

5-30 Watts

MTC Series



- 10-50 VDC Input Range
- Designed for Vetric & Avionic Use
- Single & Dual Output Versions
- -55 °C Operation Available
- MIL-STD 461 and DEF-STAN 59-411
- MIL-STD 1275 and DEF-STAN 61-5
- 3 Year Warranty

Specification

Input

| | |
|----------------------------------|-------------------------------------|
| Input Voltage Range | • 15.5-40.0 VDC |
| Transient Input Range | • 10 VDC for 10 s 50 VDC for 1 s |
| Turn On | • <15.5 VDC |
| Turn Off | • <10 VDC |
| Input Reverse Voltage Protection | • None |
| Max Input Current | • See table |

Output

| | |
|----------------------------|--|
| Output Voltage | • See table |
| Output Voltage Trim | • See table (not available for dual outputs) |
| Minimum Load | • No minimum load required |
| Line Regulation | • $\pm 1\%$ Vout nominal (15.5-40.0 Vin) |
| Load Regulation | • $\pm 1\%$ Vout nominal |
| Cross Regulation | • $\pm 3\%$ with 150 mA min load (Dual output only) see longform datasheet for more information |
| Output Set Tolerance | • ± 100 mV or $\pm 2\%$ whichever is greater |
| Ripple & Noise | • ≤ 5 Vout: 75 mV pk-pk max, >5 Vout: 1% pk-pk, at max load & 20 MHz bandwidth |
| Overvoltage Protection | • 110-120% Vout max (15 W & 30 W versions only) |
| Overcurrent Protection | • 105-150% at nominal input voltage |
| Short Circuit Protection | • Trip and restart |
| Overtemperature Protection | • 102 °C to 107 °C, 2 °C to 5 °C hysteresis |
| Remote Sense | • 0.5 V (Single output only) |
| Load Step Output Transient | • $< \pm 3\%$ of Vout nom (25-75% load) |
| Load Step Recovery | • 500 μ s within 1% of nominal value |
| Line Step Output Transient | • $< \pm 3\%$ of nominal Vout (15.5-40.0 Vin) |
| Line Step Recovery | • 500 μ s within 1% of nominal value |
| Start Up Time | • <100 ms |
| Maximum Capacitive Load | • 300 μ F x Iout max startup within 100 ms |

General

| | |
|---------------------------|--|
| Efficiency | • See tables and performance curves |
| Isolation | • 1500 VDC Input to Output, 1000 VDC Input to Case, 500 VDC Output to Case |
| Switching Frequency | • Fixed 450 kHz typical |
| Frequency Synchronization | • 400-500 kHz, 450-500 kHz for the MTC05 |
| Inhibit | • Off = TTL Low or short circuit On = TTL High or open circuit |
| Power Density | • MTC05: 15.3 W/in ³ , MTC15: 24.4 W/in ³ , MTC30: 14.5 W/in ³ |
| MTBF | • MTC05: 1.7 MHrs, MTC15: 890 kHrs MTC30: 740 kHrs, to MIL-HDBK-217F at +40 °C, GF |

Environmental

| | |
|---------------------|--|
| Case Temperature | • -40 °C to +100 °C, -55 °C to +100 °C extended range '-LT' |
| Storage Temperature | • -55 °C to +125 °C |
| Cooling | • Conduction cooling through baseplate |
| Operating Humidity | • 95% Relative Humidity 240 hrs MIL-STD-810D Method 507.2 |
| Operating Altitude | • Tested to 70000 ft (21336 m) |
| Shock | • 100 g MIL-STD-810D Method 516.3 |
| Vibration | • 5 to 500 Hz MIL-STD-810D Method 514.3 |
| Bump | • 2000 Bumps in each axis 40 g MIL-STD-810D Method 516.3 |
| Salt Atmosphere | • 48 hrs MIL-STD-810E Method 509.3 |

Environmental Screening & Low Temperature

All standard products are stress-screened and electrically tested over the operating temperature range. See notes for option details.

