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# U3 SERIES DC/DC MODULES

## Applications

- Servers, Switches and Data Storage
- Wireless Communications
- Distributed Power Architecture
- Semiconductor Test Equipment
- Networking Gear
- Data Communications
- Telecommunications
- Industrial / Medical

The U3 Family of high efficiency DC/DC converters offer power levels of up to 3 Watt, which exceeds that of other sub-bricks with the same package, while also providing Ultra-Wide Input Voltage Range. With a 4:1 input voltage range and single & multi-outputs, these converters provide versatility without sacrificing the board space. All models feature an input filter, continuous short circuit protection and regulated outputs. The fully enclosed, encapsulated construction facilitates maximum power delivered with the highest efficiency of up to 80%. All converters combine creative design practices with highly derated power devices to achieve very high reliability, high performance and low cost solution to systems designers.

## Specifications & Features Summary

- Regulated Outputs
- -25°C to +71°C ambient operation
- Continuous Short-circuit protection
- up to 3KV, 10MΩ input-to-output isolation
- Pi Input Filter
- 4:1 Input Range
- THROUGH-HOLE PACKAGES ONLY
- 5-sided metal shield High Isolation versions
- 200KHz Switching Frequency
- No airflow or heatsink required
- Voltage Accuracy ± 2%

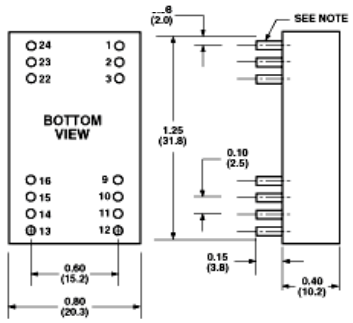
c UL us
Approval Pending

| Model Num | $V_{In}$ | $V_{Out}$ | $I_{Out}$ | $I_{No\ Load}$ | $I_{Full\ Load}$ | Eff | Case |
|---|---|---|---|---|---|---|---|
| U3-12S5 | 9-36 VDC | 5.0 VDC | 600.0 mA | 15.0 mA | 174 mA | 72% | T |
| U3-12S12 | 9-36 VDC | 12.0 VDC | 250.0 mA | 15.0 mA | 165 mA | 76% | T |
| U3-12S15 | 9-36 VDC | 15.0 VDC | 200.0 mA | 15.0 mA | 165 mA | 76% | T |
| U3-12D5 | 9-36 VDC | ±5.0 VDC | ±300.0 mA | 25.0 mA | 179 mA | 70% | T |
| U3-12D12 | 9-36 VDC | ±12.0 VDC | ±125.0 mA | 25.0 mA | 174 mA | 72% | T |
| U3-12D15 | 9-36 VDC | ±15.0 VDC | ±100.0 mA | 25.0 mA | 174 mA | 72% | T |
| U3-12S3.3 | 9-36 VDC | 3.3 VDC | 600.0 mA | 15.0 mA | 117 mA | 70% | T |
| U3-48S5 | 18-72 VDC | 5.0 VDC | 600.0 mA | 7.5 mA | 87 mA | 72% | T |
| U3-48S12 | 18-72 VDC | 12.0 VDC | 250.0 mA | 7.5 mA | 78 mA | 80% | T |
| U3-48S15 | 18-72 VDC | 15.0 VDC | 200.0 mA | 7.5 mA | 78 mA | 80% | T |
| U3-48D5 | 18-72 VDC | ±5.0 VDC | ±300.0 mA | 12.0 mA | 88 mA | 71% | T |
| U3-48D12 | 18-72 VDC | ±12.0 VDC | ±125.0 mA | 12.0 mA | 87 mA | 72% | T |
| U3-48D15 | 18-72 VDC | ±15.0 VDC | ±100.0 mA | 12.0 mA | 87 mA | 72% | T |
| U3-48S3.3 | 18-72 VDC | 3.3 VDC | 600.0 mA | 7.5 mA | 58 mA | 70% | T |

| SPECIFICATIONS | |
|---|---|
| Input Specifications | |
| Input Voltage Range | 24V--------9-36V |
| | 48V--------18-72V |
| | |
| Input Filter | Pi Type |
| Output Specifications | |
| Voltage Accuracy | ±2.0% max. |
| Voltage Balance(Dual) | ±1.0% / max. |
| Temperature Coefficient | ±0.05% / °C |
| Ripple and Noise, 20MHz BW, Single & ±5Vo | 100mV p-p max. |
| Dual | 1% p-p max. |
| Short Circuit Protection | Continuous |
| Line Regulation, Single/Dual[1] | ±0.5% |
| Load Regulation, Single[2] | ±0.5% |
| Dual[3] | ±1.0% |
| | |
| Efficiency | See Table |
| Isolation Resistance | $10^9$ ohms |
| Switching Frequency | 100KHz, min |
| Operating Temperature Range | -25°C to +71°C |
| Case Temperature (Plastic case) | 95°C max. |
| (Copper case) | 100°C max. |
| Cooling | Free-Air Convection |
| Storage Temperature Range | -40°C to +100°C |
| Dimensions | 1.25X0.8X0.4 Inches |
| | (31.8X20.3X10.2mm) |
| Isolation Voltage 500VDC (Standard Models) | |
| 1,500VDC min (Add suffix "HM") | Suffix "HM" Models |
| 3K VDC min[4] (Add Suffix "H") | Suffix "M" Models |
| Case Material | |
| Standard Models | Non-Conductive Black Plastic |
| Suffix "HM" Models | Black Coated Copper with Non-Conductive Base |
| Notes | |
| 1. | Measured From High Line to Low Line |
| 2. | Measured From Full Load to 10% Load |
| 3. | Measured From Full Load to 1/4 Load |
| 4. | Non-Conductive Black Plastic Only |

## Mechanical Outline and Pinouts for U3 Family DC/DC Converters

NOTE: Pin Size is 0.02" Inch (0.5m/m) DIA or .020 x .014 Inch
All Dimensions In Inches (mm)




| PIN CONNECTION | | | | | |
|---|---|---|---|---|---|
| 500 VDC | | | (1.5K & 3K) VDC | | |
| Pin | Single Output | Dua Output | Pin | Single Output | Dual Output |
| 1 | +V Input | +V Input | 1 | NP | NP |
| 2 | NC | -V Output | 2 | -V Input | -V Input |
| 3 | NC | Common | 3 | -V Input | -V Input |
| 9 | NP | NP | 9 | NC | Common |
| 10 | -V Output | Common | 10 | NC | NC |
| 11 | +V Output | +V Output | 11 | NC | -V Output |
| 12 | -V Input | -V Input | 12 | NP | NP |
| 13 | -V Input | -V Input | 13 | NP | NP |
| 14 | +V Output | +V Output | 14 | +V Output | +V Output |
| 15 | -V Output | Common | 15 | NC | NC |
| 16 | NP | NP | 16 | -V Output | Common |
| 22 | NC | Common | 22 | +V Input | +V Input |
| 23 | NC | -V Output | 23 | +V Input | +V Input |
| 24 | +V Input | +V Input | 24 | NP | NP |

*NP-NO PIN
*NC-NO CONNECTION WITH PIN
*TP-TEST POINT
*GO-GROUND

Typical at Ta= +25 ºC under nominal input voltages of 24V and 48VDC, unless noted. The information and specifications contained in this brief are believed to be accurate and reliable at the time of publication. Specifications are subject to change without notice. Refer to product specification sheet for performance characteristics and application guidelines.

**Consult factory for hundreds of other available input/output voltage configurations.**