LMxxxxxP6W1YMC

9-36V/18-75V Wide Input

6W, Single and Dual Output DC-DC Converters

Features

- 4:1 Wide input voltage range
- High efficiency up to 88.0%
- No-load power loss as low as 0.12W
- Isolation voltage:1500Vdc
- Input under-voltage, output over-voltage, over-current 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	6W	1	YM	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	**6W:** 6W	**1:** 1500Vdc	**YM:** 1"x1"	**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)		
LMB1050P6W1YMC	24 (9-36)	±5	±600	83.0	470
LMB1120P6W1YMC		±12	±250	87.0	100
LMB1150P6W1YMC		±15	±200	87.0	100
LMB1240P6W1YMC		±24	±125	87.0	100
LMS1033P6W1YMC		3.3	1500	79.0	1800
LMS1050P6W1YMC		5	1200	83.0	1000
LMS1090P6W1YMC		9	667	85.0	680
LMS1120P6W1YMC		12	500	87.0	470
LMS1150P6W1YMC		15	400	87.0	220
LMS1240P6W1YMC		24	250	88.0	100
LMB3050P6W1YMC	48 (18-75)	±5	±600	83.0	470
LMB3120P6W1YMC		±12	±250	87.0	100
LMB3150P6W1YMC		±15	±200	88.0	100
LMS3033P6W1YMC		3.3	1500	79.0	1800
LMS3050P6W1YMC		5	1200	83.0	1000
LMS3120P6W1YMC		12	500	87.0	470
LMS3150P6W1YMC		15	400	88.0	220
LMS3240P6W1YMC		24	250	88.0	100

Electrical Specifications

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

Input Specifications

Parameter	Notes & Conditions		Min	Typical	Max	Unit
Input Current(full load)	24Vdc input series	3.3V output	-	261	268	mA
		Others	-	292	309	
	48Vdc input series	3.3V output	-	130	134	
		Others	-	146	155	
Input Current (zero load)	24Vdc input series		-	5	12	
	48Vdc input series		-	4	8	
Reflected Ripple Current			-	20	-	
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	-	
Hot Plugging	Not supported					

Output Specifications

Parameter	Notes & Conditions		Min	Typical	Max	Unit
Output Voltage Accuracy*	zero load to 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% load		-	-	±5	
Temperature Coefficient	Full load		-	-	0.03	%/°C
Transient Recovery Time	25% load step, nominal input voltage		-	300	500	μs
Transient Response Deviation		3.3V, 5V, ±5V output	-	±5	±8	%Vo
		Others		±3	±5	
Ripple & Noise	20MHz bandwidth		-	-	85	mVp-p
Ripple Frequency**			-	300	-	kHz
Over-voltage Protection	Full input range		110	-	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 switching frequency decreases as the load decreases at 50% or less of the full load.*

Isolation and Environmental Specifications

Parameter	Notes & Conditions	Min	Typical	Max	Unit
Isolation Voltage	Input-Output, 1 minute, leakage current lower than 1mA	1,500	-	-	Vdc
Insulation Resistance	Input-Output, isolation voltage 500Vdc	1,000	-	-	MΩ
Isolation Capacitance	Input-Output, 100KHz/0.1V	-	1,000	-	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

Mechanical Specifications

Parameter	Notes
Case Material	Aluminum alloy
Dimensions	25.40 x 25.40 x 11.70 mm
Weight	12.5g (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

Note: *Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25 ^{o}C, humidity <75%RH with nominal input voltage and rated output load.*