EMC

| | |
|--------------------------|---|
| Conducted Emissions | • EN55022 conducted level B* MIL-STD 461E/F/G CE102* DEF STAN 59-411 DCE01/DCE02* |
| Immunity | • MIL-STD-704 A*, MIL-STD-704 B-F MIL-STD-1275A/B/C/D/E* |
| Conducted Susceptibility | • MIL-STD-461E/F/G CS101 CS114, CS115, CS116* DEF-STAN 61-5 part 6 issue 5* |

* MTF50 Filter Module required to meet these standards

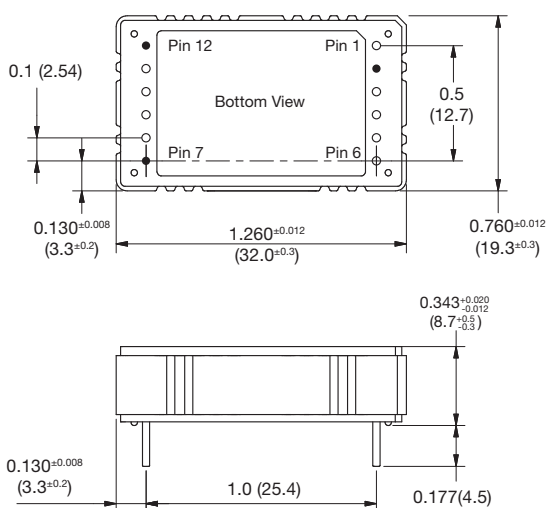
Models and Ratings

| Output Power | Output Voltage | | | Output Current | Input Current ⁽⁵⁾ | | Efficiency | Model Number ^(3,4) |
|--------------|----------------|--------------------|------------------------|----------------|------------------------------|-----------|------------|-------------------------------|
| | Nominal | Min ⁽¹⁾ | Max ⁽¹⁾ | | No Load | Full Load | | |
| 4 W | 3.3 VDC | 3.3 VDC | 4.0 VDC | 1.21 A | 0.03 A | 0.18 A | 80% | MTC0528S3V3 |
| 4 W | 5.0 VDC | 4.0 VDC | 6.0 VDC ⁽²⁾ | 0.80 A | 0.02 A | 0.19 A | 77% | MTC0528S05 |
| 5 W | 12.0 VDC | 9.0 VDC | 13.8 VDC | 0.42 A | 0.02 A | 0.23 A | 78% | MTC0528S12 |
| 5 W | 15.0 VDC | 11.0 VDC | 17.0 VDC | 0.33 A | 0.01 A | 0.23 A | 77% | MTC0528S15 |
| 5 W | 28.0 VDC | 20.0 VDC | 30.0 VDC | 0.18 A | 0.02 A | 0.22 A | 78% | MTC0528S28 |

Notes

1. Indicates maximum and minimum voltage adjustment (maximum includes Remote Sense adjustment).
2. The full trim range is not available when the input is <15.5 V.
3. For additional ESS screening, add the suffix '-ESS' to the part number e.g. MTC0528S05-ESS.
4. For -55 °C extended operating range option, add suffix '-LT' to the part number e.g. MTC0528S05-LT.
5. $V_{in} = 28$ VDC.

Mechanical Details



| MTC05 Connections | |
|-------------------|-----------------|
| Pin | Function |
| 1 | Case |
| 2 | No Pin |
| 3 | -Vin |
| 4 | +Vin |
| 5 | Synchronization |
| 6 | Inhibit |
| 7 | No Pin |
| 8 | Adjust |
| 9 | +Sense |
| 10 | +Vout |
| 11 | -Vout |
| 12 | No Pin |

Notes.

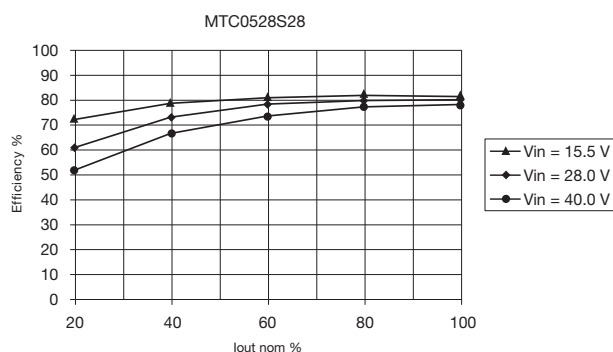
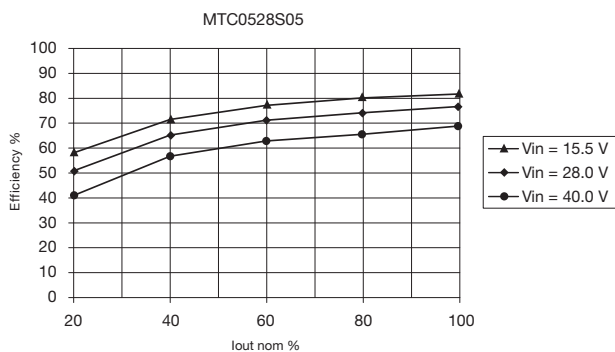
1. Dimensions are in inches (mm)
2. Tolerance: ±0.02 inches (±0.5 mm) except where indicated.
3. Weight: 0.02 lb (10 g)
4. Materials & Finish:
 - Pin - Diameter: 0.032 (0.8)
Material: Cu Zn30 2.5 µm Ni
Finish: 0.2-0.5 µm AU (HV 170-200)
 - Case - Material: Aluminium (Al Mg Si 0.5)
Finish: Chromated
 - Nameplate - Non-conductive plastic

Accessories

For more information contact sales office or visit www.xppower.com.

