Features

- 4:1 wide input voltage range
- High efficiency up to 84.0%
- No-load power loss as low as 0.10W
- 1,500Vdc input to output isolation
- Input under-voltage, output 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	S	x	xxx	P	3W	1	ST	C
Series Name	**No. of Output**	**Input Range**	**Output Voltage**	**Enable Logic**	**Output Power**	**Isolation Voltage**	**Package**	**Version No.**
	S: Single	**1:** 9-36V **3:** 18-75V	**Example:** **050:** 5V	**P:** Positive	**3W:** 3W	**1:** 1500Vdc	**ST:** SMD_DFN	**C:** Version No.

Selection Guide

Part No.	Input Voltage (Vdc)	Output		Efficiency(%) at typical input & full load	Max. Capacitance Load (μF)
		Voltage (Vdc)	Current (mA)		
LMS1050P3W1STC	24 (9-36)	5	600	80.0	2200
LMS1120P3W1STC		12	250	82.0	680
LMS1150P3W1STC		15	200	83.0	470
LMS1240P3W1STC		24	125	82.0	100
LMS3033P3W1STC	48* (18-75)	3.3	728	75.0	2200
LMS3050P3W1STC		5	600	79.0	2200
LMS3120P3W1STC		12	250	82.0	680
LMS3150P3W1STC		15	200	84.0	470
LMS3240P3W1STC		24	125	82.0	100

**No UL recognized.*

Input Specifications

Parameter	Notes & Conditions		Min	Typical	Max	Unit
Input Current(full load)	24Vdc input series	3.3V output	-	134	138	mA
		24V output	-	152	156	
		Others	-	154	161	
	48Vdc input series	3.3V output	-	67	69	
		Others	-	77	82	
Input Current (zero load)	24Vdc input series	24V output	-	4	12	
		Others	-	4	7	
	48Vdc input series		-	4	7	
Reflected Ripple Current	24Vdc input series		-	120	-	
	48Vdc input series		-	60	-	
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		13	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		-	6	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		-	±1	±3	%Vo
Line Regulation	Full range input voltage, full load	-	±0.2	±0.5	%Vo
Load Regulation	0%-100% of full load, nominal input	-	±0.5	±1	%Vo
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	-	30	120	mVp-p
Ripple Frequency*	PWM mode	-	350	-	kHz
Over-current Protection	Full input range	-	150	250	%Io
Short circuit Protection		Hiccup mode			

**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	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	
Case Temperature Rise	Ta=25°C, nominal input voltage, full load	-	+40	-	
Operating Humidity	Non-condensing	5	-	95	%RH
Reflow Soldering Temperature		Peak temperature ≤ 245°C, maximum duration above 217°C ≤ 60s			
Vibration		10-55Hz, 10G, 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 heat-proof plastic
Dimensions	19.20 x 18.10 x 10.16 mm
Weight	3.5g (Typ.)
Cooling Method	Free air convection

EMC Specifications

Parameter		Notes & Conditions	
EMI	CE	CISPR32/EN55032 CLASS B (See Figure 6-②)	
	RE	CISPR32/EN55032 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

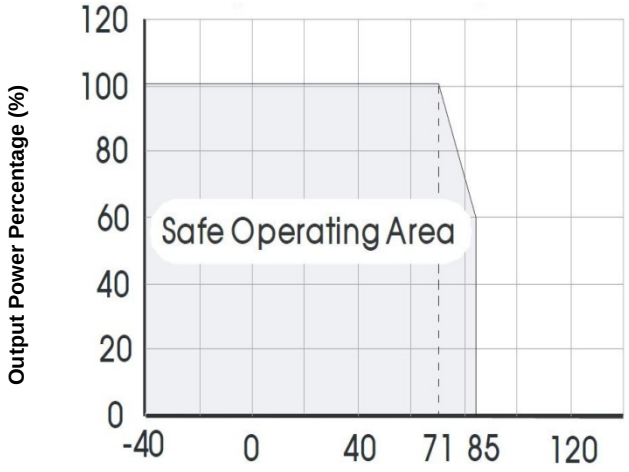


Figure 1. Temperature Derating Curve

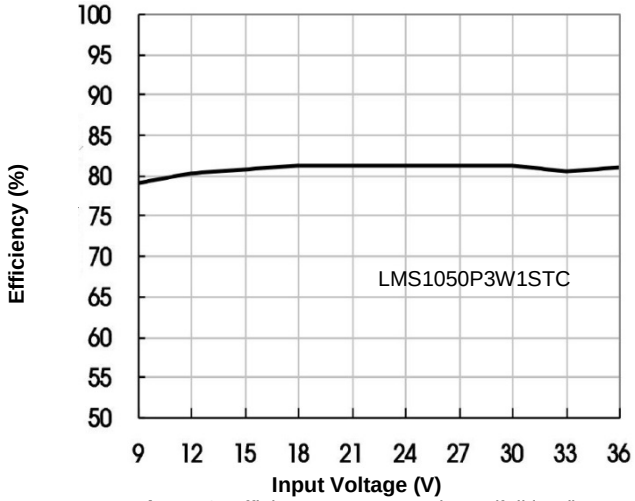


Figure 2. Efficiency vs. Input Voltage (full load)

