

# 12 Watt Single Series DC/DC Converters

## Features

- UL Recognized
- Low Noise Output
- LC Type Input Filter
- Six-Sided Shielded Steel Case
- Very Wide Input Voltage Ranges  
(9-36, and 24-72)
- High Efficiency Operation
- Long Term Output Fault Survival
- 5 Year Warranty

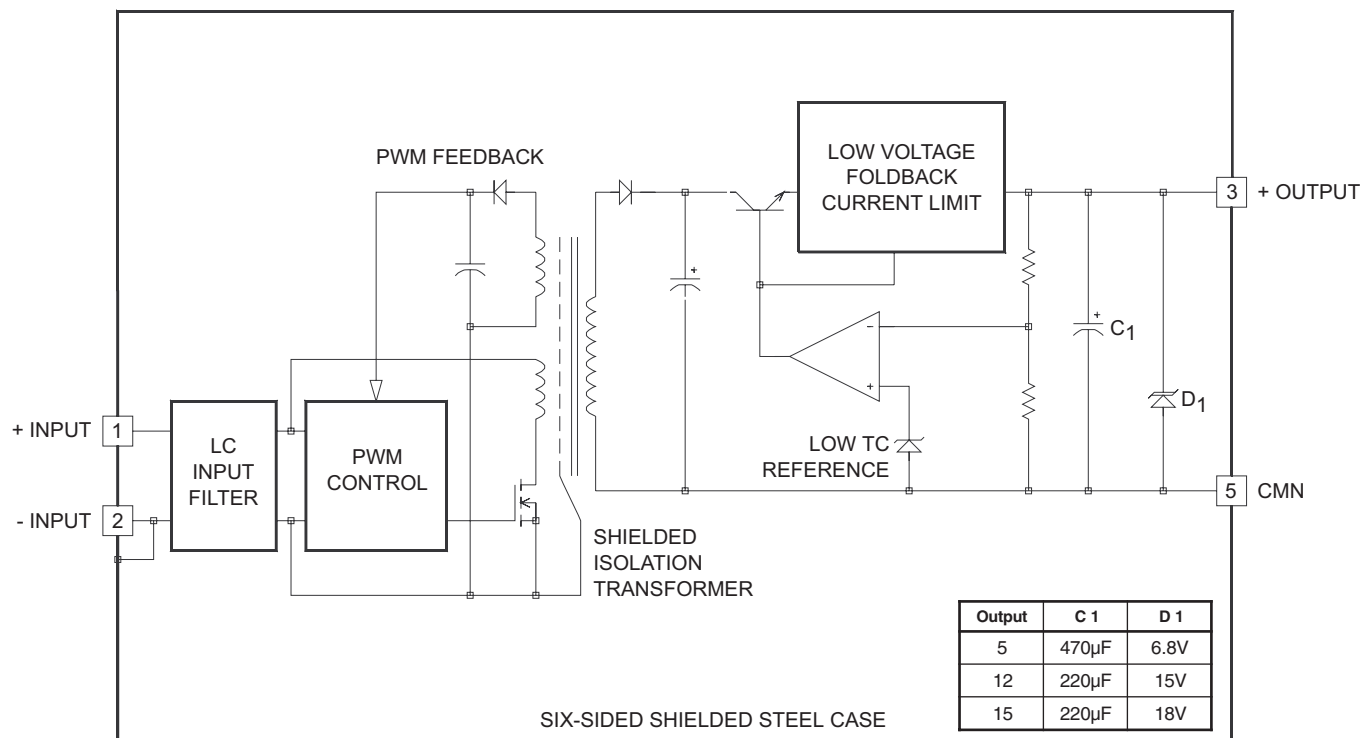
## Description

These 12 Watt Single Output DC/DC converters are designed for telecommunications, industrial controls, medical equipment and instrumentation systems. The converters feature very wide input voltage ranges.

The converter consists of a hi-speed chopper circuit using state-of-the-art MOSFET technology, isolation transformer, and high regulation linear post regulator. These provide very low noise and ultra stable output voltages.

