



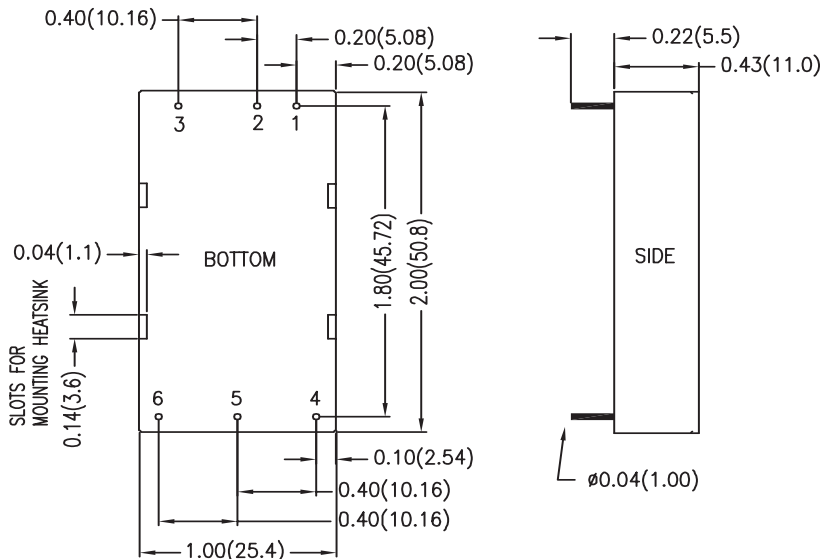
- Efficiency up to 92%
- 1500VDC Isolation
- MTBF > 227,000 Hours
- 2:1 Input
- Over Voltage Protection
- Short Circuit Protection
- Six Sided Shielding
- Remote On/Off Control
- RoHS Compliant



50 Watt TML Single and Dual Series



| Model Number | Voltage | | | Current | | | Over Voltage Protection | Input Overvoltage (1000ms) | Efficiency | Capacitive Load |
|--------------|------------|-------------|--------|----------------|-----------------|----------|-------------------------|----------------------------|------------|-----------------|
| | Input | | Output | Input | | Output | | | | |
| | Nom. (VDC) | Range (VDC) | (VDC) | @ No Load (mA) | @ Max Load (mA) | Max (mA) | | | | |
| TML33H12S3 | 12 | 9-18 | 3.3 | 85 | 3090 | 10000 | 3.9 | 25 | 89 | 25800µF |
| TML50H12S5 | 12 | 9-18 | 5 | 110 | 4630 | 10000 | 6.2 | 25 | 90 | 17000µF |
| TML50H12S12 | 12 | 9-18 | 12 | 160 | 4580 | 4170 | 15 | 25 | 91 | 2900µF |
| TML50H12S15 | 12 | 9-18 | 15 | 160 | 4580 | 3330 | 18 | 25 | 91 | 1900µF |
| TML50H12S24 | 12 | 9-18 | 24 | 250 | 4570 | 2080 | 30 | 25 | 91 | 750µF |
| TML33H24S3 | 24 | 18-36 | 3.3 | 50 | 1550 | 10000 | 3.9 | 50 | 89 | 25800µF |
| TML50H24S5 | 24 | 18-36 | 5 | 70 | 2260 | 10000 | 6.2 | 50 | 92 | 17000µF |
| TML50H24S12 | 24 | 18-36 | 12 | 85 | 2260 | 4170 | 15 | 50 | 92 | 2900µF |
| TML50H24S15 | 24 | 18-36 | 15 | 85 | 2260 | 3330 | 18 | 50 | 92 | 1900µF |
| TML50H24S24 | 24 | 18-36 | 24 | 110 | 2290 | 2080 | 30 | 50 | 91 | 750µF |
| TML33H48S3 | 48 | 36-75 | 3.3 | 35 | 770 | 10000 | 3.9 | 100 | 89 | 25800µF |
| TML50H48S5 | 48 | 36-75 | 5 | 45 | 1130 | 10000 | 6.2 | 100 | 92 | 17000µF |
| TML50H48S12 | 48 | 36-75 | 12 | 50 | 1130 | 4170 | 15 | 100 | 92 | 2900µF |
| TML50H48S15 | 48 | 36-75 | 15 | 50 | 1130 | 3330 | 18 | 100 | 92 | 1900µF |
| TML50H48S24 | 48 | 36-75 | 24 | 60 | 1150 | 2080 | 30 | 100 | 91 | 750µF |



