


**DESCRIPTION: 0.5W 3KVDC Isolated Single Output SMD DC/DC Converters**

Miniature surface mounted DC/DC Converters are an ideal and economical solution for many applications where noise reduction, voltage isolation, voltage conversion in distributed power systems is required. 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  | Efficiency up to 80%                    | Single isolated output              |
| 3KVDC isolation                   | Custom solutions available              | Power density 1.8W/cm <sup>3</sup>  |
| UL 94V-0 package material         | Footprint over pins 1.37cm <sup>2</sup> | Operating temperature: -40℃ to 105℃ |
| Input voltage: 3.3V, 5V, 12V, 15V | Output voltage: 3.3V, 5V, 9V, 12V, 15V  | /                                   |

**SELECTION GUIDE**

| Part Number | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency |
|-------------|-----------------------|----------------|---------------------------|------------|
|             | V                     | V              | mA                        | %          |
| TPET0303-W5 | 3.3                   | 3.3            | 152                       | 70         |
| TPET0305-W5 | 3.3                   | 5              | 100                       | 70         |
| TPET0309-W5 | 3.3                   | 9              | 55.5                      | 72         |
| TPET0312-W5 | 3.3                   | 12             | 41.7                      | 75         |
| TPET0315-W5 | 3.3                   | 15             | 33.3                      | 80         |
| TPET0503-W5 | 5                     | 3.3            | 152                       | 70         |
| TPET0505-W5 | 5                     | 5              | 100                       | 70         |
| TPET0509-W5 | 5                     | 9              | 55.5                      | 72         |
| TPET0512-W5 | 5                     | 12             | 41.7                      | 75         |
| TPET0515-W5 | 5                     | 15             | 33.3                      | 80         |
| TPET1203-W5 | 12                    | 3.3            | 152                       | 70         |
| TPET1205-W5 | 12                    | 5              | 100                       | 70         |
| TPET1209-W5 | 12                    | 9              | 55.5                      | 72         |
| TPET1212-W5 | 12                    | 12             | 41.7                      | 75         |
| TPET1215-W5 | 12                    | 15             | 33.3                      | 80         |
| TPET1505-W5 | 15                    | 5              | 100                       | 70         |
| TPET1515-W5 | 15                    | 15             | 33.3                      | 80         |

Add suffix "P" for continuous short circuit protection, for example TPET0505P-W5. Add suffix "X" has not 5,10,12 pin, for example TPET0505X-W5.

**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     |
| Voltage range | 15V input variants  | 13.4 | 15   | 16.4 | V     |

**ISOLATION CHARACTERISTICS**

| Parameter         | Conditions          | Min. | Typ. | Max. | Units |
|-------------------|---------------------|------|------|------|-------|
| Isolation voltage | Tested for 1 second | 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℃     |
| Internal power dissipation                      | 610mW    |
| Input voltage Vin, TPET03xx                     | 5.5V     |
| Input voltage Vin, TPET05xx                     | 7V       |
| Input voltage Vin, TPET12xx                     | 15V      |
| Input voltage Vin, TPET15xx                     | 18V      |

