



Features

- 4:1 wide input voltage range
- High efficiency up to 87.0%
- No-load power loss as low as 0.12W
- 3,000Vdc input to output isolation
- Input under-voltage, output over-current, over-voltage and short-circuit protections
- Operating temperature range: -40 to +85 °C
- Industry standard pin-out
- UL 60950-1 2nd edition recognized



Part Numbering System

LM	x	x	xxx	P	10W	3	LP	C
Series Name	No. of Output	Input Range	Output Voltage	Enable Logic	Output Power	Isolation Voltage	Package	Version No.
	B: Dual S: Single	1: 9-36V 3: 18-75V	Example: 050: 5V	P: Positive	10W: 10W	3: 3000Vdc	LP: LP package	C: Version No.

Selection Guide

Part No.	Input Voltage (Vdc)	Output		Efficiency(%) at typical input & full load	Max. Load Capacitance (µF)
		Voltage(Vdc)	Current(mA)		
LMB1050P10W3LPC	24 (9-36)	±5	±1000	81.0	1000
LMB1120P10W3LPC		±12	±416	85.0	330
LMB1150P10W3LPC		±15	±333	87.0	220
LMS1033P10W3LPC		3.3	2400	78.0	5400
LMS1050P10W3LPC		5	2000	82.0	5400
LMS1090P10W3LPC		9	1111	84.0	680
LMS1120P10W3LPC		12	833	84.0	470
LMS1150P10W3LPC		15	667	87.0	330
LMS1240P10W3LPC		24	416	86.0	100
LMB3050P10W3LPC		48 (18-75)	±5	±1000	82.0
LMB3120P10W3LPC	±12		±416	86.0	330
LMB3150P10W3LPC	±15		±333	87.0	220
LMS3033P10W3LPC	3.3		2400	79.0	5400
LMS3050P10W3LPC	5		2000	82.0	5400
LMS3120P10W3LPC	12		833	86.0	470
LMS3150P10W3LPC	15		667	87.0	330
LMS3240P10W3LPC	24		416	87.0	100

Input Specifications

Parameter	Notes & Conditions	Min	Typical	Max	Unit	
Input Current(full load)	24Vdc input series	3.3V output	-	423	434	mA
		Others	-	514	527	
	48Vdc input series	3.3V output	-	208	214	
		Others	-	254	260	
Input Current (zero load)	Full input range	-	5	12		
Reflected Ripple Current	24Vdc input series	-	40	-		
	48Vdc input series	-	30	-		
Surge Voltage (1sec. max.)	24Vdc input series	-0.7	-	50	Vdc	
	48Vdc input series	-0.7	-	100		
Starting Voltage	24Vdc input series	-	-	9		
	48Vdc input series	-	-	18		
Input Under-voltage protection	24Vdc input series	5.5	6.5	-		
	48Vdc input series	12	15.5	-		
Starting Time	Nominal input voltage & constant resistive load	-	10	-	ms	
Ctrl*	Module turn-on	Ctrl pin floating or connected to TTL high level(3.5-12Vdc)				
	Module turn-off	Ctrl pin connected to Vin(-) or low level(0-1.2Vdc)				
	Current for turn-off	-	5	10	mA	
Hot Plugging	Not supported					

*The voltage at Ctrl is referenced to Vin(-).

Output Specifications

Parameter	Notes & Conditions	Min	Typical	Max	Unit	
Output Voltage Accuracy*	0%-100%of full load	-	±1	±3	%Vo	
Line Regulation	Full range input voltage, full load	+Vout	-	±0.2		±0.5
		-Vout	-	±0.5		±1
Load Regulation	5% load to full load, nominal input	+Vout	-	±0.5		±1
		-Vout	-	±0.5	±1.5	
Cross Regulation	Dual output, main circuit with 50% load, auxiliary circuit with 10%-100% of full load	-	-	±5		
Temperature Coefficient	Full load	-	-	0.03	%/°C	
Transient Recovery Time	25% load step, nominal input voltage	-	300	500	µs	
Transient Response Deviation		-	±3	±5	%Vo	
Ripple & Noise	20MHz bandwidth	-	60	120	mVp-p	
Ripple Frequency**		-	350	-	kHz	
Over-voltage Protection	Full input range	110	130	160	%Vo	
Over-current Protection		110	140	190	%Io	
Short circuit Protection		Hiccup mode, continuous, auto-recovery				

*Output voltage accuracy of ±5Vdc output converter for 0%-5% load is ±5% max.