Dimensions are inches (mm) unless noted

Tolerance: Inches Millimeters
 X.XX ±0.01 X.X ±0.25
 X.XXX ±0.005 X.XX ±0.13
 Pin ±0.002 ±0.05

| Pin Connections | |
|-----------------|---------------|
| Pin | Single |
| 1 | +Vin |
| 2 | -Vin |
| 3 | Remote On/Off |
| 4 | + Vout |
| 5 | -Vout |
| 6 | Trim |

See Model Selection Table for Model Specific Parameters

| Input Parameters | Min | Typ | Max | Units |
|--|--|-------------------|--|---------|
| Start Voltage 12 Vin 24 Vin 48 Vin | | | 9 18 36 | VDC |
| Under Voltage Shutdown 12Vin 24 Vin 48 Vin | | 8.3 16.5 33 | | VDC |
| Switching Frequency 24Vo Models Other Models | | 285 320 | | kHz |
| Input Filter | LC Filter | | | |
| Output Parameters | Min | Typ | Max | Units |
| Output Voltage Accuracy at 50% Load and Nominal Vin | | | ±1.0 | % |
| Load Regulation Min. Load to Full Load | | | ±0.5 | % |
| Line Regulation Vin=Min. to Max. | | | ±0.5 | % |
| Ripple & Noise (20MHz) 3.3V & 5 V Models | | 100 | | mV P-P |
| Ripple & Noise (20 MHz) 12V, 15V & 24V Models | | 150 | | mV P-P |
| Over Power Protection Current Limitation of Iout max. | | 150 | | % |
| Transient Recovery Time 25% Load Step Change | | 250 | | µs |
| Temperature Coefficient | | | ±0.02 | % / °C |
| Short Circuit Protection | Hiccup Automatic Recovery | | | |
| General Specifications | Min | Typ | Max | Units |
| Isolation Voltage, 60 seconds | 1500 | | | VDC |
| Isolation Resistance 500VDC | 1000 | | | Mohms |
| Isolation Capacitance, 100kHz, 1V | | | 2200 | pF |
| Operating Temperature (Ambient) Single 3.3V 12S5 24S5, 24S12, 24S15, 48S5, 48S12, 48S15 12S12, 12S15, 12S24, 24S24 48S24 | -40 | | +56 +38 +53 +53 +46 +46 | °C |
| Operating Temperature (Case) | | | +105 | °C |
| Storage Temperature | -50 | | +125 | °C |
| Thermal Impedance Natural Convection Natural Convection with heatsink | 12.1 9.8 | | | °C/W |
| Humidity | | | 95 | % |
| MTBF MIL-HDBK-217F @25°C, Ground Benign | 227 | | | K Hours |
| Cooling | Free-Air Convection | | | |
| Case Size | 2.0 x 1.0 x 0.43 inches 50.8 x 25.4 x 11.0 mm | | | |
| Case Material | Six Sided Shielding Metal Case (UL94V-0) | | | |
| Weight | 30g | | | |

| Remote On/Off Control | Min | Typ | Max | Units |
|--|------------------------------|------|-----|-------|
| DC/DC On | 3.5V - 12V or Open Circuit | | | |
| DC/DC Off | 0V - 1.2V or Short Circuit | | | |
| Control Input Current (on) Vctrl = 5.0V | | 0.5 | | mA |
| Control Input Current (off) Vctrl = 0 V | | -0.5 | | mA |
| Control Common | Referenced to Negative Input | | | |
| Standby Input Current Nominal Vin | | 2.5 | | mA |
| Output Voltage Trim | Min | Typ | Max | Units |
| Trim Up / Down Range % of nominal output voltage 24Vo Models Other Models | +20/-10 ±10 | | | % |

| Input Fuse Selection Table | |
|----------------------------|--------------------|
| 12V Input | 10000 mA Slow-Blow |
| 24V Input | 5000 mA Slow-Blow |
| 48V Input | 2500 mA Slow-Blow |

