

Cyntec Power Module Solutions for FPGA

MSN12AD20-MQ

Cyntec Co., Ltd.



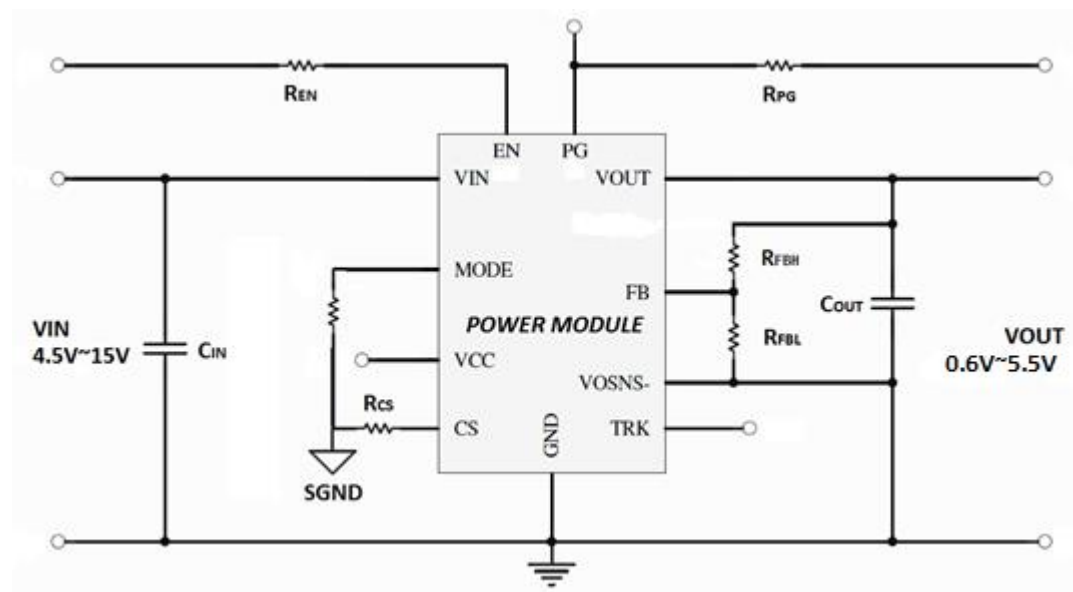
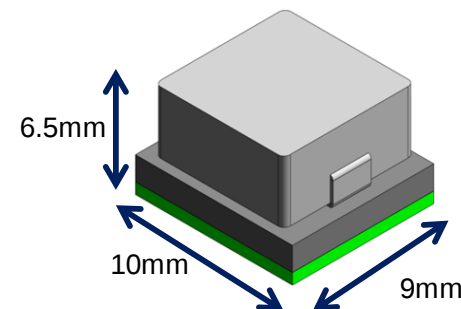
MSN12AD20-MQ FEATURE & APPLICATION

FEATURES:

- High Power Density Power Module
- Input Voltage Range from 4.5V to 15V
- Output Voltage Range from 0.6V to 5.5V
- Max. Load: 18A for 0.6V ~ 2.5V
- Max. Load: 15A above 2.5V ~ 5.5V
- 96% Peak Efficiency at 12Vin to 5Vout
- Protections (Non-Latch OCP, UVP, UVLO, OTP and Latch-Off for OVP)
- Differential Output Voltage Remote Sense
- Programmable Soft-Start
- Pre-Biased Output
- Forced CCM Operation
- Power Good Indication
- Output Voltage Tracking
- Size 10.0mm x 9.0mm x 6.5mm
- Pb-free (RoHS compliant)
- MSL 3, 245°C Reflow

APPLICATIONS:

- General Buck DC/DC Conversion
- DC Distributed Power System
- Telecom and Networking Equipments
- Servers System

