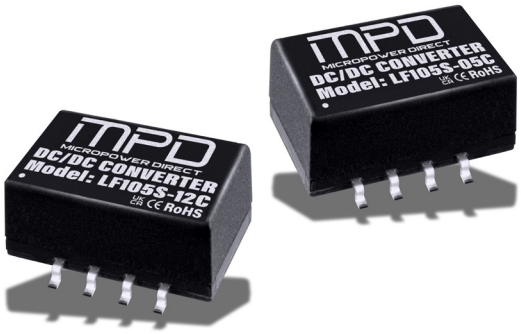
LF100C

1W, Compact, Isolated, Protected DC/DC Converters



Key Features:

- 1W Output Power
- Compact SMD Package
- Efficiency to 83%
- 1500 VDC Isolation
- -40°C to +105°C Temp
- >3500 kHour MTBF
- Short Circuit Protected
- 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 Voltage			4.5	5	5.5	VDC
Input Current	Full load/no load	3.3/5VDC Out		270/8	286/-	mA
		9/12VDC Out		241/12	254/-	
		15VDC Out		241/18	254/-	
Reflected Ripple Current				15		mA
Surge Voltage (1 sec. max.)			-0.7		9	VDC
Input Filter				Capacitance Filter		

Output

Parameter	Conditions		Min.	Typ.	Max.	Units
Output Voltage Accuracy				See Output Regulation Curves on p. 3		
Line Regulation	Input Voltage Variation ±1%	3.3VDC Output		±1.5		%
		Other Outputs		±1.2		
Load Regulation	10% - 100% Load	3.3VDC Output		15	20	%
		5VDC Output		10	15	
		9VDC Output		8	10	
		12VDC Output		7	10	
		15VDC Output		7	15	
Ripple & Noise	20MHz Bandwidth	Other Outputs		30	75	mVp-p
		15VDC Output		30	100	
Temperature Coefficient	Full Load			±0.02		%/°C
Output Short Circuit Protection	Continuous, self-recovery					

General

Parameter	Conditions		Min.	Typ.	Max.	Units
Isolation Voltage	60 seconds, leakage <1mA		1500			VDC
Isolation Resistance	500 VDC		1000			MΩ
Isolation Capacitance	100 KHz /0.1V			20		pF
Switching Frequency	Full load, nominal Vin	Other Outputs		270		kHz
		15VDC Output		300		

Environmental

Parameter	Conditions		Min.	Typ	Max.	Units
Operating Temperature Range	Derating when ≥85°C		-40		+105	°C
Storage Temperature Range			-55		+125	°C
Case Temperature Rise	Ta = 25°C	3.3VDC Output		25		°C
		Other Outputs		15		
Cooling	Free Air Convection					
Storage Humidity	Non-Condensing				95	%RH
Vibration	10-150Hz, 5G, 0.75mm along X, Y, Z axis					

Physical

Case Size	0.52 x 0.45 x 0.29 in (See mechanical drawing on page 4)
Case Material	Black plastic; flame retardant and heat resistant (UL94V-0)
Weight	0.046 oz (1.3g) (See mechanical drawing on page 4)

Reliability Specifications

Parameter	Conditions	Min.	Typ.	Max.	Units
MTBF	MIL-HDBK-217F@25°C	3500			kHours
Reflow Soldering Temperature	Peak temp ≤245°C, maximum duration time ≤60s over 217°C				

EMI Characteristics

Parameter	Conditions	Criteria	Level
Radiated Emissions	CISPR/EN 55032		Class B
Conducted Emissions	CISPR/EN 55032		Class B
ESD	IEC/EN 61000-4-2	B	±8kV Air, ±6kV Contact

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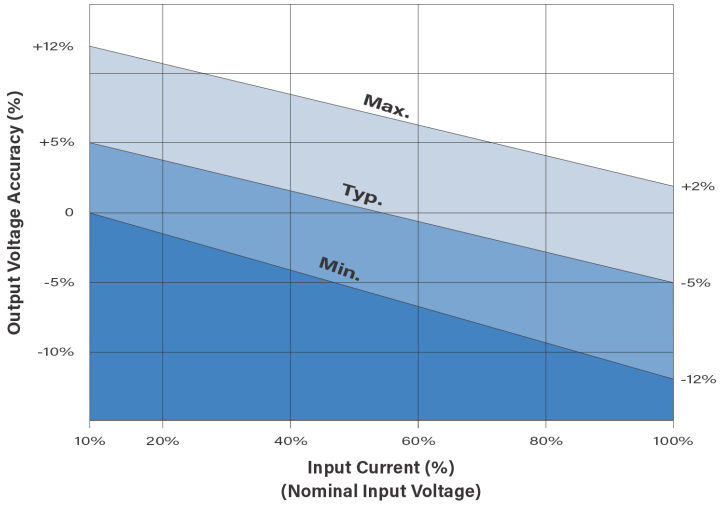
Model Selection Guide