Selection Chart				
Model	Input Range VDC		Output VDC	Output mA
	MIN	MAX		
24S5.2000	9.00	36.00	5.0	2000
24S12.1000	9.00	36.00	12.0	1000
24S15.800	9.00	36.00	15.0	800
48S5.2000	24.00	72.00	5.0	2000
48S12.1000	24.00	72.00	12.0	1000
48S15.800	24.00	72.00	15.0	800

12 Watt Single Series Block Diagram



# 12 Watt Single Series DC/DC Converters

Input Parameters*				
Model		24S5.2000 24S12.1000 24S15.800	48S5.2000 48S12.1000 48S15.800	Units
Voltage Range	MIN	9.00	24.00	VDC
	MAX	36.00	72.00	
Reflected Ripple, 0-20MHz bw	TYP	20	15	mA P-P
	MAX	45	30	
Input Current Full Load No Load	TYP	720	360	mA
	TYP	40	24	
Efficiency	TYP	70		%
Switching Frequency	TYP	909		kHz
Maximum Input Overvoltage, 100ms No Damage	MAX	40	80	VDC
Turn-on Time, 1% Output Error	TYP	60		ms
Recommended Fuse		(2)		

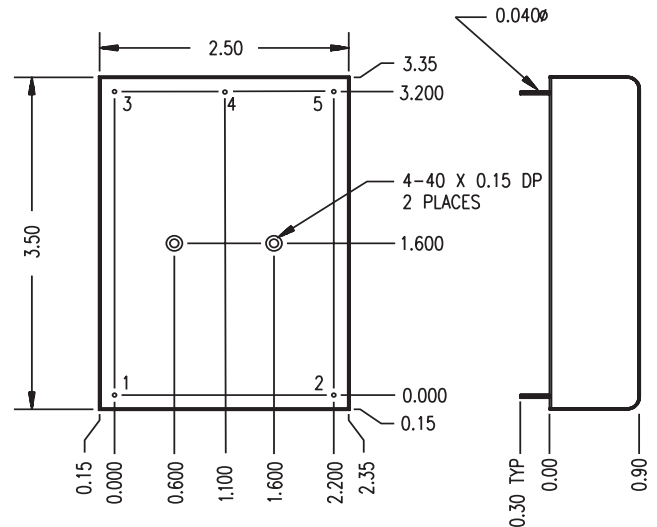
Output Parameters*					
Model		24S5.2000 48S5.2000	24S12.1000 48S12.1000	24S15.800 48S15.800	Units
Output Voltage		5	12	15	VDC
Rated Load (3)	MIN	0	0	0	mA
	MAX	2000	1000	800	
Voltage Range 100% Load	MIN	4.95	11.90	14.90	VDC
	TYP	5.00	12.00	15.00	
	MAX	5.05	12.10	15.10	
Load Regulation 0-100% Load	TYP	0.02			%
	MAX	0.05			
Line Regulation Vin = Min-Max VDC	TYP	0.02			%
	MAX	0.05			
Short Term Stability (4)	TYP	0.05			%
Long Term Stability	TYP	0.3			%/kHrs
Transient Response (5)	TYP	20			µs
Dynamic Response (6)	TYP	30	20	20	mV peak
Input Ripple Rejection (7)	TYP	60			dB
Noise, 0-20MHz bw	TYP	10			mV P-P
	MAX	40			
Temperature Coefficient	TYP	120			ppm/°C
	MAX	200			
Overvoltage Clamp (8)	TYP	6.8	15	18	VDC
Short Circuit Protection to Common for all Outputs		Continuous, 8 Hours Minimum Current Limit			

