

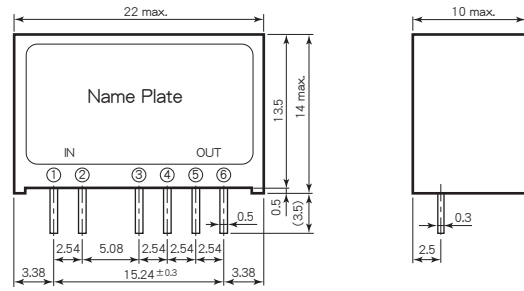
# LP SERIES

# 1W DC/DC CONVERTERS Single Output & Dual Outputs



H14×W10×L22 (mm)

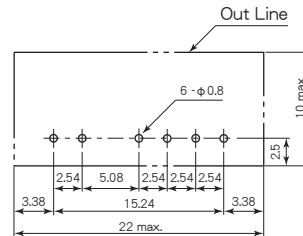
## Pin Outs & Dimensions (±0.5mm)



### Pin Outs

Single Output		Dual Outputs	
①	+Vdc in	①	+Vdc in
②	0 Vdc in	②	0 Vdc in
③	No Connection	③	+Vdc out 1
④	No Connection	④	0 Vdc out 1
⑤	+Vdc out	⑤	+Vdc out 2
⑥	0 Vdc out	⑥	0 Vdc out 2

## Hole Configurations on PCB (Top View)



## Selection Guide

Table 1

Model Number	Input Volt. (Range) (V. DC)	Output Volt. (V. DC)		Output Current (mA)		Efficiency (Typical) (%)
		out 1	out 2	out 1	out 2	
LP 5 - 5S200	5 (4.5~9)	5	-	20~200	-	65
LP 5 - 12S 85		12	-	8~85	-	70
LP 5 - 15S 70		15	-	7~70	-	70
LP 5 - 24S 45		24	-	4~45	-	70
LP 5 - 5D100		5	5	10~100	10~100	65
LP 5 - 12D 45		12	12	5~45	5~45	70
LP 5 - 15D 35		15	15	4~35	4~35	70
LP 5 - 5S12S		5	12	10~100	5~50	68
LP 5 - 5S15S		5	15	10~100	4~40	68
LP 12 - 5S200		12 (9~18)	5	-	20~200	-
LP 12 - 12S 85	12		-	8~85	-	75
LP 12 - 15S 70	15		-	7~70	-	75
LP 12 - 24S 45	24		-	4~45	-	75
LP 12 - 5D100	5		5	10~100	10~100	70
LP 12 - 12D 45	12		12	5~45	5~45	75
LP 12 - 15D 35	15		15	4~35	4~35	75
LP 12 - 5S12S	5		12	10~100	5~50	72
LP 12 - 5S15S	5		15	10~100	4~40	72
LP 24 - 5S200	24 (18~36)		5	-	20~200	-
LP 24 - 12S 85		12	-	8~85	-	75
LP 24 - 15S 70		15	-	7~70	-	75
LP 24 - 24S 45		24	-	4~45	-	75
LP 24 - 5D100		5	5	10~100	10~100	70
LP 24 - 12D 45		12	12	5~45	5~45	75
LP 24 - 15D 35		15	15	4~35	4~35	75
LP 24 - 5S12S		5	12	10~100	5~50	72
LP 24 - 5S15S		5	15	10~100	4~40	72
LP 48 - 5S200		48 (36~72)	5	-	20~200	-
LP 48 - 12S 85	12		-	8~85	-	75
LP 48 - 15S 70	15		-	7~70	-	75
LP 48 - 24S 45	24		-	4~45	-	75
LP 48 - 5D100	5		5	10~100	10~100	70
LP 48 - 12D 45	12		12	5~45	5~45	75
LP 48 - 15D 35	15		15	4~35	4~35	75
LP 48 - 5S12S	5		12	10~100	5~50	72
LP 48 - 5S15S	5		15	10~100	4~40	72

## Features

- SIP Package
- Input-Output Isolation
- Each Output Isolation
- Wide Input Voltage Range
- High Reliability
- Low Cost
- Operating Ambient Temp. -30°C~+71°C
- Max. Case Temperature +90°C
- Conformity to RoHS Directive
- Not built-in aluminum and tantalum electrolytic capacitor
- SIP パッケージ
- 入出力間絶縁
- 各出力間絶縁
- 広範囲な入力電圧
- 高信頼性
- 低価格
- 動作周囲温度 -30°C~+71°C
- 最大ケース温度 +90°C
- RoHS指令対応
- アルミ電解コンデンサ及びタンタルコンデンサ不使用

