MP28258

High Efficiency, Fast Transient, 3A, 4.2V-20V Input Synchronous Step-down Converter in QFN12 (2x3mm)

The Future of Analog IC Technology

DESCRIPTION

The MP28258 is a fully-integrated, high-efficiency, synchronous, step-down, switch mode converter. It offers a very compact solution that can achieve a 3A continuous output current over a wide input supply range with excellent load and line regulation, and can operate at high efficiency over a wide output-current load range.

Constant-On-Time (COT) control mode provides fast transient response and eases loop stabilization.

Full protection features include SCP, OCP, OVP, UVP and, thermal shut down.

The MP28258 requires a minimal number of readily-available standard external components.

This device is available in a space saving 2mmx3mm 12-pin QFN package.

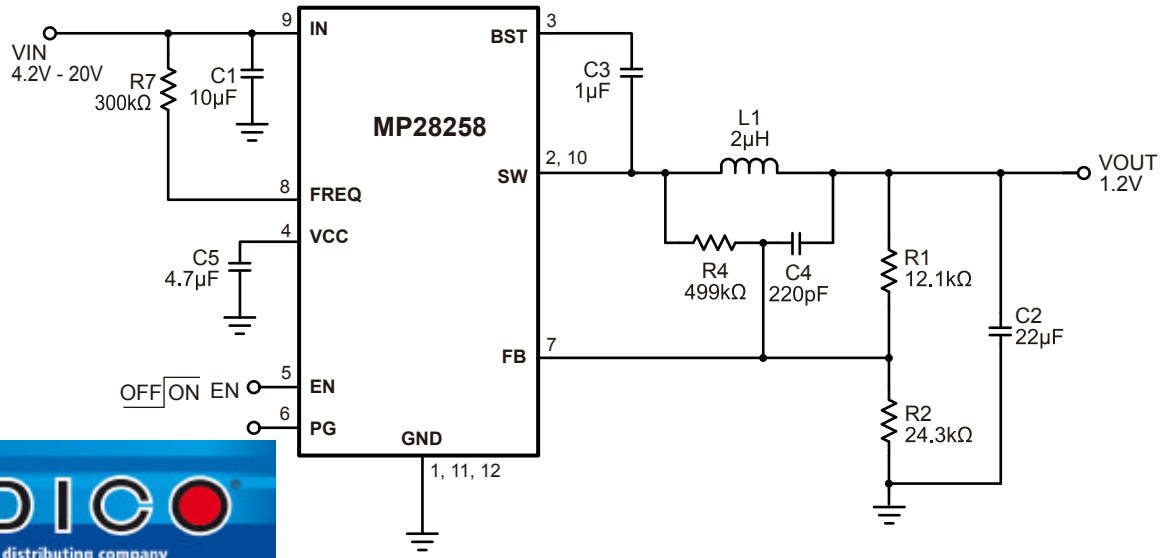
FEATURES

- Wide 4.2V to 20V Operating Input Range
- 3A Output Current
- Low R_{DS}(ON) Internal Power Mosfets
- Proprietary Switching Loss Reduction Technique
- Power-Good Indicator in QFN Package
- Soft Startup/Shutdown
- Programmable Switching Frequency
- SCP, OCP, UVP Protection and Thermal Shutdown
- Optional OCP Protection: Latch-Off Mode and Hiccup Mode.
- Output Adjustable From 0.815V To 13V
- Available in a QFN12 (2x3mm) Package