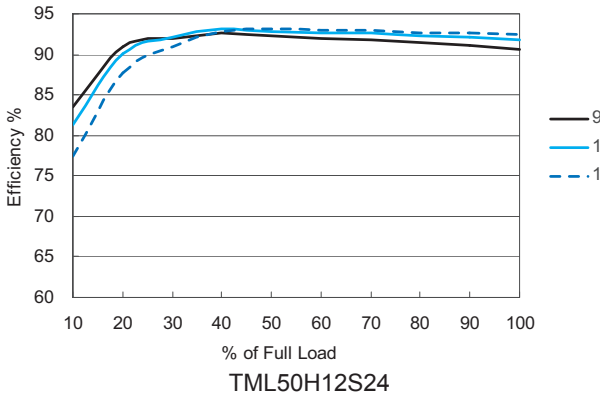
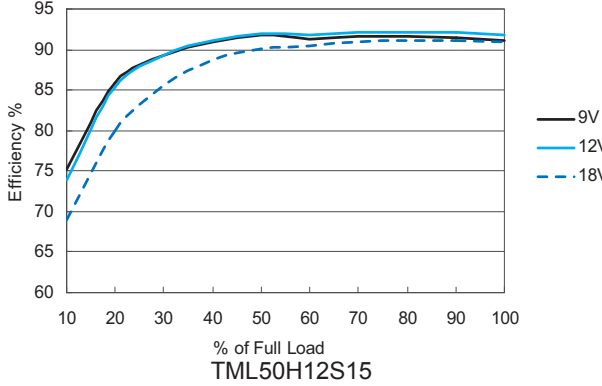
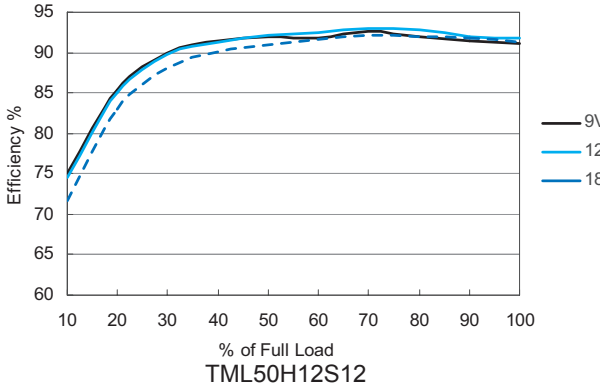
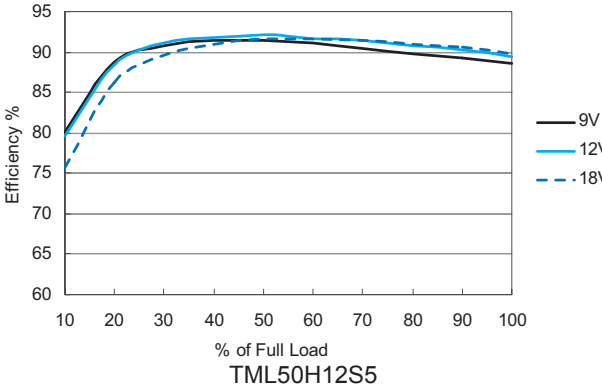
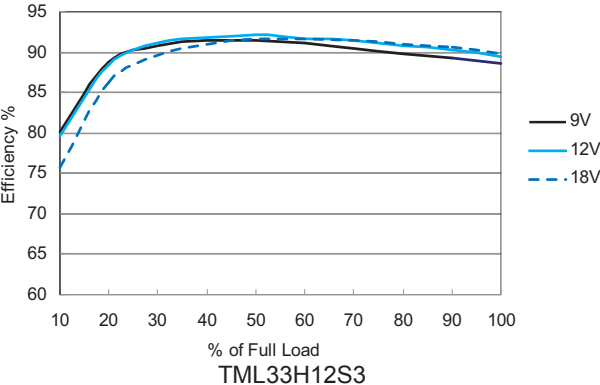
External fusing should be used for system protection due to a catastrophic failure. See ConTech website for Fusing Application Notes to determine the correct fuse.

Notes:

- Specifications typical at Ta=+25°C, resistive load, nominal input voltage, full rated output current unless otherwise noted.
- Transient recovery time is measured to within 1% error band for a step change in output load 75% to 100%.
- ConTech power converters require a minimum output loading to maintain specified regulation. Operation under no-load conditions will not damage these modules; however, they may not meet all specifications listed.
- The series has a limitation of a maximum connected capacitance at the output. The power module may be operated in current limiting mode during start-up, affecting the ramp-up and the startup time.
- Ripple & Noise measurement bandwidth is 20MHz, measured with a 4.7 µF M/C and a 220 µF T/C.
- Water washability - ConTech DC/DC converters are designed to withstand most solder/wash processes. Careful attention should be used when assessing the applicability in your specific manufacturing process. Converters are not hermetically sealed.
- See ConTech website for Definition of Terms, Application Notes, and Test Setups and Parameters. www.ConTech-us.com/appnotes.html
- Specifications subject to change without notice.
- See ConTech website www.ConTech-us.com/pdf/rohs.pdf for RoHS Statement.

