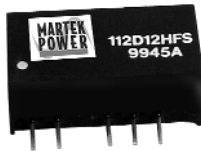




# 100HFS series

## Single & Dual Output DC/DC Converter



### DESCRIPTIONS

The 100HFS series is a family of cost effective 1 watt single and dual output DC/DC converters in ultra-miniature SIP packages. 24 models operate from input bus voltages of 5V, 12 and 24V; producing output voltage levels of 5V, 9V, 12V, 15V,  $\pm 5$ ,  $\pm 9$ V,  $\pm 12$ V or  $\pm 15$ V.

With footprint as little as 0.108 in<sup>2</sup>, the 100HFS series is ideal for innumerable board level power distribution applications where space is critical.

### OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point	$\pm 1.0$	$\pm 3.0$		% Output voltage at nominal line & FL
Output Voltage Balance (Duals)	$\pm 0.1$	$\pm 1.0$		% Equal Output Loads
Line Regulation	$\pm 1.2$	$\pm 1.5$		%; % Change / Percentage change in Input voltage
Load Regulation	See Model Selection Chart			% Output voltage measured from FL to 20% load
Ripple/Noise - Single	100	150		mV p-p, Nom.Line @FL, 20MHz B.W., using 1 $\mu$ f bypass capacitor
Ripple/Noise - Dual	50	75		
Ripple/Noise - Single - Dual		200	150	mV p-p, Over Line, Load & Temp., 20 MHz B.W., using 1 $\mu$ f bypass capacitor
Short Circuit Protection		0.5		Second
Temperature Coefficient	$\pm 0.01$	$\pm 0.02$		% per degree C

### FEATURES

- Miniature Single-Inline-Package (SIP)
- 1000 VDC Input/Output Isolation
- High Efficiency
- Wide Operating Temperature Range
- MTBF > 2,000,000 Hours
- Low Cost

### INPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
<b>Input Voltage</b>				
5 VDC Input Models	4.5	5	5.5	VDC
12 VDC Input Models	10.8	12	13.2	VDC
15 VDC Input Models	13.5	15	16.5	VDC
24 VDC Input Models	21.6	24	26.4	VDC
<b>Input Fuse Requirements</b>				
5 VDC Input Models		500		mA; Slow blow type
12 VDC Input Models		200		mA; Slow blow type
15 VDC Input Models		150		mA; Slow blow type
24 VDC Input Models		100		mA; Slow blow type
Reverse Polarity Input Current			0.3	A
Input Filter				Internal Capacitor

### GENERAL CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
<b>Switching Frequency</b>				
Single	50	90	110	kHz
Dual	70	100	120	kHz
Isolation Voltage	1100			VDC, 1 sec
Isolation Resistance	1000			Mohm, 500VDC
Isolation Capacitance		60	100	pF, 100kHz, 1Volt
MTBF (MIL-HBK-217F)	2000			Thousand Hours, +25°C, Ground Benign



### ENVIRONMENTAL SPECIFICATIONS

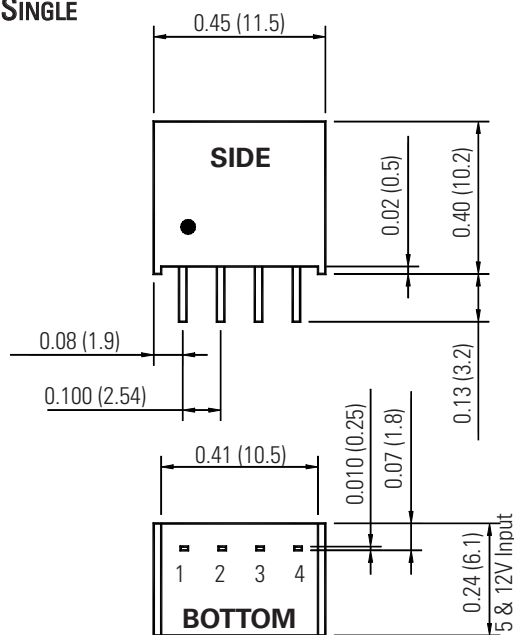
	Min	Typ	Max	Unit/Comments
Operating Temp.				
Single	-40		+75	°C; Ambient
Dual	-40		+85	°C; Ambient
Operating Temp. Range	-25		+90	°C; Case
Storage Temp. Range	-40		+125	°C
Relative Humidity			95	% Humidity; non-condensing
Cooling				Free-Air Convection

