3 Watt Single Output DC/DC Converters

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

T-57-11

FEATURES

- Low Profile Copper Case (0.375" High)
- Six-Sided Shielded Case
- Low Input/Output Noise Operation
- 500 VDC Input/Output Isolation
- Short Circuit Protected Output
- Output Overvoltage Clamp
- Fixed Frequency Operation Independent of Line and Load
- Highly Regulated/Low Drift Output
- Rugged High Speed MOSFET Power Chopper
- 5 Year Warranty

SELECTION CHART

MODEL	INPUT RANGE VDC		OUTPUTS VDC	OUTPUTS mA	CASE
	MIN	MAX			
12S5.600*	10.56	15.60	5.0	600	D
12S12.250*	10.56	15.60	12.0	250	D
12S15.200*	10.56	15.60	15.0	200	D
24S5.600*	21.12	31.20	5.0	600	D
24S12.250*	21.12	31.20	12.0	250	D
24S15.200*	21.12	31.20	15.0	200	D
28S5.600*	24.64	36.40	5.0	600	D
28S12.250*	24.64	36.40	12.0	250	D
28S15.200*	24.64	36.40	15.0	200	D
48S5.600*	42.24	62.40	5.0	600	D
48S12.250*	42.24	62.40	12.0	250	D
48S15.200*	42.24	62.40	15.0	200	D

*These units are Recognized to UL 1012 and 1459-2.

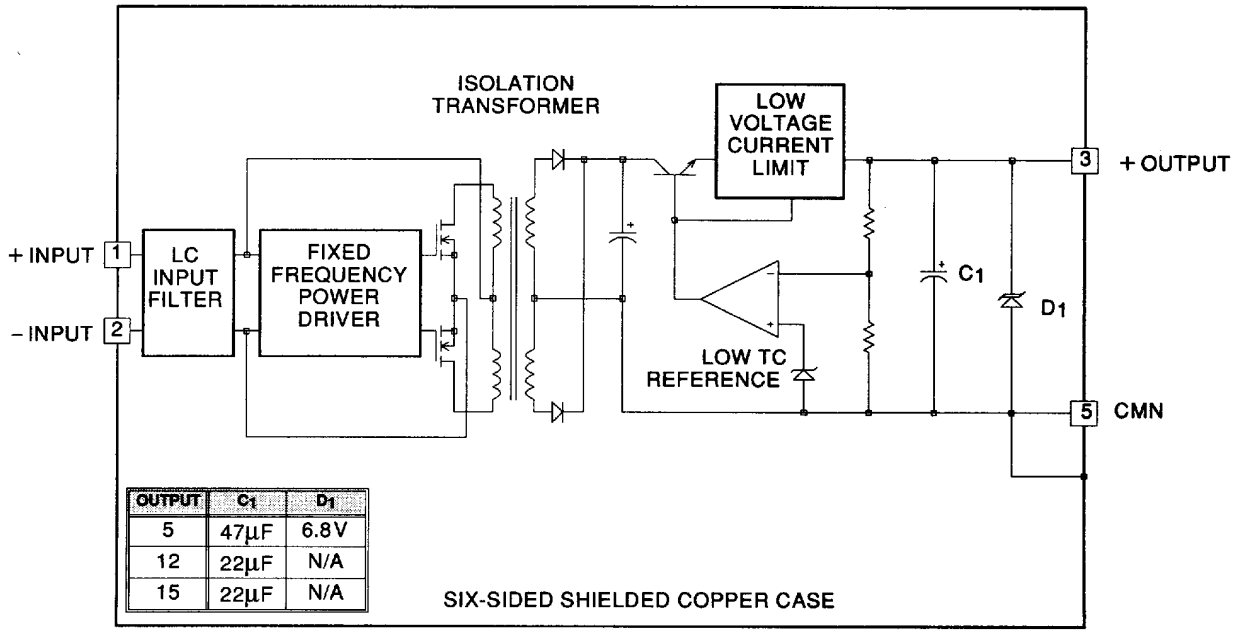
DESCRIPTION

Ideal for industrial applications or other systems that require direct PCB mounting, these 3 Watt Single Output Converters yield low noise and highly stable DC outputs.