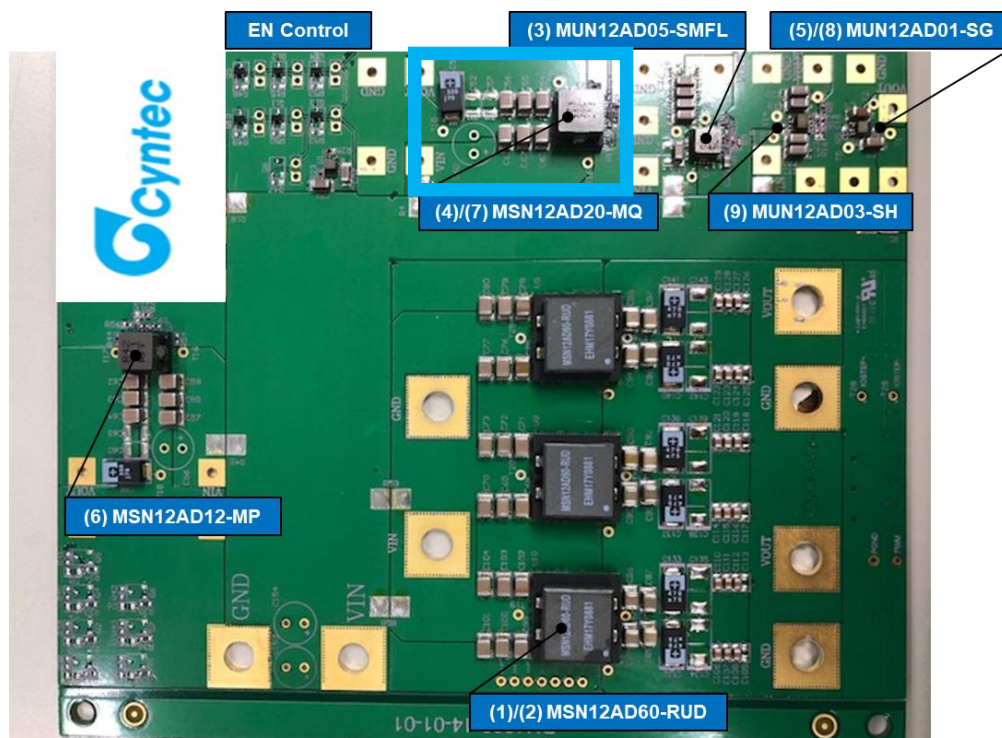


MSN12AD20-MQ for Xilinx XCVU13P

Specifications

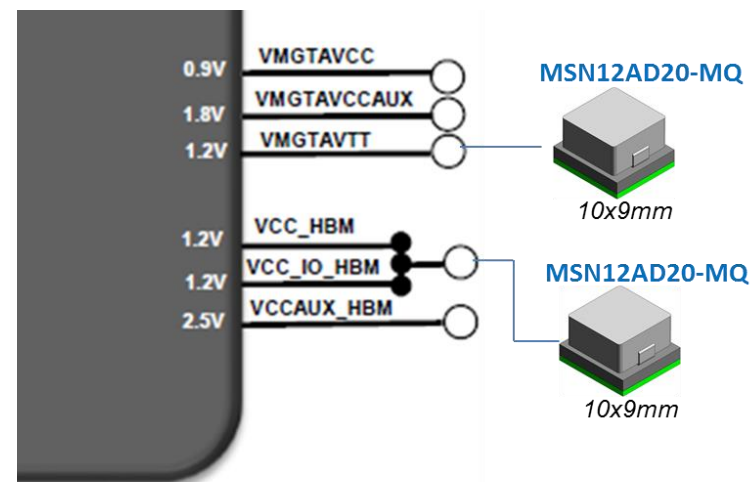
VMGTAVTT

- 1.2V, current 2~17A,
- $<10\text{mV}_{\text{pk-pk}}$ from 10kHz to 80MHz (UG578)
- Transient response: $\pm 3\%$, 25% step, 10A/us



Delta/Cyntec Confidential

160mm



Cyntec

"Making Things Smaller and Better"

