



**DESCRIPTION: 1W 3KVDC Isolation Regulated Single Output DC/DC Converters**

TPB-1W series are specially designed for 3KVDC isolation & regulated single and output application, the input voltage range within  $\pm 5\%$ , regulated output with very low ripple noise. short circuit protection

**FEATURES**

|                           |                                     |                                       |
|---------------------------|-------------------------------------|---------------------------------------|
| SIP package               | 3000VDC Isolation                   | Operating temperature -40°C to 85°C   |
| Regulated single output   | Continuous short circuit protection | RoHS Compliance                       |
| Low ripple noise          | Small footprint                     | No external component required        |
| Internal SMD construction | Input voltage:3.3V,5V,12V,15V,24V   | Output voltage:3.3V,5V,9V,12V,15V,24V |

**SELECTION GUIDE**

| Part Number  | Input         |             | Voltage (VDC) | Output       |     | Efficiency (%) |
|--------------|---------------|-------------|---------------|--------------|-----|----------------|
|              | Voltage (VDC) |             |               | Current (mA) |     |                |
|              | Nominal       | Range       |               | Max          | Min |                |
| TPB0303S-1W  | 3.3           | 3.13~3.47   | 3.3           | 303          | 30  | 66             |
| TPB0305S-1W  | 3.3           | 3.13~3.47   | 5             | 200          | 20  | 66             |
| TPB0505S-W75 | 5             | 4.75~5.25   | 5             | 150          | 15  | 68             |
| TPB0505S-1W  | 5             | 4.75~5.25   | 5             | 200          | 20  | 66             |
| TPB0509S-1W  | 5             | 4.75~5.25   | 9             | 111          | 12  | 70             |
| TPB0512S-1W  | 5             | 4.75~5.25   | 12            | 83           | 9   | 71             |
| TPB0515S-1W  | 5             | 4.75~5.25   | 15            | 67           | 7   | 73             |
| TPB0524S-1W  | 5             | 4.75~5.25   | 24            | 42           | 5   | 68             |
| TPB1205S-W75 | 12            | 11.4~12.6   | 5             | 150          | 15  | 70             |
| TPB1205S-1W  | 12            | 11.4~12.6   | 5             | 200          | 20  | 67             |
| TPB1209S-1W  | 12            | 11.4~12.6   | 9             | 111          | 12  | 72             |
| TPB1212S-1W  | 12            | 11.4~12.6   | 12            | 83           | 9   | 70             |
| TPB1215S-1W  | 12            | 11.4~12.6   | 15            | 67           | 7   | 74             |
| TPB1224S-1W  | 12            | 11.4~12.6   | 24            | 42           | 5   | 68             |
| TPB1505S-W75 | 15            | 14.25~15.75 | 5             | 150          | 15  | 68             |
| TPB1505S-1W  | 15            | 14.25~15.75 | 5             | 200          | 20  | 67             |
| TPB1509S-1W  | 15            | 14.25~15.75 | 9             | 111          | 12  | 71             |
| TPB1512S-1W  | 15            | 14.25~15.75 | 12            | 83           | 9   | 71             |
| TPB1515S-1W  | 15            | 14.25~15.75 | 15            | 67           | 7   | 72             |
| TPB1524S-1W  | 15            | 14.25~15.75 | 24            | 42           | 5   | 68             |
| TPB2405S-W75 | 24            | 22.8~25.2   | 5             | 150          | 15  | 68             |
| TPB2405S-1W  | 24            | 22.8~25.2   | 5             | 200          | 20  | 68             |
| TPB2409S-1W  | 24            | 22.8~25.2   | 9             | 111          | 12  | 68             |
| TPB2412S-1W  | 24            | 22.8~25.2   | 12            | 83           | 9   | 73             |
| TPB2415S-1W  | 24            | 22.8~25.2   | 15            | 67           | 7   | 75             |
| TPB2424S-1W  | 24            | 22.8~25.2   | 24            | 42           | 5   | 68             |

**ISOLATION CHARACTERISTICS**

| Item                 | Test condition                  | Min. | Typ. | Max. | Units |
|----------------------|---------------------------------|------|------|------|-------|
| Isolation voltage    | Tested for 1 minute and 1mA max | 3000 |      |      | VDC   |
| Isolation resistance | Test at 1000VDC                 | 1    |      |      | GΩ    |

