

FEATURES

- Compact 0.4 Inch Profile Package
- -25°C to +71°C Operating Temperature Range
- ±0.2% Line Regulation
- Short Circuit Protection
- Low Output Ripple and Noise
- ±0.5% Load Regulation

DESCRIPTIONS

The 1000WFR series is a family of 10W single and dual output DC/DC converters that utilize a cost effective design to achieve high levels of performance. Operating from wide (2:1) input voltage ranges of 9 to 18, 18 to 36 or 36 to 72 Vdc; providing outputs of 5, 9, 12, 15, ±12 or ±15 Vdc.

Standard features include an input Pi filter to reduce reflected ripple current, efficiency as high as 80%, and continuous output short circuit protection. Input/output isolation is 500 Vdc minimum, output voltage accuracy is ±1% and transient response is less than 500µSec.

OUTPUT CHARACTERISTICS

| | Min | Typ | Max | Unit/Comments |
|---------------------------------|-----|-----|-------|---------------------------|
| Voltage & Current Ratings | | | | See Model Selection Guide |
| Output Voltage Accuracy | | | ±1.0 | % |
| Voltage Balance (Dual Outputs) | | | ±1.0 | % |
| Ripple & Noise (20 MHz BW) | | | 10 | mV RMS |
| | | | 100 | mV Pk-Pk |
| Line Regulation | | | ±0.2 | % |
| Load Regulation | | | ±0.5 | % |
| Minimum Load | 10 | | | % of Full Load |
| Temperature Coefficient @FL | | | ±0.02 | % per °C |
| Short Circuit Protection | | | | Continuous, Current Limit |
| Short Circuit Restart | | | | Automatic Recover |
| Transient Response | | | | 500 µSec. |

INPUT CHARACTERISTICS

| | Unit/Comments |
|----------------------------|---------------------------|
| Input Voltage Range | see Table 1 |
| Input Filter | Pi Network Filter |
| Ripple Current | see Model Selection Guide |
| Reverse Voltage Protection | Parallel Diode |

TABLE 1 - INPUT VOLTAGE RANGE VS OUTPUT LOAD

| Nominal Input (VDC) | Input Voltage Range (VDC) at: | | | |
|---------------------|-------------------------------|-------------|-------------|-------------|
| | 20% Load | 40% Load | 60% Load | 100% Load |
| 12 | 8.6 - 20.4 | 8.75 - 19.7 | 8.8 - 18.5 | 9.0 - 18.0 |
| 24 | 17.2 - 40.9 | 17.5 - 39.5 | 17.6 - 37.1 | 18.0 - 36.0 |
| 48 | 34.4 - 81.8 | 35.0 - 79.1 | 35.2 - 74.2 | 36.0 - 72.0 |

GENERAL CHARACTERISTICS

| | Min | Typ | Max | Unit/Comments |
|-----------------------|------|-----|-----|---------------|
| Switching Frequency | 80 | | 120 | kHz |
| Isolation Voltage | 500 | | | VDC, 1 minute |
| Isolation Resistance | 1000 | | | Mohm, 500VDC |
| Isolation Capacitance | | 600 | | pF |

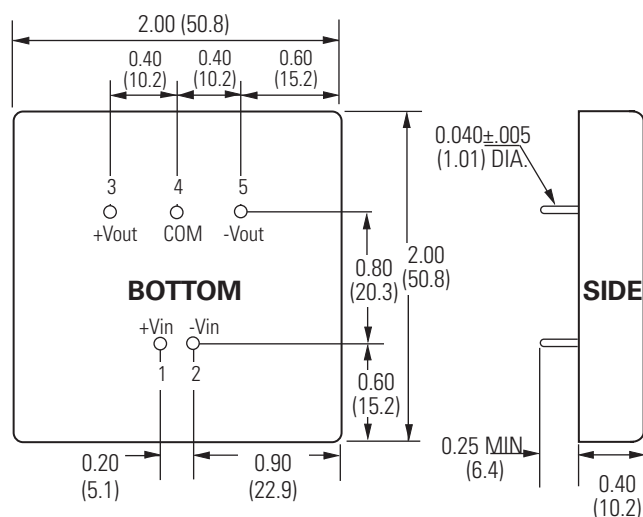
ENVIRONMENTAL SPECIFICATIONS

| | Min | Typ | Max | Unit/Comments |
|-----------------------|-----|-----|------|----------------------------|
| Operating Temp. Range | -25 | | +71 | °C; Ambient |
| Storage Temp. Range | -40 | | +105 | °C |
| Relative Humidity | | | +95 | % Humidity; non-condensing |
| Cooling | | | | Free-Air Convection |

