

5 Watt Single Output DC/DC Converter

3355 Vincent Road, Pleasant Hill, CA 94523-4389 800-542-3355 Telephone (415)932-3911 FAX: (415)932-6017



FEATURES

T-57-11

- Ultra Wide Input Voltage Range
- Low Noise, Trimable, Highly Stable Output
- Efficiency > 74% For All Line Conditions
- No Derating To 80 Degrees C Case Temperature
- Six-Sided Shielded, Low Thermal Gradient Copper Case
- Overvoltage Protected Output
- Pulse By Pulse Digital Current Limit
- 5 Year Warranty

SELECTION CHART

MODEL	INPUT RANGE VDC		OUTPUTS VDC	OUTPUTS mA	CASE
	MIN	MAX			
12S5.1000WF	7.0	32.0	5.0	1000	D

DESCRIPTION

This single output converter is designed for wide input range, low noise industrial and instrument applications. The ultra wide input range is ideal for battery or unregulated input applications.

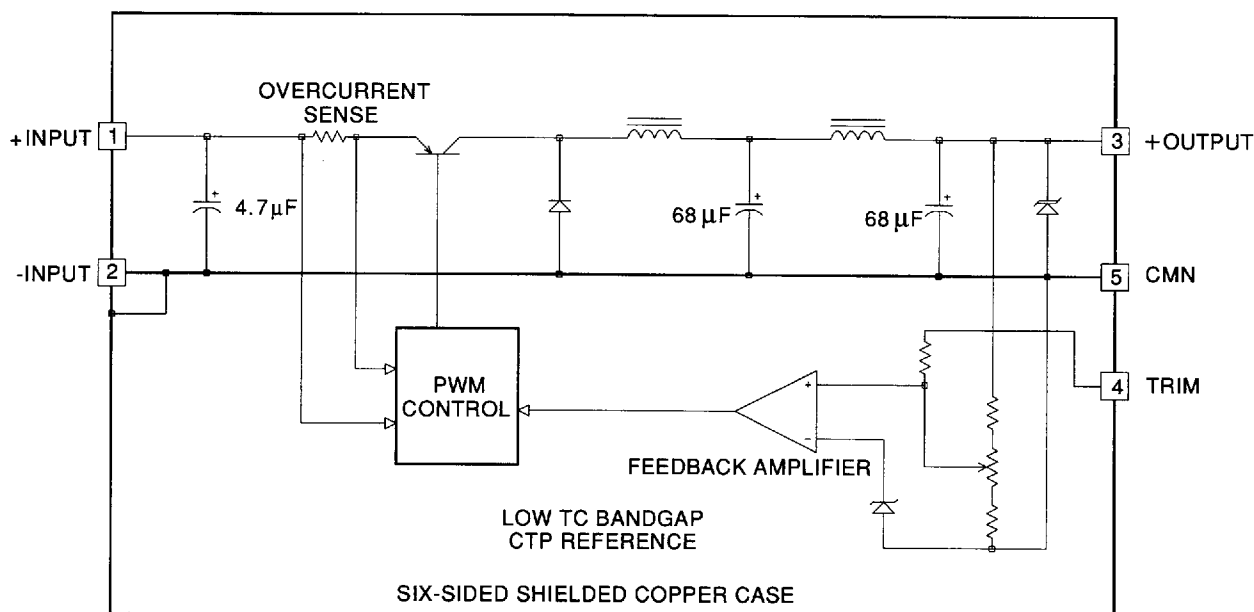
The converter features a 55kHz switching frequency that provides outstanding regulation and efficiency at full load.

The output is regulated with high loop gain pulse width modulation control which provides linear regulator type performance.

The output is resistor or trimpot trimable by $\pm 10\%$, which allows the WF to be set for +5.2 VDC in ECL applications.

The WF is protected from output shorts to ground by a high speed digital, current limit circuit. The output is overvoltage protected.

WF SINGLE SERIES BLOCK DIAGRAM





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INPUT PARAMETERS (1)			
MODEL		12S5.1000WF	UNITS
Voltage Range	MIN	7.0	VDC
	TYP	12.0	
	MAX	32.0	
Input Reflected Ripple, 0-20MHz BW (2)	MAX	1000	mA p-p
Input Current Full Load	TYP	550	mA
	TYP	10	
	No Load		
Efficiency	TYP	75	%
Switching Frequency	TYP	55	kHz
Maximum Input Overvoltage, 100mSec No Damage	MAX	40	VDC
Turn-on Time, to 1% Output Error	TYP	5	mSec
Recommended Fuse		(3)	