MSN12AD20-MQ for Xilinx XCVU13P

Efficiency

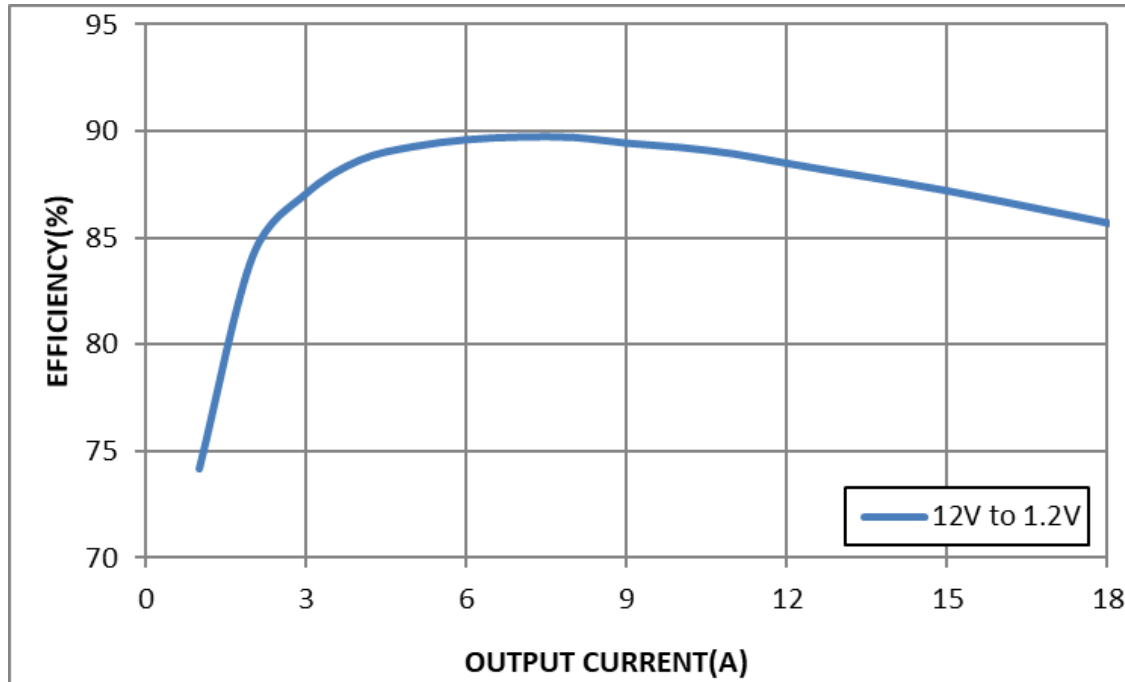
Test Condition

VIN=12V VOUT=1.2V IOUT=18A

Module: Cyntec MSN12AD20-MQ

Input Capacitor: 22uF x 2pcs

Output Capacitor: MLCC 47uF * 3pcs + SPCAP 470uF / 2.5V / ESR = 3mΩ



VOUT=1.2V Pk-Pk Efficiency= 89.7% for IOUT=7A

MSN12AD20-MQ for Xilinx XCVU13P Ripple

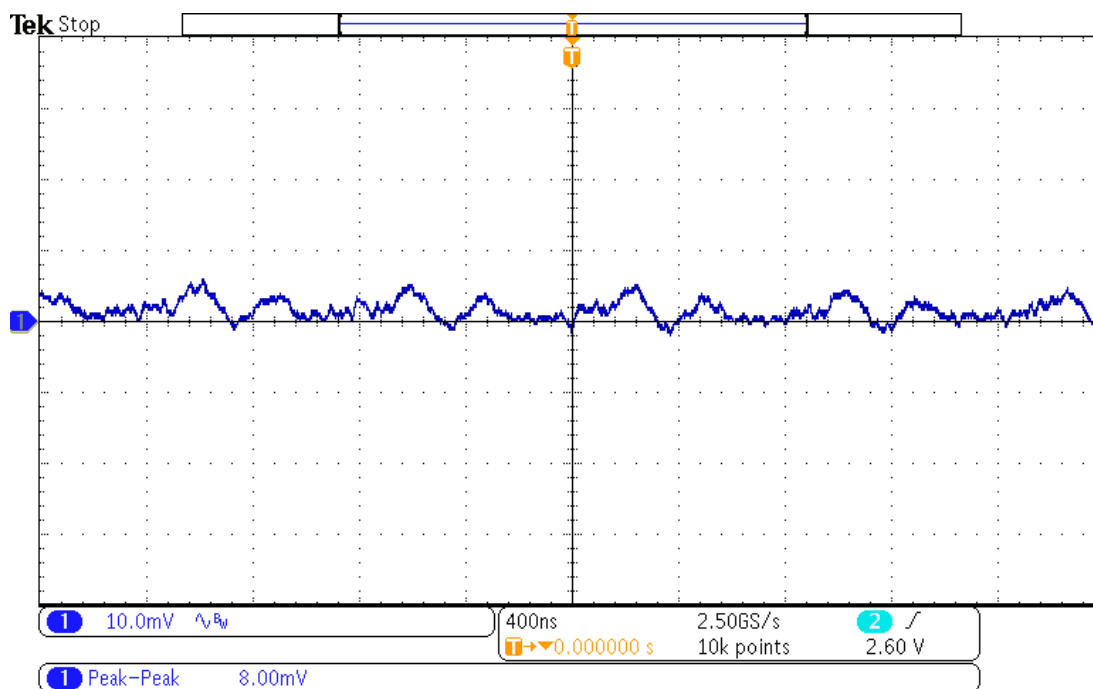
Test Condition

VIN=12V VOUT=1.2V IOUT=18A

Module: Cyntec MSN12AD20-MQ

Input Capacitor: 22uF x 2pcs

Output Capacitor: MLCC 47uF * 3pcs + SPCAP 470uF / 2.5V / ESR = 3mΩ



