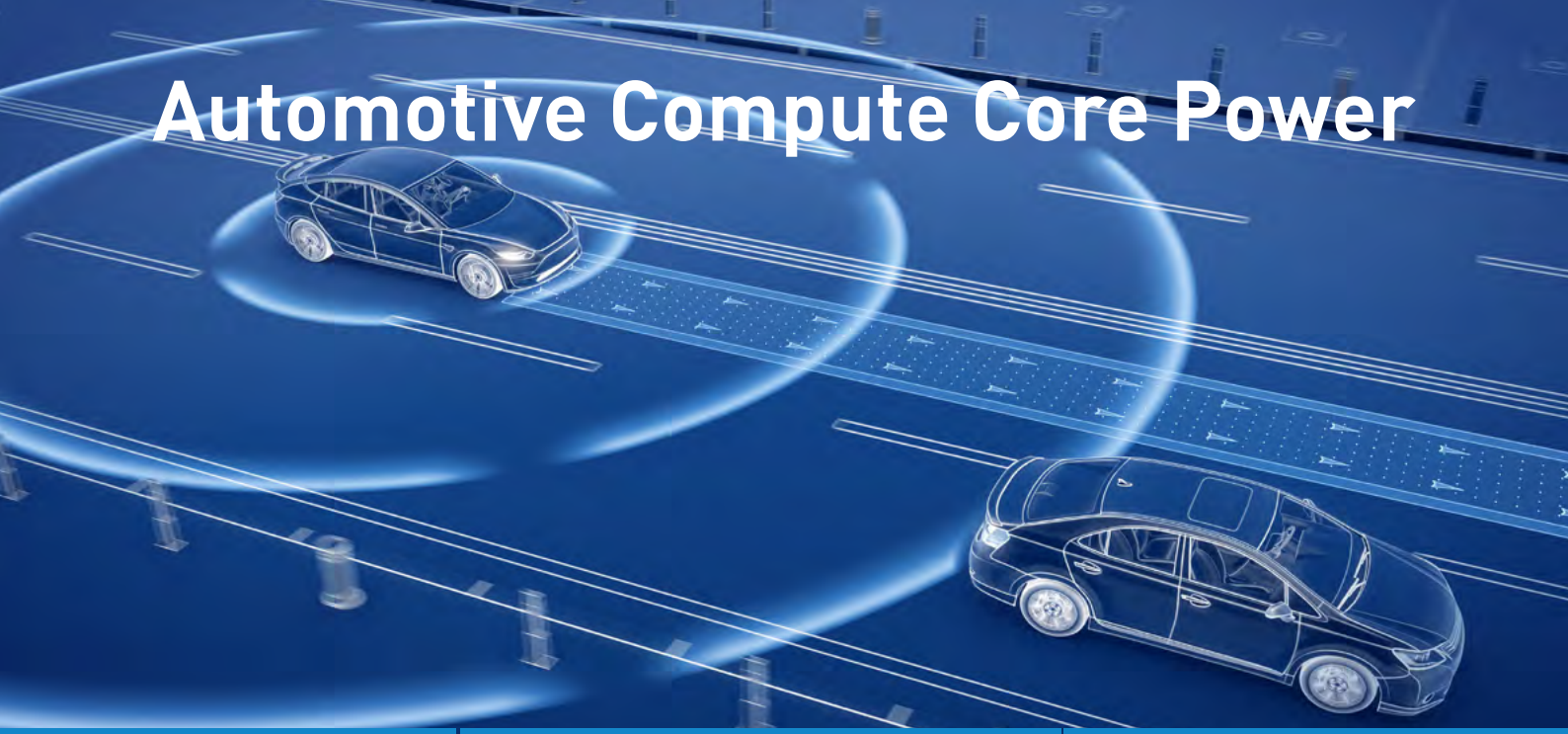
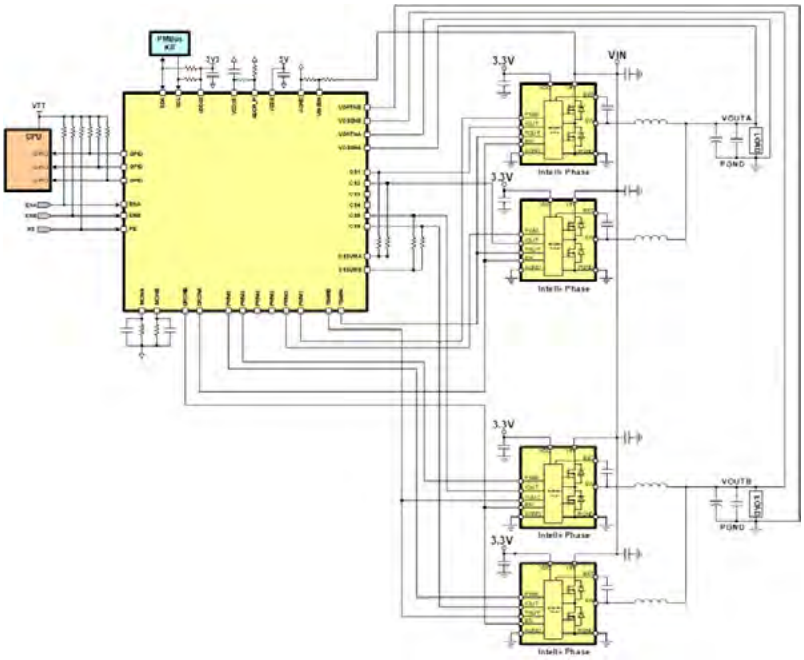
Automotive Compute Core Power



