6A to 30A Intelligent Point-of-Load Step-Down Regulators with PMBus Interface

PRODUCT FAMILY

|	
MxL7630P	30A
MxL7620P	20A
MxL7612P	12A
MxL7606P	6A

PERFORMANCE

- Input Voltage Range — 2.7V to 16V
- Output Voltage Range — 0.5V to 5.5V
- Output Voltage Accuracy — 0.5%
- Output Current Rating — 6A, 12A, 20A, 30A
- Junction Temp Range — −40°C to 125°C

FEATURES

- PMBus 1.3.1 interface up to 1MHz
  - 1.8V with 3.3V compliance
  - SMBALERT# output
- Proprietary fast transient COT control requiring no external compensation
- 400kHz to 2MHz programmable switching frequency
- Selectable FCCM/DCM operation
- 16-bit A/D analog front-end
- High resolution telemetry
- Output overvoltage and overcurrent protection, high-side short protection
- PowerArchitect™ monitoring, control, and configuration software
- 25 MTP write cycles
- Programmable password protection
- VBOOT options:
  - Register programming
  - MTP
  - External voltage
- Compact QFN packaging:
  - 6A: 4mm × 3.5mm
  - 12A: 4mm × 4mm
  - 20A: 4mm × 4.5mm
  - 30A: 4mm × 5.5mm

APPLICATIONS

- Servers
- 5G and wireless backhaul
- Telecom and networking equipment
- Industrial equipment
- FPGA power
- Point-of-Load converters

30A
20A
12A
6A
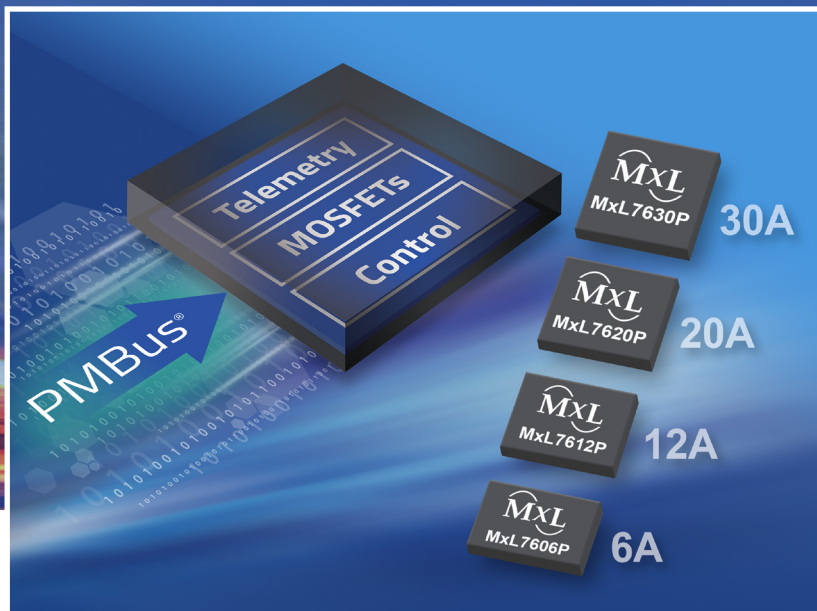
The MxL7606P, MxL7612P, MxL7620P, and MxL7630P (MxL76xxP family) are compact, high-current step-down intelligent point-of-load (iPOL) buck regulators. The MxL76xxP devices feature a PMBus® interface supporting high precision telemetry for IIN, VIN, VOUT, IOUT, PIN, and POUT and dynamic voltage scaling. The MxL76xxP family is rated at 6A, 12A, 20A, and 30A with a wide input voltage range from 2.7V to 16V, which allows for single supply operation from industry standard 3.3V, 5V, and 12V rails.

The MxL76xxP family features a proprietary constant on-time (COT) control scheme to provide extremely fast transient response using ceramic or electrolytic output capacitors. The control loop also provides excellent line and load regulation.

High frequency operation (up to 2MHz) minimizes inductor and output capacitance, which results in the highest possible power density. No external compensation circuitry is required, simplifying circuit implementation and reducing overall component count. A selectable power saving mode allows you to operate in discontinuous mode (DCM) at light current loads, thereby significantly increasing the converter efficiency.

A host of protection features, including overcurrent, output overvoltage, over temperature, short-circuit, high-side short, and undervoltage lockout (UVLO) help achieve safe operation under abnormal operating conditions.