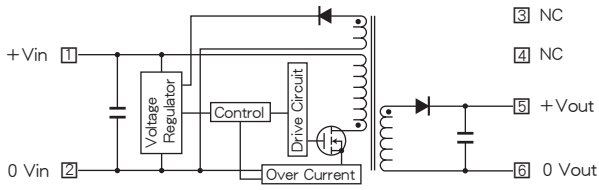
## General Characteristics

- Input Voltage, Range DC5, 12, 24, 48V (See Table 1)
- Output Voltage, Current See Table 1
- Output Voltage Accuracy ±3%
- Efficiency See Table 1
- Line Regulation ±1.5% max. (at Vin Range)
- Load Regulation ±5% max. (min. Load~max. Load)
- Reflected Input Ripple and Noise (3% Vin)Vp-p max.
- Output Ripple 100mVp-p max.
- Output Noise 300mVp-p max.
- Short Circuit Protection Built-in, Auto-restart (See Fig. 2)
- Temperature Coefficient 0.06%/°C max.
- Operating Ambient Temp. -30°C~+71°C (See Fig. 1)
- Max. Case Temperature +90°C
- Storage Temperature -40°C~+100°C
- Isolation Voltage AC500V one minute (Input-Output-Case)
- Isolation Impedance 100MΩ min. (at DC1000V) (Input-Output-Case)
- Switching Frequency 360kHz typ.
- Weight 8g max.
- Humidity 20~95% RH
- Shock 490m/s<sup>2</sup> (11msec 3directions)
- Vibration 10~55Hz 98m/s<sup>2</sup> (30minutes 3directions)
- Surface Structure Plastic Case
- Soldering Conditions Soldering iron 360°C, for 5 seconds max.
- MTBF 1,500,000H (Ta : 25°C, 80% Load, Nominal Vin)
- Warranty 5 years

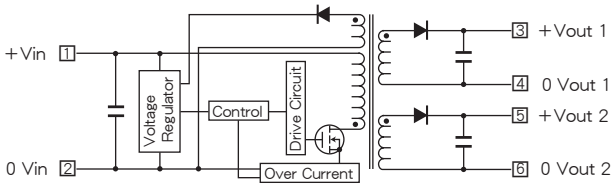
# LP SERIES DATA SHEET

## Block Diagram

### Single Output



### Dual Outputs



## Characteristic Curves

Fig. 1 Derating Curve

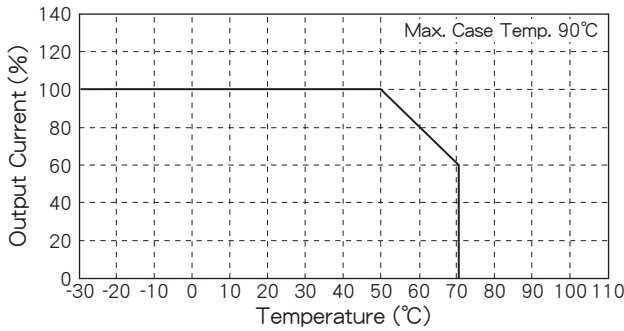


Fig. 2 Short Circuit Operating Area

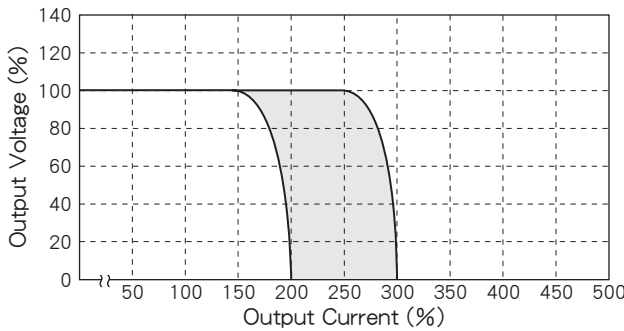


Fig. 3 Temperature Characteristic on Case Surface

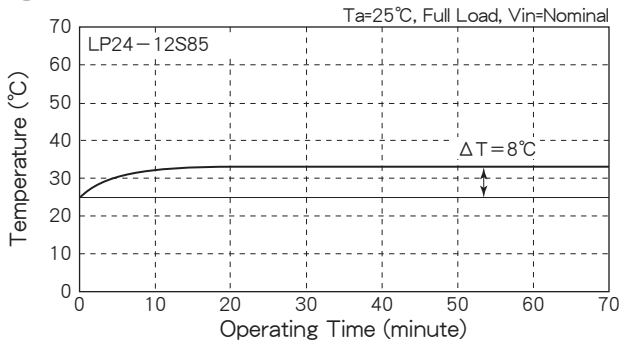


Fig. 4 Output Voltage vs. Output Current

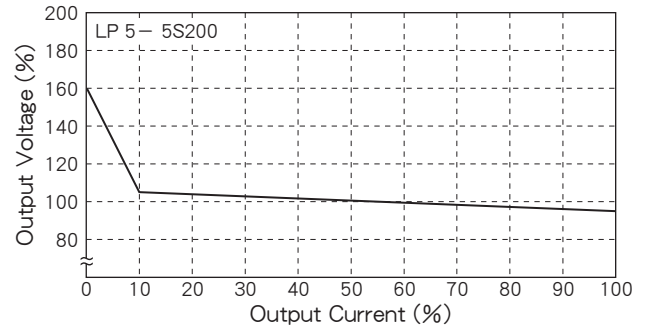


Fig. 5 Efficiency vs. Output Current (Single Output)

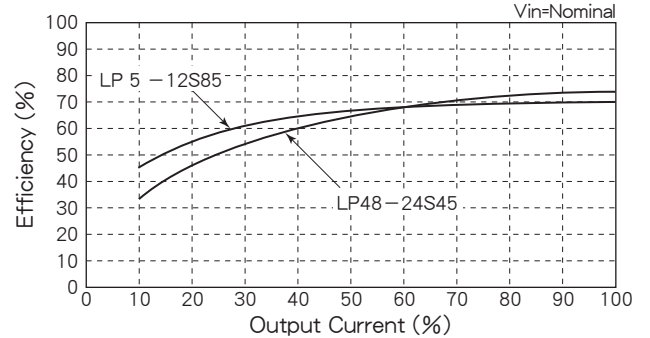


Fig. 6 Efficiency vs. Output Current (Dual Outputs)

