MicroPower Direct

2W, Miniature SMT
Single & Dual Output
DC/DC Converters
LF200R Series

Key Features

- Miniature SMT Package
- 2W Output Power
- 1500 VDC I/O Isolation
- Tight Line/Load Regulation
- CECC00802 Reflow (2801C)
- **Low Cost**

Electrical Specifications

Specifications typical @ +251C with nominal input voltage &rated output current, unless otherwise noted. Specifications subject to change without notice.

Input

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Range	5 VDC Input	4. 5	5.0	5.5	VDC
	12 VDC Input	10.8	12.0	13.2	
	24 VDC Input	21.6	24.0	26.4	
	48 VDC Input	43.2	48.0	52.8	
Input Filter	All Models		π (Pi) Filter		
Reverse Polarity Input Current	All Models			0.5	A
Short Circuit Input Power	All Models			2,500	mW

Output

Parameter	Conditions	Min.	Typ.	Max.	Units
Output Voltage Accuracy			±2.0	±4.0	%
Output Voltage Balance	Balanced Load		±1.5	±3.0	%
Line Regulation	For VIN = Min to Max		±0.2	±0.3	%
Load Regulation	For IOUT = 10% to 100%		±0.2	±0.5	%
Ripple & Noise (20 MHz)			30	50	mV P-P
Ripple & Noise (20 MHz)	Over Line Load & Temp.			75	mV P-P
Ripple & Noise (20 MHz)				5	mV rms
Output Power Protection		120			%
Transient Recovery Time	50 % Load Change			50	µSec
Transient Response Deviation				±6.0	%
Temperature Coeffiecient			±0.01	±0.02	%/1C
Output Short Circuit	Continuous				

General

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation Voltage	60 Seconds	1,000			VDC
Isolation Resistance	500 VDC	1,000			MΩ
Isolation Capacitance	100 KHz, 1V		100	150	pF
Switching Frequency		40	80		kHz

Environmental

Parameter	Conditions	Min.	Typ.	Max.	Units
Operating Temperature Range		-40	+25	+60	1C
Storage Temperature Range		-40		+125	1C
Cooling	Free Air Convection				
Humidity	RH, Non-condensing			95	%

Physical

Case Size	1.07 x 0.58 x 0.40 inches (27.2 x 14.8 x 10.2 mm)
Case Material	Non-Conductive Black Plastic
Weight	0.35 Oz (10.0g)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL STD 217F, 25 1C, Grnd Benign		800		k Hours

Absolute Maximum Ratings

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage Surge (1 sec)	5 VDC Input	-0.7		7.5	VDC
	12 VDC Input	-0.7		15.0	
	24 VDC Input	-0.7		30.0	
	48 VDC Input	-0.7		55.0	
Internal Power Dissipation	All Models			2,500	mW

Specifications typical @ +251C, nominal input voltage and rated output current unless otherwise noted. All specifications subject to change without notice.

Model Selection Guide

Model Number	Input					Output			Efficiency %, Typ	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Reflected Ripple Current (mA, Typ)	Voltage (VDC)	Current (mA, Max)	Current (mA, Min)		
	Nominal	Range	Full-Load	No-Load						
LF201R	5.0	4.5 - 5.5	667.0	70.0	80.0	5.0	400.0	0.0	60	1,500
LF202R	5.0	4.5 - 5.5	660.0	70.0	80.0	12.0	165.0	0.0	60	1,500
LF203R	5.0	4.5 - 5.5	665.0	70.0	80.0	15.0	133.0	0.0	60	1,500
LF204R	5.0	4.5 - 5.5	664.0	70.0	80.0	±12.0	±83.0	±0.0	60	1,500
LF205R	5.0	4.5 - 5.5	660.0	70.0	80.0	±15.0	±66.0	±0.0	60	1,500
LF211R	12.0	10.8 - 13.2	278.0	40.0	20.0	5.0	400.0	0.0	60	700
LF212R	12.0	10.8 - 13.2	278.0	40.0	20.0	12.0	165.0	0.0	60	700
LF213R	12.0	10.8 - 13.2	277.0	40.0	20.0	15.0	133.0	0.0	60	700
LF214R	12.0	10.8 - 13.2	277.0	40.0	20.0	±12.0	±83.0	±0.0	60	700
LF215R	12.0	10.8 - 13.2	275.0	40.0	20.0	±15.0	±66.0	±0.0	60	700
LF221R	24.0	21.6 - 26.4	139.0	18.0	20.0	5.0	400.0	0.0	60	350
LF222R	24.0	21.6 - 26.4	138.0	18.0	20.0	12.0	165.0	0.0	60	350
LF223R	24.0	21.6 - 26.4	138.0	18.0	20.0	15.0	133.0	0.0	60	350
LF224R	24.0	21.6 - 26.4	138.0	18.0	20.0	±12.0	±83.0	±0.0	60	350
LF225R	24.0	21.6 - 26.4	138.0	18.0	20.0	±15.0	±66.0	±0.0	60	350
LF231R	48.0	43.2 - 52.8	70.0	9.0	20.0	5.0	400.0	0.0	60	135
LF232R	48.0	43.2 - 52.8	69.0	9.0	20.0	12.0	165.0	0.0	60	135
LF233R	48.0	43.2 - 52.8	69.0	9.0	20.0	15.0	133.0	0.0	60	135
LF234R	48.0	43.2 - 52.8	69.0	9.0	20.0	±12.0	±83.0	±0.0	60	135
LF235R	48.0	43.2 - 52.8	69.0	9.0	20.0	±15.0	±66.0	±0.0	60	135

