

12 Watt Dual Series DC/DC Converters

Features

- Low Noise Output
- LC Type Input Filter
- Six-Sided Shielded Steel Case
- Very Wide Input Voltage Ranges (9-36, 18-54, and 24-72)
- High Efficiency Operation
- Long Term Output Fault Survival
- 5 Year Warranty

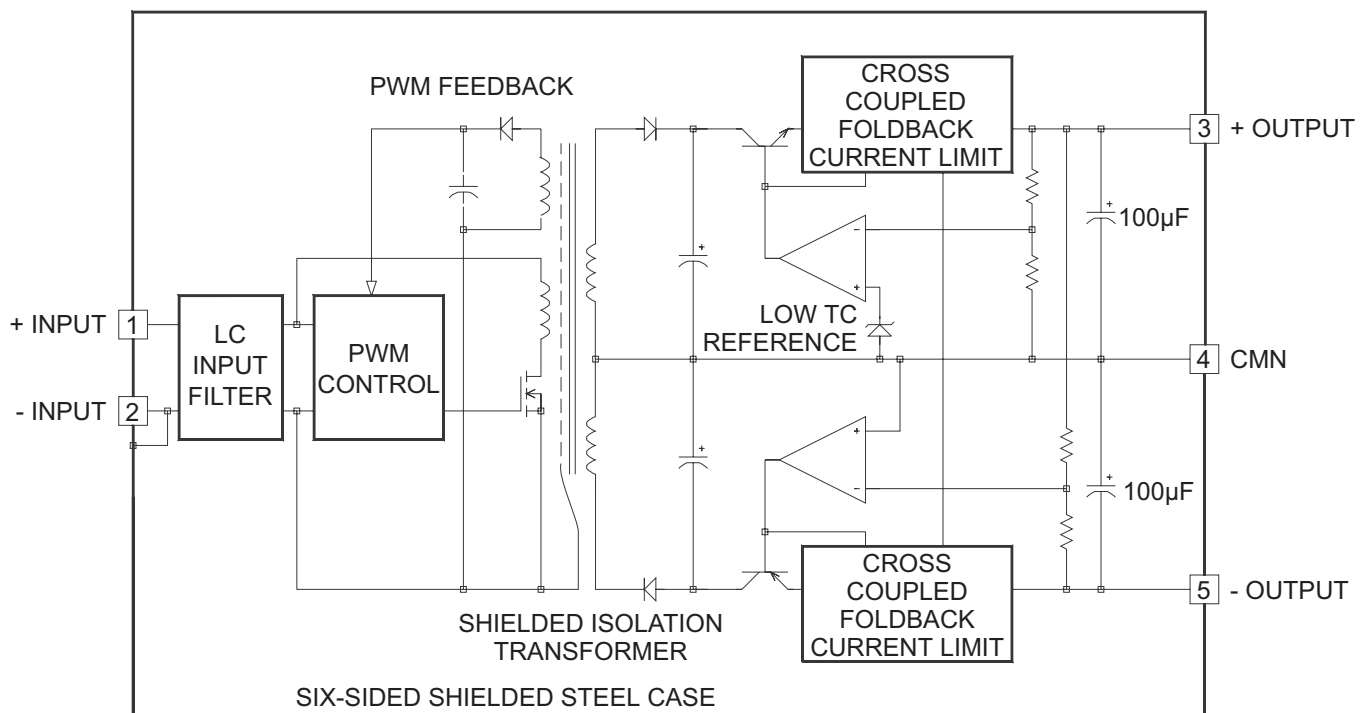
Description

These 10 and 12 Watt Dual Output DC/DC converters are designed for telecommunications, medical or industrial 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. This provides for very low noise and ultra stable output voltages.

Selection Chart				
Model	Input Range VDC		Outputs VDC	Outputs mA
	MIN	MAX		
24D12.500	9.00	36.00	±12.0	±500
24D15.400	9.00	36.00	±15.0	±400
28D5.1000	18.00	54.00	±5.0	±1000
48D12.500	24.00	72.00	±12.0	±500
48D15.400	24.00	72.00	±15.0	±400

12 Watt Dual Series Block Diagram



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Input Parameters*					
Model		24D12.500	24D15.400		Units
Voltage Range	MIN MAX	9.00 36.00		VDC	
Reflected Ripple, 0-20MHz bw	TYP MAX	20 45		mA P-P	
Input Current Full Load No Load	TYP TYP	710 40	700 40		mA
Efficiency	TYP	70		%	
Switching Frequency	TYP	100		kHz	
Maximum Input Overvoltage, 100ms No damage	MAX	40		VDC	
Turn-on Time, 1% Output Error	TYP	60		ms	
Recommended Fuse		(2)			
Model		28D5.1000	48D12.500	48D15.400	Units
Voltage Range	MIN MAX	18.00 54.00	24.00 72.00		VDC
Reflected Ripple, 0-20MHz bw	TYP MAX	20 50	15 30		mA P-P
Input Current Full Load No Load	TYP TYP	600 40	360 24	350 24	mA
Efficiency	TYP	60	70		%
Switching Frequency	TYP	87	100		kHz
Maximum Input Overvoltage, 100ms No damage	MAX	60	80		VDC
Turn-on Time, 1% Output Error	TYP	60		ms	
Recommended Fuse		(2)			