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

**OUTPUT CHARACTERISTICS**

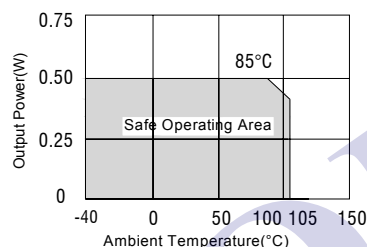
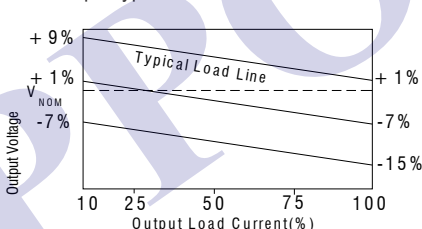
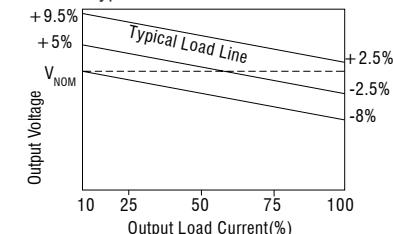
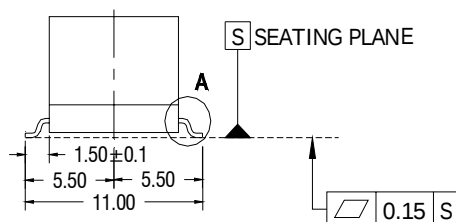
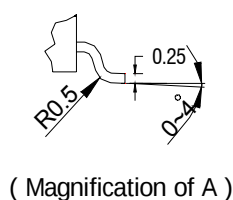
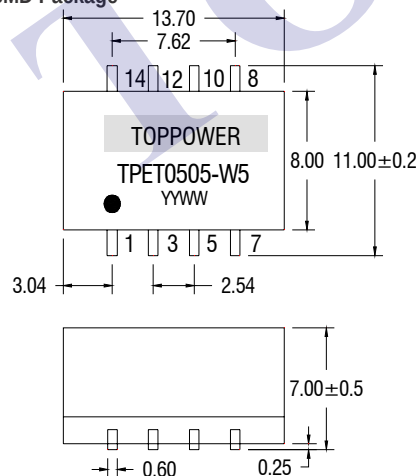
| Parameter                               | Conditions                                    | Min. | Typ. | Max. | Units |
|-----------------------------------------|-----------------------------------------------|------|------|------|-------|
| Rated power                             | TA=-40℃ to 85℃                                |      |      | 0.5  | W     |
| Voltage set point accuracy              | See tolerance envelope                        |      |      |      |       |
| Line regulation                         | High VIN to low VIN (voltage variation +/-5%) |      | 1.0  | 1.2  | %/%   |
| Load regulation(10% load to rated load) | 03XX,0503,1203                                |      | 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) | 0515,1215,1515                                |      | 6    | 7.0  | %     |

**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℃                                                                                       | -40  |      | 105  | ℃     |
| Storage                      |                                                                                                                        | -55  |      | 125  | ℃     |
| Reflow Soldering Temperature | Peak temp. ≤245℃, maximum duration times ≤60s at 217℃. For actual application, please refer to IPC/JEDEC J-STD-020D.1. |      |      |      |       |
| Cooling                      | Free air convection                                                                                                    |      |      |      |       |

**TEMPERATURE DERATING GRAPHS**

**3.3V output types**

**All other types**

**MECHANICAL DIMENSIONS**
**SMD Package**

**PIN CONNECTIONS**

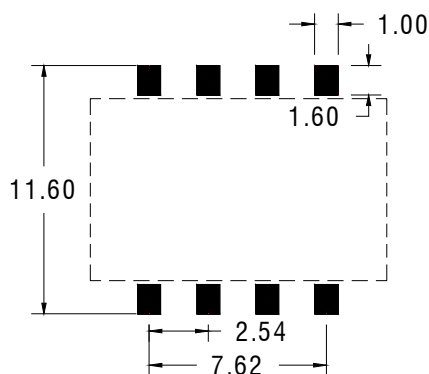
| 8 PIN SMD |          |                         |
|-----------|----------|-------------------------|
| Pin       | Function | Add suffix "X" function |
| 1         | -Vin     | -Vin                    |
| 3         | +Vin     | +Vin                    |
| 5         | NA       | No Pin              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

NA - Not available for 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

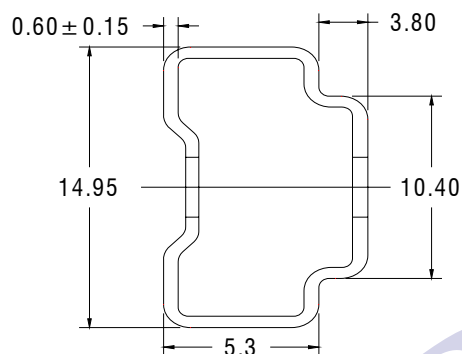
**RECOMMENDED FOOTPRINT DETAILS**



All pins on a 2.54mm pitch.

Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.

