

30 Watt XW Dual Series DC/DC Converters

Features

- 30 Watts of Output Power from Either or Both Outputs
- 2:1 Extra Wide Input Range
- High, Nearly Constant Efficiency (81-88%)
- 500 VDC Minimum Input To Output Isolation
- Short Circuit Protection
- Resettable Thermal Overload Circuit
- Overvoltage Protection for Input and Outputs
- No Derating to 80°C Case Temperature
- 5 Year Warranty

Description

These dual output converters are designed for wide input range, low noise telecommunications, industrial control and instrument applications. The extra wide input range (2:1) is ideal for battery or unregulated input applications.

These converters are state-of-the-art 80 kHz MOSFET based designs that provide outstanding line and load regulation.

The dual outputs are regulated with a high loop gain feedback control method that provides linear regulator type performance with a true, high efficiency switching DC/DC topology. The large amount of loop gain insures excellent input ripple rejection and line transient response.

Outstanding line and load regulation are achieved over the full input voltage range and over the specified load current range.

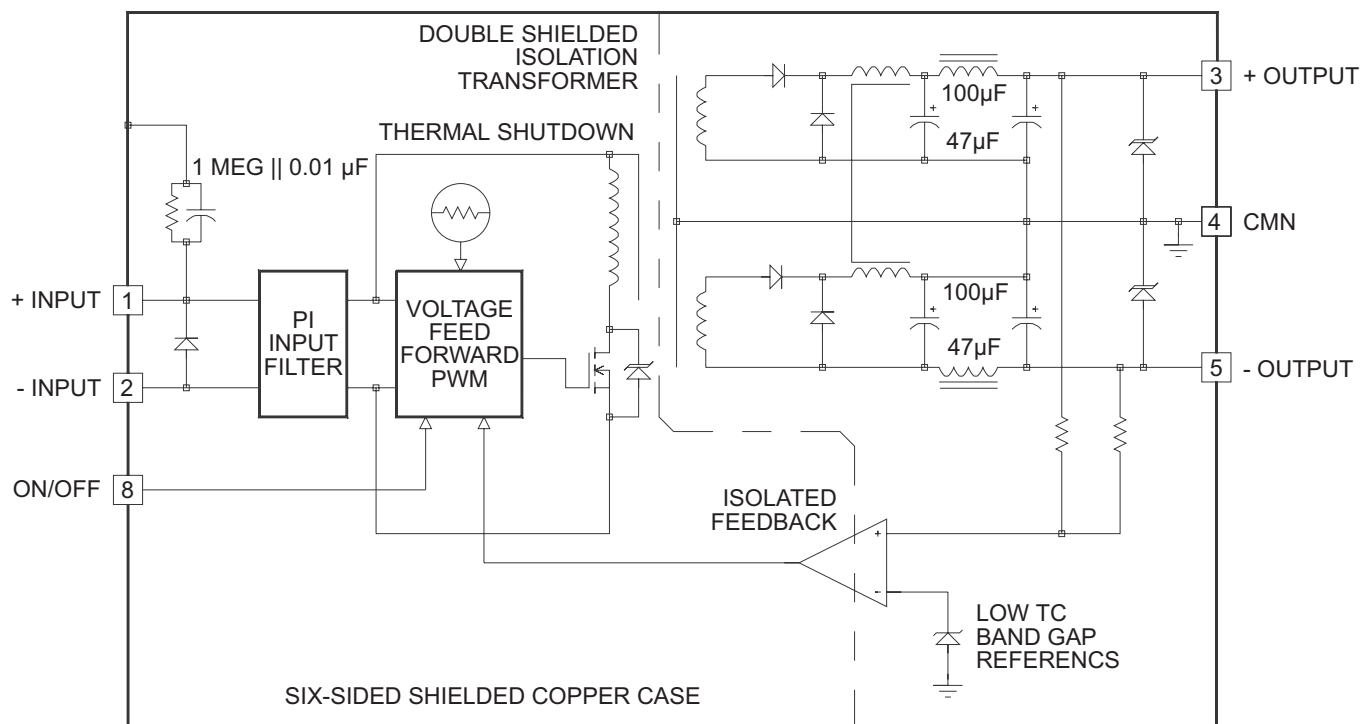
Also included is a logic (open collector TTL / CMOS compatible) shutdown pin to control converter operation.

