500HFR series

Single & Dual Output DC/DC Converter

NEW Approved for New Designs

Features

- Up to 86% Efficiency
- Single & Dual Output, 5 watt converter
- Available in 24 and 48 VDC Inputs *4 - 1 Input Range*
- Industry Standard Pinout
- Complies with EN55022 Class A

Descriptions

The 500HFR series power modules are high efficiency, low noise, 5 watt low-profile dc-dc converters. The 5 watt converters operate over a wide input voltage range of 9 - 36 VDC or 18 - 75 VDC and provide precisely regulated output voltages of 3.3V, 5V, 12V, 15V, ±5V, ±12V and ±15V.

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, 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 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		% deviation of Vout for a 25% load change
Transient Recovery Time		250	500	µS for 25% load change
Temperature Coefficient		±0.01	±0.02	% per degree C

Input Characteristics

	Min	Typ	Max	Unit/Comments
Input Voltage				
24 VDC Input Models	9	24	36	VDC
48 VDC Input Models	18	48	75	VDC
Under Voltage Shut Down				
24 VDC Input Models			8.5	VDC
48 VDC Input Models			16	VDC
Input Fuse Requirements				
24 VDC Input Models		1500		mA; Slow blow type
48 VDC Input Models		750		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		340		kHz
Isolation Voltage	1500			VDC, 1 minute
Isolation Resistance	1000			Mohm, 500VDC
Isolation Capacitance			550	pF, 100kHz, 1Volt
MTBF (MIL-HBK-217F)	1			Million Hours, +25°C, Ground Benign

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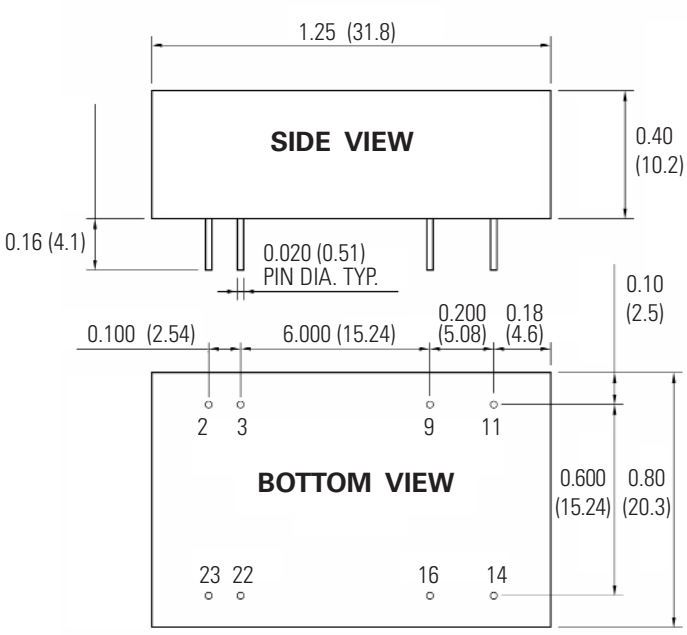
Environmental Specifications

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-25		+71	°C; Ambient
Operating Temp. Range			+90	°C; Case
Storage Temp. Range	-40		+125	°C
Relative Humidity			95	% Humidity; non-condensing
Cooling				Free-Air Convection
Conducted EMI				Complies with EN55022 Class A

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	Metal with Non-conductive Base
Flammability	UL94V-0
Weight	17.3 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

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.

Capacitor mounted close to the power module helps ensure stability of the unit, it is recommended to use a good quality low ESR capacitor of 4.7µF for the 24V input devices and a 2.2µF for the 48V devices.

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How To Order

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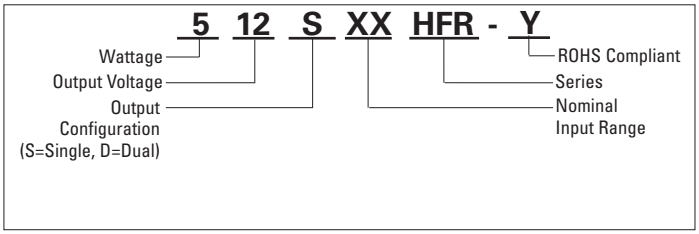

Model Selection Chart

Model	Nominal Input Voltage (VDC)	Output Voltage (VDC)	Full Load Output Current (mA)	No Load Input Current (mA)	Full Load Input Current (mA)	Efficiency @ FL (%)
503S24HFR	24	3.3	1200	20	212	78
505S24HFR	24	5	1000	20	257	81
512S24HFR	24	12	500	20	298	86
515S24HFR	24	15	400	20	298	85
505D24HFR	24	±5	±500	20	254	81
512D24HFR	24	±12	±250	20	298	86
515D24HFR	24	±15	±200	20	298	85
503S48HFR	48	3.3	1200	10	106	78
505S48HFR	48	5	1000	10	129	81
512S48HFR	48	12	500	10	149	86
515S48HFR	48	15	400	10	149	85
505D48HFR	48	±5	±500	10	127	81
512D48HFR	48	±12	±250	10	149	86
515D48HFR	48	±15	±200	10	149	85

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