

3000WFR Series

Distributed By:
B. J. Wolfe Enterprises
(800) 554-1224
Fax (818) 889-8417



KEY FEATURES

- **30W Continuous Output Power**
- **Compact 2" x 2" x 0.4" Case**
- **Industry Standard Pin-Out**
- **82% Efficiency**
- **-25°C to 71°C Operating Temperature Range**
- **18.75W/In³ Power Density**
- **Low Cost**

General Description

The **3000WFR** is a family of low cost single, dual and triple output 25W to 30W DC/DC converters specifically designed for space-critical applications. These modules combine high power density; high performance features; and compact, industry standard packaging; with low cost.

Twenty seven models operate from wide (2:1) input voltage ranges of 9 VDC to 18 VDC, 18 VDC to 36 VDC or 36 VDC to 72 VDC; and provide regulated outputs of 3.3 VDC, 5 VDC, 12 VDC, 15 VDC, ± 5 , ± 12 VDC or ± 15 , 5 ± 12 and 5 ± 15 VDC. Standard features include 500 VDC input/output isolation, an internal input filter and line/load regulation of $\pm 1.0\%$.

All models are packaged in a compact, low profile 2.0 x 2.0 x 0.4 inch metal case. This miniature size yields a power density as high as 18.75 W/In³. Operation is specified over the full operating temperature range of -25°C to +71°C. Cooling is by free-air convection.

Electrical Specifications

Input Specifications:

Input Voltage Range	2:1, See Model Selection Guide
Input Filter	π (Pi) Network
Reflected Ripple Current	See Model Selection Guide

Output Specifications:

Output Voltage Accuracy	$\pm 2\%$, Max.
Voltage Balance (Dual Outputs)	$\pm 3\%$, Max.
Minimum Load	10% of Full Load
Ripple & Noise (20 MHz BW)	± 100 mV Pk-Pk of V_{out} , Max.
Line Regulation ⁽¹⁾ Single or Dual Output	$\pm 0.2\%$, Max.
..... Triple Output	$\pm 1\%$ Max
Load Regulation ⁽²⁾	$\pm 1.0\%$, Max.
..... Triple Output	$\pm 6\%$ Max
Transient Response ⁽³⁾	<500 μ Sec.
Temperature Coefficient @ FL	$\pm 0.02\%/^{\circ}\text{C}$
Short Circuit Protection	Current Limit, Continuous

General Specifications:

Efficiency ⁽⁴⁾	See Model Selection Guide
Isolation Voltage (1 min)	500 VDC, Min.

Isolation Resistance	$10^9 \Omega$
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Environmental Specifications:

Operating Temperature Range ⁽⁵⁾	-25°C to +71°C
Storage Temperature Range	-40°C to +100°C
Maximum Case Temperature	+100°C
Derating	None Required
Humidity	Up to 95%, Non-Condensing
Cooling ⁽⁶⁾	Free-air Convection

Physical Characteristics:

Size	2.0 x 2.0 x 0.4 inches (50.8 x 50.8 x 10.2 mm)
Weight	1 Oz (28g)
Shielding	Six Sided Continuous
Case Material	Black Coated Copper with Non-Conductive Base

Reliability Specifications ⁽⁸⁾

MTBF; Ground Benign, @ +25°C Ambient	>750,000 Hours
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Specifications typical @ +25°C with nominal input voltage and under full output load conditions, unless otherwise noted. Specifications subject to change without notice.

Specification Notes:

1. Line regulation is measured by monitoring the output voltage while the module input voltage is varied from low line to high line.
2. Load regulation is measured at nominal input voltage while the output load is varied from 25% load to full load. Dual output models are loaded equally.
3. Transient response is measured to within a 1% error band with a 25% step load change applied.
4. Efficiency is specified at nominal input line and full load.
5. At higher temperature elevations, a heatsink or airflow may be required to ensure a case temperature of less than +100°C.
6. Free-air convection cooling requires the application be properly ventilated. Using a converter in a sealed application or one in which air movement is severely restricted could cause thermal runaway.
7. Total output power should not exceed the specified output ratings for any particular model.
8. MTBF calculations are made per MIL-HDBK-217F.

