
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	Single isolated output	SIP: 1.5KVDC /3KVDC isolation DIP: 2KVDC/3KVDC isolation
Efficiency up to 81%	Operating temperature : -40°C to 105°C	Power density 1.53W/cm ³
UL 94V-0 package material	Footprint from 0.69cm ²	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	Max. Capacitive Load(μF)	Package Style
	V	V	mA	%		
TPE0303D	3.3	3.3	303/30.3	72	220	DIP
TPE0305D	3.3	5	200/20	74	220	DIP
TPE0309D	3.3	9	110/11	78	220	DIP
TPE0312D	3.3	12	83/8.3	78	220	DIP
TPE0315D	3.3	15	66/6.6	80	220	DIP
TPE0324D	3.3	24	42/4.2	79	220	DIP
TPE0303S	3.3	3.3	303/30.3	72	220	SIP
TPE0305S	3.3	5	200/20	74	220	SIP
TPE0309S	3.3	9	110/11	78	220	SIP
TPE0312S	3.3	12	83/8.3	78	220	SIP
TPE0315S	3.3	15	66/6.6	80	220	SIP
TPE0324S	3.3	24	42/4.2	79	220	SIP
TPE0503D	5	3.3	303/30.3	72	220	DIP
TPE0505D	5	5	200/20	68	220	DIP
TPE0509D	5	9	110/11	78	220	DIP
TPE0512D	5	12	83/8.3	77	220	DIP
TPE0515D	5	15	66/6.6	81	220	DIP
TPE0524D	5	24	42/4.2	80	220	DIP
TPE0503S	5	3.3	303/30.3	72	220	SIP
TPE0505S	5	5	200/20	70	220	SIP
TPE0509S	5	9	110/11	78	220	SIP
TPE0512S	5	12	83/8.3	78	220	SIP
TPE0515S	5	15	66/6.6	80	220	SIP
TPE0524S	5	24	42/4.2	79	220	SIP
TPE1203D	12	3.3	303/30.3	72	220	DIP
TPE1205D	12	5	200/20	69	220	DIP
TPE1209D	12	9	110/11	74	220	DIP
TPE1212D	12	12	83/8.3	76	220	DIP
TPE1215D	12	15	66/6.6	75	220	DIP
TPE1224D	12	24	42/4.2	79	220	DIP
TPE1203S	12	3.3	303/30.3	72	220	SIP
TPE1205S	12	5	200/20	71	220	SIP
TPE1209S	12	9	110/11	73	220	SIP
TPE1212S	12	12	83/8.3	76	220	SIP
TPE1215S	12	15	66/6.6	74	220	SIP
TPE1224S	12	24	42/4.2	79	220	SIP

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

Add suffix "3H" for 3KVDC isolated, for example TPE0505S/3H.

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	1500/3000			VDC
Isolation test voltage DIP package	Tested for 1 second	2000/3000			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 (voltage variation +/-5%)		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		12	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	%
Ripple & Noise	20MHz bandwidth		70	100	mvp-p

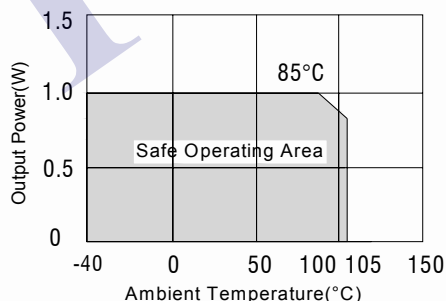
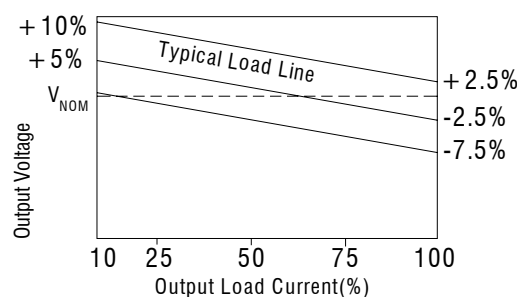
All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified.