- For thermal pad, order model number MTC05 PAD.
- For spacers, order model number MTC05 1 mm SPACER or MTC05 4 mm SPACER.

Efficiency Curves



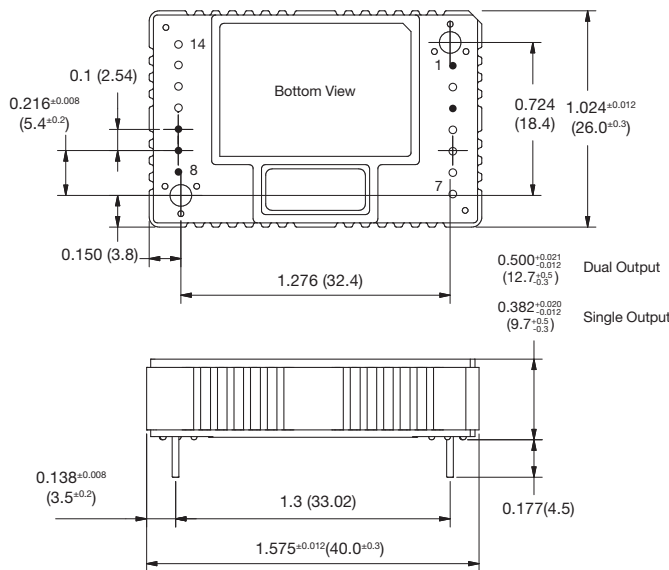
Models and Ratings

| Output Power | Output Voltage | | | Output Current | Input Current ⁽⁴⁾ | | Efficiency | Model Number ^(2,3) |
|---------------------|----------------|--------------------|--------------------|-----------------------|------------------------------|-----------|------------|-------------------------------|
| | Nominal | Min ⁽¹⁾ | Max ⁽¹⁾ | | No Load | Full Load | | |
| 10 W | 3.3 VDC | 3.3 VDC | 4.0 VDC | 3.03 A | 0.04 A | 0.46 A | 77% | MTC1528S3V3 |
| 12 W | 5.0 VDC | 4.0 VDC | 6.0 VDC | 2.40 A | 0.05 A | 0.53 A | 81% | MTC1528S05 |
| 15 W | 12.0 VDC | 9.0 VDC | 13.8 VDC | 1.25 A | 0.04 A | 0.67 A | 80% | MTC1528S12 |
| 15 W | 15.0 VDC | 11.0 VDC | 17.0 VDC | 1.00 A | 0.05 A | 0.67 A | 80% | MTC1528S15 |
| 15 W | 28.0 VDC | 20.0 VDC | 30.0 VDC | 0.54 A | 0.03 A | 0.69 A | 78% | MTC1528S28 |
| 15 W ⁽⁵⁾ | ±12 VDC | | | ±1.0 A ⁽⁵⁾ | 0.03 A | 0.68 A | 80% | MTC1528D12 |
| 15 W ⁽⁵⁾ | ±15 VDC | | | ±0.8 A ⁽⁵⁾ | 0.03 A | 0.68 A | 80% | MTC1528D15 |

Notes

1. Indicates maximum and minimum voltage adjustment (maximum includes Remote Sense adjustment).
2. For additional ESS screening, add the suffix '-ESS' to the part number e.g. MTC1528S05-ESS.
3. For -55 °C extended operating range option, add suffix '-LT' to the part number e.g. MTC1528S05-LT.
4. Typical with $V_{in} = 28$ VDC.
5. Max power 15 W must not be exceeded.

