

LF300RW Series

Wide Input, 3W SMT Single & Dual Output DC/DC Converters



Key Features:

- 3W Output Power
- UL Approved (File E245422)
- Wide 2:1 Inputs
- Miniature SMT Case
- Tight Line/Load Regulation
- 1,500 VDC Isolation
- -40°C to +70°C Operation
- 21 Standard Models
- 1.0 MH MTBF Minimum
- Industry Standard Pin-Out



Electrical Specifications

Specifications typical @ +25°C, nominal input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Start Voltage	12 VDC Input	4.5	6.0	8.0	VDC
	24 VDC Input	8.0	12.0	16.0	
	48 VDC Input	16.0	24.0	32.0	
Reverse Polarity Input Current				0.5	A
Short Circuit Input Power				1,500	mW
Input Filter	π (Pi) Filter				

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±0.5	±1.0	%
Output Voltage Accuracy	Dual Output, Balanced Load		±0.5	±1.0	%
Line Regulation	For Vin = Min to Max		±0.1	±0.3	%
Load Regulation	Iout = 20% to 100%		±0.3	±1.0	%
Ripple & Noise (20 MHz) (Note 1)			50	75	mV P - P
Ripple & Noise (20 MHz)				100	mV P - P
Ripple & Noise (20 MHz)				10	mV rms
Output Power Protection		120			%
Transient Response Time (Note 2)	25% Load Step Change		250	500	μS
Transient Response Deviation			±2.0	±6.0	%
Temperature Coefficient			±0.01	±0.02	%/°C
Output Short Circuit	Continuous				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,500			VDC
Isolation Resistance	1,000 VDC	1,000			MΩ
Isolation Capacitance	100 kHz, 1V		65	100	pF
Switching Frequency			300		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range	Ambient	-40	+25	+71	°C
Operating Temperature Range	Case	-40	+25	+90	°C
Storage Temperature Range		-40		+125	°C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	1.27 x 0.74 x 0.40 Inches (32.3 x 28.8 x 10.2 mm)
Case Material	Non-Conductive Black Plastic (UL94-V0)
Weight	0.35 Oz (10g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	1.0			MHours
Safety Standards		UL 1950, EN 60950, IEC 60950			
Safety Approvals		UL, cUL; File No. E245422			

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 Sec)	12 VDC Input	-0.7		25.0	VDC
	24 VDC Input	-0.7		50.0	
	48 VDC Input	-0.7		100.0	
Lead Temperature	1.5 mm From Case For 10 Sec.			260	°C
Internal Power Dissipation	All Models			2500	mW

Caution: Exceeding Absolute Maximum Ratings may damage the module. These are not continuous operating ratings.

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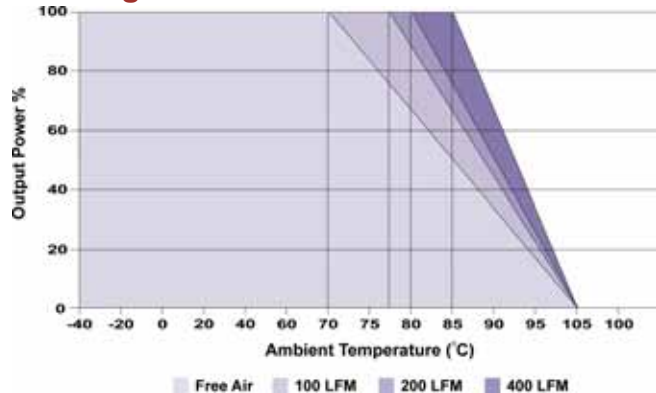
Model Selection Guide

