

300WFS series

Single & Dual Output DC/DC Converter



DESCRIPTIONS

The 300WFS series 3 watts power modules are high efficiency, surface mount dc-dc converters that operate over a wide input voltage range of 9 - 18 VDC, 18 - 36 VDC and 36 - 75 VDC and provide precisely regulated output voltages of 3.3V, 5V, 12V, 15V, $\pm 5V$, $\pm 12V$ and $\pm 15V$.

The $-40^{\circ}C$ to $+71^{\circ}C$ 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	± 0.1		± 0.3	% Output voltage measured from min. input line to maximum
Load Regulation	± 0.3		± 1.0	% Output voltage measured from FL to 10% load
Ripple/Noise		50	75	mV p-p, Nom.Line @FL, 20MHz B.W., using 1 μ f bypass capacitor
Ripple/Noise			100	mV p-p, Over Line, Load & Temp., 20 MHz B.W., using 1 μ f bypass capacitor
Short Circuit Protection				Continuous, Automatic Recovery
Transient Response Deviation	± 2		± 6	% deviation of Vout for a 25% load change
Over Power Protection	120			%
Transient Recovery Time		200	500	μ S for 25% load change
Temperature Coefficient	± 0.01		± 0.02	% per degree C



NEW Approved for New Designs

FEATURES

- SMT Package
- Up to 83% Efficiency
- Single & Dual Output, 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				
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				
12 VDC Input Models		750		mA; Slow blow type
24 VDC Input Models		350		mA; Slow blow type
48 VDC Input Models		200		mA; Slow blow type
Reverse Polarity Input Current			0.5	A
Short Circuit Input Power			1500	mW
Input Filter				Pi Filter

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°C, Ground Benign



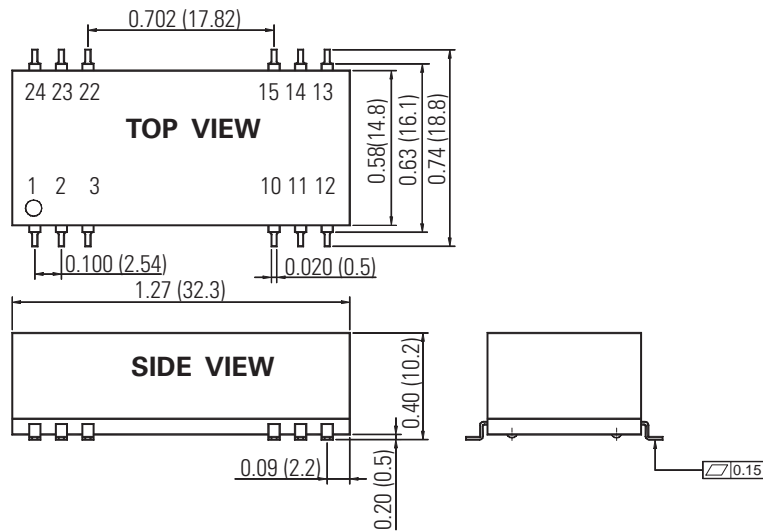
ENVIRONMENTAL SPECIFICATIONS

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-40		+71	°C; Ambient
Operating Temp. Range	-40		+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	1.27 X 0.74 X 0.4 inches (32.3 X 18.8X 10.2 mm)
Case Material	Non-conductive Black Plastic
Flammability	UL94V-0
Weight	8.8 Grams max.

OUTLINE DRAWING



PIN OUT CHART

Pins	Single	Dual
1	- Vin	- Vin
2	- Vin	- Vin
3	NC	NC
10	NC	Common
11	NC	NC
12	NC	- Vout
13	+ Vout	+ Vout
14	NC	NC
15	- Vout	Common
22	NC	NC
23	+ Vin	+ Vin
24	+ Vin	+ Vin

NC = No Connection

Notes:

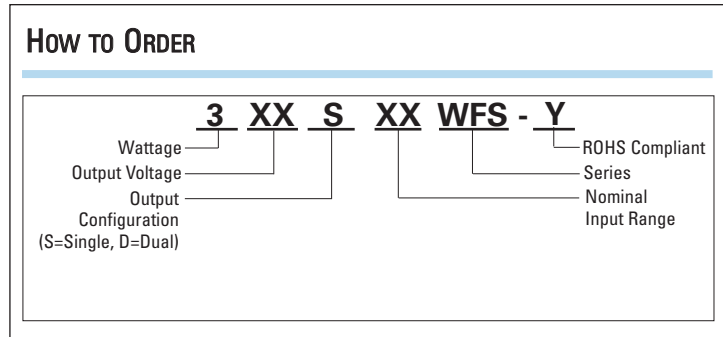
1. Unless otherwise specified dimensions are in inches (mm).