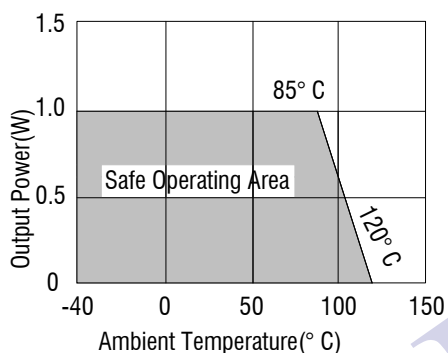
**OUTPUT SPECIFICATIONS**

| Item                    | Test Conditions             | Min. | Typ. | Max.       | Units  |
|-------------------------|-----------------------------|------|------|------------|--------|
| Output power            |                             | 0.1  |      | 1          | W      |
| Line regulation         | For Vin change of $\pm 5\%$ |      |      | $\pm 0.25$ | %      |
| Load regulation         | 10% to 100% load            |      |      | $\pm 1$    | %      |
| Output voltage accuracy | 100% full load              |      |      | $\pm 3$    | %      |
| Temperature drift       | 100% full load              |      |      | $\pm 0.03$ | %/°C   |
| Ripple                  | 20MHz Bandwidth             |      | 10   | 20         | mv p-p |
| Noise                   | 20MHz Bandwidth             |      | 50   | 75         | mv p-p |
| Switching frequency     | 100% load, nominal input    |      | 100  |            | KHz    |

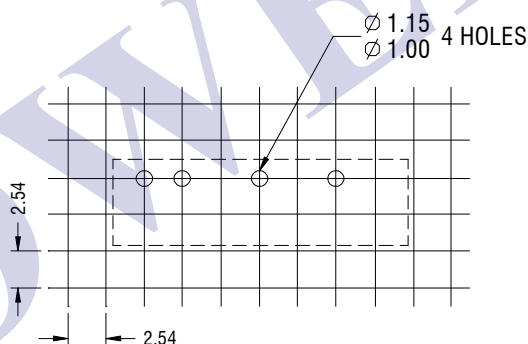
**COMMON SPECIFICATIONS**

| Item                     | Test condition | Min.                | Typ. | Max. | Units   |
|--------------------------|----------------|---------------------|------|------|---------|
| Storage humidity         | Test Condition |                     |      | 95   | %       |
| Operating temperature    |                | -40                 |      | 85   | °C      |
| Storage temperature      |                | -55                 |      | 125  | °C      |
| Temp. Rise at full load  |                |                     | 15   | 25   | °C      |
| Lead temperature         |                |                     |      | 300  | °C      |
| Short circuit protection | TPBxx05S-1W    |                     |      | 1    | S       |
| Short circuit protection | Others         | Continuous          |      |      |         |
| Cooling                  |                | Free air convection |      |      |         |
| Case material            |                | Plastic (UL94-V0)   |      |      |         |
| MTBF                     |                | 3500                |      |      | K hours |
| Weight                   | SIP            |                     | 2.1  |      | g       |
| Weight                   | DIP            |                     | 2.4  |      | g       |

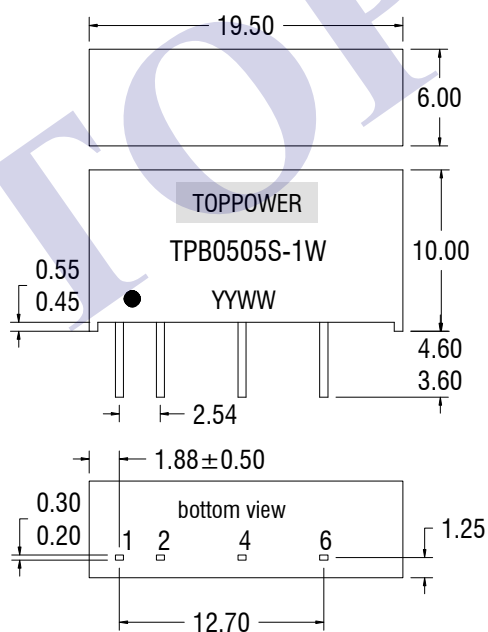
**TEMPERATURE DERATING GRAPHS**



**RECOMMENDED FOOTPRINT DETAILS**



**MECHANICAL DIMENSIONS**

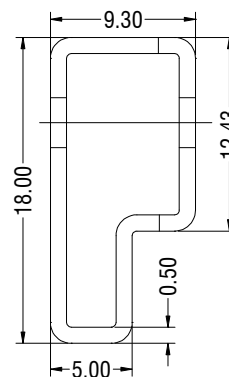


All dimensions in mm ±0.25. All pins on a 2.54mm pitch.  
Weight: 2.1g

**PIN CONNECTIONS-7PIN SIP**

| Pin | Function |
|-----|----------|
| 1   | +Vin     |
| 2   | -Vin     |
| 4   | -Vout    |
| 6   | +Vout    |

**TUBE OUTLINE DIMENSIONS**



All dimensions in mm ±0.25mm Tube Quantity : 25