### PHYSICAL CHARACTERISTICS

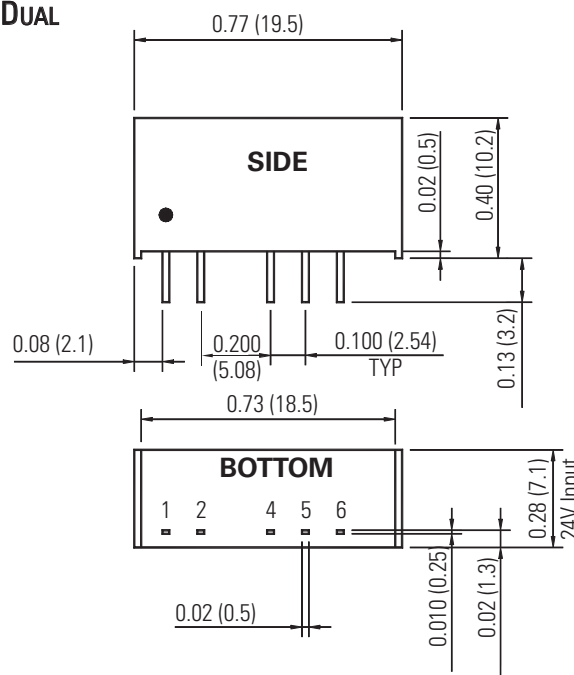
	Unit/Comments
Case Size	
Single: 5 & 12 VDC Input	0.45 X 0.24 X 0.40 inches (11.5 X 6.1 X 10.2 mm)
24 VDC Input	0.45 X 0.28 X 0.40 inches (11.5 X 7.1 X 10.2 mm)
Dual: 5 & 12 VDC Input	0.77 X 0.24 X 0.40 inches (19.5 X 6.1 X 10.2 mm)
24 VDC Input	0.77 X 0.28 X 0.40 inches (19.5 X 7.1 X 10.2 mm)
Case Material	Non-Conductive Black Plastic
Flammability	UL94V-0
Weight	
Single: 5 & 12 VDC Input	1.3 Grams
24 VDC Input	1.7 Grams
Dual: 5 & 12 VDC Input	2.2 Grams
24 VDC Input	2.6 Grams

### OUTLINE DRAWING

**SINGLE**



**DUAL**



### PIN OUT CHART

Pins	Single	Dual
1	- Vin	+ Vin
2	+ Vin	- Vin
3	- Vout	-
4	+ Vout	- Vout
5	-	Common
6	-	+ Vout

Notes:

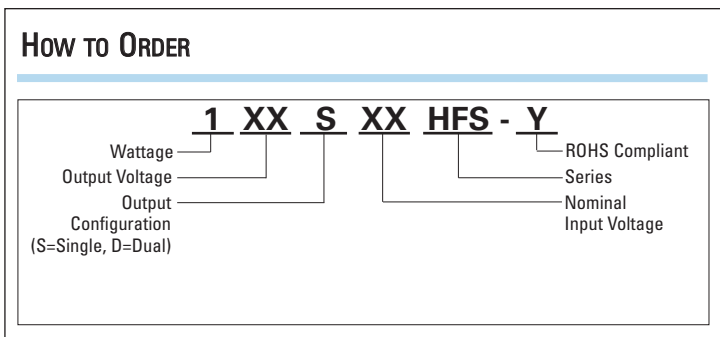
1. Unless otherwise specified dimensions are in inches (mm).