Output Parameters*					
MODEL		28D5.1000	24D12.500 48D12.500	24D15.400 48D15.400	Units
Output Voltage		±5	±12	±15	VDC
Rated Current (3)	MIN	0	0	0	mA
	MAX	+1100/-900	±500	±400	
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	
Output Balance (Plus to Minus Output, Full Load)	TYP	0.6			%
	MAX	1.0			
Load Regulation 0-100% Load	TYP	0.05	0.02	0.02	%
	MAX	0.10	0.07	0.07	
Line Regulation Vin = Min-Max VDC	TYP	0.02			%
	MAX	0.07			
Short Term Stability (4)	TYP	0.02			%
Long Term Stability	TYP	0.3			%/kHrs
Transient Response (5)	TYP	20			µs
Dynamic Response (6)	TYP	20			mV peak
Input Ripple Rejection (7)	TYP	60			dB
Noise, 0-20MHz bw	TYP	10			mV P-P
	MAX	40			
Temperature Coefficient	TYP	100	50	50	ppm/°C
	MAX	300	150	150	
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.

(3) No minimum load required.

(4) Short term stability is specified after a 30 minute warm-up at full load.

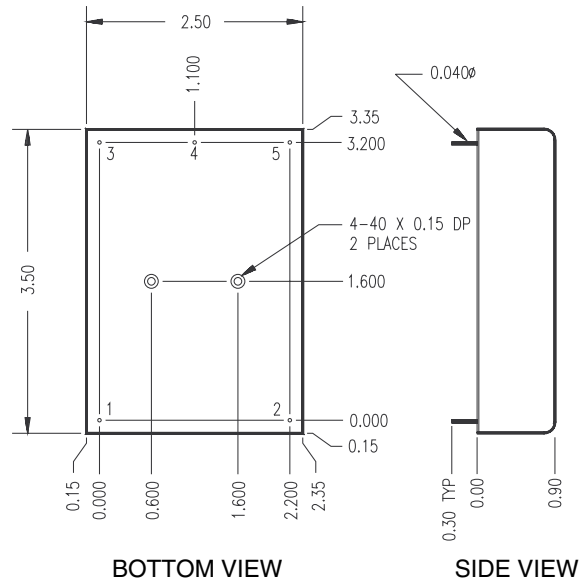
(5) Transient response is defined as the time for the output to settle from a 100% step load change to a 1% error band (rise time of step = 2µSec).

(6) Dynamic response is defined as the peak overshoot during a transient as defined in note 5 above.

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General Specifications *				
All Models				Units
Isolation				
Isolation Voltage 10µA Leakage Input-Output	MIN	500		VDC
Input to Output Capacitance	TYP	120		pF
Environmental				
Case Operating Range No Derating	MIN	-25		°C
	MAX	80		
Case Functional Range (8)	MIN	-40		°C
	MAX	85		
Storage Range	MIN	-55		°C
	MAX	100		
Thermal Impedance (9)	TYP	6		°C/Watt
General				
Unit Weight	TYP	6.5		oz
Mounting Kits		MK215-022 & MK215-08BDV		

- (7) The input ripple rejection is specified for DC to 120Hz ripple with a modulation amplitude of 1% of V_{in} .
- (8) 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.
- (9) The case thermal impedance is specified as the case temperature rise over ambient per package watt dissipated.
- (10) 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.



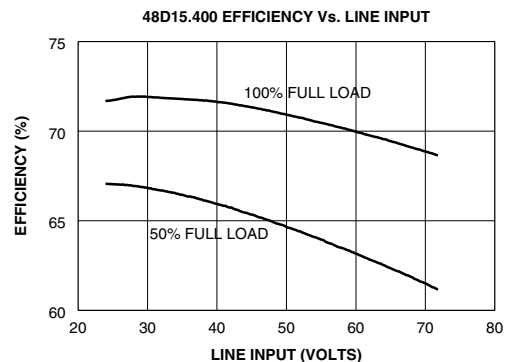
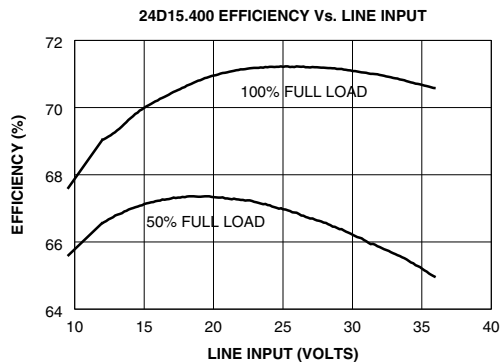
Mechanical tolerances unless otherwise noted:

X.XX dimensions: ± 0.020 inches

X.XXX dimensions: ± 0.005 inches

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

Typical Performance ($T_c=25^\circ\text{C}$, Full Rated Load).



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