OUTPUT PARAMETERS (1)			
MODEL		12S5.1000WF	UNITS
Output Voltage		5	VDC
Rated Current (4)	MIN	0	mA
	MAX	1000	
Voltage Range 100% Load	MIN	4.950	VDC
	TYP	5.000	
	MAX	5.050	
Load Regulation 0-100 % Full Load	TYP	0.05	%
	MAX	0.20	
Line Regulation Vin = Min-Max VDC	TYP	0.05	%
	MAX	0.20	
Short Term Stability (5)	TYP	0.05	%
Long Term Stability	TYP	0.20	%/kHrs
Transient Response (6)	TYP	500	μSec
Dynamic Response (7)	TYP	200	mV peak
Input Ripple Rejection (8)	TYP	23	dB
Noise, 0-20MHz BW	TYP	20	mV p-p
	MAX	40	
Temperature Coefficient	TYP	50	ppm/°C
	MAX	150	
Overvoltage Clamp (9)	TYP	6.8	VDC
Short Circuit Protection to Common		Continuous, 8 Hours Minimum Current Limit	

Notes:

- (1) All parameters measured at 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) Peak to Peak input reflected ripple is equal to the DC output current when measured into a zero impedance source resistance. For reduced input ripple use the suggested input filter circuit.
- (2) For long term short circuit protection of the converters, install a slow blow fuse in the input circuit. Choose a fuse size that is 125% of your applications actual input current and does not exceed 115% of the full load input current.
- (4) No minimum load required.
- (5) Short term stability is specified after a 30 minute warmup at full load, constant line and recording the drift over a 24 hour period.
- (6) After a 25% step change of the load, the output voltage will be within $\pm 1\%$ of the final value within the transient response time.
- (7) Dynamic response is the peak overshoot during a transient as defined in note 4 above.
- (8) The input ripple rejection is specified for DC to 120 Hz ripple with a modulation amplitude of 1% of Vin.
- (9) For module protection only, see also note 3.

GENERAL SPECIFICATIONS (1)			
MODEL		12S5.1000WF	UNITS
OUTPUT TRIM FUNCTION			
Input Resistance	TYP	100	kOhms
Trim Range	MIN	± 10	%
ISOLATION			
Isolation (10)		None	
CASE SPECIFICATIONS			
Case Operating Range, No Derating	MIN	-25	°C
	MAX	80	
Case Functional Range, (11)	MIN	-40	°C
	MAX	90	
Storage Range	MIN	-55	°C
	MAX	105	
Thermal Impedance (12)	TYP	10	°C/Watt
Unit Weight	TYP	1.5	oz
Case		D	
Mounting Kits		MS6 & MS15	

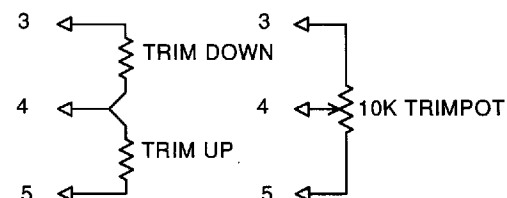


Figure 1. CONNECTIONS FOR OUTPUT TRIM

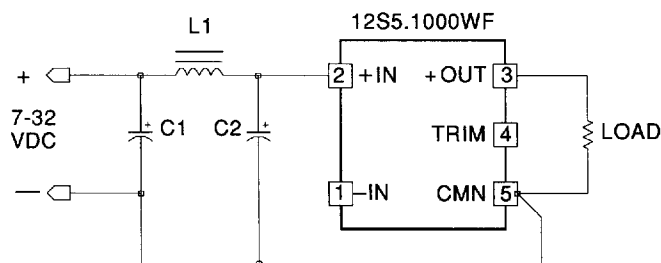


Figure 2. INPUT FILTER CIRCUIT

This circuit will reduce the input reflected ripple of the WF Series to 30mA p-p (0-20MHz BW). L1 is 10 turns wound on a MICROMETALS T30-26 core or any 6-10μH, 1 amp inductor. C1 and C2 are Panasonic 47μF, 35V, HF capacitors (ECE-A1VF470R) or the equivalent.

Note: For lowest noise operation use single point grounding to pin 5 for both input and output circuits.

- (10) Case is tied to pin 1. Input and output commons are connected internally.
- (11) The functional temperature range is intended to give additional data for 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 the case temperature rise over ambient per watt dissipated.