APPLICATIONS

- Networking Systems
- Distributed Power Systems

TYPICAL APPLICATION



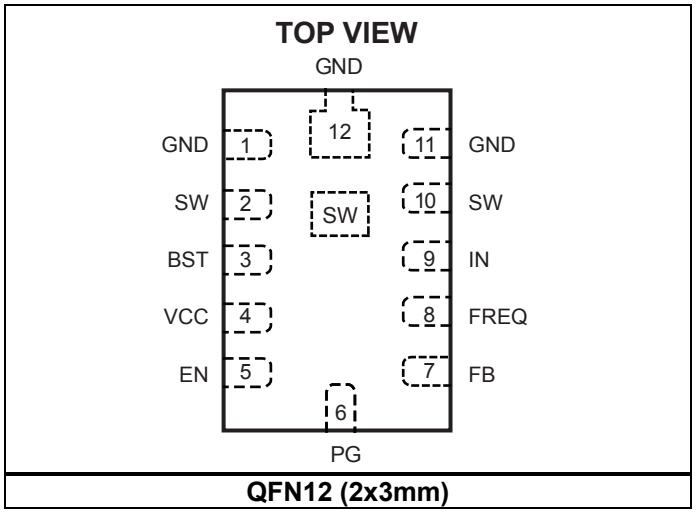
ORDERING INFORMATION

Part Number	OCP Protection	Package	Top Marking	Free Air Temperature (T_A)
MP28258DD*	Latch-off mode	QFN12 (2x3mm)	AAA	-40°C to 85°C
MP28258DD-A	Hiccup mode	QFN12 (2x3mm)	ACF	-40°C to 85°C

* For Tape & Reel, add suffix –Z (e.g. MP28258DD–Z).

For RoHS Compliant Packaging, add suffix –LF (e.g. MP28258DD–LF–Z)

PACKAGE REFERENCE



QFN12 (2x3mm)

ABSOLUTE MAXIMUM RATINGS (1)

Supply Voltage V_{IN} 22V
V_{SW} ..... -0.3V to (V_{IN} + 0.3V)
V_{BST} ..... V_{SW} + 6V
$I_{VIN\ (RMS)}$ 3.5A
All Other Pins .....-0.3V to +6V
Continuous Power Dissipation (T_A = 25°C) (2)
QFN12 (2X3mm)..... 1.8W
Junction Temperature .....150°C
Lead Temperature .....260°C
Storage Temperature..... -65°C to +150°C

Recommended Operating Conditions (3)

Supply Voltage V_{IN} .....4.2V to 20V
Output Voltage V_{OUT}.....0.815V to 13V
Maximum Junction Temp. (T_J).....125°C

Thermal Resistance (4) θ_{JA} θ_{JC}

QFN12 (2mmx3mm)..... 70 ..... 15... °C/W

Notes:

1) Exceeding these ratings may damage the device.
2) The maximum allowable power dissipation is a function of the maximum junction temperature T_J (MAX), the junction-to-ambient thermal resistance θ_{JA}, and the ambient temperature T_A. The maximum allowable continuous power dissipation at any ambient temperature is calculated by P_D (MAX) = (T_J (MAX)-T_A)/θ_{JA}. Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.
3) The device is not guaranteed to function outside of its operating conditions.
4) Measured on JESD51-7, 4-layer PCB.

MP28259

High Efficiency, Fast Transient, 2A, 4.2V-20V Input Synchronous Step-down Converter in QFN12 (2x3mm)

The Future of Analog IC Technology

DESCRIPTION

The MP28259 is a fully-integrated synchronous, rectified, step-down switch mode converter with programmable frequency. It offers a very compact solution that can achieve a 2A continuous output current over a wide input supply range with excellent load and line regulation, and can operate at high efficiency over a wide output current load range.

Constant-On-Time (COT) control mode provides fast transient response and eases loop stabilization.

Full protection features include SCP, OCP, OVP, UVP, and thermal shut down.

The MP28259 requires a minimal number of readily-available standard external components.

The device is available in a space saving 2mmx3mm 12-pin QFN package.