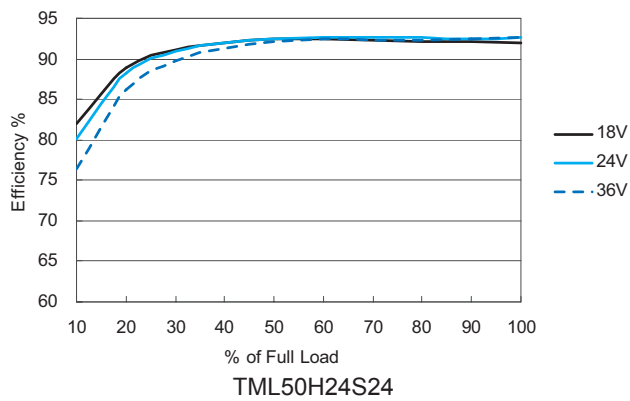
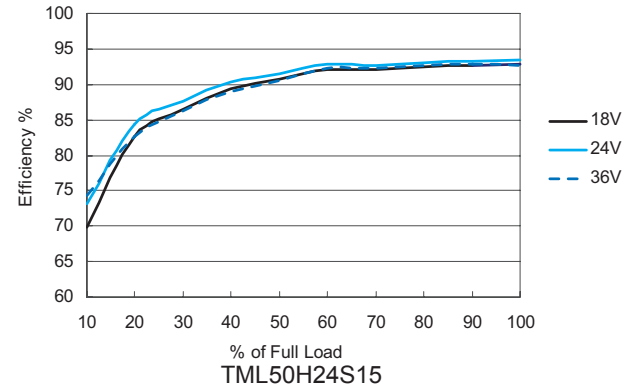
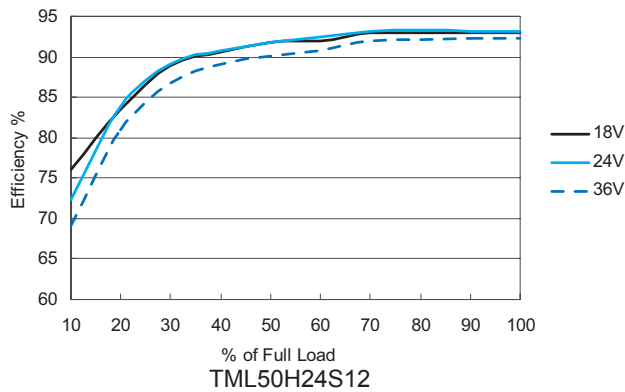
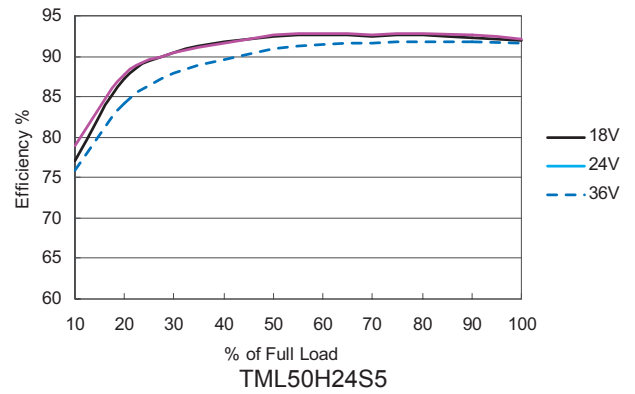
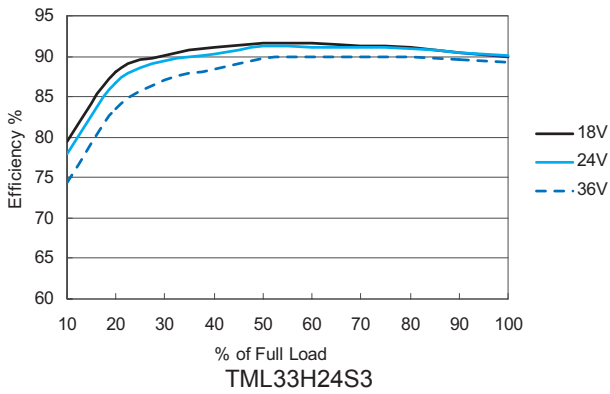
Efficiency Curves