VOUT=1.2V Pk-Pk 8mV for IOUT=18A

MSN12AD20-MQ for Xilinx XCVU13P

Transient

Test Condition

VIN=12V VOUT=1.2V IOUT=18A

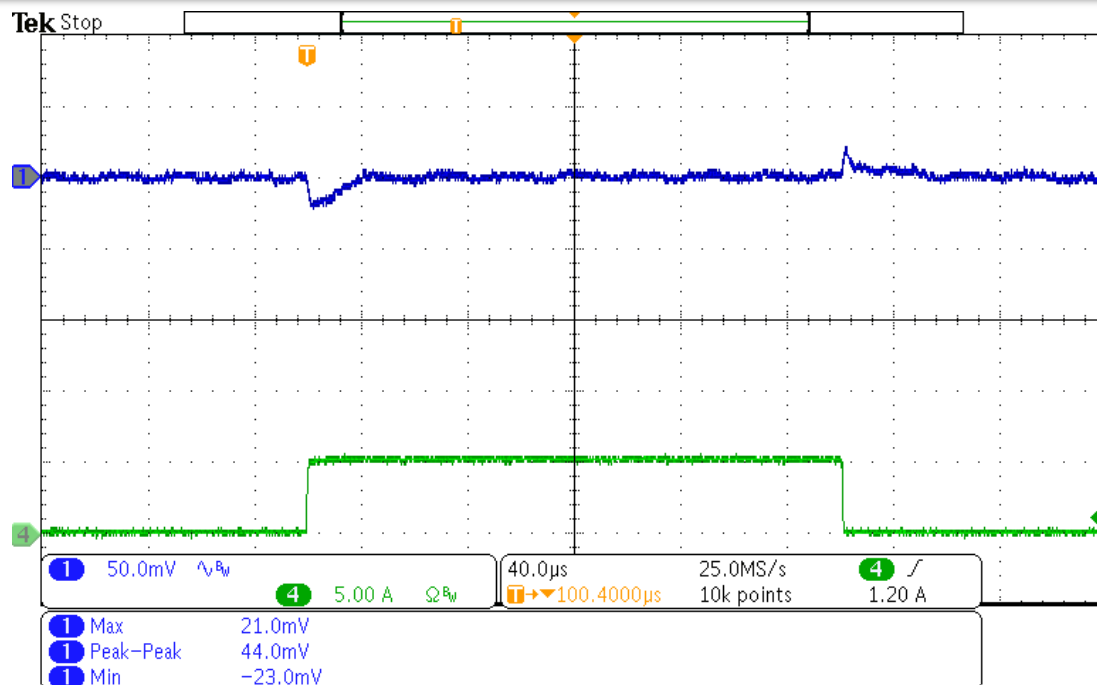
Module: Cyntec MSN12AD20-MQ

CFB = 3.3nF

Input Capacitor: 22uF x 2pcs

Output Capacitor: MLCC 47uF * 3pcs + SPCAP 470uF / 2.5V / ESR = 3mΩ

Transient < ± 3%, Io=0A~5A, 10A/us



VOUT=1.2V Pk-Pk Transient = 44mV for IOUT=0~5A

MSN12AD20-MQ for Xilinx XCVU13P

Thermal

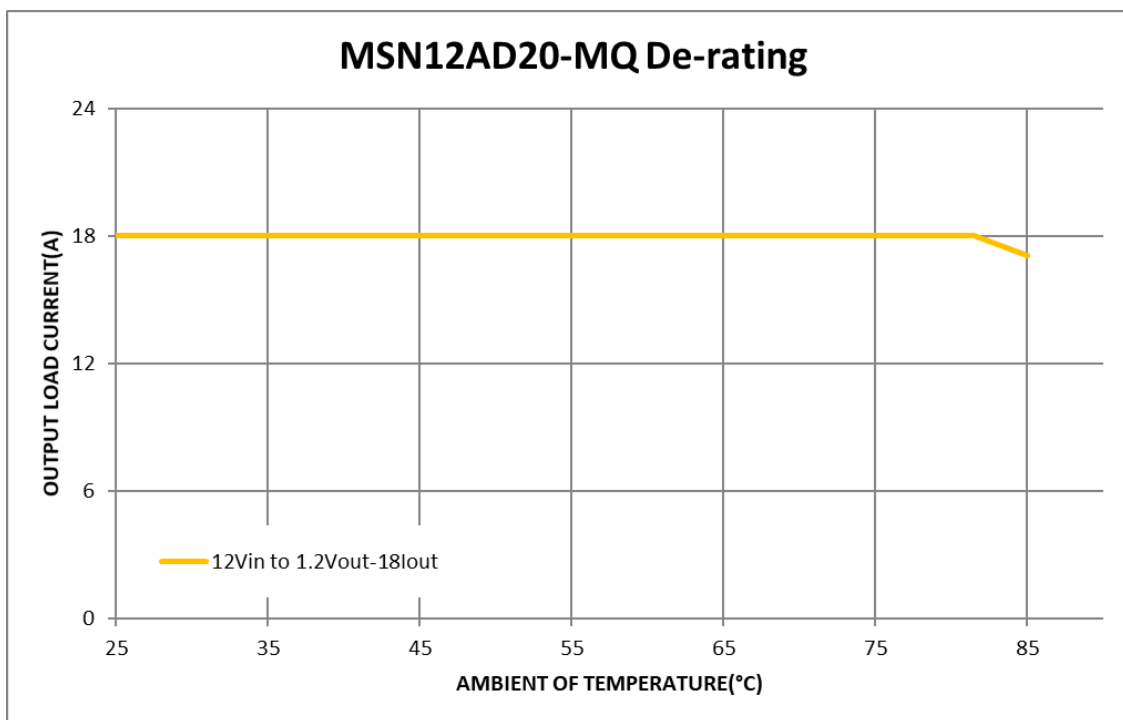
Test Condition

VIN=12V VOUT=1.2V IOUT=18A

Module: Cyntec MSN12AD20-MQ

