### Features
- Industry standard SMT package
- Output voltage programmable from 0.75 Vdc to 5.5 Vdc via external resistor
- 16 A output current
- Up to 94% efficiency
- Small size, low profile
- Cost-efficient
- Low output ripple and noise
- High reliability
- Remote on/off
- Output overcurrent protection (non-latching)
- Optional sequencing function

### Description
Bourns® MX(T)16A-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 and optional output voltage sequencing.

### Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min.</th>
<th>Nom.</th>
<th>Max.</th>
<th>Units</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INPUT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>8.3</td>
<td>12</td>
<td>14</td>
<td>Vdc</td>
<td></td>
</tr>
<tr>
<td>Remote: ON/OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Standard or -P option</td>
</tr>
<tr>
<td>Low or Open =</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>On or Off</td>
</tr>
<tr>
<td>High =</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Off or On</td>
</tr>
<tr>
<td>Voltage Setpoint Accuracy</td>
<td>0.2</td>
<td>2.0</td>
<td>% V&lt;sub&gt;o, set&lt;/sub&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line Regulation</td>
<td>0.3</td>
<td>% V&lt;sub&gt;o, set&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load Regulation</td>
<td>0.4</td>
<td>% V&lt;sub&gt;o, set&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature Regulation</td>
<td>0.4</td>
<td>% V&lt;sub&gt;o, set&lt;/sub&gt;</td>
<td>0 to +85 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ripple (pk-pk) (20 MHz Bandwidth)</td>
<td>30</td>
<td>75</td>
<td>mVpk-pk</td>
<td>1 µF ceramic/10 µF tantalum capacitors</td>
<td></td>
</tr>
<tr>
<td>Ripple (rms)</td>
<td>12</td>
<td>30</td>
<td>mVrms</td>
<td>1 µF ceramic/10 µF tantalum capacitors</td>
<td></td>
</tr>
<tr>
<td>Dynamic Load Response:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 % to 100 % Load or 100 % to 50 % Load; (ΔI/Δt = 2.5 A/µs; 25 °C)</td>
<td>200</td>
<td>25</td>
<td>mV/µs</td>
<td>1 µF ceramic/10 µF tantalum capacitors</td>
<td></td>
</tr>
<tr>
<td>50 % to 100 % Load or 100 % to 50 % Load; (ΔI/Δt = 2.5 A/µs; 25 °C)</td>
<td>100</td>
<td>50</td>
<td>mV/µs</td>
<td>2 x 150 µF polymer capacitors</td>
<td></td>
</tr>
<tr>
<td><strong>GENERAL</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTBF</td>
<td>10,000</td>
<td></td>
<td></td>
<td>kHrs</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40</td>
<td></td>
<td>+85</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55</td>
<td></td>
<td>+125</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>Switching Frequency</td>
<td>300</td>
<td></td>
<td></td>
<td>kHz</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
<td></td>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>(Vin = 12 Vdc, TA= 25 °C, Full Load)</td>
<td>85.0</td>
<td>%</td>
<td></td>
<td></td>
<td>V&lt;sub&gt;o, set&lt;/sub&gt; = 1.2 V&lt;sub&gt;dc&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>87.0</td>
<td>%</td>
<td></td>
<td></td>
<td>V&lt;sub&gt;o, set&lt;/sub&gt; = 1.5 V&lt;sub&gt;dc&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>88.0</td>
<td>%</td>
<td></td>
<td></td>
<td>V&lt;sub&gt;o, set&lt;/sub&gt; = 1.8 V&lt;sub&gt;dc&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>90.5</td>
<td>%</td>
<td></td>
<td></td>
<td>V&lt;sub&gt;o, set&lt;/sub&gt; = 2.5 V&lt;sub&gt;dc&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>92.0</td>
<td>%</td>
<td></td>
<td></td>
<td>V&lt;sub&gt;o, set&lt;/sub&gt; = 3.3 V&lt;sub&gt;dc&lt;/sub&gt;</td>
</tr>
<tr>
<td></td>
<td>94.0</td>
<td>%</td>
<td></td>
<td></td>
<td>V&lt;sub&gt;o, set&lt;/sub&gt; = 5.0 V&lt;sub&gt;dc&lt;/sub&gt;</td>
</tr>
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</table>

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

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

MX(T)16A-12SA SMT Non-Isolated Power Module

Product Dimensions

**BOTTOM VIEW**

- **3.05 (0.120)**
- **4.83 (0.190)** 4 PLCS.
- **7.54 (0.297)**
- **10.29 (0.405)**
- **10.92 (0.430)**
- **1.22 (0.048)**
- **2.84 (0.112)**
- **1.57 (0.062)**
- **L1 (REF.)**
- **33.0 (1.30)**
- **SENSE**
- **ON/OFF**
- **TRIM**
- **VOUT**
- **GND**
- **SEQ**

**SIDE VIEW**

- **7.54 (0.297)** MAX.
- **7.06 (0.276)**
- **1.91 (0.075)**
- **1.22 (0.048)**
- **6.73 (0.267)**
- **29.90 (1.177)**
- **13.5 (0.53)**
- **10.92 (0.43)**
- **33.0 (1.30)**

*Pin Stuffed with MX16A option only, absent with MX16A standard

Recommended Pad Layout

- **RECOMMENDED PAD SIZE:** MIN. X 3.56 (0.140)
- MAX. X 4.19 (0.165)

Pick and Place Location

Derating Output Current vs. Local Ambient Temp & Airflow

- **NC (0 LFM)**
- **0.5 m/s (100 LFM)**
- **1.0 m/s (200 LFM)**
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- **2.0 m/s (400 LFM)**

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How to Order

- **M X (T) 16A - 12 S A (-P)**

  - **M** = Surface Mount Device
  - Internal Identifier
  - Identifies Sequencing Pin Function (optional)
  - Output Current (Amps)
  - Input Voltage (V)
  - Outputs  
    - **S** = Single
    - **A** = Adjustable
  - Optional Positive On/Off Logic

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

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