



DESCRIPTION: 0.25W 1.5KVDC Isolated Single Output SMD DC/DC Converters

Miniature surface mounted DC/DC Converters are a 0.25W low power and high efficiency DC/DC converters in SMD package, are an ideal and economical solution for many applications where noise reduction, voltage isolation, voltage conversion in distributed power systems is required. The internal SMD construction with lead frame technology makes it possible to offer a product with high performance, these converters are qualified for the higher temperatures requested by lead-free reflow solder processes, especially for automated SMD production lines.

FEATURES

| | | |
|----------------------------------|--|---|
| RoHS compliant, CE certification | Lead frame technology | Single isolated output |
| UL 94V-0 package material | Efficiency up to 76% | Power density 1.8W/cm ³ |
| 1.5KVDC isolation | Custom solutions available | Footprint over pins 1.37cm ² |
| Input voltage: 3.3V, 5V, 12V | Output voltage: 3.3V, 5V, 9V, 12V, 15V | Operating temperature: -40°C to 105°C |

SELECTION GUIDE

| Part Number | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency |
|-------------|-----------------------|----------------|---------------------------|------------|
| | V | V | mA | % |
| TPTE0303-W2 | 3.3 | 3.3 | 75.7/7.57 | 68 |
| TPTE0305-W2 | 3.3 | 5 | 50/5.0 | 70 |
| TPTE0309-W2 | 3.3 | 9 | 28/2.8 | 70 |
| TPTE0312-W2 | 3.3 | 12 | 21/2.1 | 70 |
| TPTE0315-W2 | 3.3 | 15 | 17/1.7 | 72 |
| TPTE0503-W2 | 5 | 3.3 | 75.7/7.57 | 68 |
| TPTE0505-W2 | 5 | 5 | 51/5.1 | 71 |
| TPTE0509-W2 | 5 | 9 | 28/2.8 | 74 |
| TPTE0512-W2 | 5 | 12 | 21/2.1 | 76 |
| TPTE0515-W2 | 5 | 15 | 17/1.7 | 76 |
| TPTE1205-W2 | 12 | 5 | 51/5.1 | 71 |
| TPTE1209-W2 | 12 | 9 | 28/2.8 | 74 |
| TPTE1212-W2 | 12 | 12 | 21/2.1 | 76 |
| TPTE1215-W2 | 12 | 15 | 17/1.7 | 76 |

Add suffix "P" for continuous short circuit protection, for example TPTE0505P-W2. Add suffix "X" has not 5,10,12 pin, for example TPTE0505X-W2. 3KVDC isolation with /3H at the end of the part number. for example TPTE0505-W2/3H

INPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------|---------------------|------|------|------|-------|
| Voltage range | 3.3V input variants | 2.9 | 3.3 | 3.6 | V |
| Voltage range | 5V input variants | 4.5 | 5.0 | 5.5 | V |
| Voltage range | 12V input variants | 11 | 12.0 | 13.3 | V |

ISOLATION CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|-------------------|---------------------|------------|------|------|-------|
| Isolation voltage | Tested for 1 second | 1500, 3000 | | | VDC |
| Resistance | Viso= 1000VDC | 1 | | | GΩ |

ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------|
| Short-circuit protection | 1 second |
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Internal power dissipation | 610mW |
| Input voltage Vin, TPTE03xx | 5.5V |
| Input voltage Vin, TPTE05xx | 7V |
| Input voltage Vin, TPTE12xx | 15V |

OUTPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---|------------------------|------|------|------|-------|
| Rated power | TA=-40°C to 85°C | | | 0.25 | 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) | 03XX, 0503 | | 10 | 14 | |
| Load regulation(10% load to rated load) | 0505 & 1205 | | 13 | 15 | |
| Load regulation(10% load to rated load) | 0509 & 1209 | | 8.0 | 9.0 | |
| Load regulation(10% load to rated load) | 0512 & 1212 | | 6.5 | 7.5 | % |
| Load regulation(10% load to rated load) | 0515 & 1215 | | 6 | 7.0 | % |

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

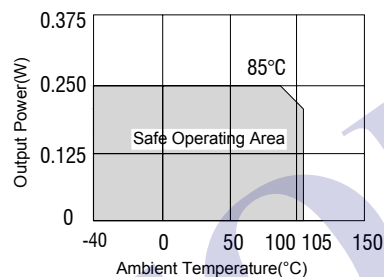
GENERAL CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------------|------------------|------|------|------|-------|
| Switching frequency | All output types | | 120 | | kHz |