The converters are designed with an LC input filter, MOSFET push-pull power chopper and an isolation transformer. Excellent line and load regulation are achieved by incorporating a linear post regulator.

The transformer provides 500 VDC isolation between input and output allowing the converters output to be floated above ground. Radiated noise from these 3 Watt converters is significantly reduced by using a low profile, six-sided shielded copper case. The CALEX 5 Year Warranty covers all units in this series.

3 WATT SINGLE SERIES BLOCK DIAGRAM



OUTPUT	C_1	D_1
5	47µF	6.8V
12	22µF	N/A
15	22µF	N/A

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INPUT PARAMETERS(1)								
MODEL		12S5.600	12S12.250	12S15.200	24S5.600	24S12.250	24S15.200	UNITS
Voltage Range	MIN MAX	10.56 15.60			21.12 31.20			VDC
Reflected Ripple, 0-20MHz BW	TYP MAX	5 7			5 10			mA p-p
Input Current Full Load No Load	TYP TYP	435 43	390 43	389 54	203 20	199 23	191 27	mA
Efficiency	TYP	60			63			%
Switching Frequency	TYP	55						kHz
Maximum Input Overvoltage, 100mS No Damage	MAX	18.7			37.4			VDC
Turn-on Time, 1% Output Error		1			1			mSec
Recommended Fuse		Slow Blow Type (2)						
MODEL		28S5.600	28S12.250	28S15.200	48S5.600	48S12.250	48S15.200	UNITS
Voltage Range	MIN MAX	24.64 36.40			42.24 62.40			VDC
Reflected Ripple (1), 0-20MHz BW	TYP MAX	3 10			5 15			mA p-p
Input Current Full Load No Load	TYP TYP	180 19	168 19	164 21	107 16	103 16	100 17	mA
Efficiency	TYP	64			60			%
Switching Frequency	TYP	55						kHz
Maximum Input Overvoltage 100mS No Damage	MAX	43.0			68.0			VDC
Turn-on Time, 1% Output Error	TYP	1			1			mSec
Recommended Fuse		Slow Blow Type (2)						

OUTPUT PARAMETERS(1)					UNITS
MODEL		12S5.600 24S5.600 28S5.600 48S5.600	12S12.250 24S12.250 28S12.250 48S12.200	12S15.200 24S15.200 28S15.200 48S15.200	
Output Voltage		5	12	15	VDC
Rated Current (3)	MIN MAX	0 600	0 250	0 200	mA
Voltage Range 100% Load	MIN TYP MAX	4.950 5.000 5.050	11.900 12.000 12.100	14.900 15.000 15.100	VDC
Load Regulation 0-100% Load	TYP MAX	0.02 0.10			%
Line Regulation Vin = Min-Max VDC	TYP MAX	0.02 0.10			%
Short Term Stability (4)	TYP	0.05			%
Long Term Stability	TYP	0.3			%/kHrs
Transient Response (5)	TYP	20			µSec
Dynamic Response (6)	TYP	120	45	40	mV peak
Input Ripple Rejection (7)	TYP	60			dB
Noise, 0-20MHz BW	TYP MAX	10 40			mV p-p
Temperature Coefficient	TYP MAX	50 200			ppm/°C
Overvoltage Clamp (8)	TYP	6.8	-	-	VDC
Short Circuit Protection to Common for all Outputs		Short Term, 1 Minute Maximum (2)			

NOTES:

(1) All parameters measured at 25° C, nominal 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) 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.

(3) No minimum Load required.

(4) Short term stability is specified after a 30 minute warm-up at full load and with constant line, load and ambient conditions.

(5) The transient response is specified as the time required to settle from 100% step load change (rise time of step = 2µSec.) to a 1% error band.

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

(7) The input ripple rejection is specified for DC to 120Hz ripple with a modulation amplitude of 1% Vin.

(8) For module protection only, see also note 2.