Notes: 1. Transient recovery is measured to within a 1% error band for a load step change of 75% to 100%.
2. When measuring output ripple, it is recommended that an external 0.1 uF ceramic capacitor be placed from each output to common.
3. Dual output units may be connected to provide a 24 VDC or 30VDC output. To do this, float the common output, and connect the load across the output pins.
4. For operation in ambient temperatures above +601C, derate output power linearly by -2.9%/1C.

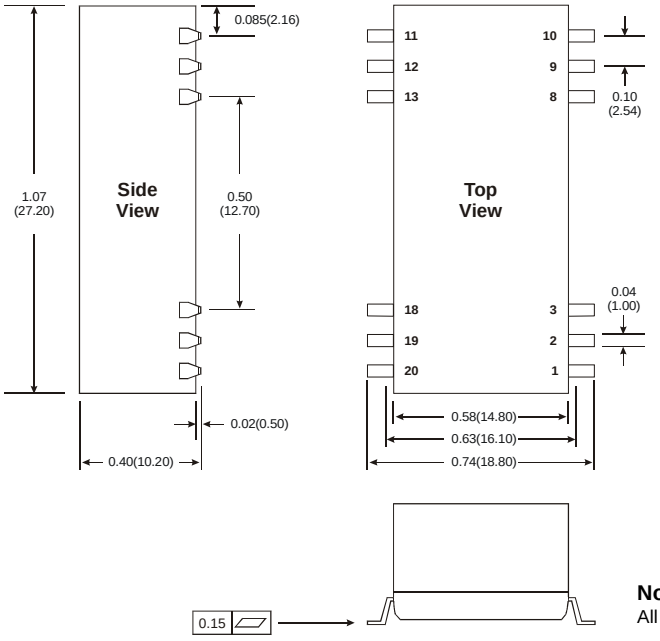
Capacitive Load

Single Output (µF Max.)	Dual Output (µF Max.)
470	220

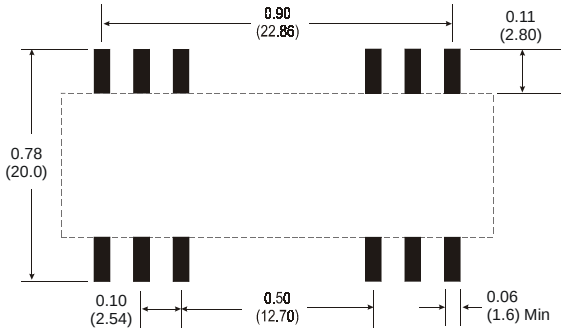
Pin Connections

Pin	Single	Dual
1, 2	-Vin	-Vin
3, 18	NC	NC
8	NC	Common
9, 12	NC	NC
10	NC	-Vout
11	+Vout	+Vout
13	-Vout	Common
19, 20	+Vin	+Vin

Mechanical Dimensions



Board Layout



Notes:
All dimensions are typical in inches (mm)

Tolerance x.xx = ±0.01 (±0.25)

MicroPower Direct

171 Tosca Drive, Stoughton, MA 02072
www.micropowerdirect.com
sales@micropowerdirect.com
phone: (781) 344 - 8226 • fax: (781) 344 - 8481