PHYSICAL CHARACTERISTICS

| | Unit/Comments |
|-------------------|---|
| Case Size | 2.0 X 2.0 X 0.4 inches (51.0 X 51.0 X 10.2 mm) |
| Weight | 2.8 oz (79 grams) |
| Case Material | Black Coated Metal |
| Shield Connection | Six-Sided Continuous |

OUTLINE DRAWING



PIN OUT CHART

| Pins | Single | Dual |
|------|--------|--------|
| 1 | + Vin | + Vin |
| 2 | - Vin | - Vin |
| 3 | + Vout | + Vout |
| 4 | NC | Common |
| 5 | - Vout | - Vout |

NC = No Connection

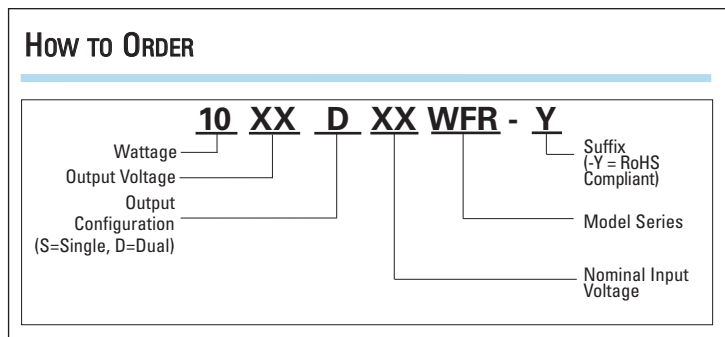
Notes:

1. Unless otherwise specified dimensions are in inches (mm).

| Tolerances | Inches | mm |
|------------|----------------|--------------|
| | X.XX = ±0.02 | X.X = ±0.5 |
| | X.XXX = ±0.010 | X.XX = ±0.25 |

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified. External, low ESR, 10 microfarad (minimum) capacitor across input is recommended for operation.

How To ORDER



MODEL SELECTION CHART

| Model | Nominal Input Voltage (VDC) | Input Voltage Range (VDC) | No Load Input Current (mA) | Full Load Input Current (mA) | Reflected Ripple Current (mA) | Output Voltage (VDC) | Full Load Output Current (mA) | Efficiency (%) |
|------------|-----------------------------|---------------------------|----------------------------|------------------------------|-------------------------------|----------------------|-------------------------------|----------------|
| 1005S12WFR | 12 | 9 - 18 | 25 | 1160 | 116 | 5 | 2000 | 72 |
| 1009S12WFR | 12 | 9 - 18 | 25 | 1115 | 112 | 9 | 1100 | 74 |
| 1012S12WFR | 12 | 9 - 18 | 25 | 1055 | 106 | 12 | 800 | 76 |
| 1015S12WFR | 12 | 9 - 18 | 25 | 1075 | 108 | 15 | 600 | 77 |
| 1012D12WFR | 12 | 9 - 18 | 25 | 1055 | 106 | ±12 | ±440 | 76 |
| 1015D12WFR | 12 | 9 - 18 | 25 | 1075 | 108 | ±15 | ±330 | 77 |
| 1005S24WFR | 24 | 18 - 36 | 25 | 565 | 57 | 5 | 2000 | 74 |
| 1009S24WFR | 24 | 18 - 36 | 25 | 545 | 55 | 9 | 1100 | 76 |
| 1012S24WFR | 24 | 18 - 36 | 25 | 515 | 52 | 12 | 800 | 78 |
| 1015S24WFR | 24 | 18 - 36 | 25 | 525 | 53 | 15 | 600 | 79 |
| 1012D24WFR | 24 | 18 - 36 | 25 | 515 | 52 | ±12 | ±440 | 78 |
| 1015D24WFR | 24 | 18 - 36 | 25 | 530 | 53 | ±15 | ±330 | 78 |
| 1005S48WFR | 48 | 36 - 72 | 25 | 275 | 28 | 5 | 2000 | 76 |
| 1009S48WFR | 48 | 36 - 72 | 25 | 270 | 27 | 9 | 1100 | 77 |
| 1012S48WFR | 48 | 36 - 72 | 25 | 255 | 26 | 12 | 800 | 79 |
| 1015S48WFR | 48 | 36 - 72 | 25 | 260 | 26 | 15 | 600 | 80 |
| 1012D48WFR | 48 | 36 - 72 | 25 | 250 | 25 | ±12 | ±440 | 80 |
| 1015D48WFR | 48 | 36 - 72 | 25 | 260 | 26 | ±15 | ±330 | 80 |