

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



The TPD-2W series are miniature, isolated 2W DC/DC-converters with twin output voltage in a SIP and DIP 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 | Twin independent output | Input/output isolation 3KVDC |
| Output/output isolation 3KVDC | Power sharing on output | Efficiency up to 80% |
| UL 94V-0 package material | Footprint from 1.17cm ² | Input voltage: 5V, 12V,24V |
| Output one: 5V,9V,12V,15V | Output two: 3.3V, 5V, 9V, 12V, 15V | Operating temperature: -40°Cto 105°C |

SELECTION GUIDE

| Part Number | Nominal Input Voltage | Output Voltage 1 | Output Voltage 2 | Output Current 1 | Output Current 2 | Efficiency | Package Style |
|---------------|-----------------------|------------------|------------------|------------------|------------------|------------|---------------|
| | V | V | V | mA | mA | % | |
| TPD050503D-2W | 5 | 5 | 3.3 | 200 | 302 | 69 | DIP |
| TPD050505D-2W | 5 | 5 | 5 | 200 | 198 | 70 | DIP |
| TPD050509D-2W | 5 | 5 | 9 | 200 | 110 | 79 | DIP |
| TPD050512D-2W | 5 | 5 | 12 | 200 | 82 | 80 | DIP |
| TPD050515D-2W | 5 | 5 | 15 | 200 | 70 | 79 | DIP |
| TPD050503S-2W | 5 | 5 | 3.3 | 200 | 302 | 70 | SIP |
| TPD050505S-2W | 5 | 5 | 5 | 200 | 198 | 70 | SIP |
| TPD050509S-2W | 5 | 5 | 9 | 200 | 110 | 79 | SIP |
| TPD050512S-2W | 5 | 5 | 12 | 200 | 82 | 80 | SIP |
| TPD050515S-2W | 5 | 5 | 15 | 200 | 70 | 80 | SIP |
| TPD050909S-2W | 5 | 9 | 9 | 111 | 111 | 82 | SIP |
| TPD051212S-2W | 5 | 12 | 12 | 83 | 83 | 82 | SIP |
| TPD051515S-2W | 5 | 15 | 15 | 67 | 67 | 83 | SIP |
| TPD120505D-2W | 12 | 5 | 5 | 200 | 198 | 70 | DIP |
| TPD120509D-2W | 12 | 5 | 9 | 200 | 110 | 80 | DIP |
| TPD120512D-2W | 12 | 5 | 12 | 200 | 82 | 80 | DIP |
| TPD120515D-2W | 12 | 5 | 15 | 200 | 70 | 79 | DIP |
| TPD120505S-2W | 12 | 5 | 5 | 200 | 198 | 70 | SIP |
| TPD120509S-2W | 12 | 5 | 9 | 200 | 110 | 80 | SIP |
| TPD120512S-2W | 12 | 5 | 12 | 200 | 82 | 79 | SIP |
| TPD120515S-2W | 12 | 5 | 15 | 200 | 70 | 80 | SIP |
| TPD120909S-2W | 12 | 9 | 9 | 111 | 111 | 83 | SIP |
| TPD121212S-2W | 12 | 12 | 12 | 83 | 83 | 85 | SIP |
| TPD121515S-2W | 12 | 15 | 15 | 67 | 67 | 83 | SIP |
| TPD240505S-2W | 24 | 5 | 5 | 200 | 200 | 81 | SIP |
| TPD240909S-2W | 24 | 9 | 9 | 111 | 111 | 82 | SIP |
| TPD241212S-2W | 24 | 12 | 12 | 83 | 83 | 84 | SIP |
| TPD241515S-2W | 24 | 15 | 15 | 67 | 67 | 84 | SIP |

Add suffix "P" for continuous short circuit protection, for example TPD050505SP-2W. Add suffix "N" Define different output pin, for example TPD050505S/N-2W.

INPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------|-----------------|------|------|------|-------|
| Voltage range | 5V input types | 4.5 | 5.0 | 5.5 | V |
| Voltage range | 12V input types | 11 | 12 | 13 | V |
| Voltage range | 24V input types | 22 | 24 | 26.5 | V |

OUTPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|------------------------|------|------|------|-------|
| Rated power | TA= -40°C to 85°C | | | 2.0 | W |
| Voltage set point accuracy | See tolerance envelope | | | | |
| Line regulation | High Vin to low Vin | | 1.0 | 1.2 | %/% |
| Load regulation(10% load to rated load) | 3.3V output variants | | | 14 | % |
| Load regulation(10% load to rated load) | 5V output variants | | | 14 | % |
| Load regulation(10% load to rated load) | 9V output variants | | | 9 | % |
| Load regulation(10% load to rated load) | 12V output variants | | | 9 | % |
| Load regulation(10% load to rated load) | 15V output variants | | | 9 | % |

ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------|
| Short-circuit protection | 1 second |
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Input voltage Vin, TPD05 variants | 6.5V |
| Input voltage Vin, TPD12 variants | 14.5V |
| Input voltage Vin, TPD24 variants | 28V |

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

ISOLATION CHARACTERISTICS

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

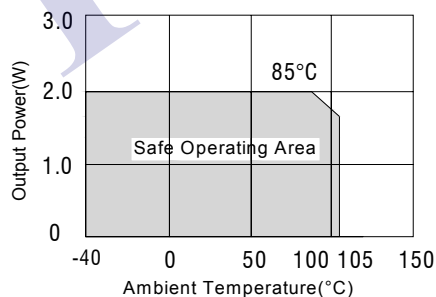
GENERAL CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------------|-----------------|------|------|------|-------|
| Switching frequency | All input types | | 110 | | kHz |

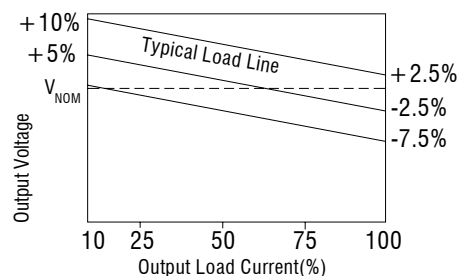
TEMPERATURE CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------|-----------------------------------|------|------|------|-------|
| Specification | Derating if the temperature ≥85°C | -40 | | 105 | °C |
| Storage | | -55 | | 130 | °C |
| Cooling | Free air convection | | | | |

TEMPERATURE DERATING GRAPHS



TOLERANCE ENVELOPES



SOLDERING INFORMATION

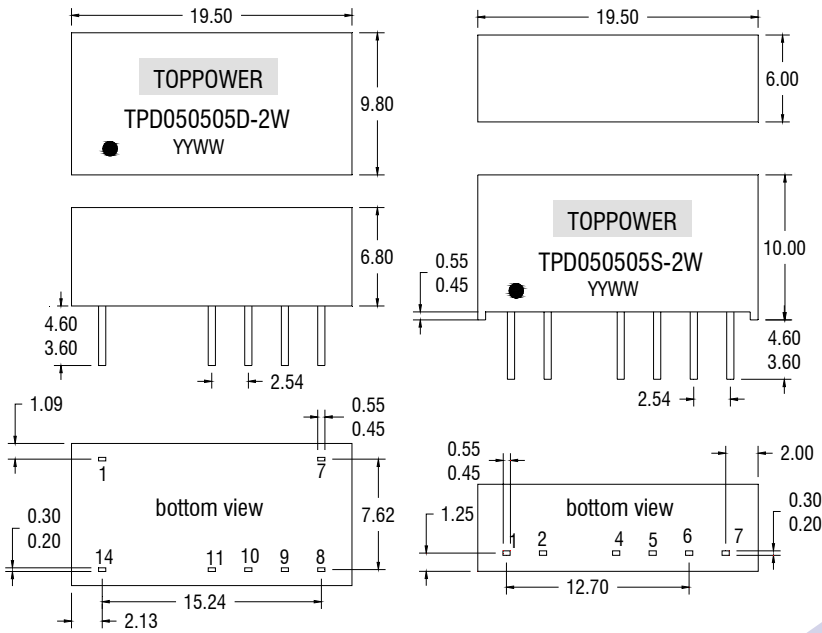
This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. Both SIP and DIP types in this series are backward compatible with Sn/Pb soldering systems.

