

### Description

The TCM series of DC/DC converters combines the leading edge technology of the 360 Watt MTW series with a chassis mount metal case. The chassis mount case is designed for mounting to an enclosure or Din-Rail applications. The 4:1 input range, industry leading efficiencies, and precisely regulated output make the TCM series an excellent power solution for battery applications. The output voltage is fully isolated from the input, allowing the output to be positive or negative polarity and with various ground connections.

Through holes are provided to allow easy mounting or addition of a heatsink for extended temperature operation. Integrated terminal blocks allow for easy connectivity. An optional DIN Rail Adaptor is available for DIN Rail Mounting the TCM.

Product is designed and manufactured in the USA.

To order with optional DIN Rail Mount specify part number by –DIN. i.e. 24S12.30 TCM-DIN

- 4:1 Input voltage range
- High power density
- Small size 3.2" x 4.3" x 1.0"
- Efficiency up to 95.6%
- Excellent thermal performance with metal case
- Over-Current and Short Circuit Protection
- Over-Temperature protection
- Auto-restart
- Monotonic startup into pre bias
- Constant frequency
- Remote ON/OFF
- Good shock and vibration damping
- Extended Temperature Range -55°C Available.
- RoHS Compliant

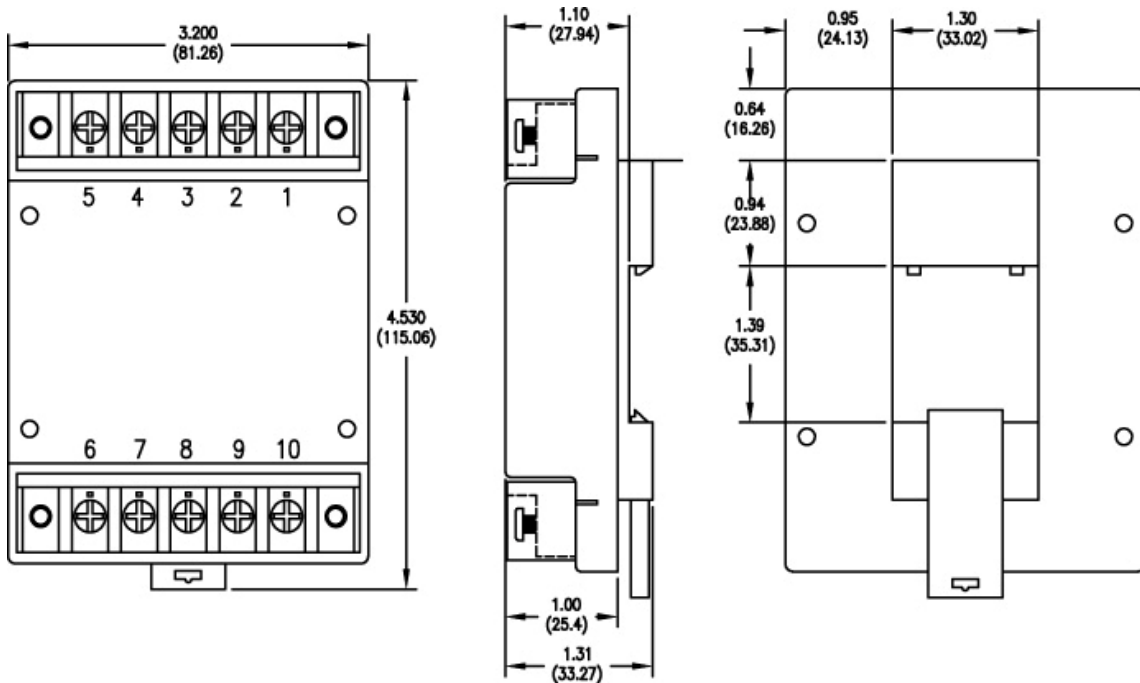
| Model              | Input Range VDC |     | Vout VDC | Iout ADC |
|--------------------|-----------------|-----|----------|----------|
|                    | Min             | Max |          |          |
| 24S12.30TCM (ROHS) | 9               | 36  | 12       | 30       |
| 24S24.15TCM (ROHS) | 9               | 36  | 24       | 15       |
| 24S28.13TCM (ROHS) | 9               | 36  | 28       | 13       |

Extended Temperature Range of -55°C to +85°C is available. Add "-T" to the part number when ordering.

1. Designed to meet MIL-STD-810G for functional shock and vibration. The unit must be properly secured to the interface medium (PCB/Chassis) by use of the threaded inserts of the unit.
2. A thermal management device, such as a heatsink, is required to ensure proper operation of this device. The thermal management medium is required to maintain baseplate < 85°C at full rated load.
3. The TCM series is designed with the internal capacitance required to support one foot of connection wire on the input and output. For applications with longer connection requirements consult the factory.

