


**DESCRIPTION : 2W 1.5KVDC Isolated Single Output DC/DC Converters**

The TPE-2W series are miniature, isolated 2W 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.

**FEATURES**

|                                   |                                                 |                                    |
|-----------------------------------|-------------------------------------------------|------------------------------------|
| RoHS compliant                    | Single isolated output                          | SIP:1.5KVDC isolation              |
| Efficiency up to 81%              | Operating temperature :-40°C to 105°C           | Power density 2.0W/cm <sup>3</sup> |
| UL 94V-0 package material         | Footprint from 1.05cm <sup>2</sup>              | Industry standard pinout           |
| Input voltage: 3.3V, 5V, 12V ,15V | Output voltage:3.3V,5V, 7.2V,9V, 12V, 15V & 24V | CE certification                   |

**SELECTION GUIDE**

| Part Number | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency | Package Style |
|-------------|-----------------------|----------------|---------------------------|------------|---------------|
|             | V                     | V              | mA                        | %          |               |
| TPE0303S-2W | 3.3                   | 3.3            | 606/60.6                  | 72         | SIP           |
| TPE0305S-2W | 3.3                   | 5              | 400/40                    | 74         | SIP           |
| TPE0503S-2W | 5                     | 3.3            | 606/60.6                  | 72         | SIP           |
| TPE0505S-2W | 5                     | 5              | 400/40                    | 70         | SIP           |
| TPE0507S-2W | 5                     | 7.2            | 270/27                    | 70         | SIP           |
| TPE0509S-2W | 5                     | 9              | 221/22.1                  | 78         | SIP           |
| TPE0512S-2W | 5                     | 12             | 168/16.8                  | 78         | SIP           |
| TPE0515S-2W | 5                     | 15             | 132/13.2                  | 80         | SIP           |
| TPE0524S-2W | 5                     | 24             | 83.3/8.33                 | 79         | SIP           |
| TPE1203S-2W | 12                    | 3.3            | 606/60.6                  | 72         | SIP           |
| TPE1205S-2W | 12                    | 5              | 400/40                    | 71         | SIP           |
| TPE1207S-2W | 12                    | 7.2            | 270/27                    | 71         | SIP           |
| TPE1209S-2W | 12                    | 9              | 221/22.1                  | 73         | SIP           |
| TPE1212S-2W | 12                    | 12             | 168/16.8                  | 76         | SIP           |
| TPE1215S-2W | 12                    | 15             | 132/13.2                  | 74         | SIP           |
| TPE1505S-2W | 15                    | 5              | 400/40                    | 71         | SIP           |
| TPE1509S-2W | 15                    | 9              | 221/22.1                  | 73         | SIP           |
| TPE1512S-2W | 15                    | 12             | 168/16.8                  | 76         | SIP           |
| TPE1515S-2W | 15                    | 15             | 132/13.2                  | 74         | SIP           |

**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  | 5.0  | 5.5  | V      |
| Voltage range            | 12V input  | 10.8 | 12.0 | 13.2 | V      |
| Voltage range            | 15V input  | 13.4 | 15   | 16.4 | V      |
| Reflected ripple current |            |      | 26   | 48   | mA p-p |

**ISOLATION CHARACTERISTICS**

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

**OUTPUT CHARACTERISTICS**

| Parameter                               | Conditions             | Min. | Typ. | Max. | Units |
|-----------------------------------------|------------------------|------|------|------|-------|
| Rated Power                             | TA= - 40°C to 85°C     |      |      | 1.0  | 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            |      | 14   | 15   | %     |

**OUTPUT CHARACTERISTICS**

|                                         |            |  |     |     |   |
|-----------------------------------------|------------|--|-----|-----|---|
| Load Regulation (10%load to rated load) | 5V output  |  | 14  | 15  | % |
| Load Regulation (10%load to rated load) | 7V output  |  | 9   | 10  | % |
| Load Regulation (10%load to rated load) | 9V output  |  | 9   | 10  | % |
| Load Regulation (10%load to rated load) | 12V output |  | 7.5 | 9.5 | % |
| Load Regulation (10%load to rated load) | 15V output |  | 7.0 | 8.5 | % |
| Load Regulation (10%load to rated load) | 24V output |  | 5.5 | 7.5 | % |