TEMPERATURE CHARACTERISTICS

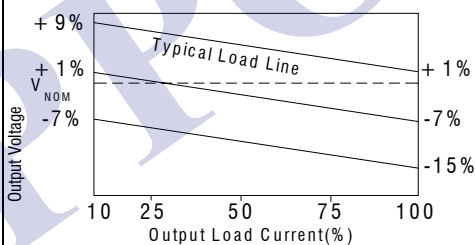
| Parameter | Conditions | Min. | Typ. | Max. | Units |
|------------------------------|-----------------------------------|--|------|------|-------|
| Specification | Derating if the temperature ≥85°C | -40 | | 105 | °C |
| Storage | | -55 | | 125 | °C |
| Reflow Soldering Temperature | | Peak temp. ≤245°C, maximum duration times ≤60s at 217°C. For actual application, please refer to IPC/JEDEC J-STD-020D.1. | | | |
| Cooling | Free air convection | | | | |

TEMPERATURE DERATING GRAPHS

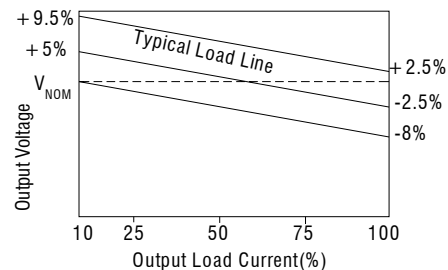


TOLERANCE ENVELOPES

3.3V output types

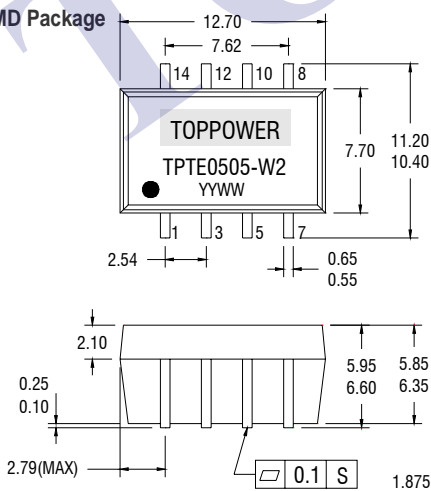


All other types

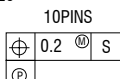
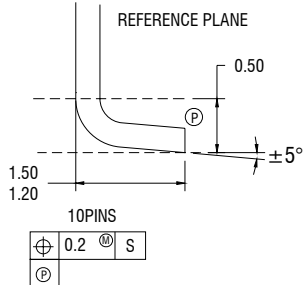


MECHANICAL DIMENSIONS

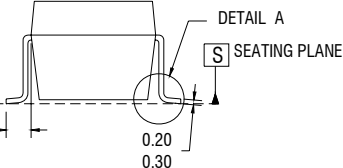
SMD Package



DETAIL A



DETAIL A



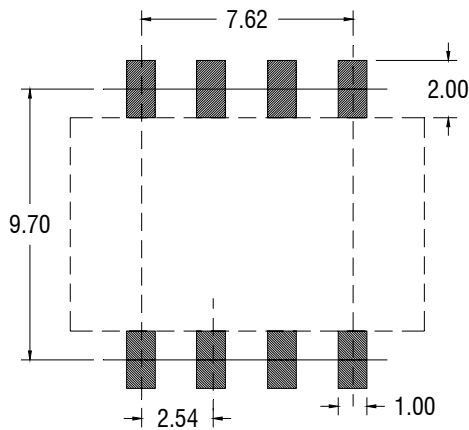
PIN CONNECTIONS

| 8 PIN SMD | | |
|-----------|----------|-------------------------|
| Pin | Function | Add suffix "X" function |
| 1 | -Vin | -Vin |
| 3 | +Vin | +Vin |
| 5 | NA | No Pin |
| 7 | -Vout | -Vout |
| 8 | +Vout | +Vout |
| 10 | NA | No Pin |
| 12 | NA | No Pin |
| 14 | NA | NA |

NA - Not available or electrical connection.