** The ripple frequency decreases as the load decreases at 50% or less of the full load.

Safety and Environmental Specifications

Parameter	Notes & Conditions	Min	Typical	Max	Unit
Isolation Voltage	Input-Output, 1 minute, leakage current less than 1mA	3,000	-	-	Vdc
Insulation Resistance	Input-Output, isolation voltage 500Vdc	1,000	-	-	MΩ
Isolation Capacitance	Input-Output, 100KHz/0.1V	-	500	-	pF
Operating Temperature		-40	-	+85	°C
Storage Temperature		-55	-	+125	
Storage Humidity	Non-condensing	5	-	95	%RH
Vibration		10-55Hz, 2G, 30 min. along X, Y and Z			
MTBF	MIL-HDBK-217F@25°C	1	-	-	10 ⁶ hours

Note: Unless otherwise specified, data in this datasheet should be tested under the conditions of nominal input voltage, rated load and Ta=25°C.

Other Specifications

Parameter	Notes
Case Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)
Dimensions	51.50 x 26.50 x 12.00 mm
Weight	21.2g (Typ.)
Cooling Method	Free air convection

EMC Specifications

Parameter	Notes & Conditions		
EMI	CE	CISPR32/EN55032 CLASS A (Without extra components) / CLASS B (See Figure 6-②)	
	RE	CISPR32/EN55032 CLASS A (Without extra components) / CLASS B (See Figure 6-②)	
EMS	ESD	IEC/EN61000-4-2 Contact ±4KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV (See Figure 6-①)	perf. Criteria B
	Surge	IEC/EN61000-4-5 Line to line ±2KV (See Figure 6-①)	perf. Criteria B
	CS	IEC/EN61000-4-6 3Vrms	perf. Criteria A
	Immunities of voltage dip, drop	IEC/EN61000-4-29 0%, 70%	perf. Criteria B

Characteristic Curves

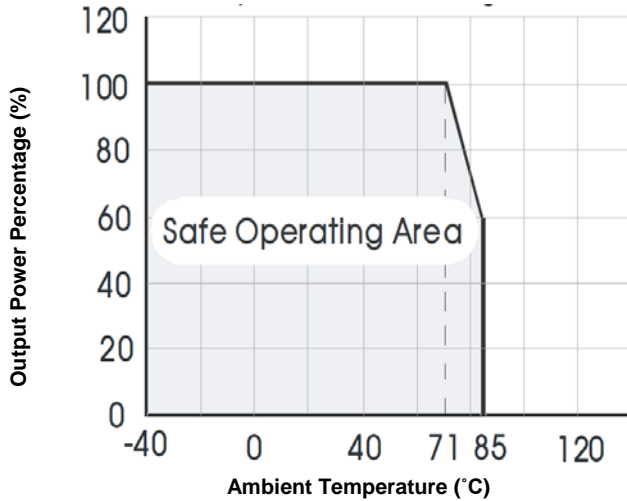


Figure 1. Temperature Derating Curve

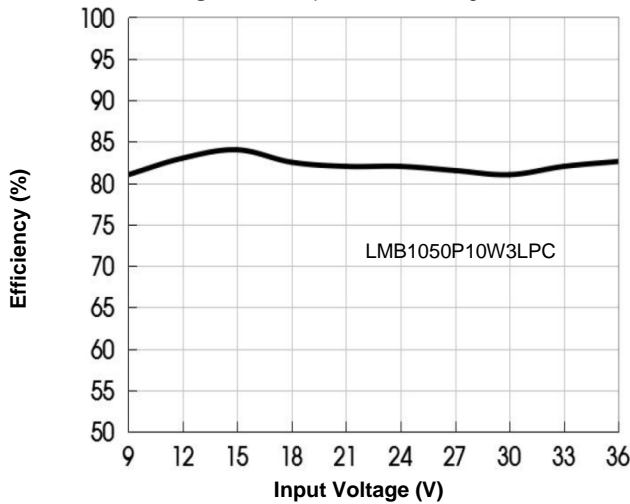


Figure 2. Efficiency vs. Input Voltage (full load)

