



# 200WFS series

## Single & Dual Output DC/DC Converter



### DESCRIPTIONS

The 200WFS series is a family of cost effective 2 watt single and dual output DC/DC converters in ultra-miniature “gull-wing” SMT packages. 13 models operate from input bus voltages of 5V, 12V and 24V; producing output voltage levels of 5V, 12V,  $\pm 5V$ ,  $\pm 12V$  and  $\pm 15V$  for a wide choice.

The 200WFS series is ideal for a variety of applications including distributed power systems, mixed analog / digital subsystems, portable test equipment, local power networks and battery backed systems.

### OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point	$\pm 1.5$	$\pm 4.0$		% 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			Measured from Full Load to 20% load
Ripple/Noise		100	120	mV p-p, Nom.Line @FL, 20MHz B.W., using 1 $\mu$ f bypass capacitor
Ripple/Noise			200	mV p-p, Over Line, Load & Temp., 20 MHz B.W., using 1 $\mu$ f bypass capacitor
Overload Protection	120			%Rated Output Load
Short Circuit Protection			0.5	Second
Temperature Coefficient	$\pm 0.01$	$\pm 0.02$		% per degree C

### FEATURES

- Miniature “Gull-wing” SMT Package
- 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
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
Input Fuse Requirements				
5 VDC Input Models		1000		mA; Slow blow type
12 VDC Input Models		500		mA; Slow blow type
24 VDC Input Models		200		mA; Slow blow type
Reverse Polarity Input Current			0.3	A
Input Filter				Internal Capacitor

### GENERAL CHARACTERISTICS

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



**ENVIRONMENTAL SPECIFICATIONS**

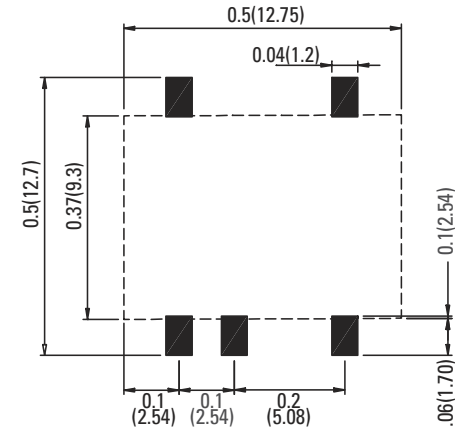
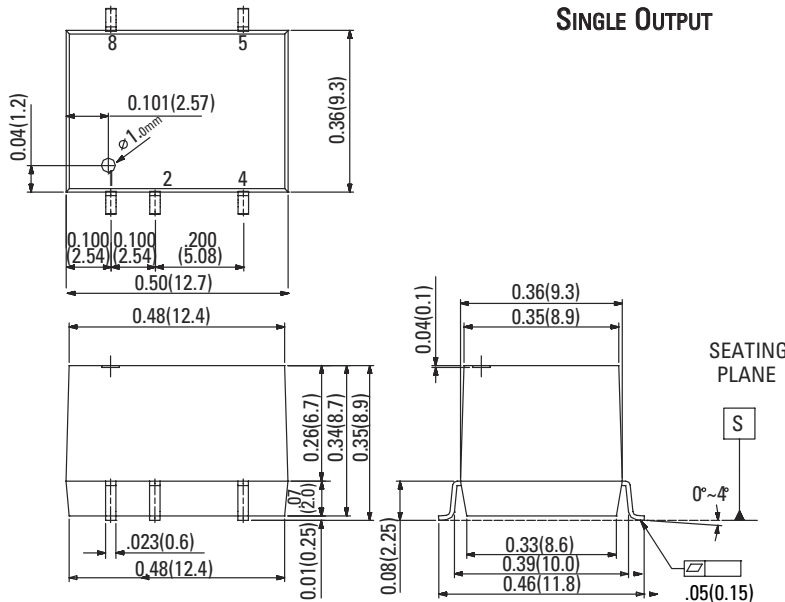
	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-40		+85	°C; Ambient
Operating Temp. Range	-40		+90	°C; Case
Storage Temp. Range	-40		+125	°C
Relative Humidity			95	% Humidity; non-condensing
Cooling				Free-Air Convection