Model Number	Input		Output			Voltage (VDC)	Current (mA, Max)	Current (mA, Min)	Efficiency (% Typ)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Reflected Ripple (mA, Typ)					
	Nominal	Range	Full-Load	No-Load						
LF301RW	12	9.0 - 18.0	257	20	25	3.3	700.0	70.0	75	750
LF302RW	12	9.0 - 18.0	316	20	25	5.0	600.0	60.0	79	750
LF303RW	12	9.0 - 18.0	305	20	25	12.0	250.0	25.0	82	750
LF304RW	12	9.0 - 18.0	305	20	25	15.0	200.0	20.0	82	750
LF305RW	12	9.0 - 18.0	321	20	25	±5.0	±300.0	±30.0	78	750
LF306RW	12	9.0 - 18.0	309	20	25	±12.0	±125.0	±12.5	81	750
LF307RW	12	9.0 - 18.0	309	20	25	±15.0	±100.0	±10.0	81	750
LF311RW	24	18.0 - 36.0	127	5	15	3.3	700.0	70.0	76	350
LF312RW	24	18.0 - 36.0	156	5	15	5.0	600.0	60.0	80	350
LF313RW	24	18.0 - 36.0	151	5	15	12.0	250.0	25.0	83	350
LF314RW	24	18.0 - 36.0	151	5	15	15.0	200.0	20.0	83	350
LF315RW	24	18.0 - 36.0	158	5	15	±5.0	±300.0	±30.0	79	350
LF316RW	24	18.0 - 36.0	152	5	15	±12.0	±125.0	±12.5	82	350
LF317RW	24	18.0 - 36.0	152	5	15	±15.0	±100.0	±10.0	82	350
LF321RW	48	36.0 - 75.0	63	3	10	3.3	700.0	70.0	76	200
LF322RW	48	36.0 - 75.0	78	3	10	5.0	600.0	60.0	80	200
LF323RW	48	36.0 - 75.0	75	3	10	12.0	250.0	25.0	83	200
LF324RW	48	36.0 - 75.0	75	3	10	15.0	200.0	20.0	83	200
LF325RW	48	36.0 - 75.0	79	3	10	±5.0	±300.0	±30.0	79	200
LF326RW	48	36.0 - 75.0	79	3	10	±12.0	±125.0	±12.5	82	200
LF327RW	48	36.0 - 75.0	76	3	10	±15.0	±100.0	±10.0	82	200

Notes:

- When measuring output ripple, it is recommended that an external 0.47 μF ceramic capacitor be placed from the +Vout pin to the -Vout pin for single output units and from each output to common for dual output units. For noise sensitive applications, the use of 3.3 μF capacitors will reduce the output ripple.
- Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
- Operation at no-load will not damage these units. However, they may not meet all specifications.
- Dual output units may be connected to provide a 24 VDC or 30 VDC output. To do this, connect the load across the positive (+Vout) and negative (-Vout) outputs and float the output common.
- The converter should be connected to a low ac-impedance source. An input source with a highly inductive impedance may affect the stability of the converter. In applications where the converter output loading is high and input power is supplied over long lines, it may be necessary to use a capacitor on the input to insure start-up. In this case, it is recommended that a low ESR (ESR <1.0 Ω at 100 kHz) capacitor be mounted close to the converter. For 12V input units a 3.3 μF is recommended, and for 24V & 48V units a 1.5 μF .
- It is recommended that a fuse be used on the input of a power supply for protection. See the table above for the correct rating.

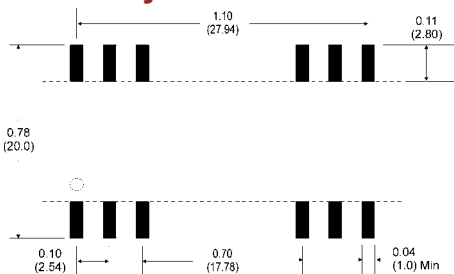
Derating Curve



Capacitive Load

Single Output μF Max	Dual Output μF Max
4,700	±180

Board Layout

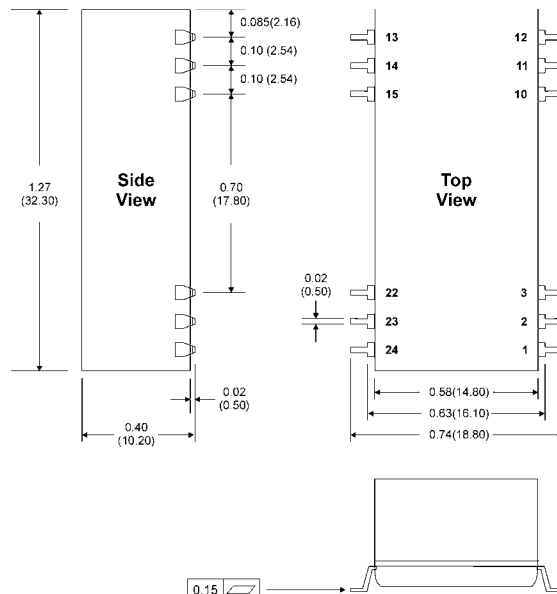


Pin Connections

Pin	Single	Dual
1	-Vin	-Vin
2	-Vin	-Vin
3	NC	NC
10	NC	Common
11	NC	NC
12	NC	-Vout
13	+Vout	+Vout
14	NC	NC
15	-Vout	Common
22	NC	NC
23	+Vin	+Vin
24	+Vin	+Vin

NC: No Connection

Mechanical Dimensions



Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ± 0.01 (± 0.25)
- Pin 1 is marked by a "dot" or indentation on the unit
- Leads are tin plated for improved solderability.



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