Characteristic Curves

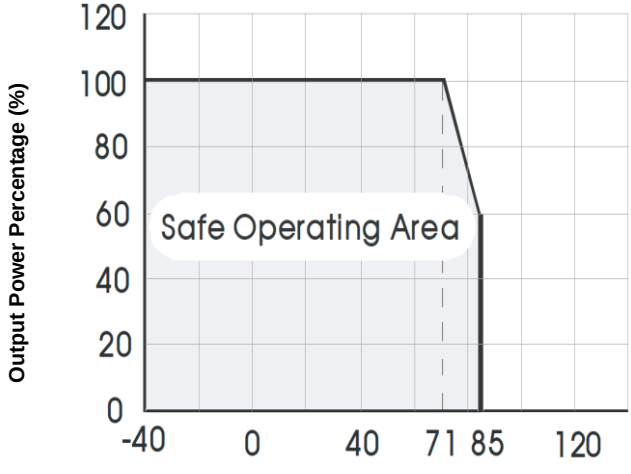


Figure 1. Temperature Derating Curve

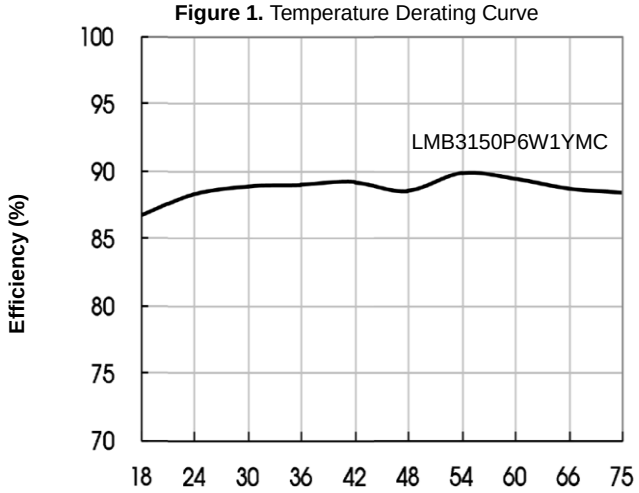


Figure 2. Efficiency vs. Input Voltage (full load)

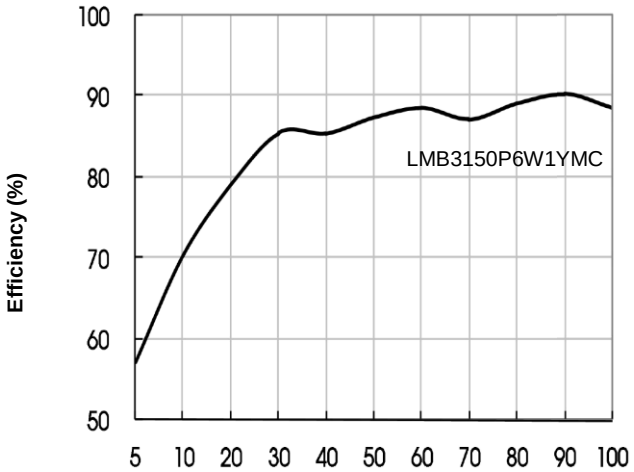


Figure 3. Efficiency vs. Output Load (Vin = 48V)

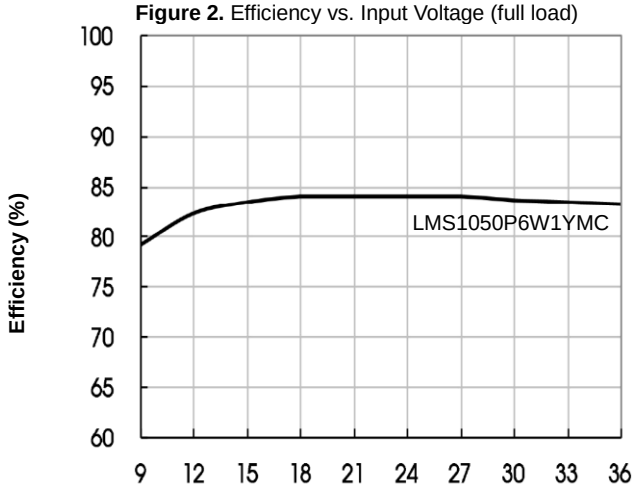


Figure 4. Efficiency vs. Input Voltage (full load)