The XW Dual Series is protected from output shorts to common by a high speed pulse by pulse digital current limit circuit and a resettable thermal shut down circuit.

The outputs and input are overvoltage protected.

Selection Chart				
Model	Input Range VDC		Outputs VDC	Outputs mA
	MIN	MAX		
12D12.1250XW	9.0	18.0	±12.0	±1250
12D15.1000XW	9.0	18.0	±15.0	±1000
24D12.1250XW	18.0	36.0	±12.0	±1250
24D15.1000XW	18.0	36.0	±15.0	±1000
48D12.1250XW	36.0	72.0	±12.0	±1250
48D15.1000XW	36.0	72.0	±15.0	±1000

30 Watt XW Dual Series Block Diagram



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Input Parameters*								
Model		12D12.1250XW	12D15.1000XW	24D12.1250XW	24D15.1000XW	48D12.1250XW	48D15.1000XW	Units
Input Range	MIN	9.0		18.0		36.0		VDC
	TYP	12.0		24.0		48.0		
	MAX	18.0		36.0		72.0		
Input Reflected Ripple 0-20MHz bw	TYP	90		35		25		mA P-P
	MAX	150		70		50		
Input Current Full Load No Load	TYP	3085		1440		710		mA
	TYP	35		25		20		
Efficiency	TYP	81		87		88		%
Switching Frequency	TYP	80						kHz
Maximum Input Overvoltage, 100ms No Damage	MAX	23		45		85		VDC
Undervoltage Lockout	TYP	8.5		15.5		34.0		VDC
Turn-on Time, 1% Output Error	TYP	20						ms
Recommended Fuse		(2)						

Output Parameters*						
Model		12D12.1250XW 24D12.1250XW 48D12.1250XW		12D15.1000XW 24D15.1000XW 48D15.1000XW		Units
Output Voltage		±12		±15		VDC
Rated Load (3)	MIN	±310		±250		mA
	MAX	±1250		±1000		
Output Voltage Accuracy Plus out, Full load	MIN	11.925		14.925		VDC
	TYP	12.000		15.000		
	MAX	12.075		15.075		
Output Balance (Plus to Minus Output, Full Load)	TYP	0.5				%
	TYP	0.7				
	MAX	0.5				
	MAX	0.7				
Load Regulation 25%-100% Load 0-100% Load	TYP	0.8		0.7		%
	MAX	1.2		1.2		
	TYP	2.0		2.0		
	MAX	4.0		4.0		
Cross Regulation (4)	TYP	0.8				%
	MAX	1.2				
Line Regulation Vin = Min-Max VDC	TYP	0.02				%
	MAX	0.2				
Short Term Stability 0-24Hrs (5)	TYP	0.1				%
Long Term Stability	TYP	0.3				%/kHrs
Transient Response (6)	TYP	150				µs
Dynamic Response (7)	TYP	225				mV peak
Input Ripple Rejection (8)	TYP	52				dB
Noise, 0-20MHz bw	TYP	20				mV P-P
	MAX	75				
Temperature Coefficient	TYP	50				ppm/°C
	MAX	200				
Overvoltage Clamp (9)	TYP	15		18		VDC

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.**

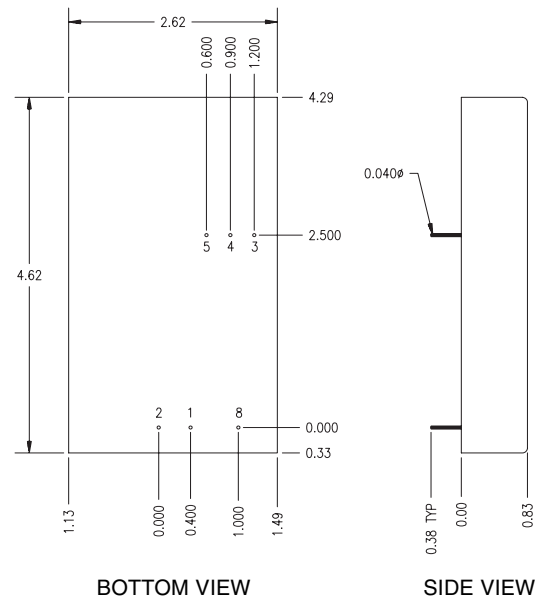
- (2) Determine the correct fuse size by calculating the maximum DC current drain at low line input, maximum load (or use the supplied curves) and then adding 20 to 25 percent to get the desired fuse size.
- (3) Maximum output power is 30 Watts. This power can be drawn from any output combination so long as the sum of both outputs power never exceeds 30 Watts (i.e. one output can draw 0 Amps and the other can draw twice it's rated full load current).