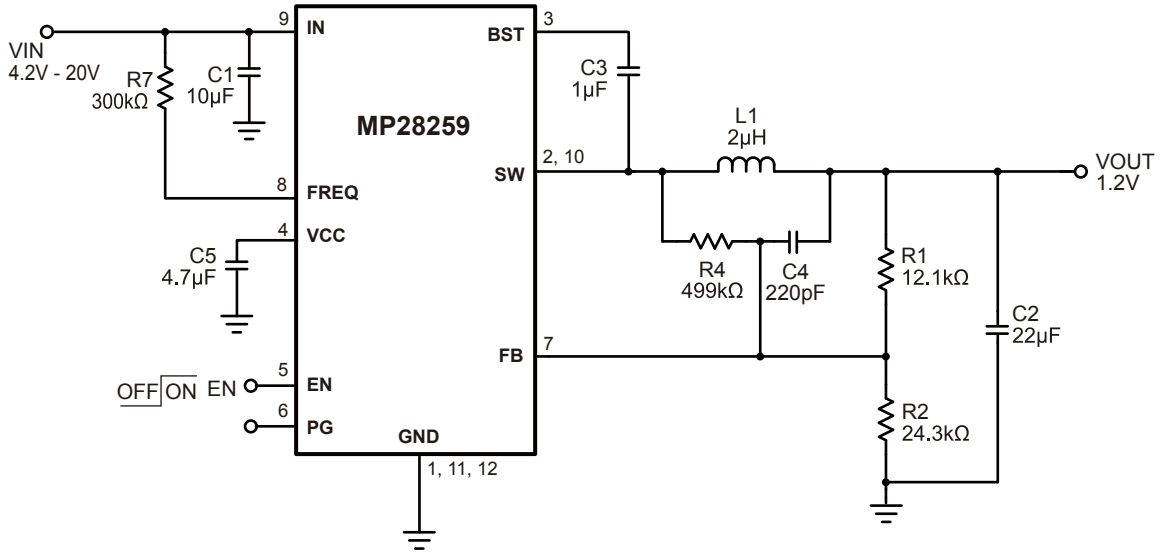
FEATURES

- Wide 4.2V to 20V Operating Input Range
- 2A Output Current
- Low R_{DS}(ON) Internal Power MOSFETs
- Proprietary Switching Loss Reduction Technique
- Power-Good Indicator in QFN Package
- Soft Shutdown
- Programmable Switching Frequency
- OCP, SCP, OVP, UVP Protection and Thermal Shutdown
- Optional OCP Protection: Latch-Off Mode and Hiccup Mode
- Output Adjustable from 0.815V to 13V
- Available in a QFN12 (2mmx3mm) Package

APPLICATIONS

- Networking Systems
- Distributed Power Systems

TYPICAL APPLICATION

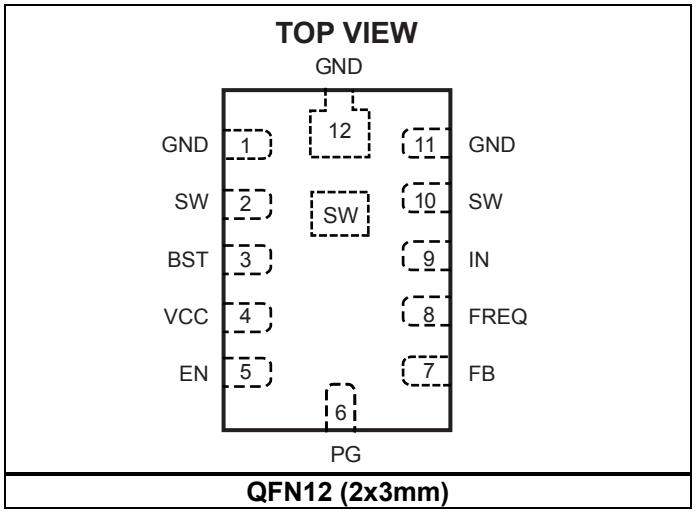


ORDERING INFORMATION

Part Number*	OCP Protection	Package	Top Marking	Free Air Temperature (T_A)
MP28259DD	Latch-off mode	QFN12 (2x3mm)	AAT	-40°C to 85°C
MP28259DD-A	Hiccup mode	QFN12 (2x3mm)	TBD	-40°C to 85°C

* For Tape & Reel, add suffix –Z (e.g. MP28259DD–Z).
For RoHS Compliant Packaging, add suffix –LF (e.g. MP28259DD–LF–Z)

PACKAGE REFERENCE



QFN12 (2x3mm)

ABSOLUTE MAXIMUM RATINGS (1)

Supply Voltage V_{IN} 22V
V_{SW} ..... -0.3V to (V_{IN} + 0.3V)
V_{BST} ..... V_{SW} + 6V
All Other Pins ..... -0.3V to +6V
Continuous Power Dissipation (T_A = 25°C) (2)
QFN12 (2x3mm) 1.8W
Junction Temperature ..... 150°C
Lead Temperature ..... 260°C
Storage Temperature ..... -65°C to +150°C

Recommended Operating Conditions (3)

Supply Voltage V_{IN} ..... 4.2V to 20V
Output Voltage V_{OUT} ..... 0.815V to 13V
Maximum Junction Temp. (T_J) ..... 125°C

Thermal Resistance (4)

	θ_{JA}	θ_{JC}	
QFN12 (2x3mm)	70	15	°C/W

Notes:

1) Exceeding these ratings may damage the device.
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3) The device is not guaranteed to function outside of its operating conditions.
4) Measured on JESD51-7, 4-layer PCB.