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CALEX MANUFACTURING CO

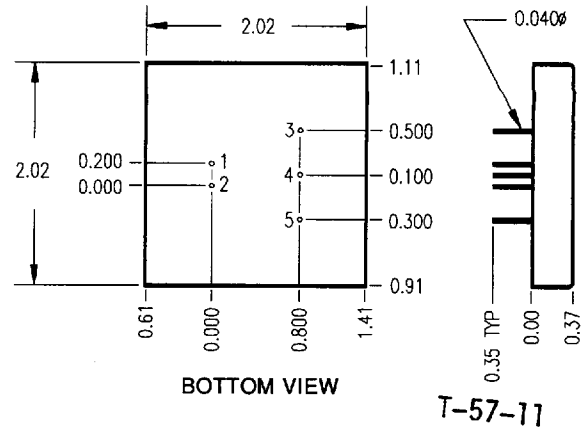
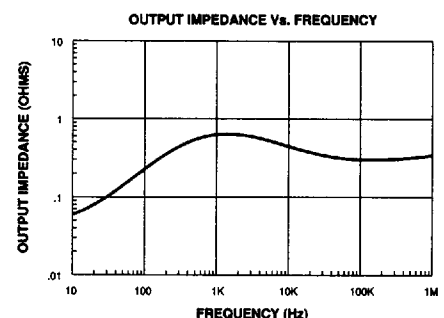
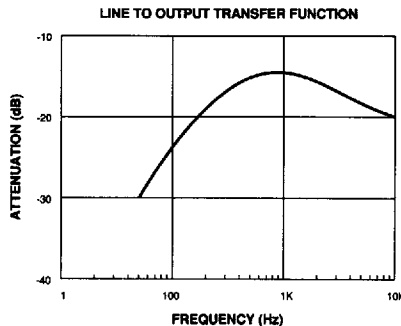
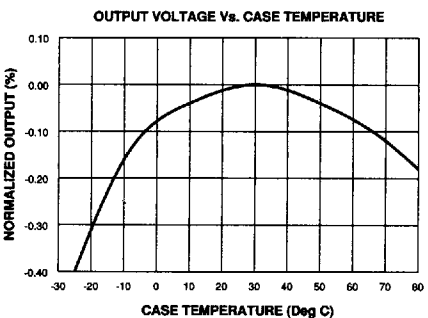
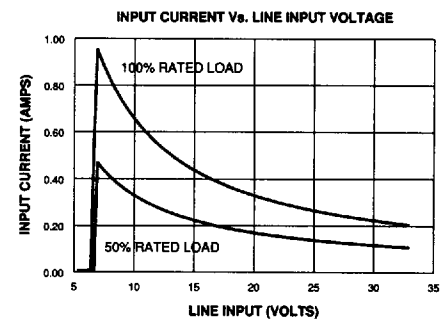
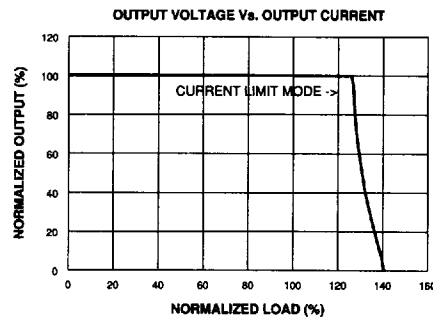
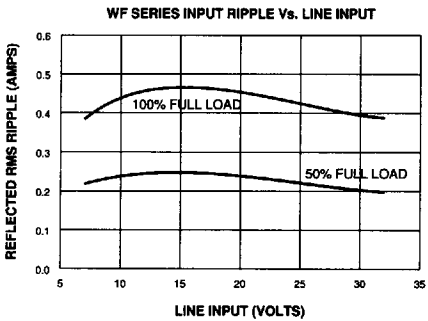
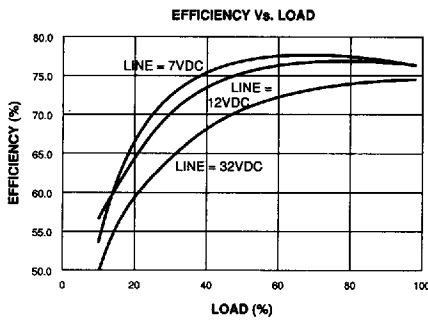
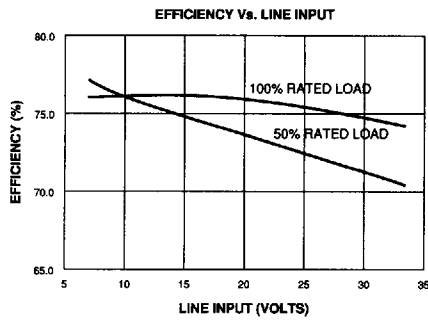
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52E D ■ 1811250 0001136 469 ■ CEX

Typical Performance:

(Tc = 25°C; Full Rated Load).



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	TRIM
5	OUT CMN