Regulation degrades with substantial unbalance. Minimum load is required for proper regulation only; no module damage is sustained if run at less than minimum load.

- (4) Cross regulation is defined as the change in one output when the other output is changed from minimum to maximum load.
- (5) Short term stability is specified after a 30 minute warm-up at full load.
- (6) Transient response is defined as the time for the output to settle from a 25 to 75 % step load change to a 1% error band (rise time of step = 2 µSec).
- (7) Dynamic response is defined as the peak overshoot during a transient as defined in note 6 above.

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General Specifications*			
All Models			Units
Logic Shutdown (10)			
ON Logic Level or Leave Pin Open	MIN	5.5	VDC
OFF Logic Level	MAX	0.8	VDC
Input Resistance	TYP	100	kohms
Converter Idle Current, Shut Down Pin Low	TYP	5	mA
Isolation			
Isolation Voltage	MIN	500	VDC
Input-Output	MIN	250	VDC
Input-Case	MIN	250	VDC
Output-Case	MIN	250	VDC
10 μ A Leakage			
Input to Output Capacitance	TYP	190	pF
Environmental			
Case Operating Range	MIN	-25	$^{\circ}$ C
No Derating	MAX	80	$^{\circ}$ C
Case Functional Range (11)	MIN	-40	$^{\circ}$ C
	MAX	90	$^{\circ}$ C
Storage Range	MIN	-55	$^{\circ}$ C
	MAX	105	$^{\circ}$ C
Thermal Impedance (12)	TYP	3.3	$^{\circ}$ C/Watt
Thermal Shutdown Case Temperature	TYP	90	$^{\circ}$ C
General			
Unit Weight		10.5	oz.
Mounting Kit		MS10	



Mechanical tolerances unless otherwise noted:

X.XX dimensions: ± 0.020 inches

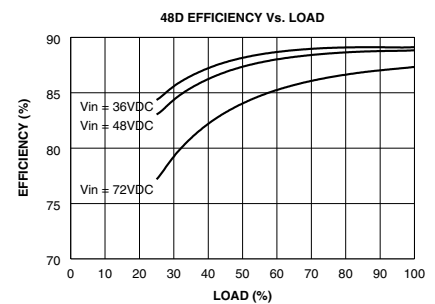
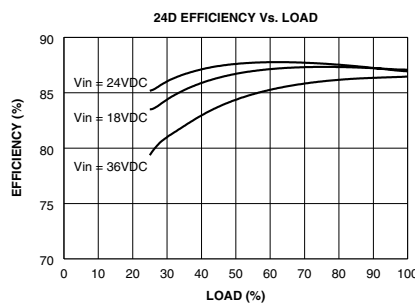
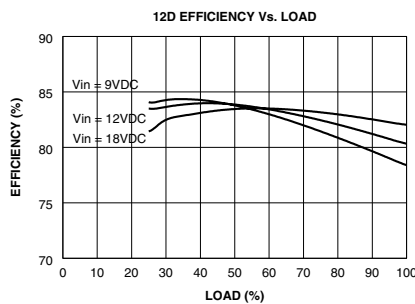
X.XXX dimensions: ± 0.005 inches

Seal around terminals is not hermetic. Do not immerse units in any liquid.

Pin	Function
1	+INPUT
2	-INPUT
3	+OUTPUT
4	CMN
5	-OUTPUT
8	ON/OFF

- (8) The input ripple rejection is specified for DC to 120 Hz ripple with a modulation amplitude of 1% of V_{in} .
- (9) For module protection only, see also note 2.
- (10) The logic shutdown pin is Open Collector TTL, CMOS, and relay compatible. The input to this pin is referenced to -input (pin 2) and is protected to +100 VDC.
- (11) 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.
- (12) The case thermal impedance is specified as the case temperature rise over ambient per package watt dissipated.
- (13) 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.

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



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