Tolerances	Inches	mm
	X.XX = ±0.02	X.X = ±0.5
	X.XXX = ±0.010	X.XX = ±0.25

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



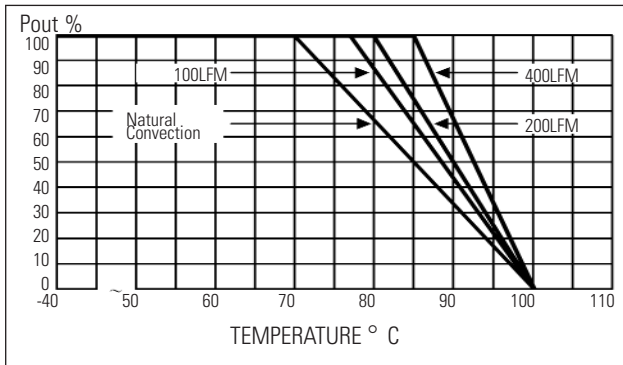
## MODEL SELECTION CHART

Model	Nominal Input Voltage (VDC)	Input Voltage Range (VDC)	Output Voltage (VDC)	Max. Output Current (mA)	Efficiency @ FL (%)	Max. Load Regulation (%)
105S5HFS	5	4.5 - 5.5	5.0	200	69	11
109S5HFS	5	4.5 - 5.5	9.0	110	76	8
112S5HFS	5	4.5 - 5.5	12.0	84	77	7
115S5HFS	5	4.5 - 5.5	15.0	67	78	6
105D5HFS	5	4.5 - 5.5	±5.0	±100	72	8
109D5HFS	5	4.5 - 5.5	±9.0	±56	77	8
112D5HFS	5	4.5 - 5.5	±12.0	±42	78	8
115D5HFS	5	4.5 - 5.5	±15.0	±34	79	8
105S12HFS	12	10.8 - 13.2	5.0	200	71	9
109S12HFS	12	10.8 - 13.2	9.0	110	77	5
112S12HFS	12	10.8 - 13.2	12.0	84	79	5
115S12HFS	12	10.8 - 13.2	15.0	67	80	4
105D12HFS	12	10.8 - 13.2	±5.0	±100	74	8
109D12HFS	12	10.8 - 13.2	±9.0	±56	79	8
109D12HFS	12	10.8 - 13.2	±12.0	±42	81	8
115D12HFS	12	10.8 - 13.2	±15.0	±34	81	8
105S24HFS	24	21.6 - 26.4	5.0	200	70	8
109S24HFS	24	21.6 - 26.4	9.0	100	76	5
112S24HFS	24	21.6 - 26.4	12.0	84	79	4
115S24HFS	24	21.6 - 26.4	15.0	67	79	4
105D24HFS	24	21.6 - 26.4	±5.0	±100	72	8
109D24HFS	24	21.6 - 26.4	±9.0	±56	76	8
112D24HFS	24	21.6 - 26.4	±12.0	±42	79	8
115D24HFS	24	21.6 - 26.4	±15.0	±34	80	8

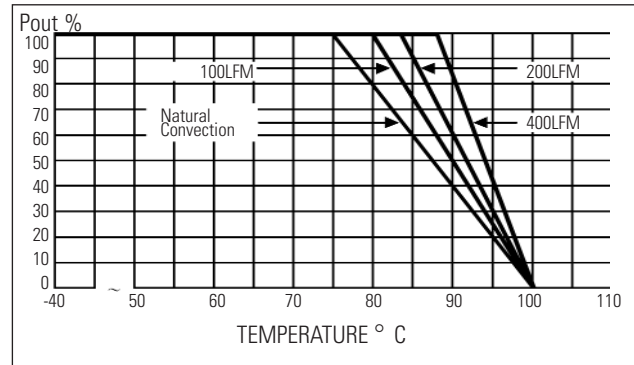


DERATING CURVES

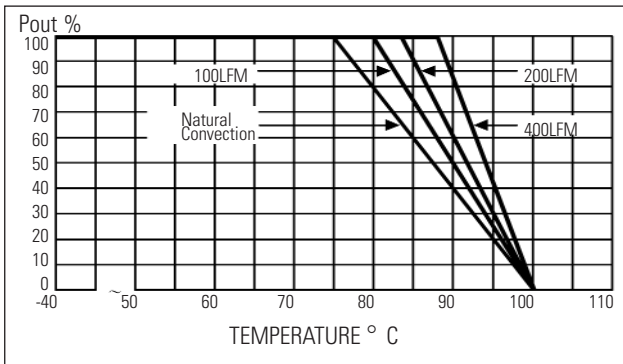
MODEL 100HFS Single - 3.3V, 5V & ±5V Output



MODEL 100HFS Single - 24V



MODEL 100HFS Dual - 5V Output



MODEL 100HFS Dual - all other outputs

