

3 Watt LCS Single Series DC/DC Converters



Features

- Up to 3 Watts in a 0.80" x 1.25" x 0.28" case
- Low Cost
- Standard Pinout
- Wide Input Range
- High Efficiency
- Fully Isolated, 1544 VDC
- Fully Self contained,
No External Parts Required for Operation
- 5 Year Warranty

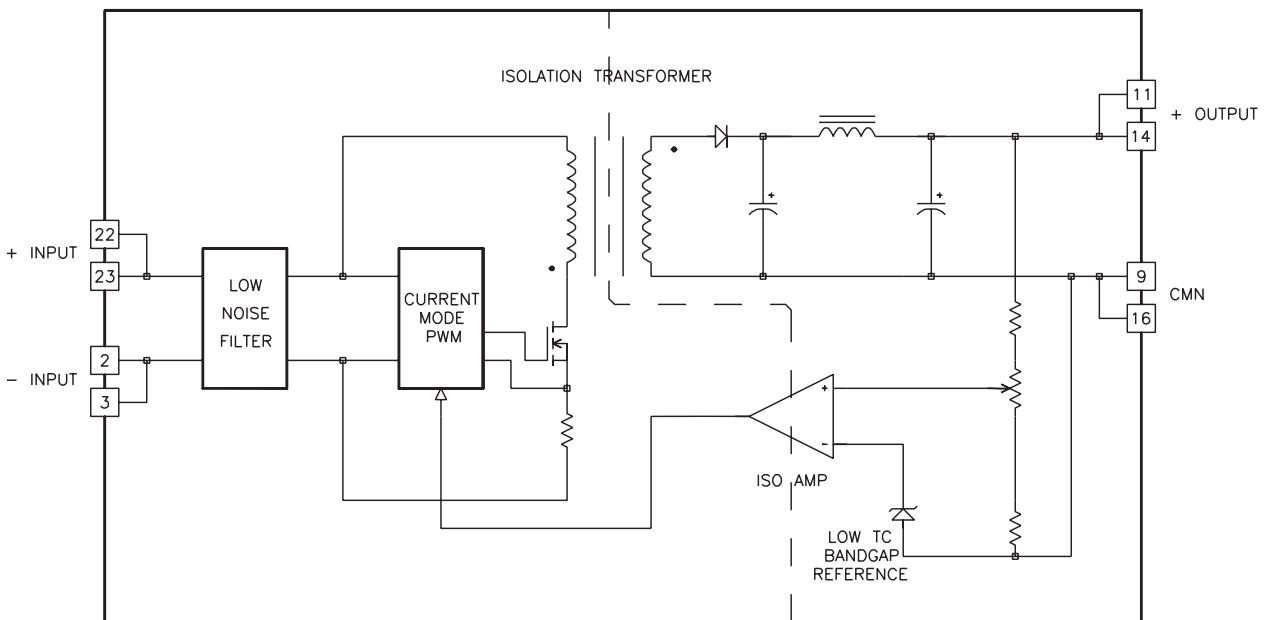
Description

These 3 Watt DC/DC converters were designed for fast integration with your system's power needs. With no external components or filtering necessary for all but the most critical applications, these converters can provide power instantly. This saves you costly engineering time required to design your system around the power converter.

Selection Chart

Model	Input Range VDC			V out VDC	I out mA
	Min	Nom	Max		
12S3R3.600LCS	9	12	18	3.3	600
12S5.600LCS	9	12	18	5	600
12S12.250LCS	9	12	18	12	250
12S15.200LCS	9	12	18	15	200
24S3R3.600LCS	18	24	36	3.3	600
24S5.600LCS	18	24	36	5	600
24S12.250LCS	18	24	36	12	250
24S15.200LCS	18	24	36	15	200
48S3R3.600LCS	36	48	72	3.3	600
48S5.600LCS	36	48	72	5	600
48S12.250LCS	36	48	72	12	250
48S15.200LCS	36	48	72	15	200

3 Watt LCS Single Series Block Diagram



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Input Parameters *(1)						
Model		12S3R3.600LCS	12S5.600LCS	12S12.250LCS	12S15.200LCS	Units
Voltage Range		MIN TYP MAX	9 12 18			VDC
Input Current No Load Min Load Full Load		TYP TYP TYP	10 33 231	10 50 338	10 50 321	14 50 310 mA
Efficiency		TYP	70	74	78	80 %
Switching Frequency		TYP	300			kHz
Maximum Input Overvoltage, 100ms Maximum			24			VDC
Turn-on Time, 1% Output Error			1			ms
Recommended Fuse		(3)				
Model		24S3R3.600LCS	24S5.600LCS	24S12.250LCS	24S15.200LCS	Units
Voltage Range		MIN TYP MAX	18 24 36			VDC
Input Current No Load Min Load Full Load		TYP TYP TYP	2 17 111	2 25 161	2 25 155	2 25 155 mA
Efficiency		TYP	73	78	80	80 %
Switching Frequency		TYP	300			kHz
Maximum Input Overvoltage, 100ms Maximum			45			VDC
Turn-on Time, 1% Output Error			1			ms
Recommended Fuse		(3)				
Model		48S3R3.600LCS	48S5.600LCS	48S12.250LCS	48S15.200LCS	Units
Voltage Range		MIN TYP MAX	36 48 72			VDC
Input Current No Load Min Load Full Load		TYP TYP TYP	2 7 57	2 13 81	2 13 77	2 13 77 mA
Efficiency		TYP	73	78	80	80 %
Switching Frequency		TYP	300			kHz
Maximum Input Overvoltage, 100ms Maximum			85			VDC
Turn-on Time, 1% Output Error			1			ms
Recommended Fuse		(3)				