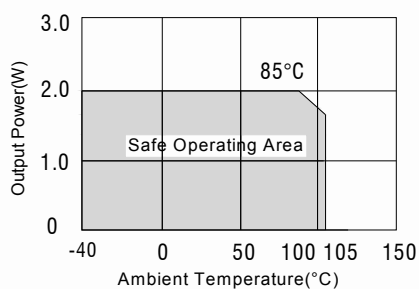
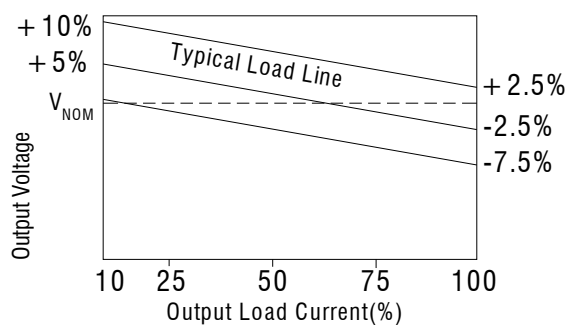
All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified.

**GENERAL CHARACTERISTICS**

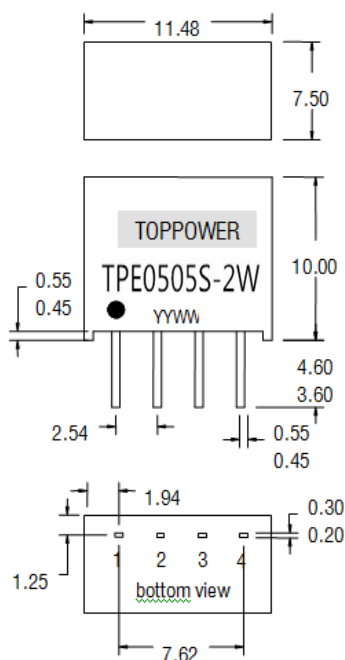
| Parameter           | Conditions | Min. | Typ. | Max. | Units |
|---------------------|------------|------|------|------|-------|
| Switching frequency | 3.3V input |      | 95   |      | kHz   |
| Switching frequency | 5V input   |      | 110  |      | kHz   |
| Switching frequency | 12V input  |      | 145  |      | kHz   |
| Switching frequency | 15V input  |      | 145  |      | kHz   |

**TEMPERATURE CHARACTERISTICS**

| Parameter                      | Conditions                                            | Min. | Typ. | Max. | Units              |
|--------------------------------|-------------------------------------------------------|------|------|------|--------------------|
| Specification                  | Derating if the temperature $\geq 85^{\circ}\text{C}$ | -40  |      | 105  | $^{\circ}\text{C}$ |
| Storage                        |                                                       | -55  |      | 150  | $^{\circ}\text{C}$ |
| Case Temperature above ambient | 5V output                                             |      |      | 41   | $^{\circ}\text{C}$ |
| Case Temperature above ambient | All other output                                      |      |      | 32   | $^{\circ}\text{C}$ |
| Cooling                        | Free air convection                                   |      |      |      |                    |

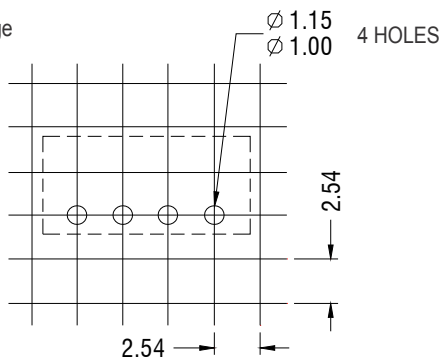
**TEMPERATURE DERATING GRAPHS**

**TOLERANCE ENVELOPES**

**SOLDERING INFORMATION**

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300 $^{\circ}\text{C}$  for 10 seconds. Both types in this series are backward compatible with Sn/Pb soldering systems.

**MECHANICAL DIMENSIONS**
**PIN CONNECTIONS**
**SIP Package**


| 4 PIN SIP |          |
|-----------|----------|
| Pin       | Function |
| 1         | -Vin     |
| 2         | +Vin     |
| 3         | -Vout    |
| 4         | +Vout    |

All dimensions in mm  $\pm 0.25$ mm. All pins on a 2.54 mm pitch and within  $\pm 0.25$ mm of true position  
Weight: 1.40g (SIP)

**RECOMMENDED FOOTPRINT DETAILS**
**4Pin SIP Package**

**TUBE OUTLINE DIMENSIONS**
**4Pin SIP Tube**

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

Tube length (4 Pin SIP) : 520mm  $\pm 2$ mm.

Tube Quantity : 17PCS/35PCS

