



DESCRIPTION: 2W 3KVDC Isolated Single Output DC/DC Converters

The TPG series are miniature, isolated 2W DC/DC converters in a SIP package. They offer the ideal solution in many space critical applications for board level power distribution. The internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency, lower output ripple noise and 3KVDC isolation.

FEATURES

| | | |
|--|--|---------------------------------------|
| RoHS compliant, CE certification | Efficiency from 81% to 88% | Operating temperature :-40°C to 105°C |
| UL 94V-0 package material | Industry standard pinout | 3KVDC isolation |
| Input voltage: 3.3V, 5V, 12V,15V,24V,48V | Output voltage: 3.3V,5V, 9V, 12V, 15V, 24V | Internal SMD construction |

SELECTION GUIDE

| Part Number | Nominal Input Voltage | Output Voltage | Output Current(Max./Min) | Load Regulation (Max) | Efficiency (Typ.) |
|-------------|-----------------------|----------------|--------------------------|-----------------------|-------------------|
| | V | V | mA | % | % |
| TPG0305S | 3.3 | 5 | 400/40 | 7.4 | 73 |
| TPG0503S | 5 | 3.3 | 606/60.6 | 8.0 | 75 |
| TPG0505S | 5 | 5 | 400/40 | 7.4 | 77 |
| TPG0509S | 5 | 9 | 222/22.2 | 6.1 | 81 |
| TPG0512S | 5 | 12 | 167/16.7 | 5.1 | 82 |
| TPG0515S | 5 | 15 | 133/13.3 | 4.5 | 82 |
| TPG0524S | 5 | 24 | 83/8.3 | 4.5 | 82 |
| TPG1203S | 12 | 3.3 | 606/60.6 | 8.0 | 75 |
| TPG1205S | 12 | 5 | 400/40 | 4.8 | 77 |
| TPG1209S | 12 | 9 | 222/22.2 | 3.2 | 82 |
| TPG1212S | 12 | 12 | 167/16.7 | 2.9 | 83 |
| TPG1215S | 12 | 15 | 133/13.3 | 2.5 | 83 |
| TPG1224S | 12 | 24 | 83/8.3 | 4.5 | 82 |
| TPG1505S | 15 | 5 | 400/40 | 7.4 | 75 |
| TPG1515S | 15 | 15 | 133/13.3 | 2.5 | 75 |
| TPG2403S | 24 | 3.3 | 400/40 | 7.4 | 71 |
| TPG2405S | 24 | 5 | 400/40 | 6.5 | 77 |
| TPG2409S | 24 | 9 | 222/22.2 | 3.2 | 77 |
| TPG2412S | 24 | 12 | 167/16.7 | 2.9 | 79 |
| TPG2415S | 24 | 15 | 133/13.3 | 2.5 | 79 |
| TPG2424S | 24 | 24 | 83/8.3 | 4.5 | 82 |
| TPG4805S | 48 | 5 | 400/40 | 6.5 | 77 |
| TPG4812S | 48 | 12 | 167/16.7 | 2.9 | 79 |

Add suffix "P" for continuous short circuit protection, for exampleTPG0505SP.

GENERAL CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------------|------------|------|------|------|-------|
| Switching frequency | | | 65 | | kHz |

INPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|--------------------------|------------------|------|------|------|--------|
| Voltage range | 3.3V input types | 2.9 | 3.3 | 3.6 | V |
| Voltage range | 5V input types | 4.5 | 5 | 5.5 | V |
| Voltage range | 12V input types | 11 | 12 | 13.2 | V |
| Voltage range | 15V input types | 13.4 | 15 | 16.4 | V |
| Voltage range | 24V input types | 21.6 | 24 | 26.4 | V |
| Voltage range | 48V input types | 43 | 48 | 53 | V |
| Reflected ripple current | | | 8 | 15 | mA p-p |

OUTPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|----------------------------|---|------|------|------|-------|
| Rated Power | TA=-40°C to 85°C | | | 2 | W |
| Voltage Set Point Accuracy | See tolerance envelope | | | | |
| Line regulation | High VIN to low VIN (voltage variation +/-5%) | | 1.0 | 1.2 | %/% |

ISOLATION CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|------------------------|---------------------|------|------|------|-------|
| Isolation test voltage | Tested for 1 second | 3000 | | | VDC |
| Resistance | Viso= 1000VDC | 1 | | | GΩ |

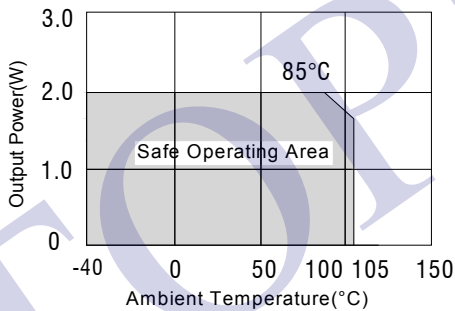
ABSOLUTE MAXIMUM RATINGS

| | |
|---|-------|
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Internal power dissipation | 700mW |
| Input voltage Vin, TPG03 | 5.5V |
| Input voltage Vin, TPG05 | 7V |
| Input voltage Vin, TPG12 | 15V |
| Input voltage Vin, TPG15 | 18V |
| Input voltage Vin, TPG24 | 28V |
| Input voltage Vin, TPG48 | 54V |

