



DESCRIPTION: 1W 3KVDC Isolated Single Output DC/DC Converters

The TPR-1W series are miniature, isolated 1W 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 | 3KVDC isolation | Efficiency up to 80% |
| Operating temperature: -40°C to 105°C | Power density up to 0.90W/cm ³ | UL 94V-0 package material |
| Footprint from 1.17cm ² | Industry standard pinout | Input voltage:3.3V,5V, 12V, 15V, 24V |
| Output voltage: 3.3V,5V, 9V,12V, 15V, 24V | Custom solutions available | CE certification |

SELECTION GUIDE

| Part Number | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency |
|-------------|-----------------------|----------------|---------------------------|------------|
| | V | V | mA | % |
| TPR0303S-1W | 3.3 | 3.3 | 303/30.3 | 72 |
| TPR0305S-1W | 3.3 | 5 | 200/20 | 74 |
| TPR0503S-1W | 5 | 3.3 | 303/30.3 | 72 |
| TPR0505S-1W | 5 | 5 | 200/20 | 68 |
| TPR0509S-1W | 5 | 9 | 111/11.1 | 78 |
| TPR0512S-1W | 5 | 12 | 84/8.1 | 76 |
| TPR0515S-1W | 5 | 15 | 68/6.8 | 79 |
| TPR0524S-1W | 5 | 24 | 42/4.2 | 81 |
| TPR1203S-1W | 12 | 3.3 | 303/30.3 | 74 |
| TPR1205S-1W | 12 | 5 | 200/20 | 69 |
| TPR1209S-1W | 12 | 9 | 111/11.1 | 76 |
| TPR1212S-1W | 12 | 12 | 84/8.4 | 77 |
| TPR1215S-1W | 12 | 15 | 68/6.8 | 76 |
| TPR1224S-1W | 12 | 24 | 42/4.2 | 84 |
| TPR1505S-1W | 15 | 5 | 200/20 | 69 |
| TPR1512S-1W | 15 | 12 | 83/8.3 | 76 |
| TPR1515S-1W | 15 | 15 | 67/6.7 | 75 |
| TPR2405S-1W | 24 | 5 | 200/20 | 71 |
| TPR2409S-1W | 24 | 9 | 111/11.1 | 78 |
| TPR2412S-1W | 24 | 12 | 84/8.4 | 78 |
| TPR2415S-1W | 24 | 15 | 68/6.8 | 80 |
| TPR2424S-1W | 24 | 24 | 42/4.2 | 80 |

Add suffix "P" for continuous short circuit protection, for example TPR0505SP-1W.

INPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------|------------|------|------|------|-------|
| Voltage range | 3.3V input | 2.9 | 3.3 | 3.6 | V |
| Voltage range | 5V input | 4.5 | 5 | 5.5 | V |
| Voltage range | 12V input | 11 | 12 | 13.3 | V |
| Voltage range | 15V input | 13.4 | 15 | 16.4 | V |
| Voltage range | 24V input | 22 | 24 | 26.6 | V |

ISOLATION CHARACTERISTICS

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

OUTPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|--------------------------------------|------|------|------|-------|
| Rated Power | TA=-40°C to 85°C | | | 1 | W |
| Voltage Set Point Accuracy | See tolerance envelope | | | | |
| Line regulation | High VIN to low VIN | | 1.2 | | %/% |
| Load Regulation(10% load to rated load) | TPRXX03S-1W ,TPRXX05S-1W,TPRXX09S-1W | | 13 | | % |
| Load Regulation(10% load to rated load) | TPR0512S-1W/1212S-1W | | 7 | | % |
| Load Regulation(10% load to rated load) | TPR0515S-1W/1215S-1W | | 7 | | % |
| Load Regulation(10% load to rated load) | 24V input variants | | 7 | | % |
| Load Regulation(10% load to rated load) | 24V input variants | | 3 | | % |
| Load Regulation(10% load to rated load) | 24V input variants | | 3 | | % |

ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------|
| Short-circuit protection | 1 second |
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Internal power dissipation | 540mW |
| Input voltage Vin, TPR03 variants | 5.5V |
| Input voltage Vin, TPR05 variants | 7V |
| Input voltage Vin, TPR12 variants | 15V |
| Input voltage Vin, TPR15 variants | 18V |
| Input voltage Vin, TPR24 variants | 28V |

All specifications typical at TA=25° C, nominal input voltage and rated output current unless otherwise specified.