Mechanical Details



| MTC15 Connections | | |
|-------------------|-----------------|-----------------|
| Pin | Single Output | Dual Output |
| 1 | No Pin | No Pin |
| 2 | Case | Case |
| 3 | No Pin | No Pin |
| 4 | - Vin | - Vin |
| 5 | Synchronization | Synchronization |
| 6 | + Vin | + Vin |
| 7 | Inhibit | Inhibit |
| 8 | No Pin | No Pin |
| 9 | No Pin | No Pin |
| 10 | No Pin | -Vout |
| 11 | + Sense | No Pin |
| 12 | - Vout | COM |
| 13 | Adjust | No Pin |
| 14 | + Vout | + Vout |

Notes

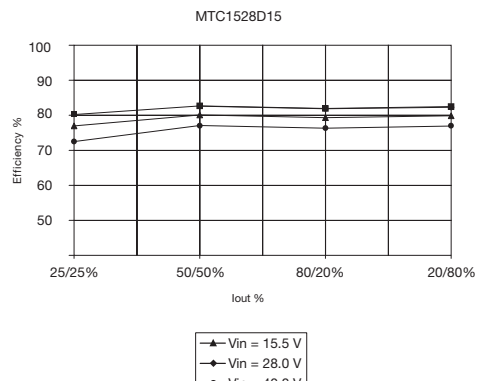
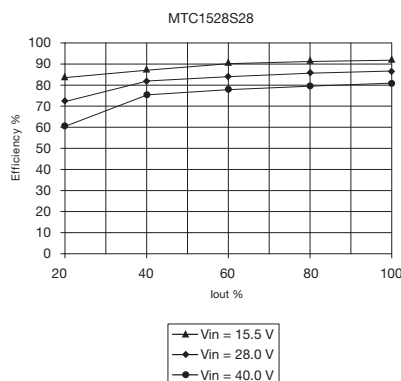
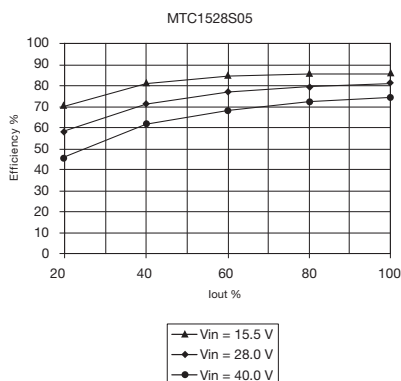
1. Dimensions are in inches (mm)
2. Tolerance: ±0.02 inches (±0.5 mm) except where indicated.
3. Weight: 0.04 lb (20 g)
4. Materials & Finish:
 - Pin - Diameter: 0.032 (0.8)
Material: Cu Zn30 2.5 µm Ni
Finish: 0.2-0.5 µm AU (HV 170-200)
 - Mounting Hole - Diameter: 0.102 (2.6)
 - Case - Material: Aluminium (Al Mg Si 0.5)
Finish: Chromated
 - Nameplate - Non-conductive plastic

Accessories

For more information contact sales office or visit www.xppower.com.

- For thermal pad, order model number MTC15 PAD.
- For spacers, order model number MTC15 3 mm SPACER.

Efficiency Curves



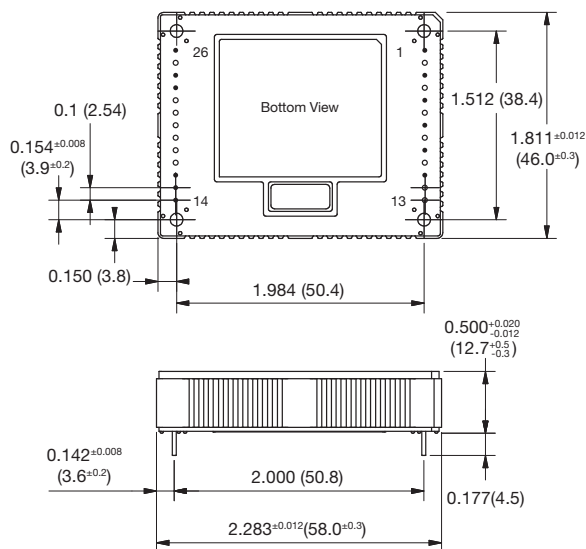
Models and Ratings

| Output Power | Output Voltage | | | Output Current | Input Current ⁽⁶⁾ | | Efficiency | Model Number ^(3,4) |
|---------------------|----------------|--------------------|-------------------------|-----------------------|------------------------------|-----------|------------|-------------------------------|
| | Nominal | Min ⁽¹⁾ | Max ⁽¹⁾ | | No Load | Full Load | | |
| 20 W | 3.3 VDC | 3.3 VDC | 4.0 VDC | 6.06 A | 0.06 A | 0.89 A | 80% | MTC3028S3V3 |
| 25 W | 5.0 VDC | 4.0 VDC | 6.0 VDC | 5.00 A | 0.09 A | 1.08 A | 83% | MTC3028S05 |
| 32 W | 12.0 VDC | 9.0 VDC | 13.8 VDC ⁽²⁾ | 2.70 A | 0.05 A | 1.41 A | 81% | MTC3028S12 |
| 35 W | 15.0 VDC | 11.0 VDC | 17.0 VDC ⁽²⁾ | 2.33 A | 0.06 A | 1.54 A | 81% | MTC3028S15 |
| 35 W | 28.0 VDC | 20.0 VDC | 30.0 VDC | 1.25 A | 0.07 A | 1.51 A | 83% | MTC3028S28 |
| 30 W ⁽⁶⁾ | ±12 VDC | | | ±2.0 A ⁽⁶⁾ | 0.04 A | 1.33 A | 81% | MTC3028D12 |
| 30 W ⁽⁶⁾ | ±15 VDC | | | ±1.6 A ⁽⁶⁾ | 0.04 A | 1.33 A | 80% | MTC3028D15 |