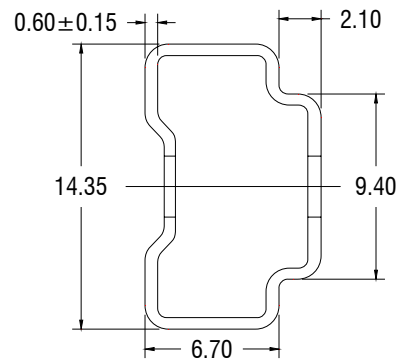
All dimensions in mm ±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.
Weight: 1.21g

RECOMMENDED FOOTPRINT DETAILS



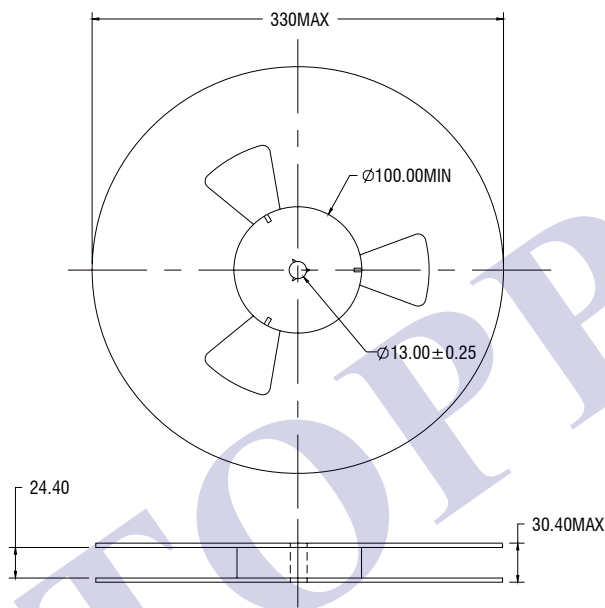
All pins on a 2.54mm pitch.
Unless otherwise stated all dimensions in mm ±0.5mm.

TUBE OUTLINE DIMENSIONS

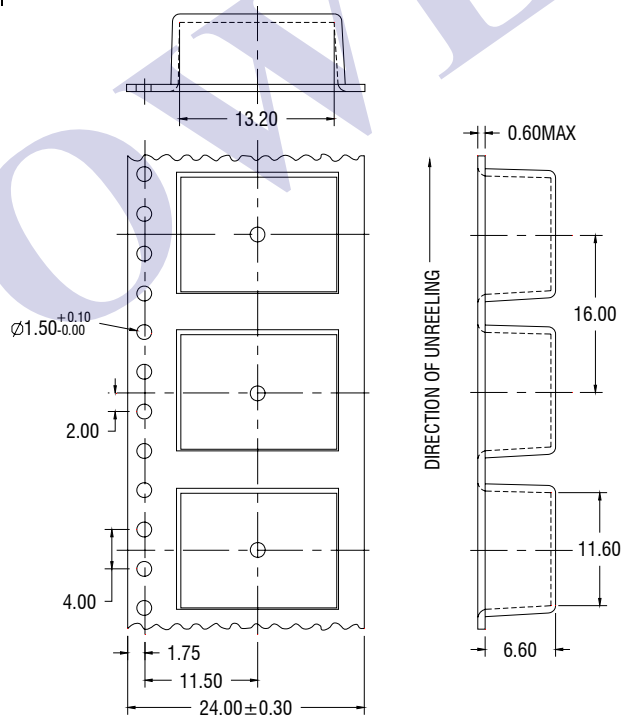


Unless otherwise stated all dimensions in mm ±0.5mm.
Tube length: 475mm ±2.0mm Tube Quantity: 35PCS

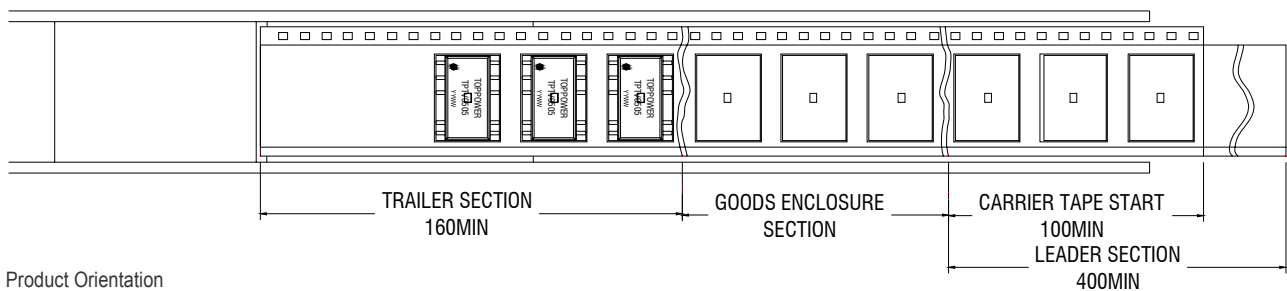
REEL OUTLINE DIMENSIONS



TAPE OUTLINE DIMENSIONS



REEL PACKAGING DETAILS



Product Orientation
Pin 1 located nearest to carrier drive sprocket Reel quantity : 500PCS