**PHYSICAL CHARACTERISTICS**

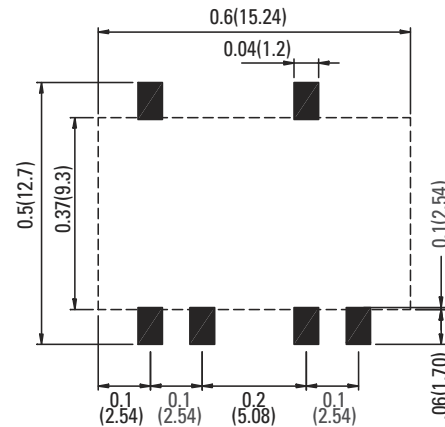
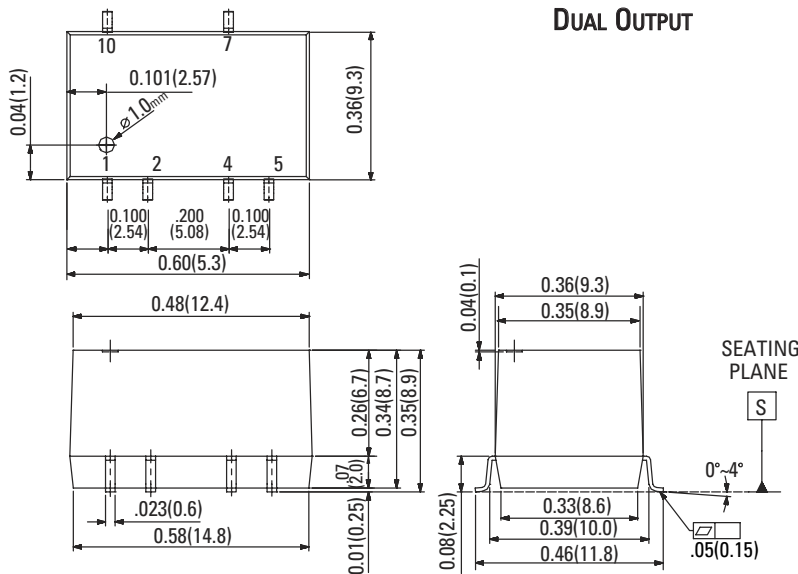
	Unit/Comments
Case Size (Single)	0.50 X 0.36 X 0.35 inches (12.8 X 9.3 X 8.9 mm)
Case Size (Dual)	0.60 X 0.36 X 0.35 inches (15.3 X 9.3 X 8.9 mm)
Case Material	Molding
Flammability	UL94V-0
Weight	1.5 Grams (Single) 2.2 Grams (Dual)

**OUTLINE DRAWING**

**SINGLE OUTPUT**



**DUAL OUTPUT**



**PIN OUT CHART**

Pins	Single	Dual
1	- Vin	- Vin
2	+ Vin	+ Vin
4	- Vout	Common
5	+ Vout	- Vout
7	No Pin	+ Vout
8	NA	No Pin
10	No Pin	NA

**Notes:**

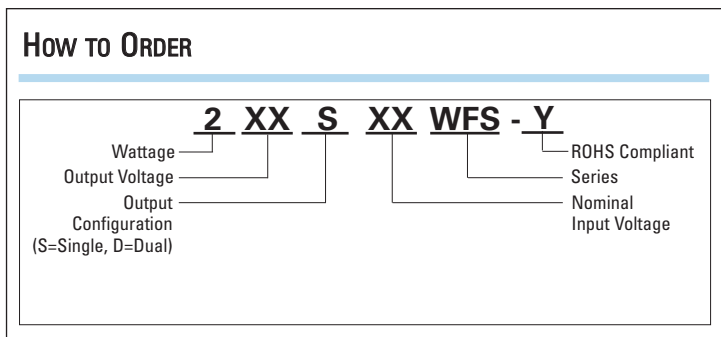
1. Unless otherwise specified dimensions are in inch (mm).

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)	Output Voltage (VDC)	Min. Output Current (mA)	FL Output Current (mA)	No Load Input Current (mA)	FL Input Current (mA)	Efficiency @ FL (%)	Max. Load Regulation (%)
205S5WFS	5	5	8	400	60	519	77	11
212S5WFS	5	12	3	165	60	488	81	11
205S12WFS	12	5	8	400	30	213	78	8
212S12WFS	12	12	3	165	30	201	82	5
205S24WFS	24	5	8	400	15	106	78	8
212S24WFS	24	12	3	165	15	101	81	5
205D5WFS	5	±5	±4	±200	60	519	77	10
212D5WFS	5	±12	±1.5	±83	60	504	79	7
215D5WFS	5	±15	±1	±66	60	501	79	7
212D12WFS	12	±12	±1.5	±83	30	202	82	5
215D12WFS	12	±15	±1	±66	30	201	82	5
212D24WFS	24	±12	±1.5	±83	15	102	81	5
215D24WFS	24	±15	±1	±66	15	100	82	5



## DERATING CURVES

MODEL 200WFS