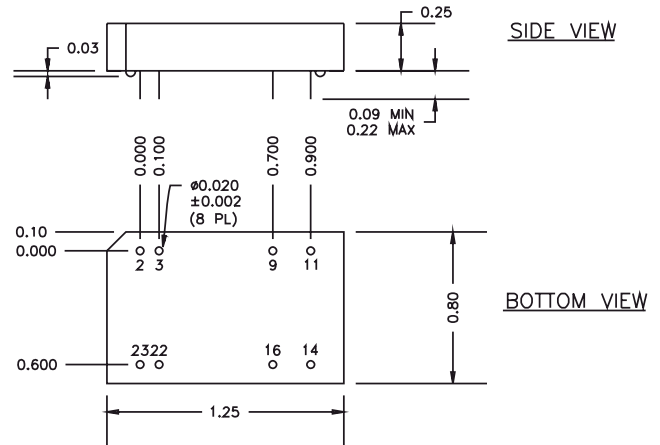
NOTES

- * All parameters measured at $T_{AMB} = 25^{\circ}\text{C}$, 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) Noise is measured per CALEX Application Notes. Measurement bandwidth is 0-20 MHz for peak-peak measurements, 10 kHz to 1 MHz for RMS measurements. Output noise is measured with a $0.01\mu\text{F}/100\text{V}$ ceramic capacitor in parallel with a $1\mu\text{F}/35\text{V}$ Tantalum capacitor, 1 inch from the output pins to simulate standard PCB decoupling capacitance.
- (3) External fusing should be used for system protection due to a catastrophic failure. See CALEX Application Note 9 in the Calex DC/DC Catalog to determine correct fuse.
- (4) The case thermal impedance is specified as the case temperature rise over ambient per package watt dissipated.
- (5) Specifications subject to change without notice.
- (6) Requires minimum load to regulate. No harm to the unit when operated at less than minimum load.
- (7) 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.

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Output Parameters *(1)						
Model		12S3R3.600LCS 24S3R3.600LCS 48S3R3.600LCS	12S5.600LCS 24S5.600LCS 48S5.600LCS	12S12.250LCS 24S12.250LCS 48S12.250LCS	12S15.200LCS 24S15.200LCS 48S15.200LCS	Units
Output Voltage		3.3	5	12	15	VDC
Output Voltage Accuracy	MIN	3.24	4.90	11.70	14.60	VDC
	TYP	3.33	5.00	12.00	15.00	
	MAX	3.42	5.10	12.30	15.40	
Rated Load Range (6)	MIN	60	60	25	20	mA
	MAX	600	600	250	200	
Load Regulation 10% - 100% Load		TYP	0.2			%
Line Regulation Vin = Min-Max VDC		TYP	0.1			%
Noise (2)		TYP	50	75		mV P-P
Short Circuit Protection		Continuous, Auto Restart				

General Specifications			
All Models			Units
Isolation			
Input to Output Isolation, 10μ Leakage			
V nom = 12V, 24V	MIN	700	VDC
V nom = 48V	MIN	1544	VDC
Environmental			
Ambient Operating Temperature	MIN MAX	-40 +85	°C
Case Operating Temperature	MIN MAX	-40 +105	°C
Storage Temperature	MIN MAX	-40 +125	°C
Thermal Impedance (4)	TYP	30	°C/watt
Cooling		Free-Air Convection	
General			
Case Size		1.27 x 0.74 x 0.28 in 32.3 x 18.8 x 7.1 mm	
Case Material		Non-Conductive Black Plastic	
Weight		8g	



Mechanical tolerances unless otherwise noted:

X.XX dimensions: ± 0.020 inches

X.XXX dimensions: ± 0.005 inches

Pin location shown is for mating PCB.

The case is plastic with a non-conductive header.

Pin	Function
2	-INPUT
3	-INPUT
9	OUTPUT CMN
11	+OUTPUT
14	+OUTPUT
16	OUTPUT CMN
22	+INPUT
23	+INPUT

APPLICATION NOTE

Start-up: A minimum load is required for the LCS to have a nominal output. The specification indicates a minimum load of 10% of the maximum load, but will usually start with less. The type of load will also vary the start-up characteristics. Such as an electronic load or some types of active circuitry (vs. a pure resistive load) will require more load for start-up.

Each application should be verified and an additional resistive load added if needed.

The output may be in a burp mode (output pulsing) with less than a minimum load, causing the output voltage to vary.