300FR series

Single & Dual Output DC/DC Converter

MARTEK POWER

www.martekpower.com

Features

- Up to 64 % Efficiency
- Single and Dual Output, 3 watt converter
- Available in 5, 12, 24 and 48 VDC Inputs
- Industry Standard Pinout
- Short Circuit Protection

Descriptions

The 300FR series 3 watt power modules are specially designed to provide low output ripple and tight regulation in a low-profile 24 pin DIP package. The series consists of 20 models with input voltages of 5V, 12V, 24V and 48V, and offers regulated output voltages of 5V, 12V, 14V, ±12V and ±15.

The -25°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, automatic test instrumentation and industrial robot systems.

Output Characteristics

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point		±2.0	±4.0	% Output voltage at nominal line & FL
Output Voltage Balance (Duals)		±1.0	±3.0	% 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	50	mV p-p, Nom.Line @FL, 20MHz B.W., using 1 µf bypass capacitor
Ripple/Noise			75	mV p-p, Over Line, Load & Temp., 20 MHz B.W., using 1 µf bypass capacitor
Overload Protection	120			%Rated Output Load
Short Circuit Protection				Continuous, Automatic Recovery
Transient Response Deviation			±6	% deviation of Vout for a 50% load change
Transient Recovery Time			50	µS for 50% load change
Temperature Coefficient		±0.01	±0.02	% per degree C

Input Characteristics

	Min	Typ	Max	Unit/Comments
Input Voltage				
5 VDC Input Models	4.5	5	5.5	VDC
12 VDC Input Models	10.8	12	13.2	VDC
24 VDC Input Models	21.6	24	26.4	VDC
48 VDC Input Models	43.2	48	52.8	VDC
Input Fuse Requirements				
5 VDC Input Models		2000		mA; Slow blow type
12 VDC Input Models		1000		mA; Slow blow type
24 VDC Input Models		500		mA; Slow blow type
48 VDC Input Models		200		mA; Slow blow type
Reverse Polarity Input Current			0.5	Amp
Short Circuit Input Power			2500	mW
Input Filter				Pi Filter

General Characteristics

	Min	Typ	Max	Unit/Comments
Switching Frequency	40	80		kHz
Isolation Voltage	500			VDC, 1 minute
Isolation Resistance	1000			Mohm, 500VDC
Isolation Capacitance		100	150	pF, 100kHz, 1Volt
MTBF (MIL-HBK-217F)	600			Thousand Hours, +25°C, Ground Benign

Martek Power reserves the right to change specifications without notice.

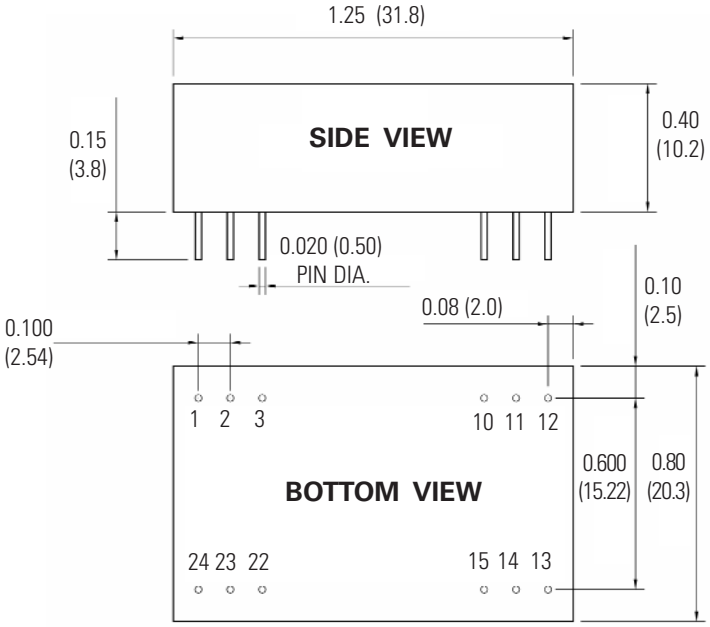
Environmental Specifications

	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	Black Coated Metal
Flammability	UL94V-0
Weight	14 Grams

Outline Drawing



Pin Out Chart

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

NC = No Connection

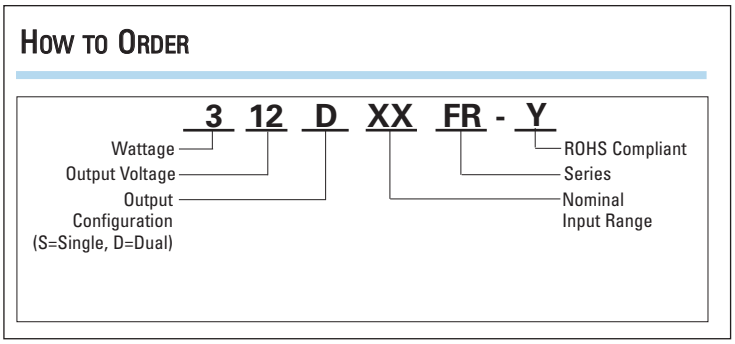
Notes:

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.

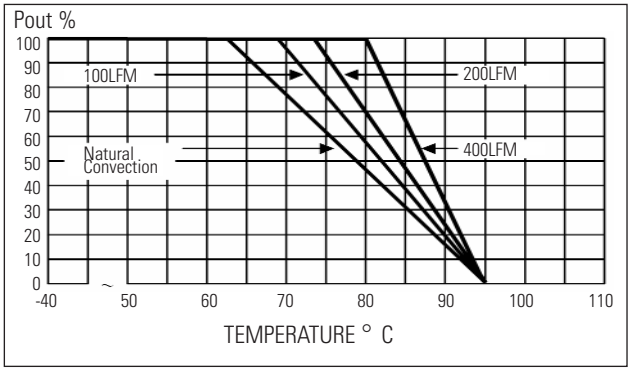
How To Order



Model Selection Chart

Model	Nominal Input Voltage (VDC)	Output Voltage (VDC)	Full Load Output Current (mA)	No Load Input Current (mA)	Full Load Input Current (mA)	Reflected Ripple Current (mA)	Efficiency @ FL (%)
305S5FR	5	5	600	100	1000	100	60
312S5FR	5	12	250	100	960	100	62
315S5FR	5	15	200	100	960	100	62
312D5FR	5	±12	±125	100	1000	100	60
315D5FR	5	±15	±100	100	1000	100	60
305S12FR	12	5	600	50	420	40	60
312S12FR	12	12	250	50	400	40	62
315S12FR	12	15	200	50	400	40	62
312D12FR	12	±12	±125	50	420	40	60
315D12FR	12	±15	±100	50	420	40	60
305S24FR	24	5	600	25	210	25	60
312S24FR	24	12	250	25	195	25	64
315S24FR	24	15	200	25	195	25	64
312D24FR	24	±12	±125	25	210	25	60
315D24FR	24	±15	±100	25	210	25	60
305S48FR	48	5	600	15	105	15	60
312S48FR	48	12	250	15	100	15	62
315S48FR	48	15	200	15	100	15	62
312D48FR	48	±12	±125	15	105	15	60
315D48FR	48	±15	±100	15	105	15	60

MODEL 300FR - Single Output



MODEL 300FR - Dual Output