



**DESCRIPTION:** 1W 1KVDC 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	Single isolated output	SIP: 1KVDC isolation    DIP: 2KVDC isolation
Efficiency up to 81%	Operating temperature : -40°C to 85°C	Power density 1.53W/cm <sup>3</sup>
UL 94V-0 package material	Footprint from 0.69cm <sup>2</sup>	Industry standard pinout
Input voltage: 3.3V, 5V, 12V	Output voltage: 3.3V, 5V, 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	%	
TPE0303D	3.3	3.3	303/30.3	72	DIP
TPE0305D	3.3	5	200/20	74	DIP
TPE0303S	3.3	3.3	303/30.3	72	SIP
TPE0305S	3.3	5	200/20	74	SIP
TPE0503D	5	3.3	303/30.3	72	DIP
TPE0505D	5	5	200/20	68	DIP
TPE0509D	5	9	110/11	78	DIP
TPE0512D	5	12	83/8.3	77	DIP
TPE0515D	5	15	66/6.6	81	DIP
TPE0524D	5	24	42/4.2	80	DIP
TPE0503S	5	3.3	303/30.3	72	SIP
TPE0505S	5	5	200/20	70	SIP
TPE0509S	5	9	110/11	78	SIP
TPE0512S	5	12	83/8.3	78	SIP
TPE0515S	5	15	66/6.6	80	SIP
TPE0524S	5	24	42/4.2	79	SIP
TPE1203D	12	3.3	303/30.3	72	DIP
TPE1205D	12	5	200/20	69	DIP
TPE1209D	12	9	110/11	74	DIP
TPE1212D	12	12	83/8.3	76	DIP
TPE1215D	12	15	66/6.6	75	DIP
TPE1203S	12	3.3	303/30.3	72	SIP
TPE1205S	12	5	200/20	71	SIP
TPE1209S	12	9	110/11	73	SIP
TPE1212S	12	12	83/8.3	76	SIP
TPE1215S	12	15	66/6.6	74	SIP

Add suffix "P" for continuous short circuit protection, for example TPE0505SP.

**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
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	1000			VDC
Isolation test voltage DIP package	Tested for 1 second	2000			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	%
Load Regulation (10%load to rated load)	5V output		14	15	%
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.

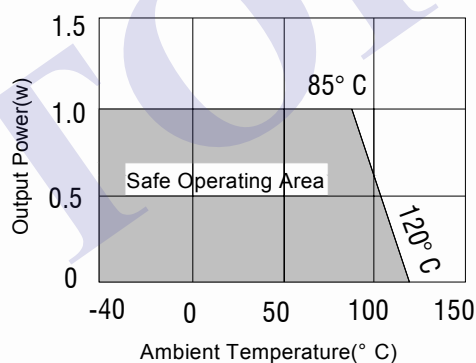
## GENERAL CHARACTERISTICS

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

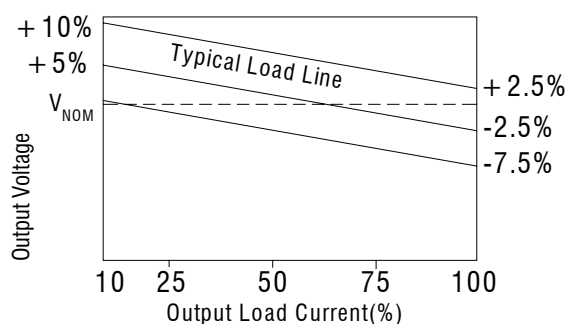
## TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	All output	-40		85	°C
Storage		-55		150	°C
Case Temperature above ambient	5V output			41	°C
Case Temperature above ambient	All other output			32	°C
Cooling	Free air convection				

