Features

- 4:1 wide input voltage range
- Dual output: ±150V
- High efficiency up to 81.0%
- Input under-voltage, output over-voltage, over-current, short-circuit and over-temperature protections
- 1,500Vdc input to output isolation
- Operating temperature range: -40 to +85 °C
- Industry standard pin-out
- UL 62368-1 2nd edition recognized

Part Numbering System

LD	B	1	150	P	5W	1	LD	C
Series Name	**No. of Output**	**Input Range**	**Output Voltage**	**Enable Logic**	**Output Power**	**Isolation Voltage**	**Package**	**Version No.**
	B: Dual	**1:** 9-36V	**Example:** **150:** 150V	**P:** Positive	**5W:** 5W	**1:** 1500Vdc	**LD:** 2x1	**C:** Version No.

Absolute Maximum Rating

Excessive stresses over these absolute maximum ratings can cause permanent damage to the converter. Operation should be limited to the conditions outlined under the Electrical Specification Section.

Parameter	Min	Max	Unit
Input Voltage (continuous)	-0.7	40	V
Input Voltage (<100ms, operating)	-	50	V
Operating Ambient Temperature	-40	85	˚C
Operating Temperature (case)	-40	105	˚C
Storage Temperature	-55	125	˚C
Soldering Temperature (wave soldering < 10s)	-	300	˚C

Electrical Specifications

These specifications are valid over the converter's full range of input voltage, resistive load, and temperature unless noted otherwise.

Input Specifications

Parameter	Min	Typical	Max	Unit
Input Voltage	9	24	36	V
Input Current (no load)	-	16	62	mA
Input Current	-	-	1	A
Input Reflected-ripple Current, peak-to-peak (5 Hz to 20 MHz, 12μH source impedance and 220μF input capacitance)	-	40	-	mA
Input Turn-on Voltage Threshold	8.0	8.7	9.0	V
Input Turn-off Voltage Threshold	7.0	7.8	8.0	V

Output Specifications

Parameter	Min	Typical	Max	Unit
Output Voltage Set Point (typical Vin; 50% of full load; Ta = 25°C)	±148.5	±150.0	±151.5	V
Output Voltage Set Point Accuracy (typical Vin; 50% of full load; Ta = 25°C)	-	-	±1.0	%Vo
Output Regulation: Line Regulation (full range input voltage, 50% full load) Load Regulation(full range load, typical Vin) Temperature (Ta = -40°C to 85 °C)	 - - -	 - - -	 ±0.2 ±0.5 ±0.02	%Vo
Output Ripple and Noise Voltage Peak-to-peak (5 Hz to 20 MHz bandwidth, typical Vin)	-	700	-	mVp-p
Output Current	0	-	±16.6	mA
Output Power	0	-	5	W
Efficiency (typical Vin; full load; Ta = 25°C)	-	81.0	-	%
Output Ripple Frequency	-	121	-	kHz
External Load Capacitance	-	-	3.3	μF
Startup Delay, duration from enabling signal to Vo reaches 10% of its set point. (typical Vin; full load; Ta = 25°C)	-	70	-	ms

Output Specifications (Continued)

Parameter	Min	Typical	Max	Unit
Startup Time, duration for Vo to rise from 10% of its set point to within its regulation band. (typical Vin; full load; Ta = 25°C)	-	70	-	ms
Output Over Current Protection Set Point (hiccup mode, auto-recovery)	-	200	-	%
Output Over Voltage Protection Set Point (hiccup mode, auto-recovery)	105	-	115	%
Output Short-circuit Protection	hiccup mode, auto-recovery			
Dynamic Response (typical Vin; Ta = 25°C; load transient 1A/μs) Load steps from 50% to 75% of full load: Peak deviation Settling time (within 10% band of Vo deviation) Load step from 75% to 50% of full load Peak deviation Settling time (within10% band of Vo deviation)	 - - - -	 - - - -	 5 250 5 250	 %Vo μs %Vo μs

General Specifications

Parameter	Min	Typical	Max	Unit
Isolation Capacitance	-	100	-	pF
Insulation Resistance (at 500Vdc)	100	-	-	MΩ
Calculated MTBF (Telecordia SR-332, 2011, Issue 3), full load, 40°C, 60% upper confidence level, typical Vin	-	1	-	10^6-hour

Feature Descriptions

Input Fusing

Certain applications may require fuses at the inputs of power conversion components. Fuses should also be used when there is a possibility of sustained input voltage reversal which is not current limited.

The LDP1150P5W1LDC converter is not internally fused. A slow-blown fuse should be used in the ungrounded input supply line.

Input Under-Voltage Lockout

This feature prevents the converter from starting until the input voltage reaches the turn-on voltage threshold, and keeps the converter running until the input voltage falls below the turn-off voltage threshold. Both turn-on and turn-off voltage thresholds are defined in the Input Specifications table.

Output Over-Current or Short-circuit Protection

Once the output current is over the specified output DC current limit or a short-circuit condition occurred at the output, the converter is turned off. The converter then enters a “hiccup mode” until the over current condition is removed. This prevents excessive heating of the converter or the load.

