



300WFR series

Single & Dual Output DC/DC Converter



DESCRIPTIONS

The 300WFR series 3 watts power modules are high efficiency, low profile dc-dc converters that operate over a wide input voltage range of 4.5 - 9 VDC, 9 - 18 VDC, 18 - 36 VDC and 36 - 72 VDC and provide precisely regulated output voltages of 3.3V, 5V, 12V, 15V, $\pm 5V$, $\pm 12V$ and $\pm 15V$.

The -25°C to $+71^{\circ}\text{C}$ operating temperature range makes it ideal for data communication equipment, mobile battery driven equipment, distributed power systems, telecommunication equipment, mixed analog/digital subsystems, process/machine control equipment, computer peripheral systems and industrial robot systems.

OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point	± 0.5	± 1.0		% Output voltage at nominal line & FL
Output Voltage Balance (Duals)	± 0.5	± 2.0		% Equal Output Loads
Line Regulation	± 0.2	± 0.5		% Output voltage measured from min. input line to maximum
Load Regulation	± 0.2	± 0.5		% Output voltage measured from FL to 10% load
Ripple/Noise		45	60	mV p-p, Nom.Line @FL, 20MHz B.W., using 1 μf bypass capacitor
Ripple/Noise			100	mV p-p, Over Line, Load & Temp., 20 MHz B.W., using 1 μf bypass capacitor
Short Circuit Protection				Continuous, Automatic Recovery
Transient Response Deviation	± 3	± 5		% deviation of V_{out} for a 25% load change
Over Power Protection	120			%
Transient Recovery Time		300	500	μS for 25% load change
Temperature Coefficient	± 0.01	± 0.02		% per degree C

FEATURES

- Up to 84% Efficiency
- Single & Dual Output, 2 to 3 watt converter
- 2 - 1 Input Range
- 1500 VDC Input / Output Isolation
- Short Circuit Protection
- MTBF > 1,000,000 Hours

INPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Start Voltage				
5 VDC Input Models	4.5	5	9	VDC
12 VDC Input Models	9	12	18	VDC
24 VDC Input Models	18	24	36	VDC
48 VDC Input Models	36	48	72	VDC
Input Fuse Requirements				
5 VDC Input Models		1500		mA; Slow blow type
12 VDC Input Models		700		mA; Slow blow type
24 VDC Input Models		350		mA; Slow blow type
48 VDC Input Models		135		mA; Slow blow type
Reverse Polarity Input Current			1	A

GENERAL CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Switching Frequency		300		kHz
Isolation Voltage	1500			VDC, 1 minute
Isolation Resistance	1000			Mohm, 500VDC
Isolation Capacitance		65	100	pF, 100kHz, 1VOLT
MTBF (MIL-HBK-217F)	1			Million Hours, $+25^{\circ}\text{C}$, Ground Benign



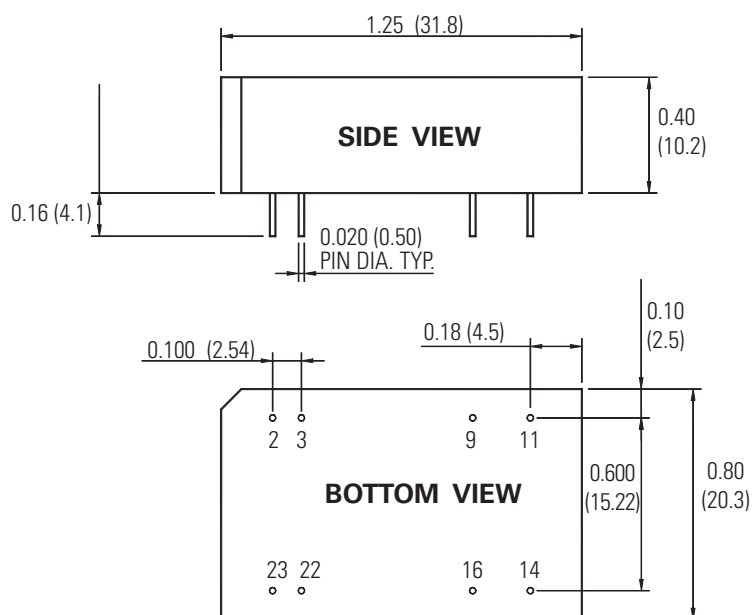
ENVIRONMENTAL SPECIFICATIONS

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-25		+71	°C; Ambient
Operating Temp. Range	-25		+90	°C; Case
Storage Temp. Range	-40		+125	°C
Relative Humidity			95	% Humidity; non-condensing
Cooling				Free-Air Convection