Notes

1. Indicates maximum and minimum voltage adjustment (Maximum includes Remote Sense adjustment).
2. The full trim range is not available when the input is <15.5 V.
3. For additional ESS screening, add the suffix '-ESS' to the part number e.g. MTC3028S05-ESS.
4. For -55 °C extended operating range option, add suffix '-LT' to the part number e.g. MTC3028S05-LT.
5. Typical with $V_{in} = 28$ VDC.
6. Max power 30 W must not be exceeded.

Mechanical Details



| MTC30 Connections | | |
|-------------------|----------------------|----------------------|
| Pin | Single Output | Dual Output |
| 1 | No Pin | No Pin |
| 2 | Case | Case |
| 3 | No Pin | No Pin |
| 4 | - Vin | - Vin |
| 5 | No Pin | No Pin |
| 6 | + Vin | + Vin |
| 7 | No Pin | No Pin |
| 8 | Synchronization | Synchronization |
| 9 | No Pin | No Pin |
| 10 | Inhibit | Inhibit |
| 11 | No Pin | No Pin |
| 12 | Thermal Warning (TW) | Thermal Warning (TW) |
| 13 | Signal GND (SGND) | No Pin |
| 14 | No Pin | No Pin |
| 15 | No Pin | No Pin |
| 16 | No Pin | No Pin |
| 17 | Adjust | No Pin |
| 18 | + Sense | No Pin |
| 19 | + Vout | + Vout |
| 20 | + Vout | + Vout |
| 21 | - Vout | COM |
| 22 | - Vout | COM |
| 23 | No Pin | - Vout |
| 24 | No Pin | - Vout |
| 25 | - Sense | No Pin |
| 26 | No Pin | No Pin |

Notes

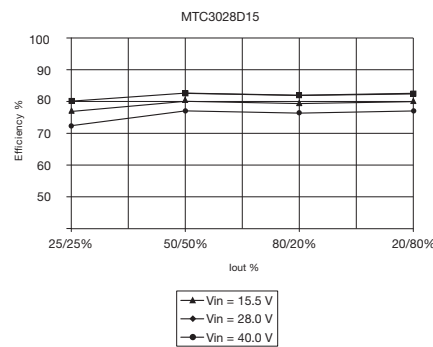
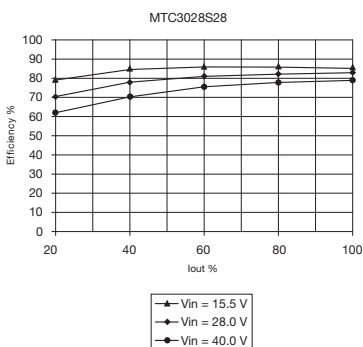
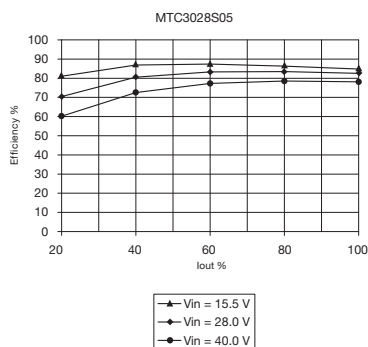
1. Dimensions are in inches (mm)
2. Tolerance: ±0.02 inches (±0.5 mm) except where indicated.
3. Weight: 0.15 lb (70 g)
4. Materials & Finish:
 - Pin - Diameter: 0.032 (0.8)
Material: Cu Zn30 2.5 μm Ni
Finish: 0.2-0.5 μm AU (HV 170-200)
 - Mounting Hole - Diameter: 0.102 (2.6)
 - Case - Material: Aluminium (Al Mg Si 0.5)
Finish: Chromated
 - Nameplate - Non-conductive plastic

Accessories

For more information contact sales office or visit www.xppower.com.

- For thermal pad, order model number MTC30 PAD.

Efficiency Curves



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