Output Over-Voltage Protection (OVP)

If the output voltage rises to the specified output over-voltage trip point, the converter is turned off. The converter then enters a “hiccup mode” until the over voltage condition is removed. This prevents possible damages to the converter or the load.

Over Temperature Protection (OTP)

If environmental conditions cause the internal temperature of the converter to rise above a set internal safe operating temperature, the converter is turned off. When the internal temperature decreases below a threshold, the converter will auto restart.

Typical Connection

In order to prevent the input line impedance from causing the input voltage oscillation, it is recommended to add capacitors close to the input of the converter.

Similarly, capacitors are added to the outputs of the converter. The recommended parameters are: Ci1=47~100μF (electrolytic), Ci2=1μF (ceramic or film). Co1, Co2, Co3, Co4 should have low ESR<0.1 Ω.

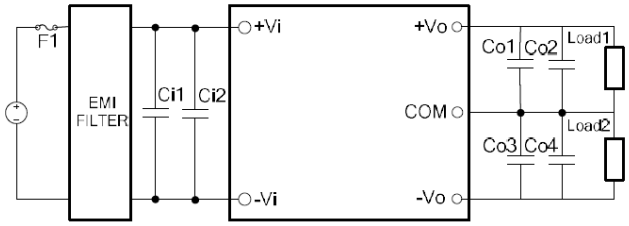
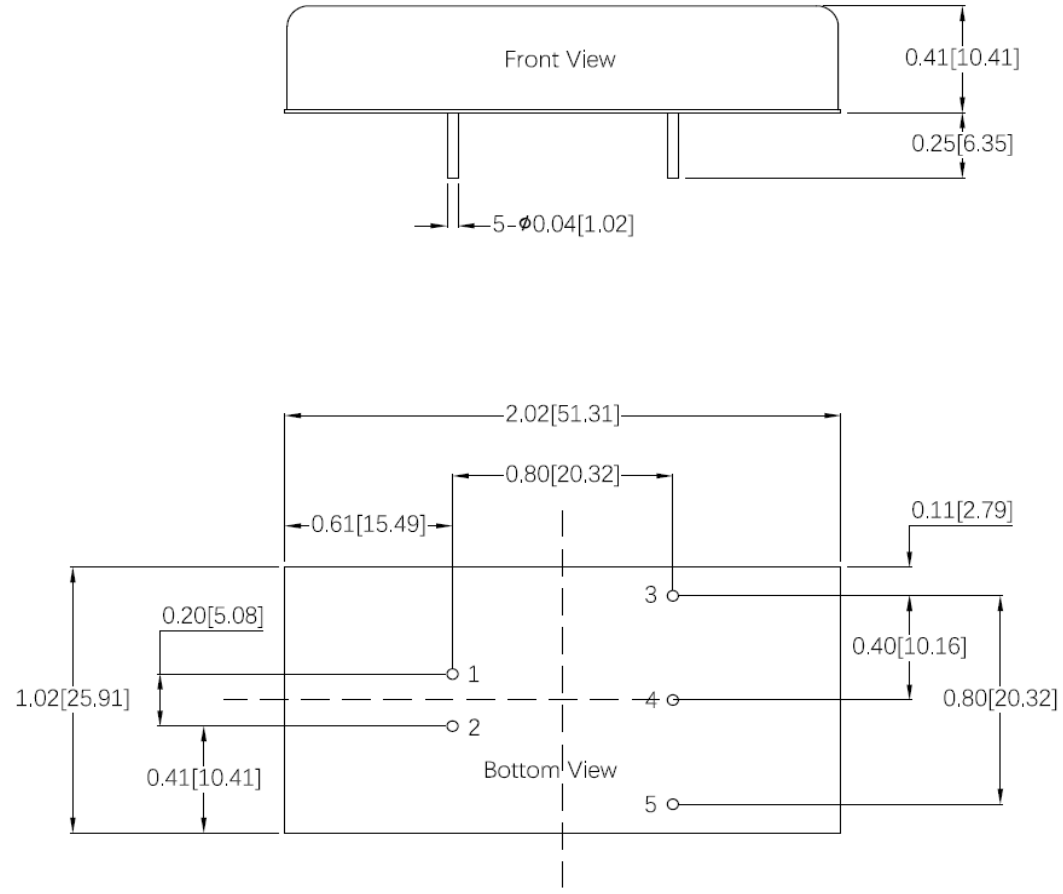


Figure 1. Typical Application Connection

EMC Considerations

The EMC performance of the converter is related to the layout and filtering design of the customer board. Careful layout and adequate filtering around the converter are important to confine noise generated by the switching actions in the converter and to optimize system EMC performance.

Mechanical Drawing



Pin	Name	Function
1	Vin(+)	Positive input voltage
2	Vin(-)	Negative input voltage
3	+Vout	Positive output voltage
4	COM	Output common GND
5	-Vout	Negative output voltage

Notes:

1) All dimension in mm (inches)
   Tolerances: ±0.50 (±0.020)
2) Pin section tolerances : ±0.10 (±0.004)
3) Weight: 31.5 g
4) The case is connected to Vin(-)