

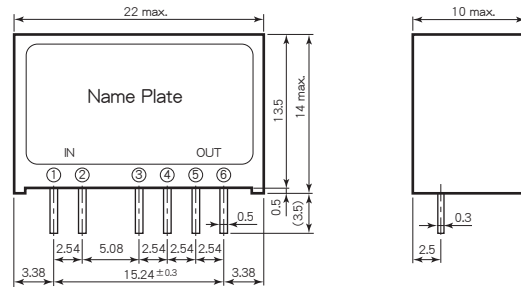
LP SERIES

1W DC/DC CONVERTERS Single Output & Dual Outputs



H14×W10×L22 (mm)

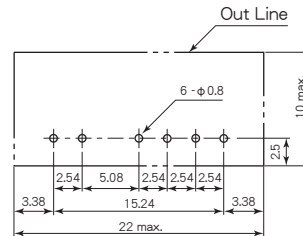
Pin Outs & Dimensions (±0.5mm)



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)



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 RoHS2 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
- RoHS2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/s² (11msec 3directions)
- Vibration 10~55Hz 98m/s² (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

Selection Guide

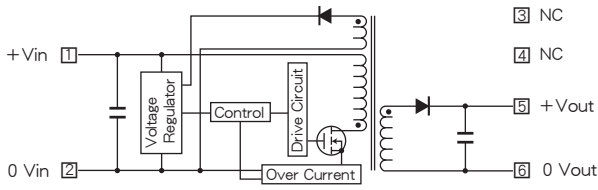
Table 1

| 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 |

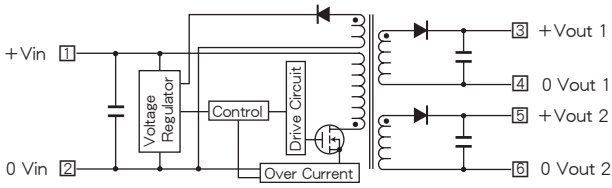
LP SERIES DATA SHEET

Block Diagram

Single Output



Dual Outputs



Characteristic Curves

Fig. 1 Derating Curve

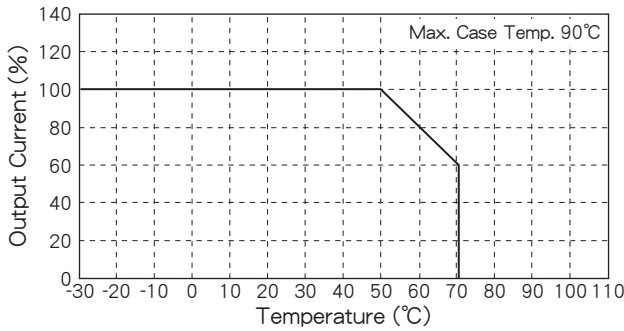


Fig. 2 Short Circuit Operating Area

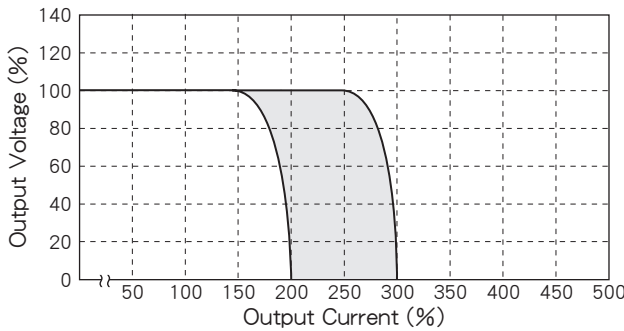


Fig. 3 Temperature Characteristic on Case Surface

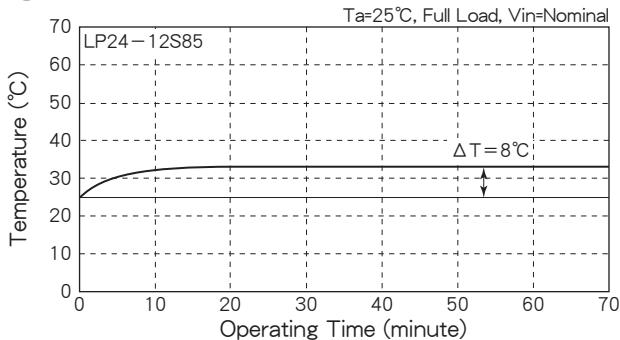


Fig. 4 Output Voltage vs. Output Current

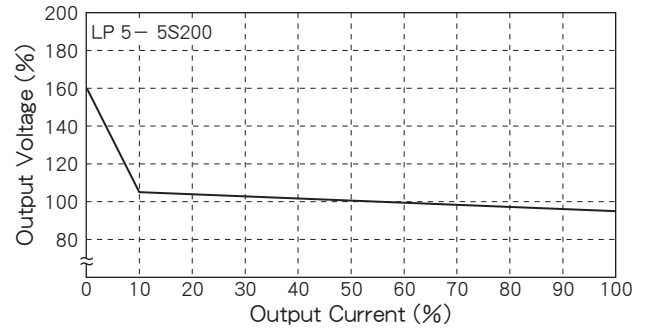


Fig. 5 Efficiency vs. Output Current (Single Output)

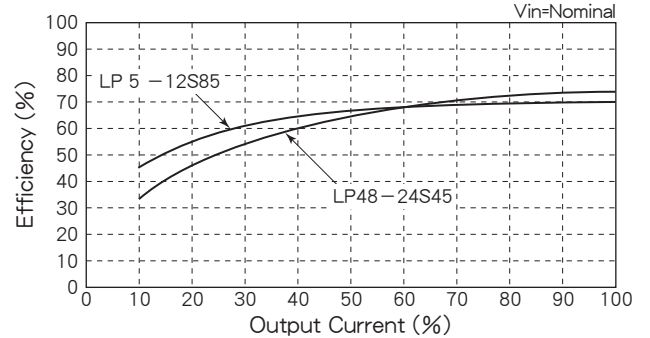


Fig. 6 Efficiency vs. Output Current (Dual Outputs)