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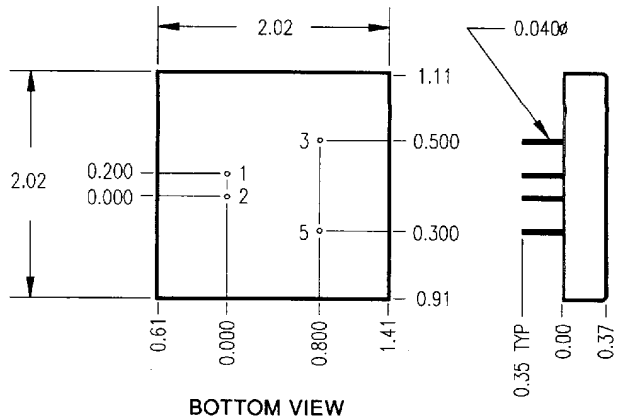
GENERAL SPECIFICATIONS (1)			
MODEL		**ALL MODELS**	**UNITS**
ISOLATION			
Isolation Voltage Input-Output 10µA Leakage	MIN	500	VDC
Input to Output Capacitance	TYP	75	pF
ENVIRONMENTAL			
Case Operating Range, No Derating	MIN MAX	-25 80	°C
Case Functional Range (9)	MIN MAX	-30 85	°C
Storage Range	MIN MAX	-55 100	°C
Thermal Impedance (10)	TYP	10	°C/Watt
Unit Weight	TYP	1.7	oz
Case		D	
Mounting Kits		MS15 & MS6	

(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.



BOTTOM VIEW

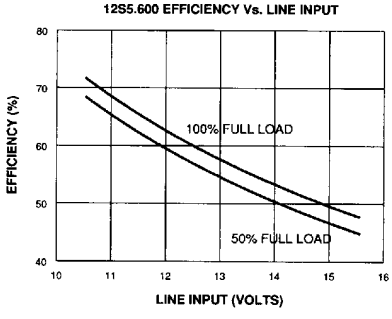
Mechanical tolerances unless otherwise noted:

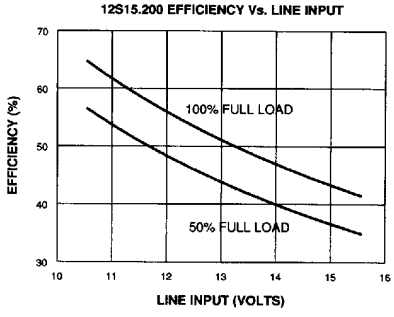
X.XX dimensions: ±0.020 inches

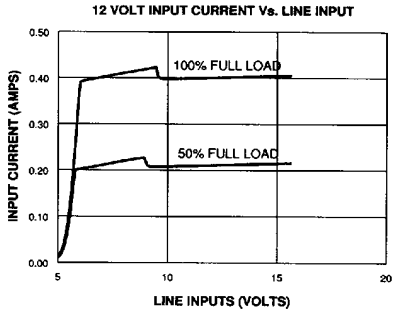
X.XXX dimensions: ±0.005 inches

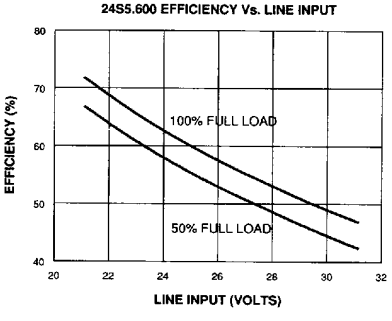
Seal around terminals is not hermetic. Do not immerse units in any liquid.

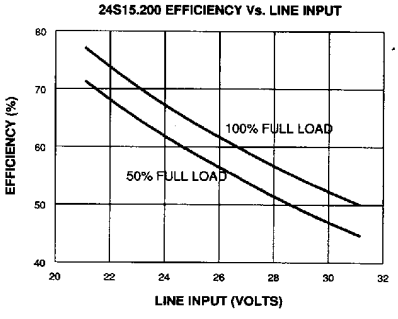
PIN	FUNCTION
1	+INPUT
2	-INPUT
3	+OUTPUT
5	CMN