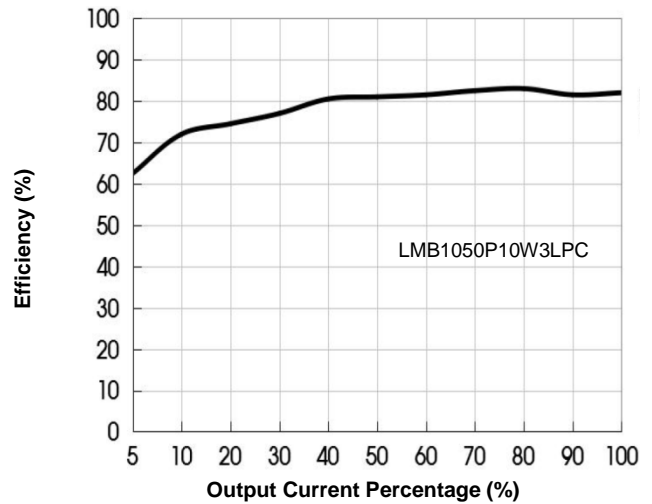


Figure 3. Efficiency vs. Output Load (Vin=24V)

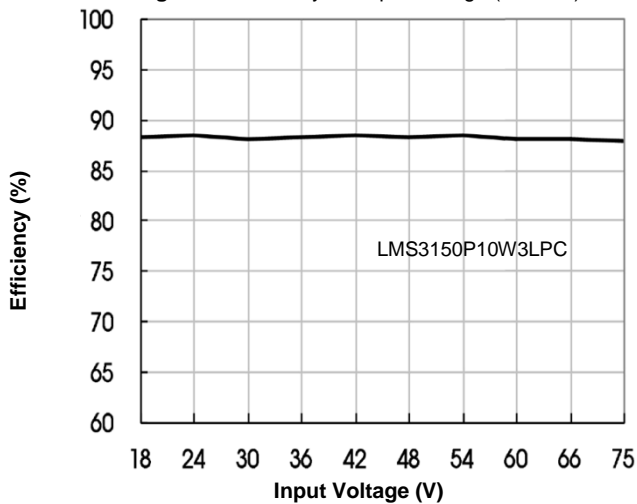


Figure 4. Efficiency vs. Input Voltage (full load)

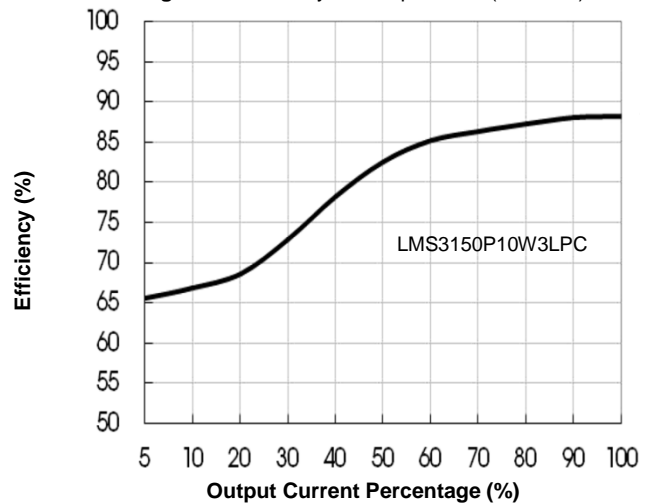
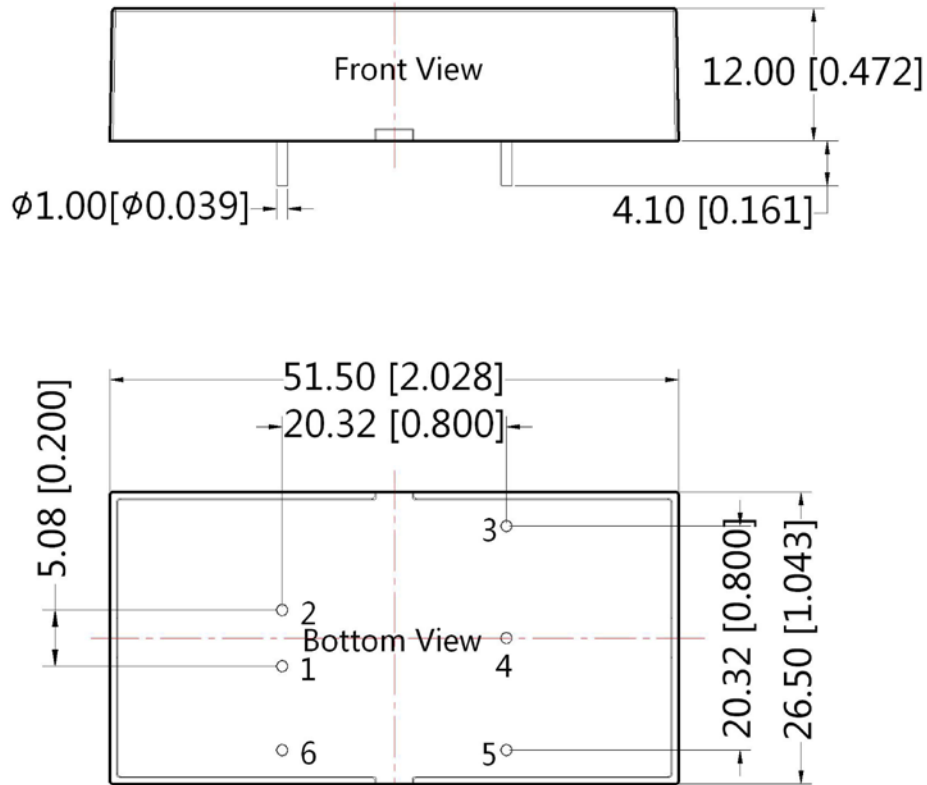


