3x3)	AEC-Q100, coreless, bi- or unidirectional sensing, ratiometric or absolute analog output, immune to external magnetic field gradients
S	MCQ1880	±50, ±100, ±150, ±200	3.3, 5	2%	-40 to +150	100	100	-	350	-	-	0.2	-	PSOF-7	AEC-Q100, bi- or unidirectional sensing, 0.2mΩ primary conductor resistance, high precision, ratiometric or absolute analog output
P	MCQ1809	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2%	-40 to +125	3000	550	-	350	✓	-	0.5	-	SOIC-8	AEC-Q100, coreless, ratiometric analog output

MagAlpha™ Magnetic Position Sensors

	Part Number	±3σ Resolution	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Cutoff Frequency (Hz)	Latency at Constant Speed (μs)	Magnetic Field Detection	Temperature Range (°C)	Package	Wettable Flanks	Notes
	MAQ430	12-Bit	SPI, UVW, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	390	8	-	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100
	MAQ470	12-Bit	SPI, SSI, PWM, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	390	8	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100
	MAQ473	10-Bit to 14-Bit	SPI, SSI, PWM, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	23 to 6k	8	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, prog. filter
	MAQ800	8-Bit	SPI, SSI	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	✓	-40 to +125	QFN-16 (3x3)	✓	Optimized for automotive HMI applications, SSI output
	MAQ820	8-Bit	SPI, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	✓	-40 to +125	QFN-16 (3x3)	✓	Optimized for automotive HMI applications, SSI output
	MAQ850	8-Bit	SPI, PWM	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	✓	-40 to +125	QFN-16 (3x3)	✓	Optimized for automotive HMI applications, SSI output
N	MAQ600A	12-Bit to 15-Bit	SPI, ABZ, PWM, UVW, SSI	3 to 3.6	7.5	20+ (No Upper Limit)	75 to 17k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, TMR front-end, high accuracy and BW, 0.6° INL (<0.1° INL through user calibration w/ 32-word lookup table)

MagVector™ 3D Magnetic Position Sensors

	Part Number	Data Length	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Conversion Time (μs)	Temperature Range (°C)	Package	Notes
P	MVQ310	12-Bit	I²C, SPI	3.3	25nA to 2.5	±125 or ±250	40	-40 to +150	TSOT23-6	AEC-Q100, digital component output, selectable operating power modes and sensing axis

MagDiff™ Magnetic Position Sensors with Stray Field Immunity

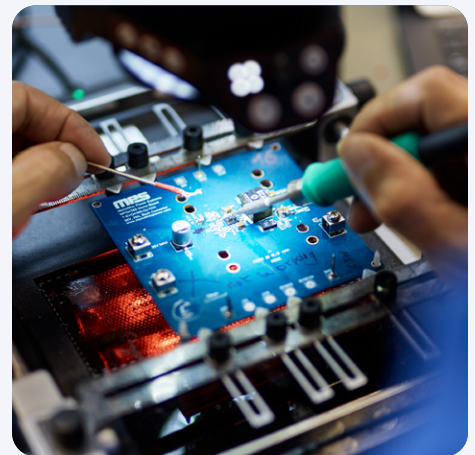
	Part Number	±3σ Resolution	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Cutoff Frequency (Hz)	Latency at Constant Speed (μs)	Magnetic Field Detection	Temperature Range (°C)	Package	Wettable Flanks	Notes
S	MAQ79010	10-Bit to 14.5-Bit	SPI, SSI, I ² C, UVW, SENT, ABZ	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, ASIL-B compliant, robust against parasitic stray fields >4kA/m DC, or 5mT
P	MAQ79016	10-Bit to 14.5-Bit	SPI, SSI, I ² C, UVW, SENT, ABZ	Up to 26V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, ASIL-B compliant, 26V with reverse polarity protection, robust against parasitic stray fields >4kA/m DC, or 5mT
S	MAQ900	10-Bit to 14.5-Bit	SPI, SSI, I ² C, UVW, SENT, ABZ	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-16 (3x3)	✓	AEC-Q100, robust against parasitic stray fields >4kA/m DC, or 5mT
P	MAQ79020	12-Bit to 14.5-Bit	ABZ, PWM, SPI, I ² C, SSI, UVW	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	✓	-40 to +150	QFN-32 (5x5)	✓	AEC-Q100, ASIL-D compliant w/ functional safety, robust against parasitic stray fields >4kA/m DC or 5mT, wettable flanks

Why Choose MPS

For almost 30 years, Monolithic Power Systems (MPS) — headquartered in Kirkland, Washington, and listed on Nasdaq — has been powering the most important technological innovations, from electric vehicles to artificial intelligence, renewable energy systems to advanced medical devices. Our fully customized service, dedicated support, and steadfast partnerships have attracted industry leaders and startups on the cusp of groundbreaking discoveries.