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

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



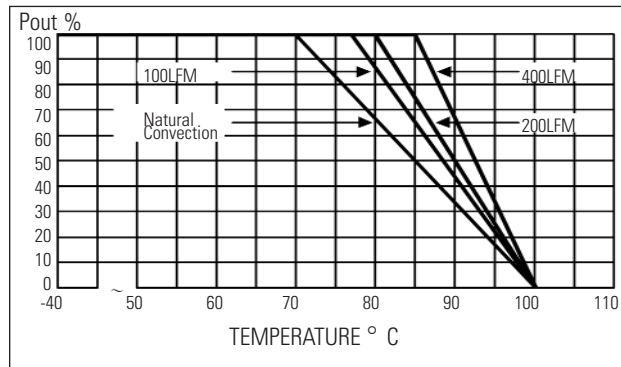
MODEL SELECTION CHART

Model	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Output Voltage (VDC)	Full Load Output Current (mA)	Input Current No Load Typ. (mA)	Efficiency @ FL (%)
303S12WFS	12	9 - 18	3.3	700	20	75
305S12WFS	12	9 - 18	5.0	600	20	79
312S12WFS	12	9 - 18	12.0	250	20	82
315S12WFS	12	9 - 18	15.0	200	20	82
305D12WFS	12	9 - 18	±5.0	±300	20	78
312D12WFS	12	9 - 18	±12.0	±125	20	81
315D12WFS	12	9 - 18	±15.0	±100	20	81
303S24WFS	24	18 - 36	3.3	700	5	76
305S24WFS	24	18 - 36	5.0	600	5	80
312S24WFS	24	18 - 36	12.0	250	5	83
315S24WFR	24	18 - 36	15.0	200	5	83
305D24WFS	24	18 - 36	±5.0	±300	5	79
312D24WFS	24	18 - 36	±12.0	±125	5	82
315D24WFS	24	18 - 36	±15.0	±100	5	82
303S48WFS	48	36 - 72	3.3	700	3	76
305S48WFS	48	36 - 72	5.0	600	3	80
312S48WFS	48	36 - 72	12.0	250	3	83
315S48WFS	48	36 - 72	15.0	200	3	83
305D48WFS	48	36 - 72	±5.0	±300	3	79
312D48WFS	48	36 - 72	±12.0	±125	3	82
315D48WFS	48	36 - 72	±15.0	±100	3	82



DERATING CURVES

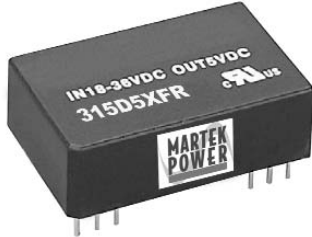
MODEL 300WFS





300XFR series

Single & Dual Output DC/DC Converter



DESCRIPTIONS

The 300XFR series power modules are high efficiency, low-profile, 3 watt dc-dc converters that operate over input voltage ranges of 4.5 - 9 VDC, 9 - 18 VDC, 18 - 36 VDC and 36 - 75 VDC and provide precisely regulated output voltages of 5V, 12V, 15V, ±12V and ±15V.

The -40°C to +71°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	±2.0		% Output voltage at nominal line & FL
Output Voltage Balance	±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 Vout for a 25% load change
Transient Recovery Time	300	500		µS for 25% load change
Temperature Coefficient	±0.01	±0.02		% per degree C

NEW Approved for New Designs

FEATURES

- Up to 81% Efficiency
- Single and Dual Output, 3 watt converter
- Available in 5, 12, 24 and 48 VDC Inputs 2 - 1 Input Range
- Industry Standard Pin out
- Short Circuit Protection

INPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Input 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	75	VDC
Under Voltage Shut Down				
5 VDC Input Models			4	VDC
12 VDC Input Models			8.5	VDC
24 VDC Input Models			17	VDC
48 VDC Input Models			34	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	Amp
Short Circuit Input Power		1000	1500	mW
Input Filter				Pi Filter

GENERAL CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Switching Frequency		300		kHz
Isolation Voltage	500			VDC, 1 minute
Isolation Resistance	1000			Mohm, 500VDC
Isolation Capacitance			500	pF, 100kHz, 1Volt
MTBF (MIL-HBK-217F)	1			Million Hours, +25°C, Ground Benign