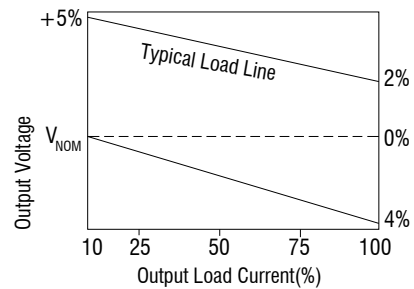
TEMPERATURE CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|--------------------------------|-----------------------------------|------|------|------|-------|
| Specification | Derating if the temperature ≥85°C | -40 | | 105 | °C |
| Storage | | -50 | | 150 | °C |
| Case Temperature above ambient | TPG05XX | | | 32 | °C |
| Case Temperature above ambient | TPG12XX | | | 27 | °C |
| Case Temperature above ambient | All other output types | | | 25 | °C |
| Cooling | Free air convection | | | | |

TEMPERATURE DERATING GRAPHS

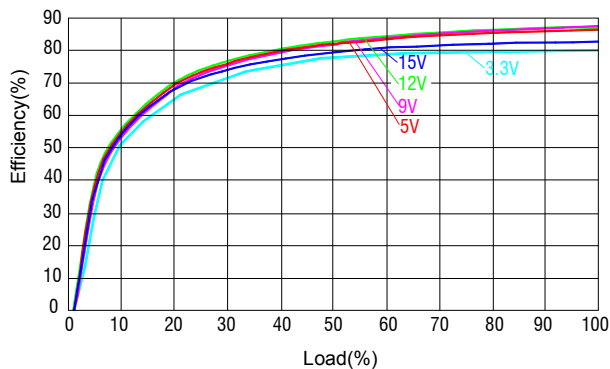


TOLERANCE ENVELOPES

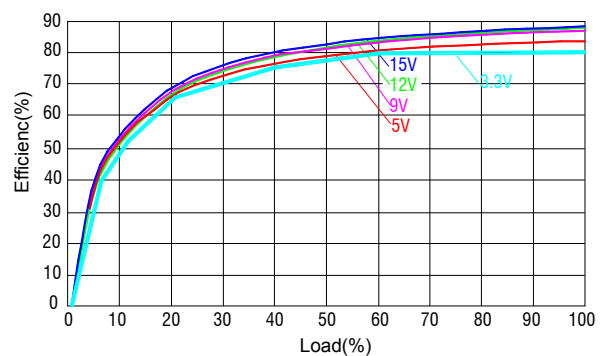


EFFICIENCY VS LOAD

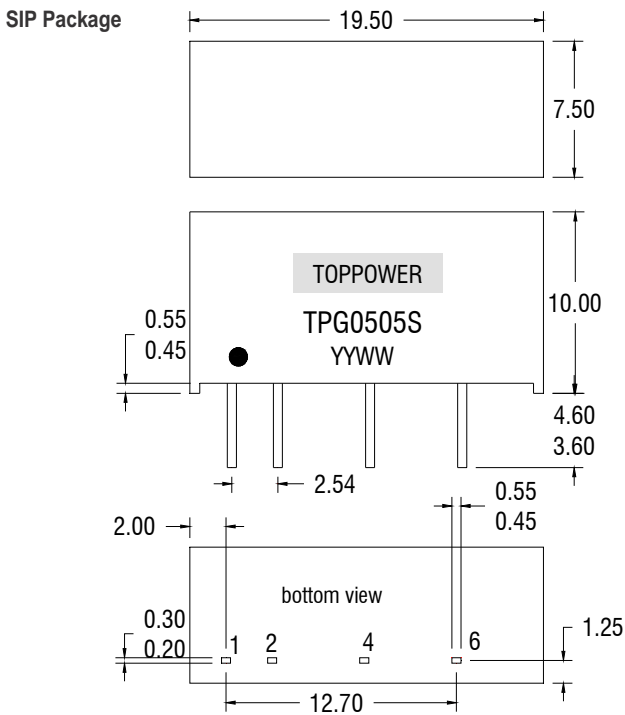
TPG 5V Input Voltage



TPG 12V Input Voltage



MECHANICAL DIMENSIONS

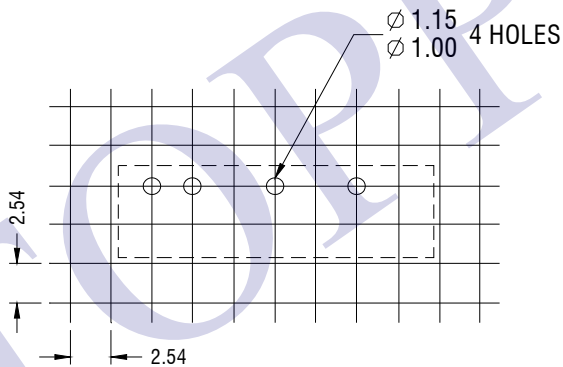


All dimensions in mm ± 0.25 mm . All pins on a 2.54mm pitch and within ± 0.25 mm of true position. Weight: 2.8g

PIN CONNECTIONS

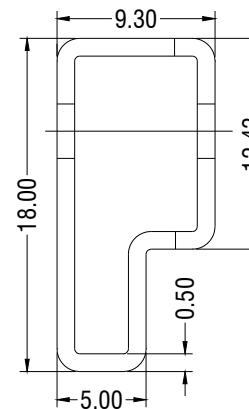
| 7 PIN SIP | |
|-----------|----------|
| Pin | Function |
| 1 | +Vin |
| 2 | -Vin |
| 4 | -Vout |
| 6 | +Vout |

RECOMMENDED FOOTPRINT DETAILS



Unless otherwise stated all dimensions in mm ± 0.5 mm.

TUBE OUTLINE DIMENSIONS



Unless otherwise stated all dimensions in mm ± 0.5 mm.
 Tube length : 520mm ± 2 mm. Tube Quantity : 25PCS

SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. This series are backward compatible with Sn/Pb soldering systems.