## TEMPERATURE DERATING GRAPHS



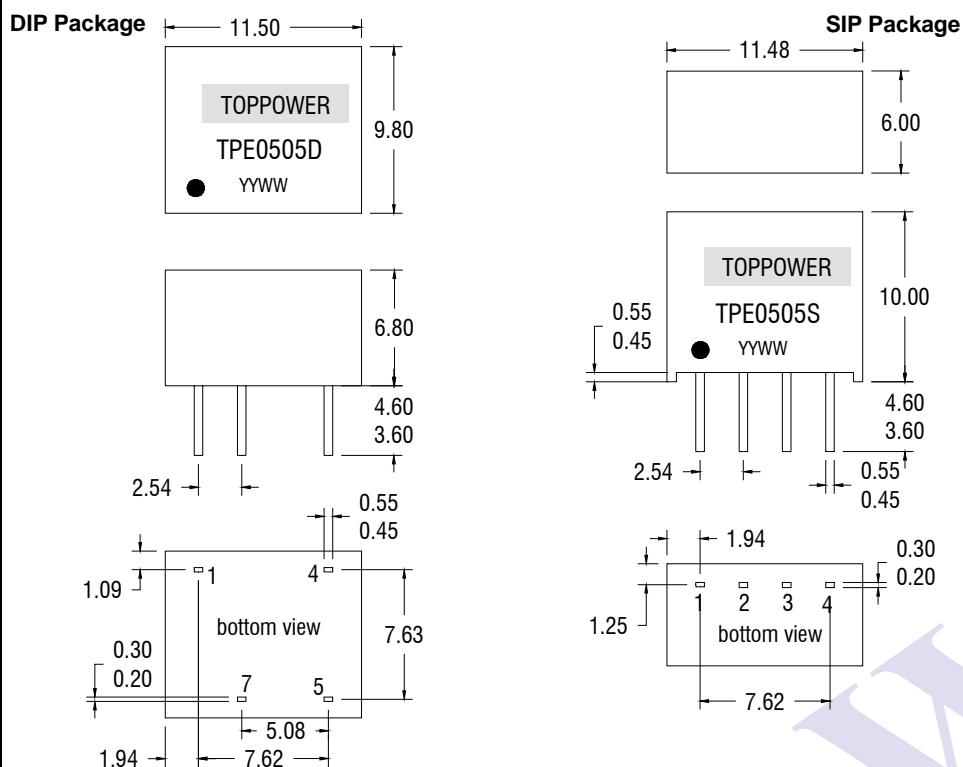
## TOLERANCE ENVELOPES



## SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. Both types in this series are backward compatible with Sn/Pb soldering systems.

**MECHANICAL DIMENSIONS** **PIN CONNECTIONS**



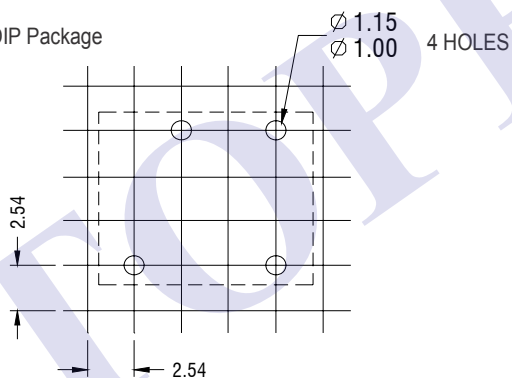
8 PIN DIP	
Pin	Function
1	-Vin
4	+Vin
5	+Vout
7	-Vout

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

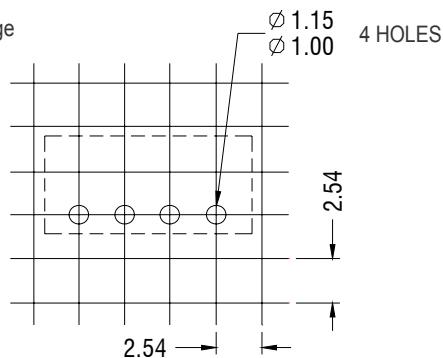
All dimensions in mm  $\pm 0.25$ mm. All pins on a 2.54 mm pitch and within  $\pm 0.25$ mm of true position  
 Weight: 1.30g (SIP) 1.48g (DIP)

**RECOMMENDED FOOTPRINT DETAILS**

8Pin DIP Package

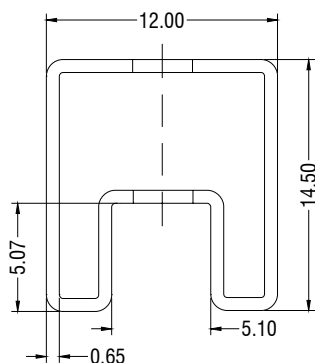


4Pin SIP Package

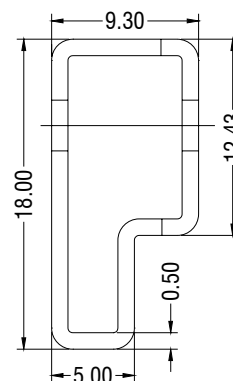


**TUBE OUTLINE DIMENSIONS**

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