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
MTBF	MIL-HDBK-217F@25°C		3500		K hours

TEMPERATURE CHARACTERISTICS

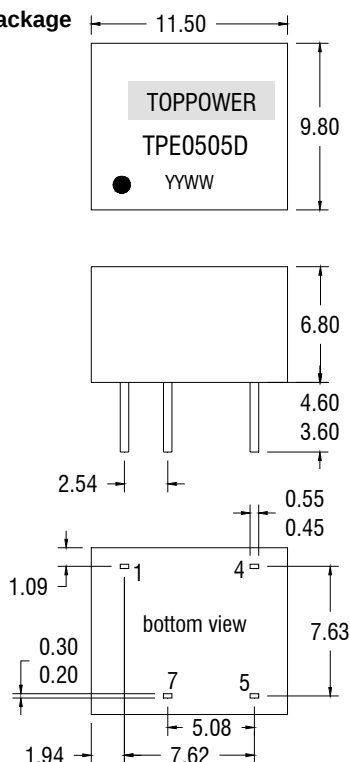
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85°C	-40		105	°C
Storage		-55		150	°C
Case Temperature above ambient	5V output			41	°C
Case Temperature above ambient	All other output			32	°C
Cooling	Free air convection				

TEMPERATURE DERATING GRAPHS

TOLERANCE ENVELOPES

SOLDERING INFORMATION

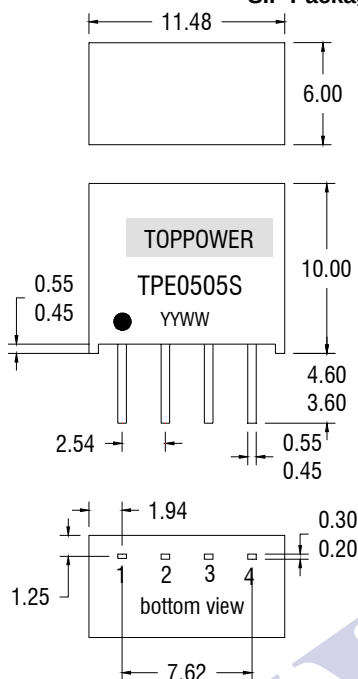
This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. Both types in this series are backward compatible with Sn/Pb soldering systems.

MECHANICAL DIMENSIONS

DIP Package



SIP Package



PIN CONNECTIONS

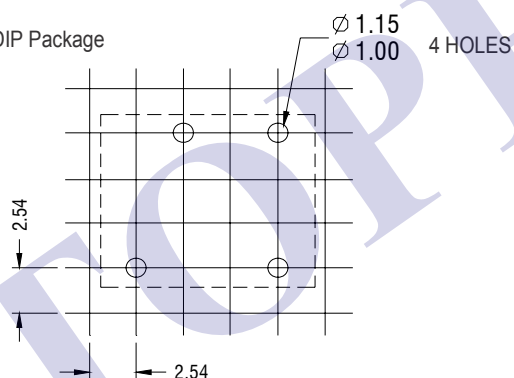
8 PIN DIP	
Pin	Function
1	-Vin
4	+Vin
5	+Vout
7	-Vout

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

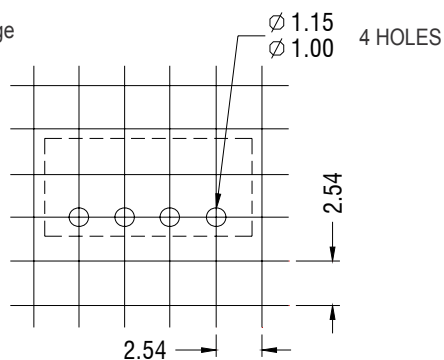
All dimensions in mm ± 0.25 mm. All pins on a 2.54 mm pitch and within ± 0.25 mm of true position
Weight: 1.30g (SIP) 1.48g (DIP)

RECOMMENDED FOOTPRINT DETAILS

8Pin DIP Package

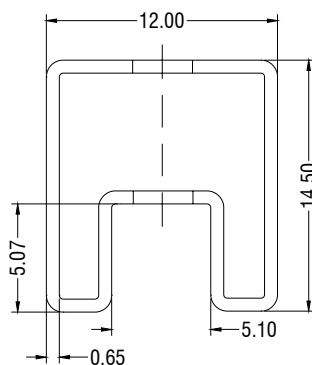


4Pin SIP Package

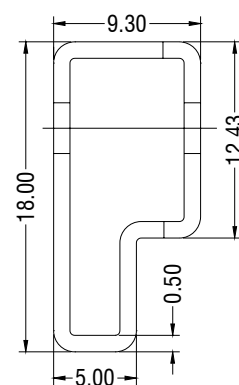


TUBE OUTLINE DIMENSIONS

8Pin DIP Tube



4Pin SIP Tube



Unless otherwise stated all dimensions in mm ± 0.5 mm.

Tube length (8 Pin DIP) : 520mm ± 2 mm.

Tube length (4 Pin SIP) : 520mm ± 2 mm.

Tube Quantity : 35PCS