Power Management

Power modules, point-of-load regulators, system controls, LED lighting and universal PMIC solutions simplify power and system architecture in a wide variety of end markets

MxL76xxP PMBus® Compatible PoLs

Part Number	IOUT (A)	VIN Range (V)	VOUT Range (V)	Frequency (MHz)	Accuracy (%)	Package (mm)	Interface and GPIOs
MxL7606P-AQF-R	6	3 to 16	0.5 to 5.5	0.6 to 2	0.5	5 × 3.5 QFN	PMBus 1.3.1 SMBALERT# CAT_FLT#
MxL7612P-AQF-R	12			0.6 to 2		5 × 4 QFN	
MxL7620P-AQF-R	20			0.4 to 1.2		5 × 4.5 QFN	
MxL7630P-AQF-R	30			0.4 to 1.2		5 × 5.5 QFN	

PowerArchitect™ for MxL76xxP Intelligent PoL Configuration Tool
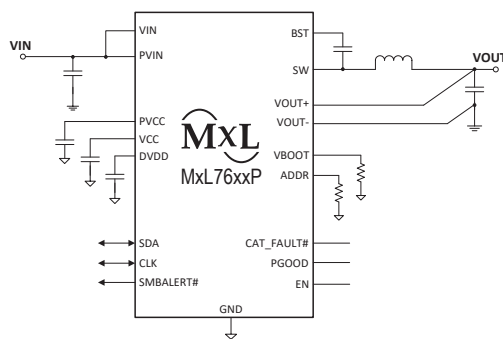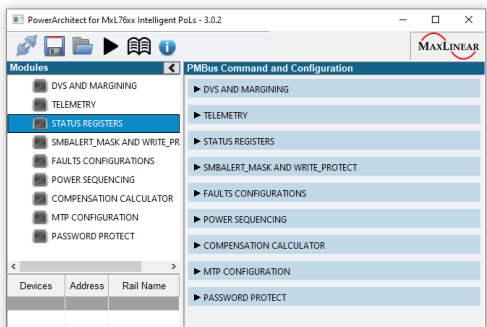
Typical Schematic
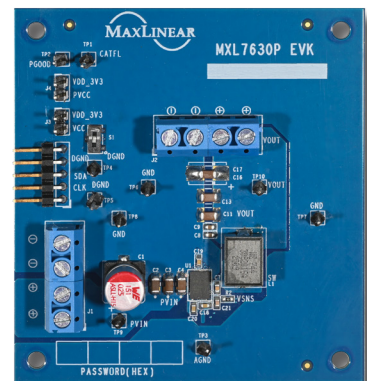
MxL7630P
Evaluation Board

Interactive GUI to:

- Monitor telemetry and status bits
- Dynamically control output voltage
- Optimize control loop parameters
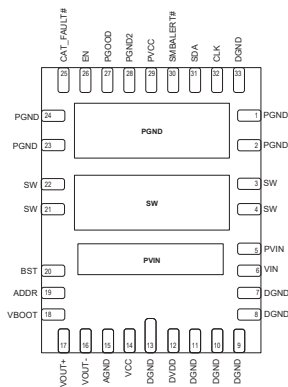- Program initial boot parameters through the PMBus interface
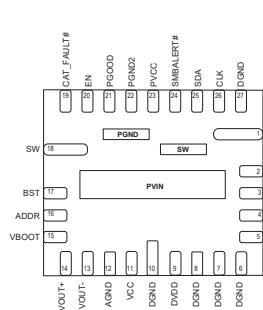
MxL7606P: 6A, 4mm × 3.5mm
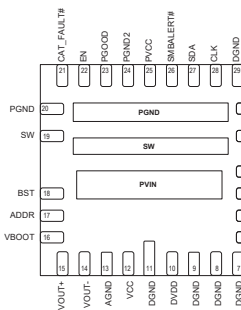
MxL7612P: 12A, 4mm × 4mm
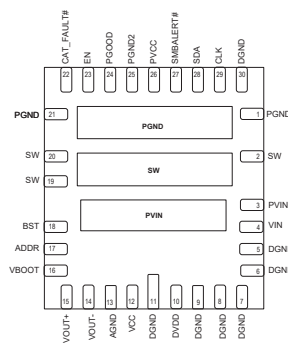
MxL7620P: 20A, 4mm × 4.5mm

MxL7630P: 30A, 4mm × 5.5mm

MxL76xxP Pinouts (Bottom View)

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