



Features

- Industry standard SMT package
- Output voltage programmable from 0.75 Vdc to 5.5 Vdc via external resistor
- 3 A output current
- Up to 95 % efficiency
- Small size, low profile
- Cost-efficient
- Low output ripple and noise
- High reliability
- Remote on/off
- Output overcurrent protection (non-latching)

MX3A-12SA(-P) SMT Non-Isolated Power Module

Description

Bourns® MX3A-12SA(-P) is a non-isolated DC-DC converter offering designers a cost and space-efficient solution with standard features such as remote on/off, precisely regulated programmable output voltage and overcurrent protection.

Specifications

Parameter	Min.	Nom.	Max.	Units	Notes
INPUT					
Voltage	8.3	12	14	V _{dc}	18 V max. for -W version
Current			2.0	A _{dc}	
Remote ON/OFF:	<u>Standard</u>		<u>-P Option</u>		
Low or Open =	On	Off	0.4	V _{dc}	10 µA max.
High =	Off	On	V _{in}	V _{dc}	1 mA max.
OUTPUT					
Voltage Adjustment Range	0.75		5.5	V _{dc}	
Current	0.0		3.0	A _{dc}	
Voltage Setpoint Accuracy	-2.5		2.5	% V _{o,set}	
Line Regulation		0.3		% V _{o,set}	
Load Regulation		0.4		% V _{o,set}	
Temperature Regulation		0.4		% V _{o,set}	0 to +85 °C
Ripple (pk-pk) (20 MHz Bandwidth)		30	50	mVpk-pk	1 µF ceramic//10 µF tantalum capacitors
Ripple (rms)		10	15	mVrms	1 µF ceramic//10 µF tantalum capacitors
Dynamic Load Response:					
50 % to 100 % Load or 100 % to 50 % Load; (Δi/Δt = 2.5 A/µs; 25 °C)		200 25		mV µs	1 µF ceramic//10 µF tantalum capacitors
50 % to 100 % Load or 100 % to 50 % Load; (Δi/Δt = 2.5 A/µs; 25 °C)		75 100		mV µs	2 x 100 µF polymer capacitors
GENERAL					
MTBF		13,000		kHrs	
Operating Temperature	-40		+85	°C	
Storage Temperature	-55		+125	°C	
Switching Frequency		300		kHz	
Efficiency		86.0		%	V _{o,set} = 1.2 V _{dc}
(V _{in} = 12 Vdc, T _A = 25 °C, Full Load)		88.0		%	V _{o,set} = 1.5 V _{dc}
		90.0		%	V _{o,set} = 1.8 V _{dc}
		91.0		%	V _{o,set} = 2.5 V _{dc}
		93.0		%	V _{o,set} = 3.3 V _{dc}
		95.0		%	V _{o,set} = 5.0 V _{dc}

Applications

- Intermediate Bus architecture
- Distributed power applications
- Workstations and servers
- Telecom equipment
- Enterprise networks including LANs/WANs
- Latest generation ICs (DSP, FPGA, ASIC) and microprocessor powered applications

Output Voltage Programming

Via external trim resistor between Trim and GND:

$$R_{\text{trim}} = \left[\frac{10.5}{V_o - 0.7525} - 1.0 \right] \text{ k}\Omega$$

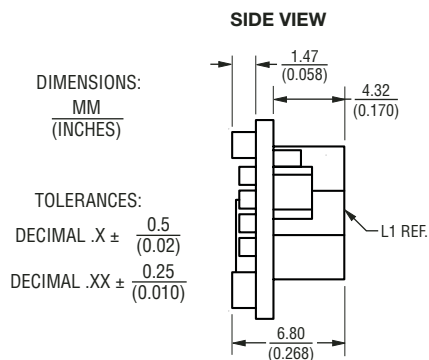
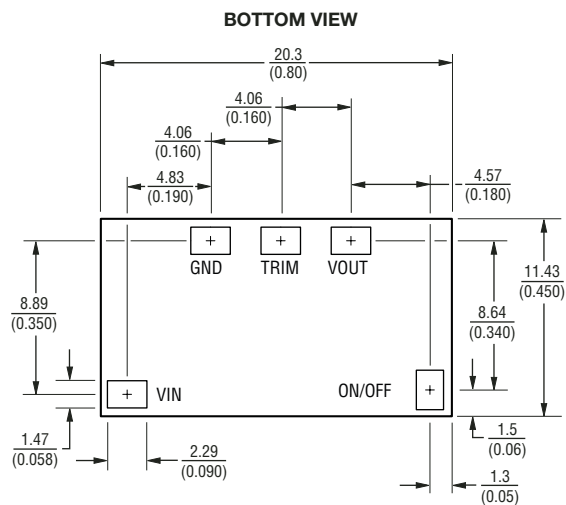
Via application of external voltage between Trim and GND:

$$V_{\text{trim}} = (0.7 - 0.0667 \times \{V_o - 0.7525\})$$

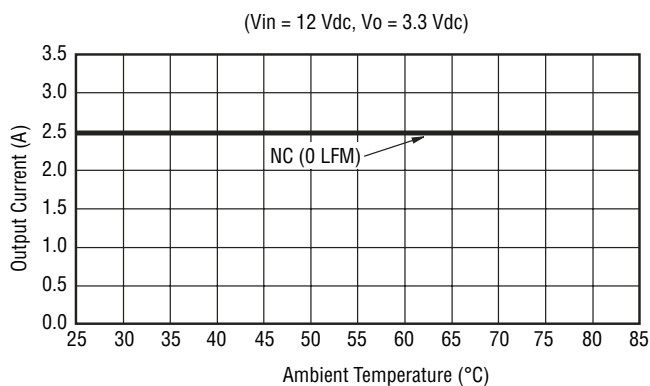
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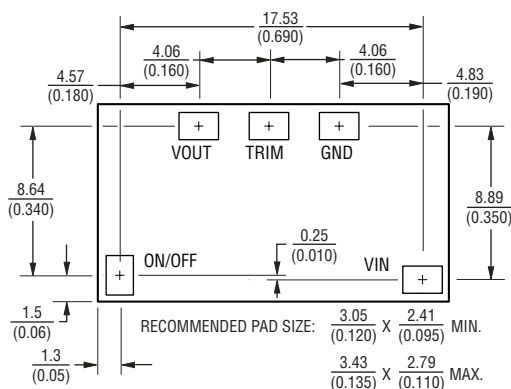
Product Dimensions



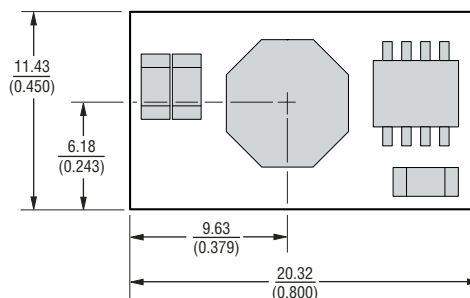
Derating Output Current vs. Local Ambient Temp & Airflow



Recommended Pad Layout



Pick and Place Location



How to Order

M X 3 A - 12 S A (-P)

- Configuration
 - M = Surface Mount Device
 - Internal Identifier
 - Output Current (Amps)
 - Input Voltage (V)
 - Outputs
 - S = Single
 - Output Voltage (V)
 - A = Adjustable
 - Optional Positive On/Off Logic
- Fixed output voltage parts and optional features available; contact factory.



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REV. A 06/06
 Specifications are subject to change without notice.
 Customers should verify device performance in their specific applications.