12 Volt Input @ 25°C



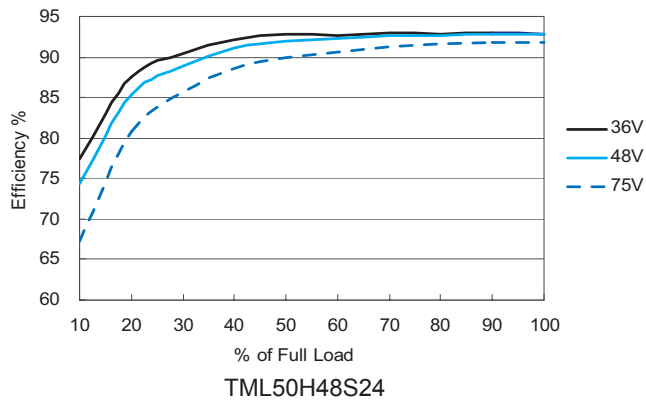
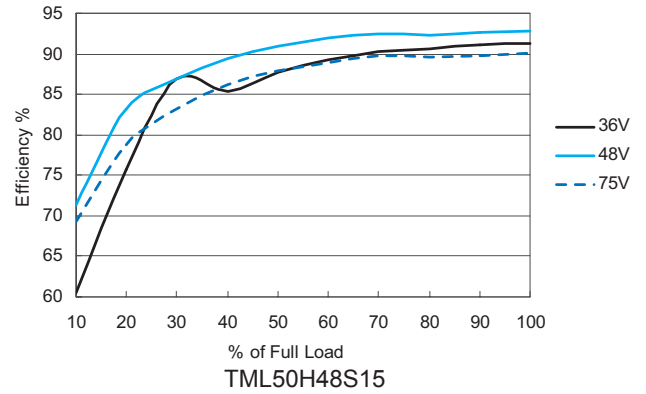
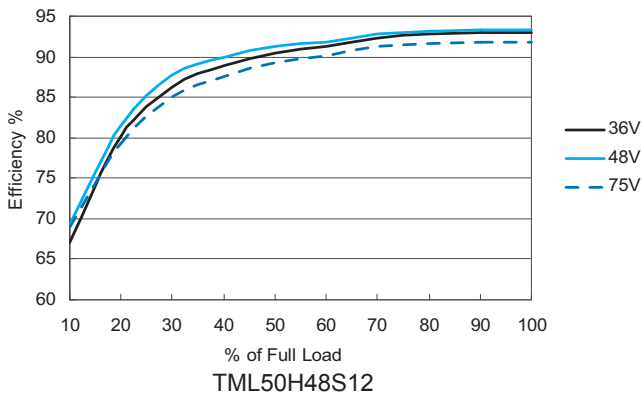
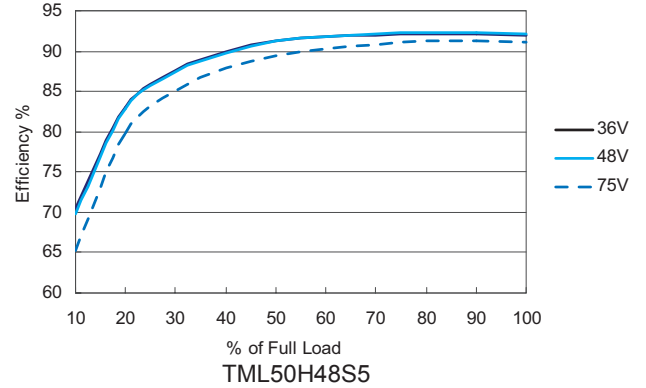
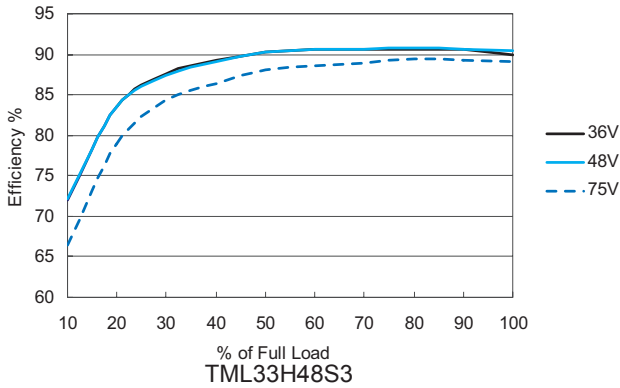
Efficiency Curves

24 Volt Input @ 25°C



Efficiency Curves

48 Volt Input @ 25°C



Derating Curves

To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 105°C.