MECHANICAL DIMENSIONS

PIN CONNECTIONS

DIP Package

SIP Package



| 14 PIN DIP | | |
|------------|----------|--------------------------|
| Pin | Function | Add suffix "/N" function |
| 1 | -Vin | -Vin |
| 7 | NC | NC |
| 8 | -Vout2 | +Vout2 |
| 9 | +Vout2 | -Vout2 |
| 10 | -Vout1 | +Vout1 |
| 11 | +Vout1 | -Vout1 |
| 14 | +Vin | +Vin |

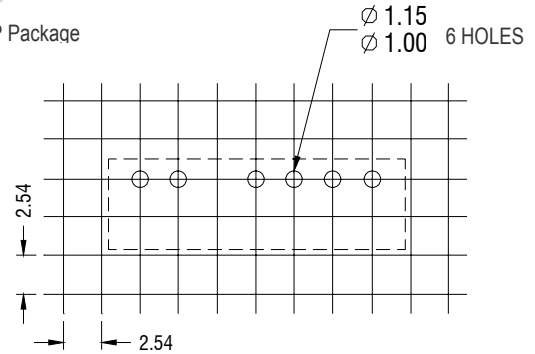
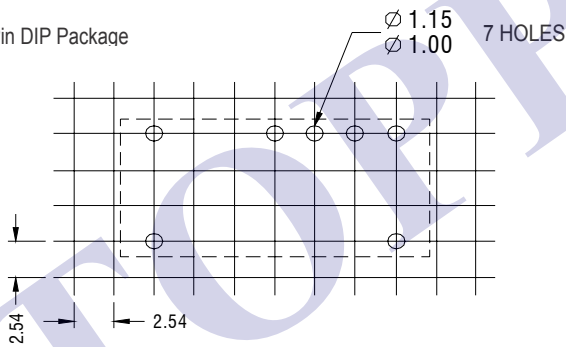
| 7 PIN SIP | | |
|-----------|----------|--------------------------|
| Pin | Function | Add suffix "/N" function |
| 1 | +Vin | +Vin |
| 2 | -Vin | -Vin |
| 4 | +Vout1 | -Vout1 |
| 5 | -Vout1 | +Vout1 |
| 6 | +Vout2 | -Vout2 |
| 7 | -Vout2 | +Vout2 |

All dimensions in mm ± 0.25 mm. All pins on a 2.54mm pitch and within ± 0.25 mm of true position.
Weight: 2.3g (DIP & SIP)

RECOMMENDED FOOTPRINT DETAILS

14Pin DIP Package

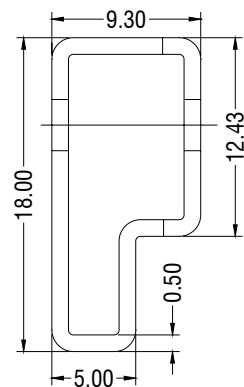
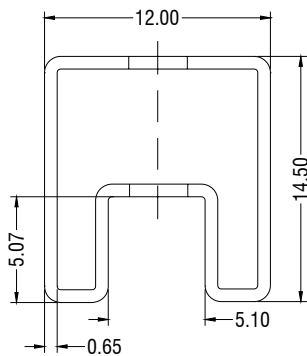
7Pin SIP Package



TUBE OUTLINE DIMENSIONS

14Pin DIP Tube

7Pin SIP Tube



Unless otherwise stated all dimensions in mm ± 0.5 mm.

Tube length (14 Pin DIP) :520mm ± 2 mm Tube Quantity : 25PCS
Tube length (7 Pin SIP) : 520mm ± 2 mm Tube Quantity : 25PCS