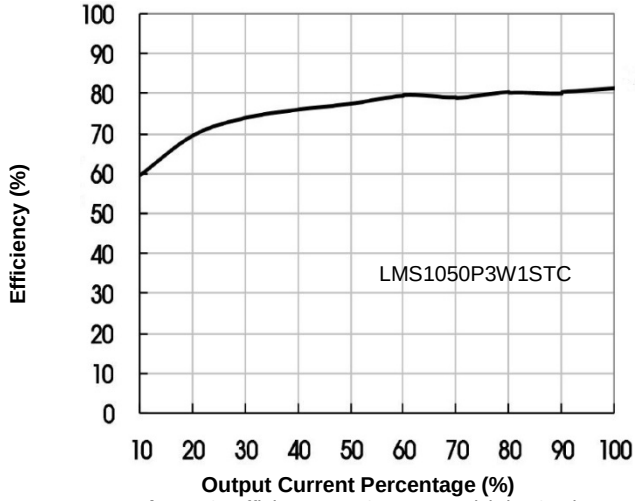


Figure 3. Efficiency vs. Output Load (Vin=24V)

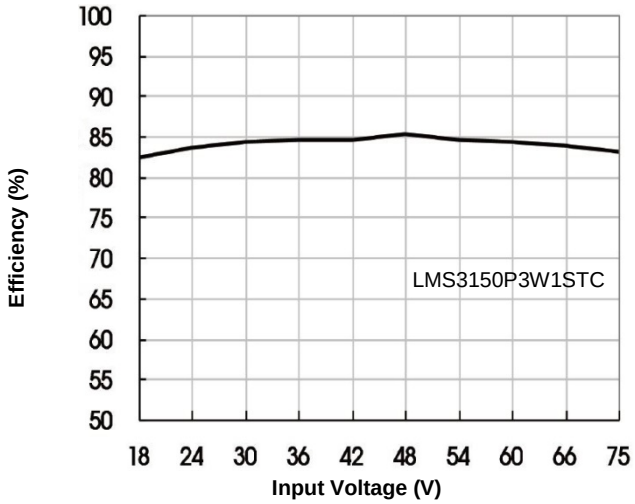


Figure 4. Efficiency vs. Input Voltage (full load)