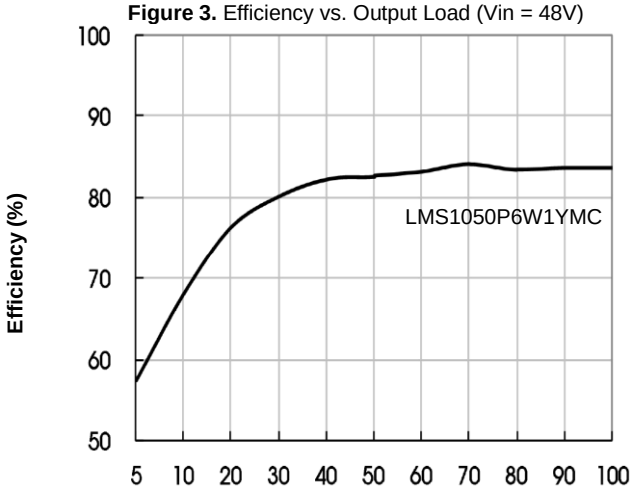
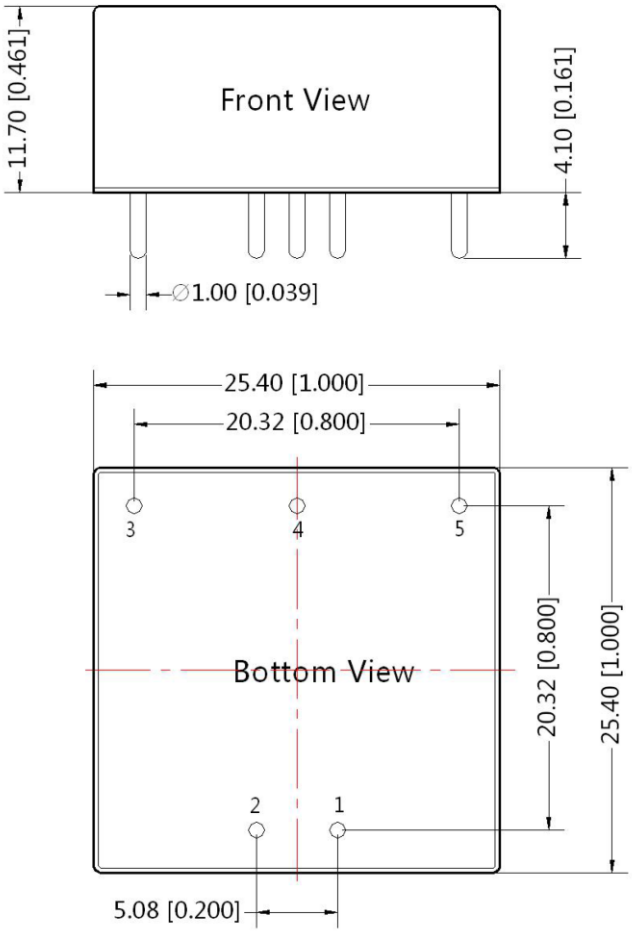


Figure 5. Efficiency vs. Output Load (Vin = 24V)

Mechanical Drawing



Single output		
Pin	**Name**	**Function**
1	Vin(-)	Negative input voltage
2	Vin(+)	Positive input voltage
3	Vout(+)	Positive output voltage
4	NC	No connection
5	Vout(-)	Negative output voltage
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

Notes:

1) All dimension in mm (inches)
2) Pin selection tolerances : ±0.10 (±0.004)
3) General tolerances: ±0.50 (±0.020)

EMC Typical Application Circuit

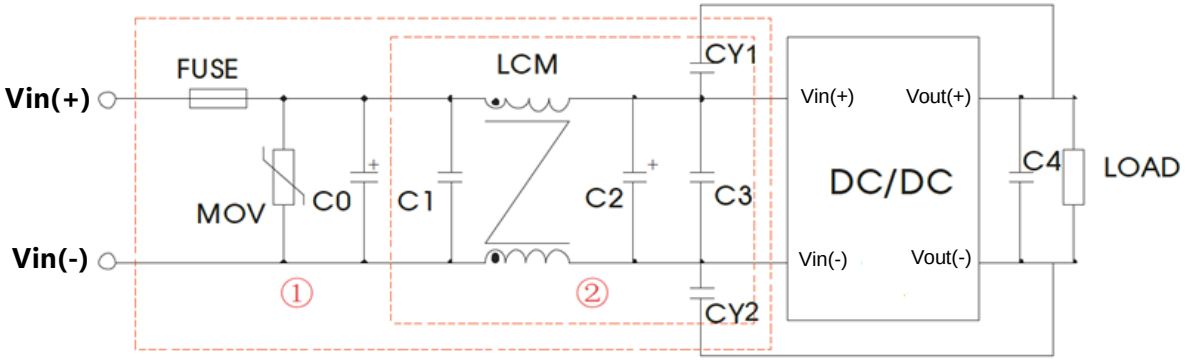


Figure 6. EMC Recommended Circuit

Component	Recommended Value	
	24Vin	48Vin
FUSE	Choose according to the actual input current	
MOV	S20K30	S14K60
C0	680μF/50V	680μF/100V
C1	1μF/50V	1μF/100V
C2	330μF/50V	330μF/100V
C3	4.7μF/50V	4.7μF/100V
C4	10μF	10μF
LCM	4.7mH	
CY1, CY2	1nF/2KV	