

**DESCRIPTION:** 1W 1.5KVDC and 2KVDC Isolated Single Output DC/DC Converters

The TPE series are miniature, isolated 1W DC/DC converters 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.



**FEATURES**

RoHS compliant, CE certification	Single isolated output	SIP: 1.5KVDC isolation    DIP: 2KVDC isolation
Efficiency up to 81%	Power density 1.45W/cm <sup>3</sup>	UL 94V-0 Package material
Footprint from 0.69cm <sup>2</sup>	Industry Standard Pinout	Input voltage: 15V, 24V, 48V
Output voltage: 3.3V, 5V, 9V, 12V, 15V, 24V	Custom solutions available	Operating temperature: -40°C to 105°C

**SELECTION GUIDE**

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency	Package Style
	V	V	mA	%	
TPE1505D	15	5	200/20	71	DIP
TPE1505S	15	5	200/20	71	SIP
TPE1515S	15	15	67/6.7	78	SIP
TPE2403D	24	3.3	303/30.3	71	DIP
TPE2405D	24	5	200/20	70	DIP
TPE2409D	24	9	111/11.1	75	DIP
TPE2412D	24	12	83/8.3	81	DIP
TPE2415D	24	15	66/6.6	81	DIP
TPE2424D	24	24	41.5/4.15	80	DIP
TPE2403S	24	3.3	303/30.3	71	SIP
TPE2405S	24	5	200/20	71	SIP
TPE2409S	24	9	111/11.1	75	SIP
TPE2412S	24	12	83/8.3	80	SIP
TPE2415S	24	15	66/6.6	80	SIP
TPE2424S	24	24	41.5/4.15	80	SIP
TPE4805D	48	5	200/20	70	DIP
TPE4809D	48	9	111/11.1	75	DIP
TPE4812D	48	12	83/8.3	80	DIP
TPE4815D	48	15	66/6.6	80	DIP
TPE4805S	48	5	200/20	70	SIP
TPE4809S	48	9	111/11.1	75	SIP
TPE4812S	48	12	83/8.3	81	SIP
TPE4815S	48	15	66/6.6	81	SIP

Add suffix "P" for continuous short circuit protection, for example TPE2405SP.

**INPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	15V input	13.4	15	16.4	v
Voltage range	24V input	21.6	24	26.4	V
Voltage range	48V input	43.2	48	52.8	V

**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)	5V output			15	%
Load Regulation (10% load to rated load)	all other output			10	%

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

## ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Input voltage $V_{in}$ , TPE15	18V
Input voltage $V_{in}$ , TPE24	28V
Input voltage $V_{in}$ , TPE48	54V

## ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage SIP package	Tested for 1 second	1500			VDC
Isolation test voltage DIP package	Tested for 1 second	2000			VDC
Resistance	Viso= 500VDC	1			GΩ

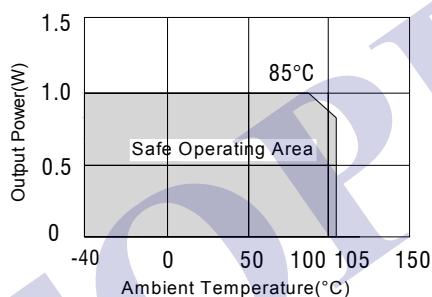
## GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	All types		100		kHz

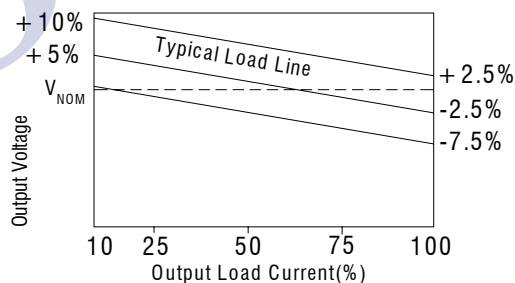
## TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature $\geq 85^\circ\text{C}$	-40		105	$^\circ\text{C}$
Storage		-55		130	$^\circ\text{C}$
Cooling	Free air convection				