MPS is agile, nimble, and forward-thinking, always looking for better, faster, and more efficient ways to drive technological progress. We forge ahead to create what's next and make a sustainable impact.

We are a global leader in powering the most important technological innovations of our lives — working with our customers to create what's next. We design high-performance, super efficient power solutions for a wide range of product categories — from AI datacenters to automation, advanced medical devices to robotics.



Expert Engineering Resources

On-Site

Embedded engineering teams join our largest customers on location

On-Demand

Knowledgeable FAE/AE resources respond as needed to assist customers in optimizing designs

Virtual

Remote engineers provide virtual design sessions

- Product Recommendations
- Project Troubleshooting
- Technical Consulting



www.monolithicpower.com/quote-samples-support

Contact & Ordering

US Offices

MPS Kirkland ●●

5808 Lake Washington Blvd. NE
Kirkland, WA 98033, USA
Tel: +1 425-296-9956

MPS Detroit ●●

19499 Victor Parkway
Livonia, MI 48152, USA
Tel: +1 248-907-0222

MPS Florida

1555 Palm Beach Lakes Blvd.
West Palm Beach, FL 33401, USA

MPS San Jose ●●

79 Great Oaks Blvd.
San Jose, CA 95119, USA
Tel: +1 408-826-0600

MPS Phoenix ●

2065 S. Cooper Rd., Suite 3
Chandler, AZ 85826, USA

MPS North Carolina ●

Canterbury Hall
4815 Emperor Blvd.
Durham, NC 27703, USA

EU Offices

MPS Barcelona ●

Av. Josep Tarradellas 123, 5-A
08029 Barcelona, Spain
Tel: +34 93-181-5400

MPS Munich ●

Alte Landstrasse 21A
85521 Ottobrunn, Germany
Tel: +49-89-80913512-0

MPS Portugal ●

Rua D. Manuel II, 290, Piso 7
4050-344 Porto,
Portugal

MPS Netherlands ●

Haaksbergerstraat 95, 3rd Floor
7554 PA Hengelo,
The Netherlands

MPS Germany ●●●

Gutenbergstrasse 4,
77955 Ettenheim,
Germany

MPS Switzerland

Bleicheplatz 2/3, 5th Floor
8200 Schaffhausen,
Switzerland

Asia Offices

MPS China Chengdu ●●

#8 Kexin Road West Park of Export
Processing Zone West Hi-Tech Zone
Chengdu, Sichuan, 611731
Tel: +86 28-8730-3000

MPS China Hangzhou ●●

Floor 6, Building A2, Xixi Center,
No. 588 West Wenyi Road, Xihu District
Hangzhou, Zhejiang, 310012
Tel: +86 571-8981-8588

MPS China Shanghai

Floor 27, Magnolia Plaza, No. 777
Hongqiao Road, Xuhui District
Shanghai, 20030
Tel: +86 21-2225-1700

MPS China Shenzhen

Room 1401, Kingkey Riverfront Times Square
Branch North,
Binhe Avenue South, Futian District
Shenzhen Guangdong, 518054
Tel: +86 755-3688-5818-5852

MPS Taiwan Taipei ●

29F, No. 97, Section 1, Xintai 5th Road
Xizhi District, New Taipei City, Taiwan
Tel: +886 2-86911600

MPS Taiwan Hsinchu

10F, No. 8, Taiyuan 2nd Street,
Zhubei City, Hsinchu County, Taiwan 302082
Tel: +886 3-527-6600

MPS Japan Tokyo

Shinjuku Sumitomo Bldg. 31F
2-6-1 Nishishinjuku Shinjuku-ku,
Tokyo 163-0231, Japan
Tel: +81 3-5989-0885

MPS Japan Osaka

Room 301, NLC Shin-Osaka Business
Zone III, 3-14-20 Nishinakajima,
Yodogawa-ku, Osaka-shi,
Osaka 532-0011, Japan
Tel: +81 6-6300-7432

MPS Singapore

No. 8 Ubi Road 2
#08-12 Zervex, Singapore 408538

MPS Korea

I&C Building 5F, 24,
Pangyo-ro 255beon-gil,
Bundang-gu, Seongnam-si,
Gyeonggi-do, Korea 13486
Tel: +82 31-778-6819

MPS India

Unit G-12, Prestige Towers,
No 99 / 100, Residency Road,
Bangalore 560025
Tel: +91 80-4124-0312 / 20

● Regional Headquarters ● EMC Labs ● R&D Center

MPS Investor Relations

www.monolithicpower.com/investors

**Fast
Response**

Quotes, Availability, Engineering Support & Samples

www.monolithicpower.com/quote-samples-support

Order Direct

www.monolithicpower.com

Online Order Support

www.monolithicpower.com/onlineorders