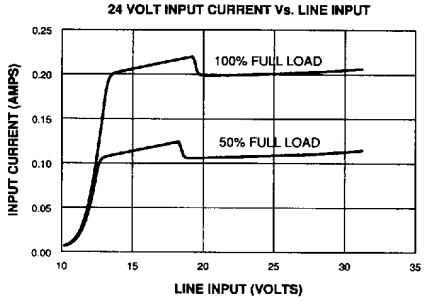












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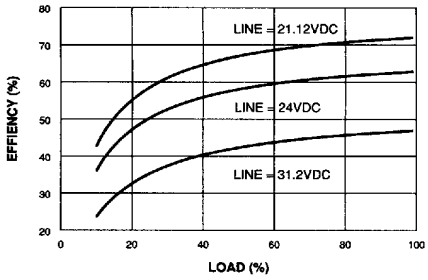
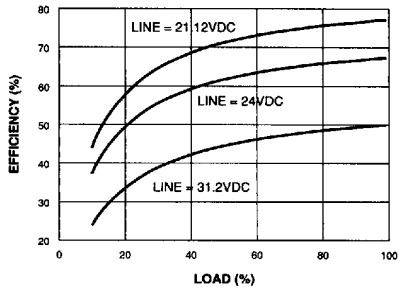
Typical Performance (Tc=25°C; Full Rated Load).

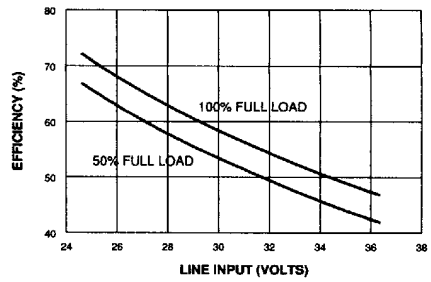
24S5.600 EFFICIENCY Vs. LOAD



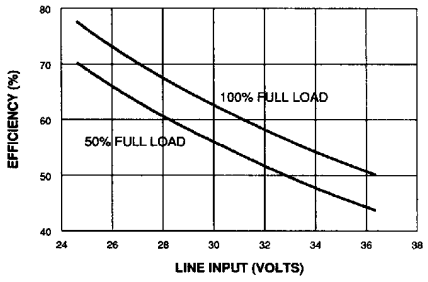
24S15.200 EFFICIENCY Vs. LOAD



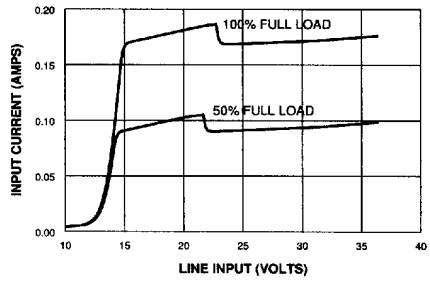
28S5.600 EFFICIENCY Vs. LINE INPUT



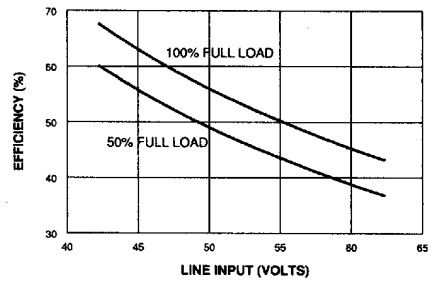
28S15.200 EFFICIENCY Vs. LINE INPUT



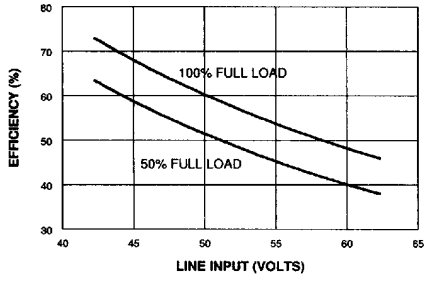
28 VOLT INPUT CURRENT Vs. LINE INPUT



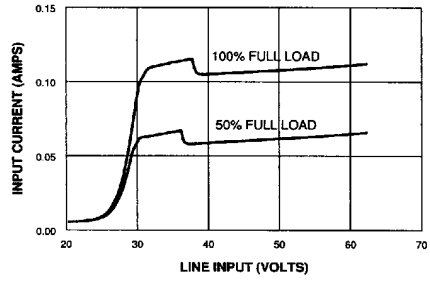
48S5.600 EFFICIENCY Vs. LINE INPUT



48S15.200 EFFICIENCY Vs. LINE INPUT



48 VOLT INPUT CURRENT Vs. LINE INPUT



OUTPUT IMPEDANCE Vs. FREQUENCY