#### Performance Specifications

| Model       | Vout (VDC)  | Iout (ADC) | Power (Watts) | Ripple/Noise (mVp-p) |     | Regulation Max (%) |      | Vin (VDC) | Range (VDC) | Iin No Load (mA) | Iin Full Load (A) | Efficiency Full Load (%) |           |
|-------------|-------------|------------|---------------|----------------------|-----|--------------------|------|-----------|-------------|------------------|-------------------|--------------------------|-----------|
|             |             | Max        |               | Typ                  | Max | Line               | Load | Nom       |             | Max              | Max               | 24Vin Min                | 24Vin Typ |
|             | 24S12.30TCM | 12         | 30            | 360                  | 120 | 180                | 0.15 | 0.15      | 24          | 9-36             | 280               | 45.3                     | 93.7      |
| 24S24.15TCM | 24          | 15         | 360           | 240                  | 360 | 0.15               | 0.15 | 24        | 9-36        | 300              | 45                | 94.5                     | 95.2      |
| 24S28.13TCM | 28          | 13         | 360           | 280                  | 380 | 0.15               | 0.15 | 24        | 9-36        | 280              | 45                | 94.3                     | 95.4      |



Mechanical Tolerances  
 X.XX : ±0.020 inches (.51mm)  
 X.XXX: ±0.005 inches (.127mm)

| Terminal | Label   | Function                       |
|----------|---------|--------------------------------|
| 1        | +Input  | Positive Input Voltage         |
| 2        | + Input | Positive Input Voltage         |
| 3        | On/Off  | TTL Input referenced to -Input |
| 4        | -Input  | Negative Input Voltage         |
| 5        | -Input  | Negative Input Voltage         |
| 6        | -Output | Negative Output Voltage        |
| 7        | -Output | Negative Output Voltage        |
| 8        | N/C     | Not Connected                  |
| 9        | +Output | Positive Output Voltage        |
| 10       | +Output | Positive Output Voltage        |



# PRODUCT BRIEF

## TCM Series

| General Specifications                                   |  |                     |            |                |
|--|--|---------------------|------------|----------------|
| All Models   |  |                     |            | Units          |
| <b>ON/OFF Function</b>                                   |  |                     |            |                |
| Converter – ON   | HIGH Logic Level / Leave ON/OFF Pin Open   | MIN                 | 2.0        | V              |
| Leakage Current  |  | MAX                 | 0.16       | mA             |
| Converter – OFF  | LOW Logic Level / Tie ON/OFF Pin to -INPUT   | MAX                 | 0.8        | V              |
| Sinking Current for Logic Low                            |  | MAX                 | 0.36       | mA             |
| Idle Current (Module is OFF)                             |  | MAX                 | 4          | mA             |
| Turn-on Time to 1% error from On/Off                     |  | MAX                 | 20         | ms             |
| <b>Isolation</b>   |  |                     |            |                |
| Input to Output Isolation 10 $\mu$ A Leakage             |  | MIN                 | 2250       | VDC            |
| Input to Output Resistance                               |  | MIN                 | 10         | M $\Omega$     |
| Input to Output Capacitance                              |  | TYP                 | 4500       | pF             |
| <b>Environmental</b>                                     |  |                     |            |                |
| MTBF   | Telecordia SR-332, Method 1 Case 1 50% electrical stress, 40 $^{\circ}$ C components | 5.4M                |            | hrs            |
| Case Operating Temperature Range                         |  | MIN<br>MAX          | -40<br>85  | $^{\circ}$ C   |
| Extended Case Operating Temperature Range                |  | MIN<br>MAX          | -55<br>85  | $^{\circ}$ C   |
| Storage Temperature                                      |  | MIN<br>MAX          | -55<br>125 | $^{\circ}$ C   |
| Thermal Impedance: Chassis to Ambient                    |  | TYP                 | 5.2        | $^{\circ}$ C/W |
| Thermal Shutdown Case Temperature (Auto Restart)         |  | TYP                 | 95         | $^{\circ}$ C   |
| <b>General</b>   |  |                     |            |                |
| Efficiency   |  | Up to 96.1%         |            |                |
| Switching Frequency (Output Ripple is 2X Switching Freq) |  | TYP                 | 200        | kHz            |
| Unit Weight  |  | 430                 |            | g              |
| Case Dimension   |  | 3.2" x 4.3" x 1.00" |            |                |
| Designed to meet UL/cUL 60950, IEC/EN 60950-1            |  |                     |            |                |

The TCM series provides a chassis mountable product that uses MTW converters. For more detailed performance data please refer to the MTW series data sheet.