Figure 5. Efficiency vs. Output Load (Vin=48V)

Mechanical Drawing



Single output		
Pin	Name	Function
1	Vin(-)	Negative input voltage
2	Vin(+)	Positive input voltage
3	Vout(+)	Positive output voltage
4	Omit	No pin
5	Vout(-)	Negative output voltage
6	Ctrl	On/Off control
Dual output		
Pin	Name	Function
1	Vin(-)	Negative input voltage
2	Vin(+)	Positive input voltage
3	+Vout	Positive output voltage
4	COM	Output common GND
5	-Vout	Negative output voltage
6	Ctrl	On/Off control

Notes:

- 1) All dimension in mm(inches)
Tolerances: $\pm 0.50(\pm 0.020)$
- 2) Pin section tolerances : $\pm 0.10(\pm 0.004)$

EMC Typical Application Circuit

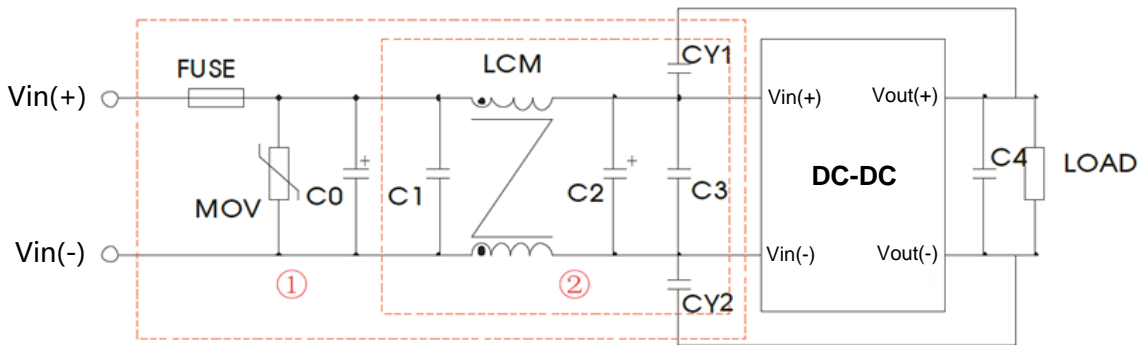


Figure 6. EMC Recommended Circuit

Component	Recommended Value	
	24Vin	48Vin
FUSE	Choose according to the actual input current	
MOV	S20K30	S14K60
C0	680 μ F/50V	680 μ F/100V
C1	1 μ F/50V	1 μ F/100V
C2	330 μ F/50V	330 μ F/100V
C3	4.7 μ F/50V	4.7 μ F/100V
LCM	4.7mH	4.7mH(dual output) / 6.8mH
C4	10 μ F	
CY1, CY2	1nF/3KV	