Input Capacitor: 22uF x 2pcs

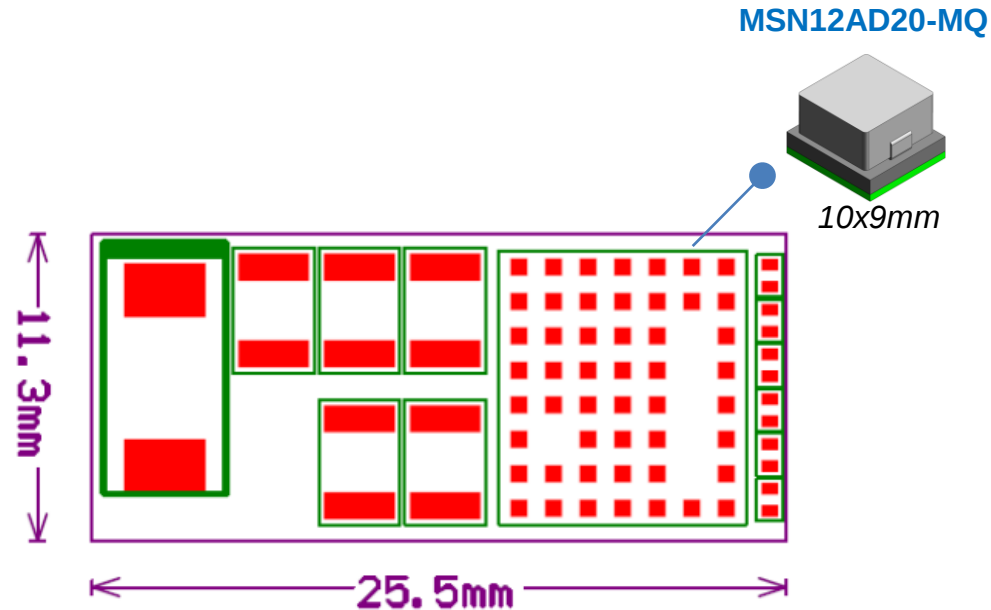
Output Capacitor: MLCC 47uF * 3pcs + SPCAP 470uF / 2.5V / ESR = 3mΩ



0 LFM 81.5°C De-rating

Layout Example of the 18A module

(Layout is for reference only --- single-sided SMT. Further optimization is possible in terms of output characteristics and actual application environment)



Remarks

- Input capacitance: 22uF x 2pcs
- Output capacitance: MLCC 47uF * 3pcs + SPCAP 470uF / 2.5V / ESR = 3mΩ
- Arrangement could be optimized based on output transient requirements