## NOTES:

- \* All parameters measured at Tc=25°C, nominal input voltage and full rated load unless otherwise noted. Refer to the CALEX Application Notes for the definition of terms, measurement circuits and other information.
- (2) Determine the correct fuse size by calculating the maximum DC current drain at low line input, maximum load then adding 20 to 25 percent. Slow blow type recommended.
- (3) No minimum load required.
- (4) Short term stability is specified after a 30 minute warm-up at full load.
- (5) Transient response is defined as the time for the output to settle from 100% step load change to a 1% error band (rise time of step =2 µSec).
- (6) Dynamic response is defined as the peak overshoot during a transient as defined in note 5 above.
- (7) The input ripple rejection is specified for DC to 120Hz ripple with a modulation amplitude of 1% of Vin.
- (8) For module protection only, with use of external fuse on input circuit, see note 2.
- (9) The functional temperature range is intended to give an additional data point for use in evaluating this power supply. At the low functional temperature the power supply will function with no side effects, however sustained operation at the high functional temperature will reduce expected operational life. The data sheet specifications are not guaranteed over the functional temperature range.
- (10) The case thermal impedance is specified as the case temperature rise over ambient per package watt dissipated.
- (11) Water Washability - Calex DC/DC converters are designed to withstand most solder/wash processes. Careful attention should be used when assessing the applicability in your specific manufacturing process. Converters are not hermetically sealed.

# 12 Watt Single Series DC/DC Converters

General Specifications*			
All Models			Units
<b>Isolation</b>			
Isolation Voltage	MIN	500	VDC
10 $\mu$ A Leakage Input-Output			
Input to Output Capacitance	TYP	120	pF
<b>Environmental</b>			
Case Operating Range	MIN	-25	°C
No Derating	MAX	80	
Case Functional Range (9)	MIN	-40	°C
	MAX	85	
Storage Range	MIN	-55	°C
	MAX	100	
Thermal Impedance (10)	TYP	6	°C/Watt
<b>General</b>			
Unit Weight	TYP	6.5	oz
Mounting Kits	MK215-022 & MK215-08BDV		
Agency Approvals	UL 1459		



BOTTOM VIEW

SIDE VIEW

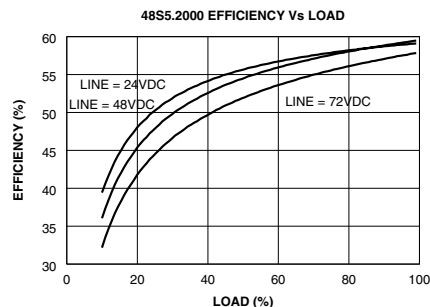
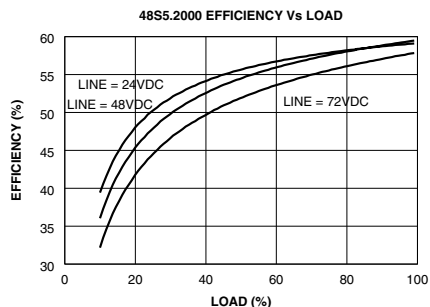
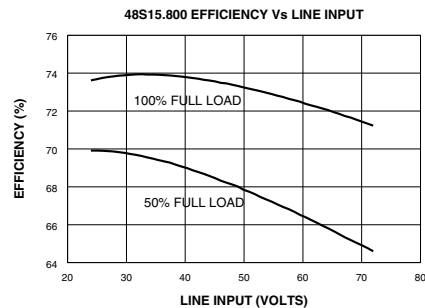
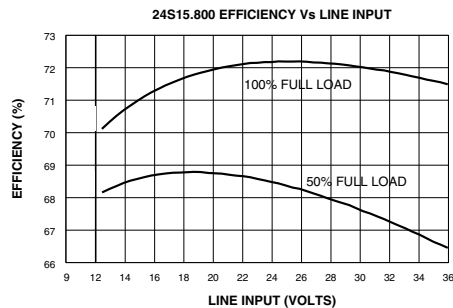
Mechanical tolerances unless otherwise noted:

X.XX dimensions:  $\pm 0.020$  inches

X.XXX dimensions:  $\pm 0.005$  inches

Pin	Function
1	+INPUT
2	-INPUT
3	+OUTPUT
4	N/C
5	CMN

Typical Performance ( $T_c=25^\circ\text{C}$ ,  $V_{in}=\text{Nom VDC}$ , Rated Load).



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