**TUBE OUTLINE DIMENSIONS**

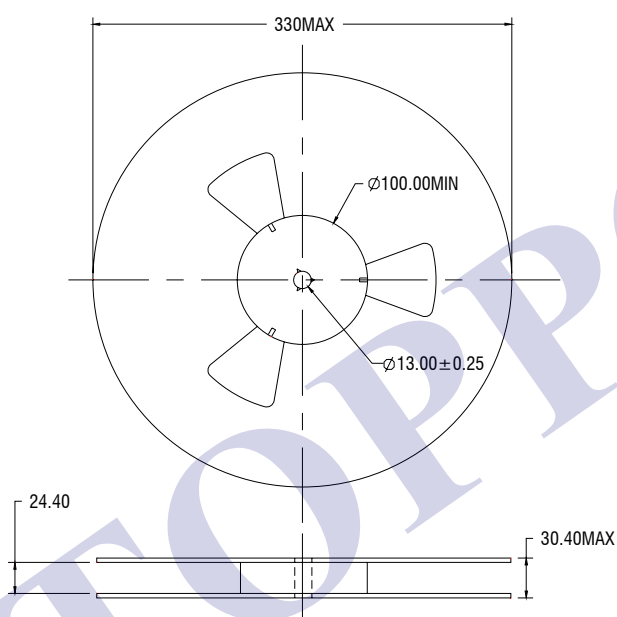


Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.

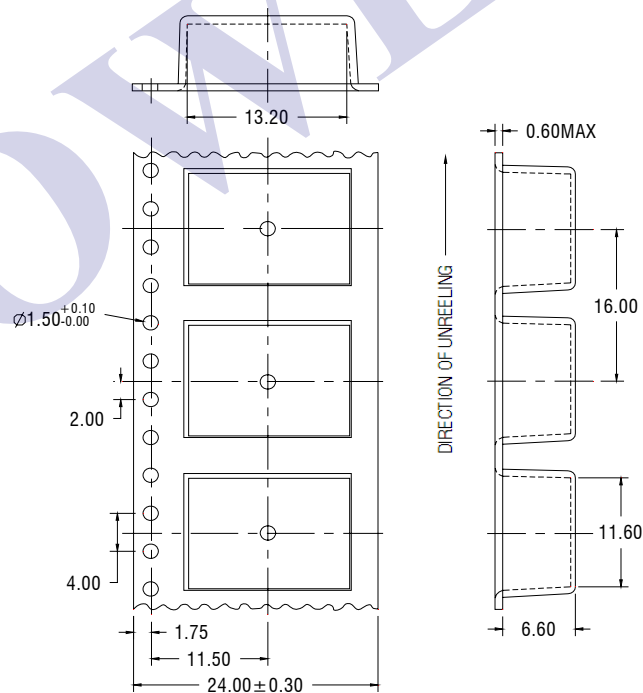
Tube length: 475mm  $\pm 2.0$ mm

Tube Quantity: 35PCS

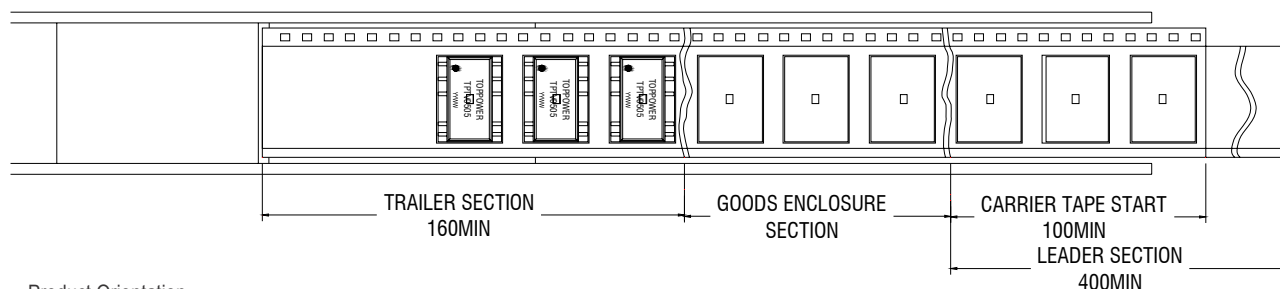
**REEL OUTLINE DIMENSIONS**



**TAPE OUTLINE DIMENSIONS**



**REEL PACKAGING DETAILS**



Product Orientation

Pin 1, located nearest to carrier drive sprocket

Reel Quantity : 500PCS