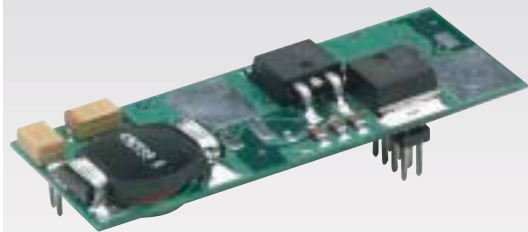


M10A SERIES

HDLV
Family



Description - Not recommended for New Designs

The M10A Series is a full-featured set of non-isolated, very high efficiency, board-level power modules. Each converter provides the low voltages needed by core logic, ASICs, microcontrollers and microprocessors. The high-density, open-frame design minimizes the board area required to implement the power conversion. The M10A series uses Bourns Switch Power's proprietary V²™ architecture, which provides ultrafast transient response, improved line and load regulation, and very high efficiency.

Designed specifically for board-level use in applications requiring high reliability, the M10A features low losses, high reliability and a low seated height. The initial setpoint accuracy of 0.5 %, and measured low-radiated emissions are superior to most competitive units. The M10A Series provides a 10-amp output at any of its standard output voltages. Beyond the standard output voltages, the series also allows for custom outputs from 1.3 volts to 3.5 volts in 100 mV steps.

Features

- 10-amp Output Current
- Open-frame Design
- 90 % Efficiency
- Overtemperature Protection
- Short-circuit Protection with auto-restart
- Fast Transient Response
- Remote Sense
- Remote Enable
- Trim Function
- 35W/in³ Power Density
- Low 0.38 " Height
- Industry-standard Pin-out

Patents 5,770,940
5,978,195
6,127,814

Common Specifications

| | Min | Nom | Max | Units | Notes |
|---------------------------|-----|-------|-----|-----------------------------|--|
| Input | | | | | |
| Voltage | 4.5 | 5 | 5.5 | Vdc | 4.75V _{in} startup |
| Current | | 12 | | A | |
| Remote Enable | | | | | |
| High = Disable | 2.4 | | | Vdc | |
| Low = Enable | | | 0.4 | Vdc | Open=Enable |
| E/D Current | | 1 | | mA | |
| Output | | | | | |
| Current | 0 | | 10 | A | |
| Current Limit | 11 | | | A | |
| Voltage Setpoint Accuracy | | | ±2 | %V _{out} | |
| Voltage Trim Range | -7 | | +7 | %V _{nom} | |
| Line Regulation | | ±0.1 | | %V _{nom} | |
| Load Regulation | | ±0.3 | | %V _{nom} | ±0.2 w/o remote sense |
| Dynamic Response | | | | | |
| 0-100 % load | | 200 | | mV | Δi/Δt=3A/μs |
| | | 19 | | μs | |
| 100-0 % load | | 200 | | mV | Δi/Δt=3A/μs |
| | | 19 | | μs | |
| Startup from Power On | 30 | | 150 | ms | From 4.75 V _{in} to 90 % V _{nom} |
| Temperature Regulation | | | | ±0.02 %V _{out} /°C | |
| General | | | | | |
| MTBF | | 1,000 | | k Hrs | Bellcore TR332, 25 °C |
| Operating Temperature | 0 | | 55 | °C | full power, 100 LFM |
| Storage Temperature | -55 | | 125 | °C | |
| Switching Frequency | | 250 | | kHz | |



Reliable Electronic Solutions

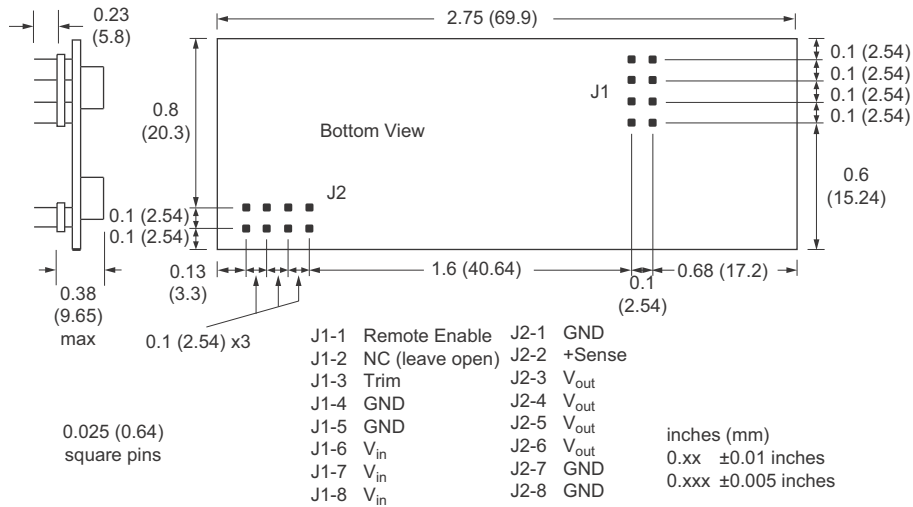
Asia-Pacific: TEL +886- (0)2 25624117 • FAX +886- (0)2 25624116
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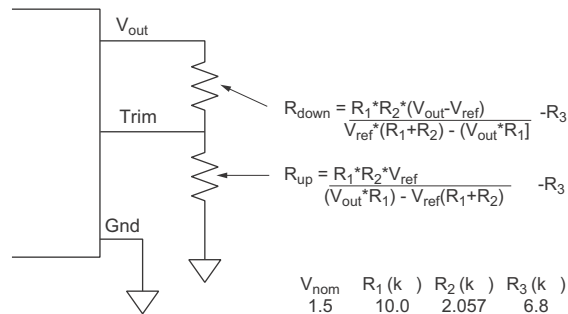
Specifications are subject to change without notice.
Customers should verify actual device performance in their specific applications.

Electrical Specifications

| | Nominal Input (V) | Output Voltage (V) | Output Current (A) | Noise (mV pp) typ | Efficiency (%) typ |
|-------------|-------------------|--------------------|--------------------|-------------------|--------------------|
| M10A-5S3.45 | 5 | 3.45 | 10 | 100 | 90 |
| M10A-5S3.3 | 5 | 3.3 | 10 | 100 | 90 |
| M10A-5S2.8 | 5 | 2.8 | 10 | 100 | |
| M10A-5S2.6 | 5 | 2.6 | 10 | 100 | |
| M10A-5S2.5 | 5 | 2.5 | 10 | 100 | |
| M10A-5S2.2 | 5 | 2.2 | 10 | 100 | |
| M10A-5S2 | 5 | 2 | 10 | 100 | |
| M10A-5S1.9 | 5 | 1.9 | 10 | 100 | |
| M10A-5S1.8 | 5 | 1.8 | 10 | 100 | |
| M10A-5S1.5 | 5 | 1.5 | 10 | 100 | |



M10A Trim Circuit



| V _{nom} | R ₁ (k) | R ₂ (k) | R ₃ (k) | V _{ref} |
|------------------|--------------------|--------------------|--------------------|------------------|
| 1.5 | 10.0 | 2.057 | 6.8 | 1.244 |
| 2.5 | 2.05 | 2.07 | 6.8 | 1.244 |
| 3.3 | 21.5 | 14.0 | 33.2 | 2.00 |