PHYSICAL CHARACTERISTICS

	Unit/Comments
Case Size	1.25 X 0.8 X 0.4 inches (31.8 X 20.3 X 10.2 mm)
Case Material	Non-conductive Black Plastic
Flammability	UL94V-0
Weight	12 Grams

OUTLINE DRAWING



PIN OUT CHART

Pins	Single	Dual
2	- Vin	- Vin
3	- Vin	- Vin
9	No Pin	Common
11	NC	- Vout
14	+ Vout	+ Vout
16	- Vout	Common
22	+ Vin	+ Vin
23	+ Vin	+ Vin

Notes:

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

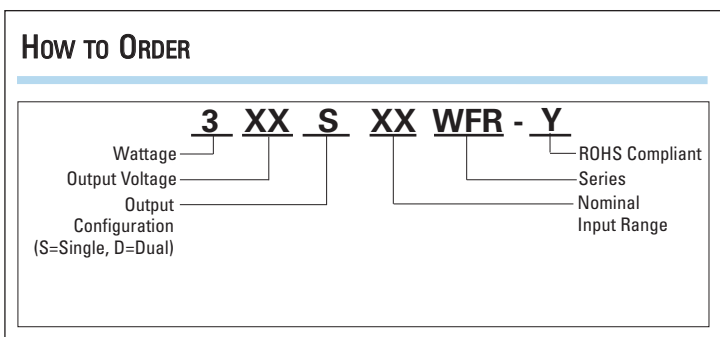
Tolerances	Inches	mm
	X.XX = ±0.02	X.X = ±0.5
	X.XXX = ±0.010	X.XX = ±0.25
Pin :	±0.002	±0.05

NC = No Connection

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



How To ORDER



MODEL SELECTION CHART

Model	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Output Voltage (VDC)	Full Load Output Current (mA)	Input Current No Load Typ. (mA)	Efficiency @ FL (%)
303S5WFR	5	4.5 - 9.0	3.3	600	40	70
305S5WFR	5	4.5 - 9.0	5.0	500	40	73
312S5WFR	5	4.5 - 9.0	12.0	250	40	77
315S5WFR	5	4.5 - 9.0	15.0	200	40	77
305D5WFR	5	4.5 - 9.0	±5.0	±250	40	72
312D5WFR	5	4.5 - 9.0	±12.0	±125	40	75
315D5WFR	5	4.5 - 9.0	±15.0	±100	40	75
303S12WFR	12	9 - 18	3.3	600	20	74
305S12WFR	12	9 - 18	5.0	500	20	78
312S12WFR	12	9 - 18	12.0	250	20	82
315S12WFR	12	9 - 18	15.0	200	20	82
305D12WFR	12	9 - 18	±5.0	±250	20	77
312D12WFR	12	9 - 18	±12.0	±125	20	80
315D12WFR	12	9 - 18	±15.0	±100	20	80
303S24WFR	24	18 - 36	3.3	600	5	76
305S24WFR	24	18 - 36	5.0	500	5	79
312S24WFR	24	18 - 36	12.0	250	5	84
315S24WFR	24	18 - 36	15.0	200	5	84
305D24WFR	24	18 - 36	±5.0	±250	5	79
312D24WFR	24	18 - 36	±12.0	±125	5	82
315D24WFR	24	18 - 36	±15.0	±100	5	82
303S48WFR	48	36 - 72	3.3	600	3	76
305S48WFR	48	36 - 72	5.0	500	3	79
312S48WFR	48	36 - 72	12.0	250	3	84
315S48WFR	48	36 - 72	15.0	200	3	84
305D48WFR	48	36 - 72	±5.0	±250	3	80
312D48WFR	48	36 - 72	±12.0	±125	3	84
315D48WFR	48	36 - 72	±15.0	±100	3	84



MAXIMUM CAPACITIVE LOAD

SINGLE OUTPUT UNITS

Module Output Voltage	3.3V	5V	12V	15V
Maximum Capacitive Load	4000 μ F	4000 μ F	4000 μ F	4000 μ F

DUAL OUTPUT UNITS

Module Output Voltage	$\pm 5V$	$\pm 12V$	$\pm 15V$
Max. Capacitive Load for each Output	1000 μ F	1000 μ F	1000 μ F

DERATING CURVES

MODEL 300WFR