Model Number	Input				Output			Full Load Efficiency (%, Typ)	Reflected Ripple Current (mA, Typ)	Capacitive Load (uF Max) (See Note 1)	Fuse Rating Slow-Blow (mA)
	Voltage (VDC)		Current (mA)		Voltage (VDC)	Current (mA, Max)	Current (mA, Min.)				
	Nominal	Range	Full-Load (Typ)	No-Load							
LF105S-03C	5	4.5 - 5.5	270	8	3.3	303	30	74	15	2400	600
LF105S-05C	5	4.5 - 5.5	270	8	5	200	20	82	15	2400	600
LF105S-09C	5	4.5 - 5.5	241	12	9	111	12	83	15	1000	600
LF105S-12C	5	4.5 - 5.5	241	12	12	84	9	83	15	560	600
LF105S-15C	5	4.5 - 5.5	241	18	15	67	7	83	15	470	600

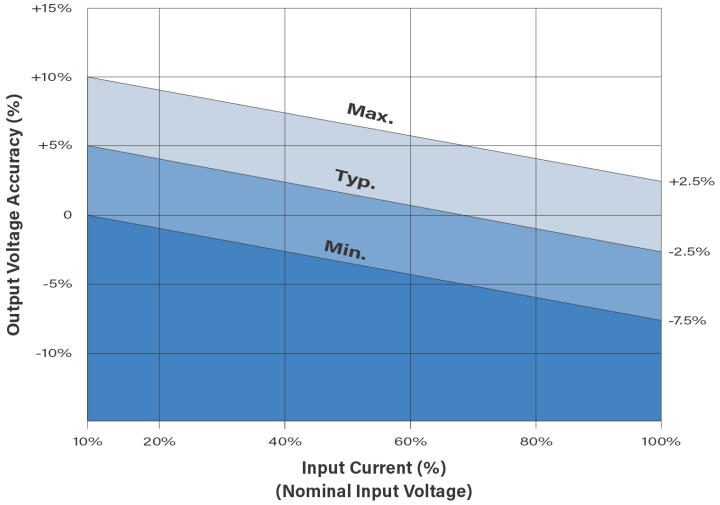
Notes:

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage.
2. The "parallel cable" method is used for ripple and noise test.
3. The maximum capacitive load is tested within the input voltage range and under full load conditions.
4. Unless otherwise specified, all indicators in this manual are measured at Ta=25 °C, humidity <75% RH, nominal input voltage, and rated output load.