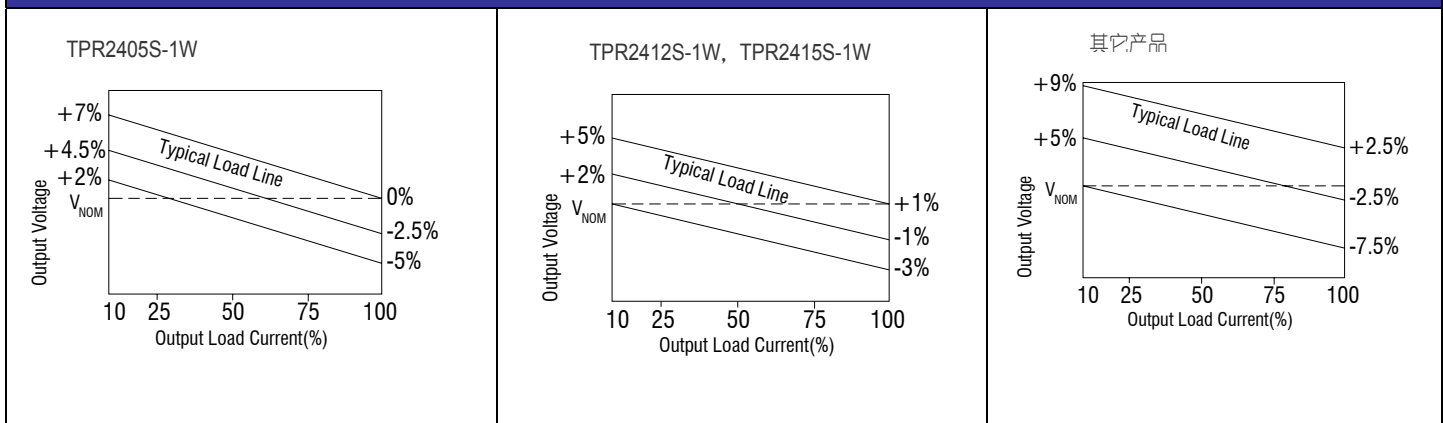
GENERAL CHARACTERISTICS

| Parameter | Conditions | Typ. | Max. | Units |
|---------------------|------------|------|------|-------|
| Switching frequency | 3.3V input | 120 | | kHz |
| Switching frequency | 5V input | 120 | | kHz |
| Switching frequency | 12V input | 160 | | kHz |
| Switching frequency | 15V input | 90 | | kHz |
| Switching frequency | 24V input | 90 | | kHz |

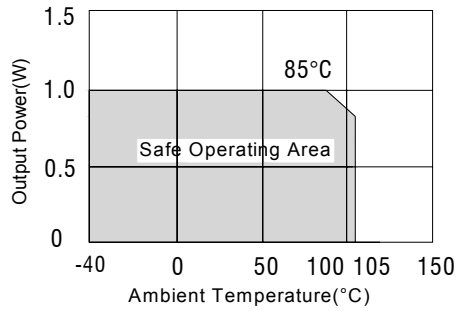
TEMPERATURE CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|--------------------------------|-----------------------------------|------|------|------|-------|
| Specification | Derating if the temperature ≥85°C | -40 | | 105 | °C |
| Storage | | -50 | | 130 | °C |
| Case Temperature above ambient | 5V output types | | 35 | | °C |
| Case Temperature above ambient | All other output types | | 30 | | °C |
| Cooling | Free air convection | | | | |

TOLERANCE ENVELOPES



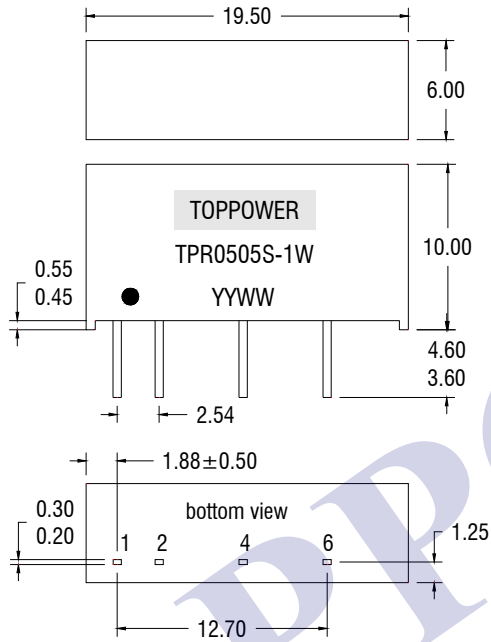
TEMPERATURE DERATING GRAPHS



MECHANICAL DIMENSIONS

PIN CONNECTIONS

SIP Package

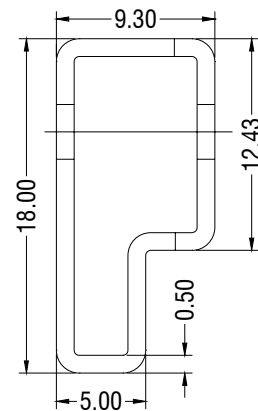
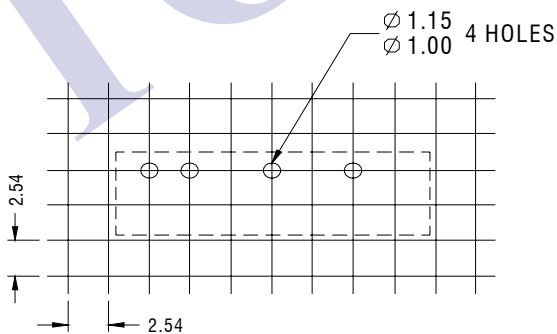


| 7 PIN SIP | |
|-----------|----------|
| Pin | Function |
| 1 | +Vin |
| 2 | -Vin |
| 4 | -Vout |
| 6 | +Vout |

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

RECOMMENDED FOOTPRINT DETAILS

TUBE OUTLINE DIMENSIONS



All dimensions in mm ± 0.25 mm

All dimensions in mm ± 0.25 mm

Tube Quantity : 25PCS