## TEMPERATURE DERATING GRAPHS



## TOLERANCE ENVELOPES

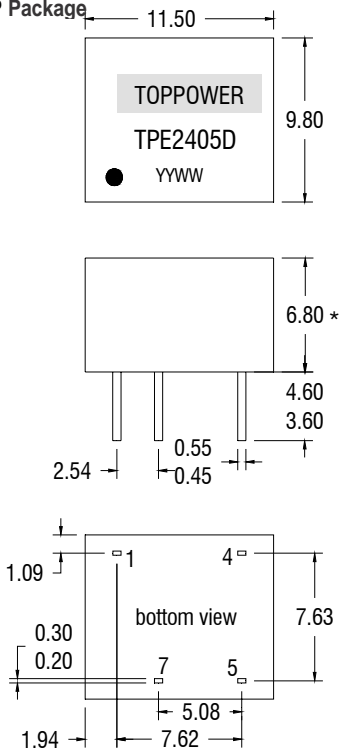


## SOLDERING INFORMATION

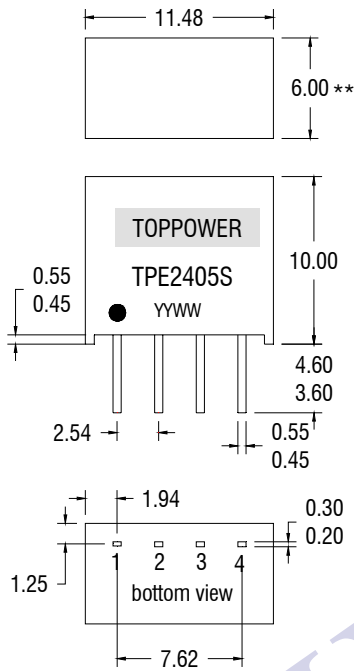
This series is compatible with RoHS soldering systems with a peak wave solder temperature of  $300^\circ\text{C}$  for 10 seconds. Both SIP and DIP types in this series are backward compatible with Sn/Pb soldering systems.

**MECHANICAL DIMENSIONS**

**DIP Package**



**SIP Package**



**PIN CONNECTIONS**

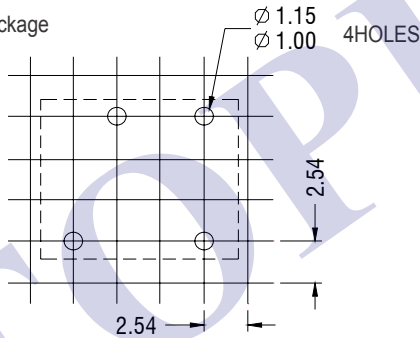
8 PIN DIP	
Pin	Function
1	-Vin
4	+Vin
5	+Vout
7	-Vout

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

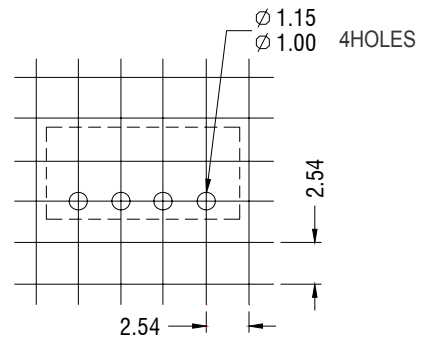
\*7.70 for 48V variants      \*\*7.50 for 48V variants      Weight: 1.48g (DIP) 1.30g (SIP)  
 All dimensions in mm  $\pm 0.25$ mm. All pins on a 2.54mm pitch and within  $\pm 0.25$ mm of true position.

**RECOMMENDED FOOTPRINT DETAILS**

**8 Pin DIP Package**

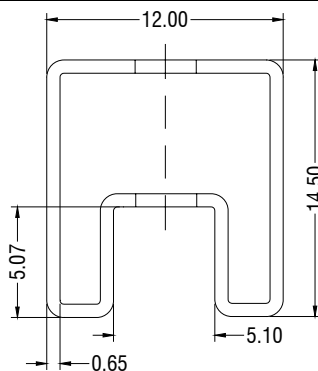


**4 Pin SIP Package**

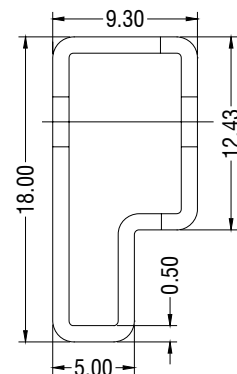


**TUBE OUTLINE DIMENSIONS**

**8Pin DIP Tube**



**4Pin SIP Tube**



Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.  
 Tube length (8 Pin DIP) : 520mm  $\pm 2$ mm.  
 Tube length (4 Pin SIP) : 520mm  $\pm 2$ mm.

Tube Quantity : 35PCS