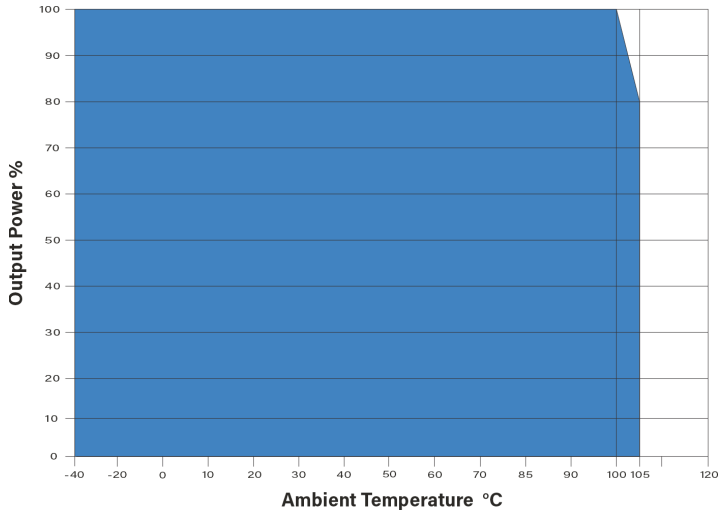
Output Regulation: 3.3VOUT



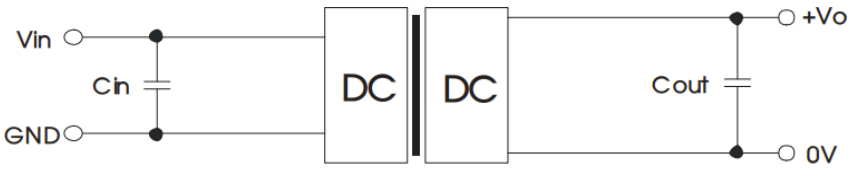
Output Regulation: Other Outputs



Temperature Derating



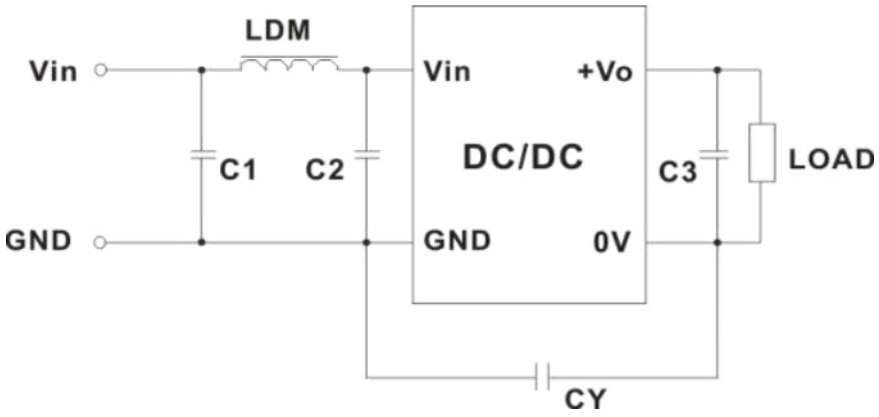
Typical Application Circuit



Recommended Capacitive Load Values			
Vin (VDC)	**Cin**	**Vout**	**Cout**
5VDC	4.7uF/16V	3.3/5VDC	10uF/16V
		9VDC	4.7uF/25V
		12/15VDC	2.2uF/25V

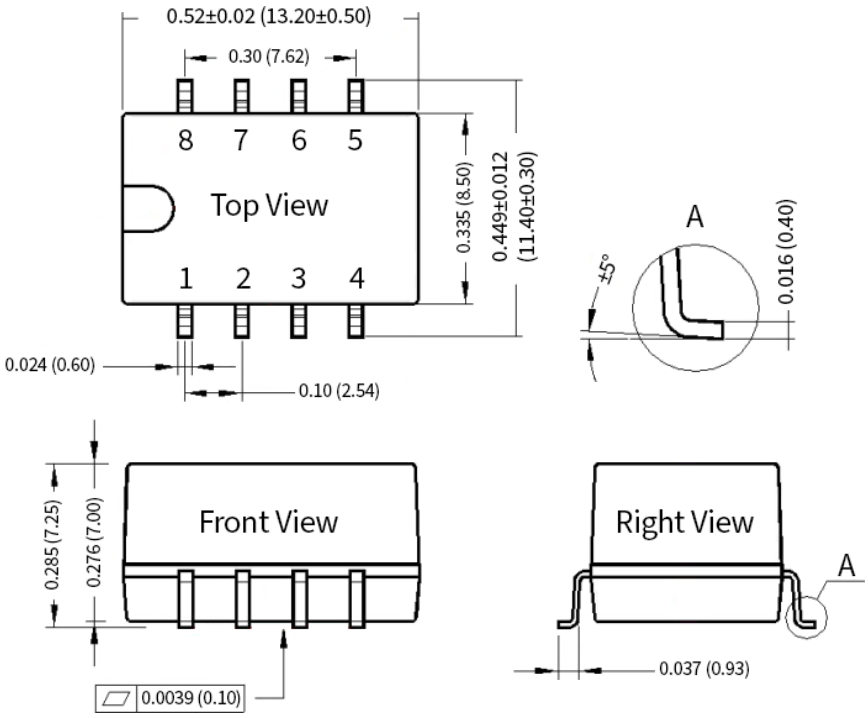
Notes:
1. To further reduce input and output ripple, a capacitor filtering network can be connected at the input and output terminals. It is important to choose suitable filter capacitor values for smooth operation of the module, particularly to avoid start-up problems caused by capacitor values that are too high. Refer to the table above for recommended input and output capacitor values.

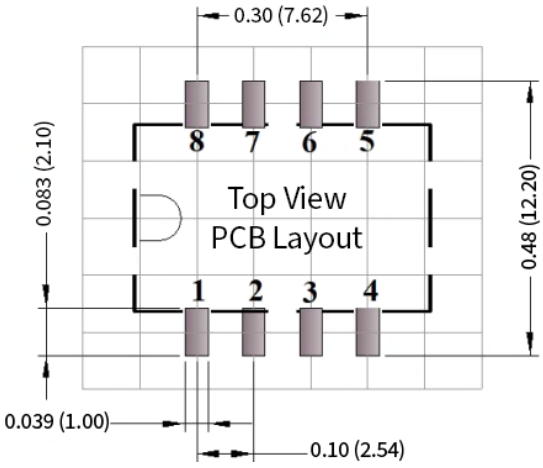
EMC Recommended Circuit



Recommended EMC Values			
Output Voltage		**3.3/5/9 VDC**	**12/15 VDC**
Emissions	C1/C2	4.7uF/25V	
	CY	--	1nF/2kVDC HEC c1206X102K202T JOHANSON 202R18W102KV4E
	C3	Refer to Table Above	
	LDM	6.8uH	

Mechanical Dimensions





Note: Grid distance is 2.54 * 2.54 mm

Note:

- Unit: inches (mm)
- Pin section tolerances: ±0.004 (±0.10)
- General tolerances: ±0.010 (±0.25)
- Weight: 0.046 oz (1.3g)

Pin	Function
1	GND
2	Vin
3	NC
4	0V
5	+Vo
6	NC
7	NC
8	NC

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