**ULTRA-MINIATURE, HIGH DENSITY
WIDE INPUT VOLTAGE RANGE
30W DC/DC CONVERTERS**

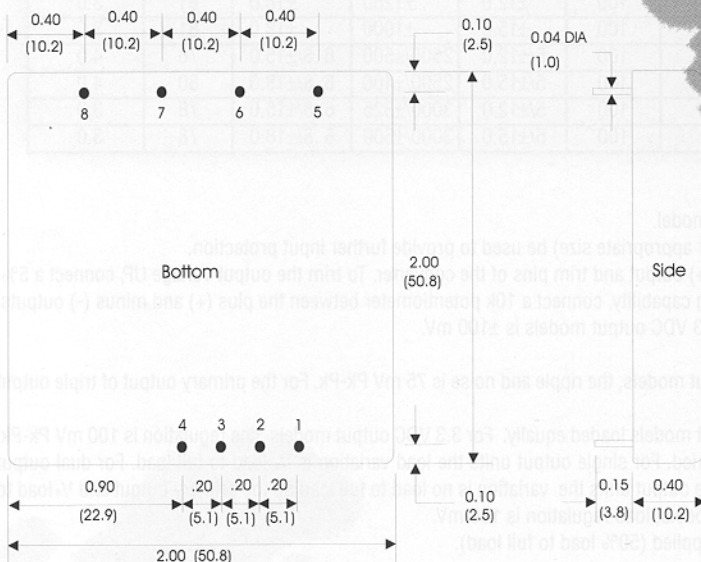
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Model Selection Guide

Model Number	Input				Output		Efficiency @FL (%)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA)	
	Nominal	Range	No-Load	Full-Load			
3003S12WFR	12	9 to 18	30	1860	3.3	5000	74
3005S12WFR	12	9 to 18	30	2675	5	5000	78
3012S12WFR	12	9 to 18	30	3050	12	2500	82
3015S12WFR	12	9 to 18	30	3050	15	2000	82
3005D12WFR	12	9 to 18	35	2675	±5	±2500	78
3012D12WFR	12	9 to 18	35	3050	±12	±1250	82
3015D12WFR	12	9 to 18	35	3050	±15	±1000	82
3005/12T12WFR	12	9 to 18	35	2640	5/±12	3500/±310	79
3005/15T12WFR	12	9 to 18	35	2640	5/±15	3500/±250	79
3003S24WFR	24	18 to 36	30	920	3.3	5000	75
3005S24WFR	24	18 to 36	30	1336	5	5000	79
3012S24WFR	24	18 to 36	30	1525	12	2500	82
3015S24WFR	24	18 to 36	30	1525	15	2000	82
3005D24WFR	24	18 to 36	30	1336	±5	±2500	79
3012D24WFR	24	18 to 36	30	1470	±12	±1250	85
3015D24WFR	24	18 to 36	30	1470	±15	±1000	85
3005/12T24WFR	24	18 to 36	30	1320	5/±12	3500/±310	80
3005/15T24WFR	24	18 to 36	30	1320	5/±15	3500/±250	80
3003S48WFR	48	36 to 72	20	460	3.3	5000	75
3005S48WFR	48	36 to 72	20	660	5	5000	79
3012S48WFR	48	36 to 72	20	765	12	2500	82
3015S48WFR	48	36 to 72	20	765	15	2000	82
3005D48WFR	48	36 to 72	25	660	±5	±2500	79
3012D48WFR	48	36 to 72	25	735	±12	±1250	85
3015D48WFR	48	36 to 72	25	735	±15	±1000	85
3005/12T48WFR	48	36 to 72	25	655	5/±12	3500/±310	80
3005/15T48WFR	48	36 to 72	25	655	5/±15	3500/±250	80

Mechanical Configuration:



Application Notes:

- These units operate as complete modules with no need for external components. However, in some noise sensitive analog applications it is recommended that a 15 μ F, 25V tantalum electrolytic capacitor be placed in parallel with a 0.1 μ F ceramic capacitor as close to the load as possible. This will reduce ripple significantly.

Pin-Out; Case A

Pin	Single Output	Dual Output	Triple Output
1	Remote On/Off	Remote On/Off	Remote On/Off
2	No Pin	No Pin	No Pin
3	- Input	- Input	- Input
4	+ Input	+ Input	+ Input
5	Trim	Trim	- Output (Aux)
6	- Output	- Output	Common
7	+ Output	Common	+5V Output
8	No Pin	+ Output	+ Output (Aux)

Note: All dimensions are typical in inches (mm).
Tolerance X.XX = ± 0.02 , (± 0.5)
X.XXX = ± 0.010 , (± 0.25)

For Easy Ordering Use