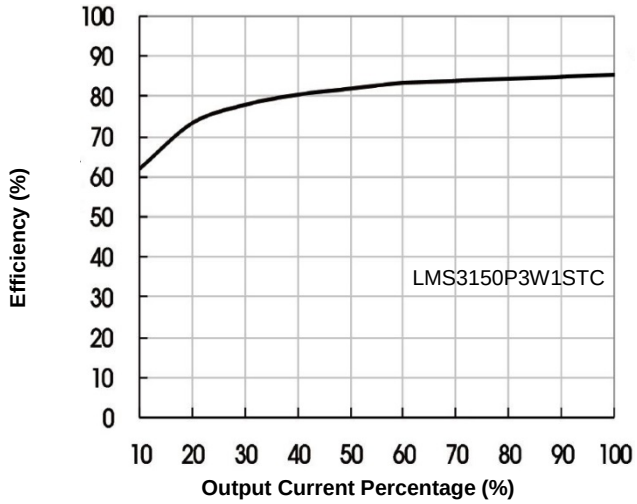
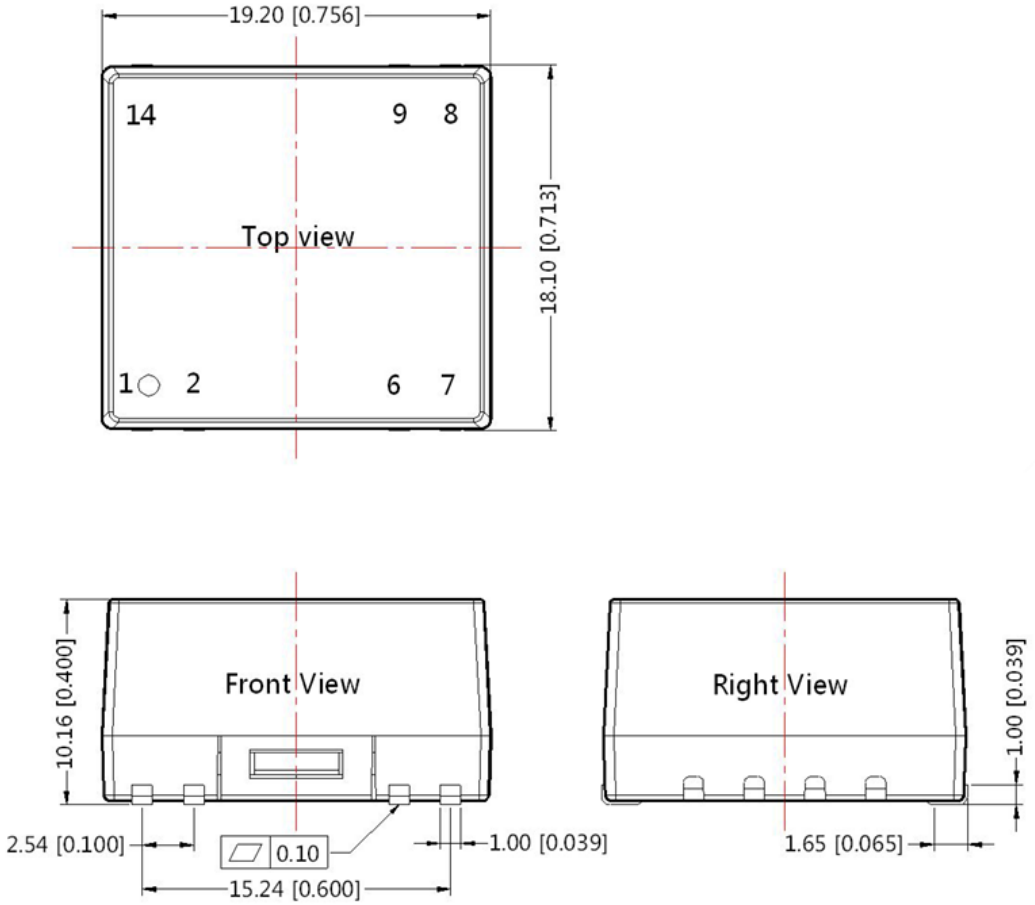


Figure 5. Efficiency vs. Output Load (Vin=48V)

Mechanical Drawing



Pin	Name	Function
1	Vin(-)	Negative input voltage
2	Ctrl	ON/OFF control
6	NC	No Connection
7	NC	No Connection
8	Vout(+)	Positive output voltage
9	Vout(-)	Negative output voltage
14	Vin(+)	Positive input voltage

Notes:

1) All dimension in mm(inches)
   Tolerances: ±0.50(±0.020)
2) Pin section tolerances : ±0.10(±0.004)

EMC Typical Application Circuit

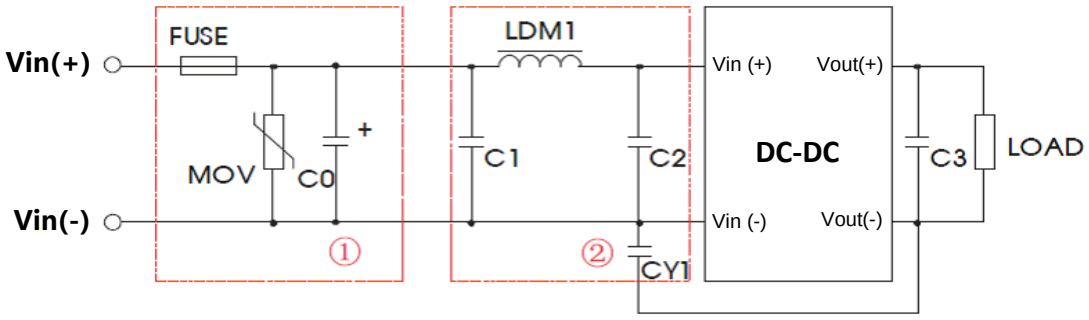


Figure 6. EMC Recommended Circuit

Component	Recommended Value	
	24Vin	48Vin
FUSE	Choose according to the actual input current	
MOV	S20K30	S14K60
C0	680μF/50V	680μF/100V
C1, C2	4.7μF/50V	4.7μF/100V
C3	10μF	
LDM1	12μH	
CY1	1nF/2KV	