High Efficiency | **Fast Transient Response** | **Compact Solution**

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, programmability, and comprehensive monitoring and protection features to power the most advanced high-performance computing for automotive applications, such as ADAS and infotainment.

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



Features

Digital Control

- Easy compensation
- Fast transient response
- Better current balancing
- Programmability 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-sensing accuracy

Fewer External Components

- Lower cost
- More compact design

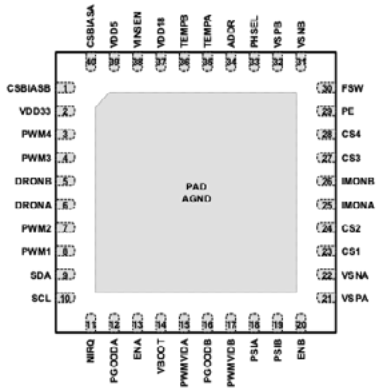
Contact

Contact MPS for more information about the **MPQ29x7** and **MPQ869x0** families, or visit our webpage: monolithicpower.com/en/products/automotive-aecq-grade/multi-phase-controllers-and-intelli-phase.html

Monolithic Power Systems

MPQ2967FS-AEC1 NEW SAMPLING MPSafe™ ASIL-D

2-Rail, 4-Phase Digital Controller



QFN-40 (6mmx6mm), 0.5mm Pitch

Customer Benefits

Proven design for NVIDIA Orin ADAS platform

COT PWM scheme offering fast transient response to reduce C_{OUT}

Digital control for flexibility, optimized tuning, and design cycles

Features

Programming and monitoring

PWM-VID interface compliant

Built-in MTP to store custom configurations

Automatic loop compensation, automatic phase-shedding, and phase-to-phase active current balancing

Input voltage, output voltage, output current, and regulator temperature monitoring

Protections include UVLO, OVP, UVP, OCP, and OTP

Runtime register CRC, and PEC mismatch check

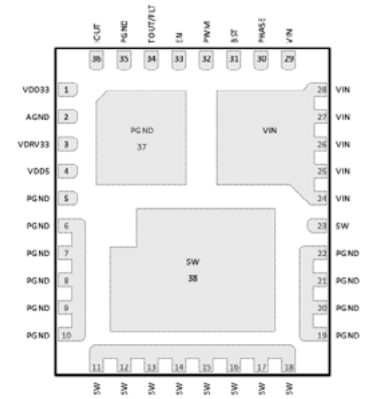
Separate EN for each rail

Applications

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

MPQ86960-AEC1 NEW SAMPLING

50A Intelli-Phase™ DrMOS



LGA (5mmx6mm)

Customer Benefits

Proven design for NVIDIA Orin ADAS platform

Monolithic design offers higher switching frequency to reduce inductor and capacitor size

Optimized process technology for best efficiency to extend EV battery range

Features

Wide 3V to 22V operating input voltage range

5V VDD input

VDRV33 and VDD33 supported by internal LDO

Current-sensing with Accu-Sense™

Temperature-sensing

Accept tri-state 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

Automotive Compute Core Power | Multi-Phase Digital Controllers

Part Number	Control Method	System Interface	Memory Type	# of Rails	# of Phases	V_{CC} (Typ) (V)	f_{SW} (Max) (kHz)	Wettable Flank QFN Option	Package	Notes
N MPQ2977-AEC1	Digital Control	I²C	MTP	2	6	5	1250	✓	TQFN-40 (6x6)	-
N MPQ2967FS-AEC1	Digital Control	I²C	MTP	2	4	5	2000	✓	TQFN-40 (6x6)	MPSafe™ ASIL-D digital controller

Automotive Compute Core Power | Intelli-Phase™ DrMOS

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Load Current (A)	V_{CC} (Typ) (V)	Integrated Current Sense	Integrated Temp Sense	Fault Indicator	Wettable Flank QFN Option	Package
N MPQ86940-AEC1	3	22	40	3.3	✓	✓	✓	✓	QFN-21 (4x5)
N MPQ86960-AEC1	3	22	50	5	✓	✓	✓	-	LGA-38 (5x6)