

Features

- Industry standard SMT package
- Output voltage programmable from 0.75 Vdc to 5.5 Vdc via external resistor
- 5 A output current
- Up to 92 % efficiency
- Small size, low profile
- Cost-efficient
- Low output ripple and noise
- High reliability
- Remote on/off
- Output overcurrent protection (non-latching)

MX5A-12SA SMT Non-Isolated Power Module

Description

Bourns® MX5A-12SA 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	10	12	14	V _{dc}	
Current			3.5	A _{dc}	
Remote ON/OFF: Low or Open = On High = Off	2.4		0.4 V _{in}	V _{dc} V _{dc}	10 µA max. 1 mA max.
OUTPUT					
Voltage Adjustment Range	0.75		5.5	V _{dc}	
Current	0.0		5.0	A _{dc}	
Voltage Setpoint Accuracy	-2.0		2.0	% 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)		50	75	mVpk-pk	1 µF ceramic//10 µF tantalum capacitors
Ripple (rms)		15	30	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)		50 50		mV µs	2 x 150 µF polymer capacitors
GENERAL					
MTBF		10,000		kHrs	
Operating Temperature	-40		+85	°C	
Storage Temperature	-55		+125	°C	
Switching Frequency		300		kHz	
Efficiency (V _{in} = 12 Vdc, T _A = 25 °C, Full Load)		81.5		%	V _{o,set} = 1.2 V _{dc}
		84.0		%	V _{o,set} = 1.5 V _{dc}
		85.0		%	V _{o,set} = 1.8 V _{dc}
		87.0		%	V _{o,set} = 2.5 V _{dc}
		89.0		%	V _{o,set} = 3.3 V _{dc}
		92.0		%	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:

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

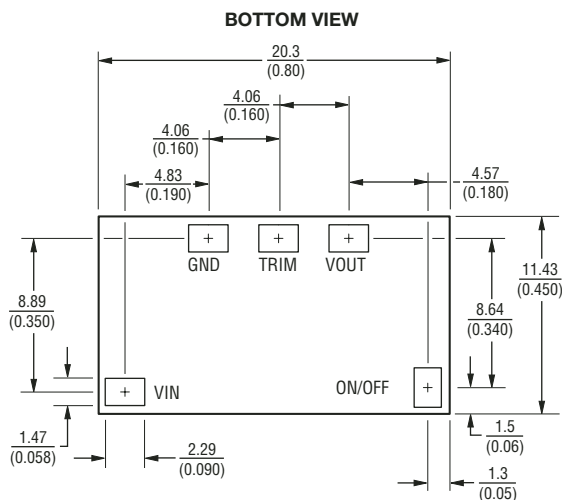
Via application of external voltage between Trim and GND:

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

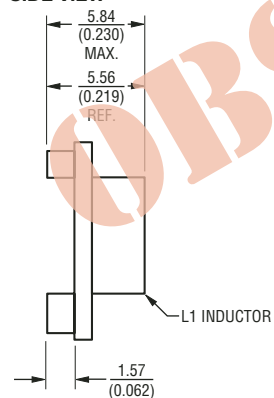
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BOURNS®

Product Dimensions



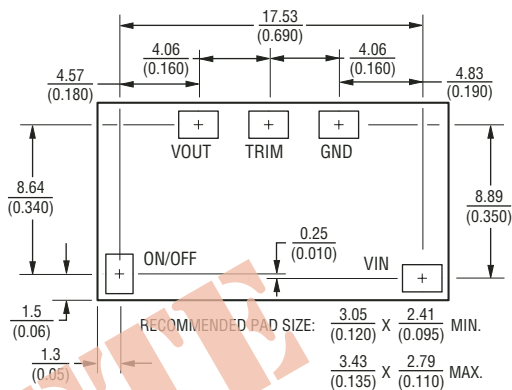
SIDE VIEW



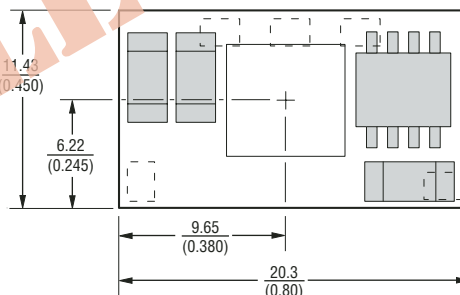
DIMENSIONS:
MM
(INCHES)

TOLERANCES:
DECIMAL .X ± 0.5
(0.02)
DECIMAL .XX ± 0.25
(0.010)

Recommended Pad Layout



Pick and Place Location



How to Order

MX5A - 12SA

Configuration _____

- M = Surface Mount Device

Internal Identifier _____

Output Current (Amps) _____

Input Voltage (V) _____

Outputs _____

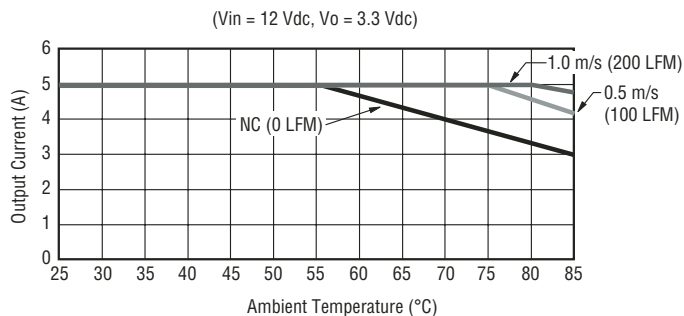
- S = Single

Output Voltage (V) _____

- A = Adjustable

Fixed output voltage parts and optional features available; contact factory.

Derating Output Current vs. Local Ambient Temp & Airflow



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