



**DESCRIPTION: 1W 3KVDC Isolated Twin Output DC/DC Converters**

The TPD series are miniature, isolated 1W DC/DC-converters with twin output voltage 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 and 3KVDC isolation.

**FEATURES**

RoHS compliant, CE certification	Twin independent output	Input/output isolation 3KVDC
Output/output isolation 3KVDC	Power sharing on output	Efficiency to 80%
UL 94V-0 package material	Footprint from 1.17cm <sup>2</sup>	Input voltage: 5V, 12V, 24V
Output one: 5V,9V,12V,15V	Output two: 3.3V, 5V, 9V, 12V, 15V	Operating temperature: -40°C to 105°C

**SELECTION GUIDE**

Part Number	Nominal Input Voltage	Output Voltage 1	Output Voltage 2	Output Current 1	Output Current 2	Efficiency	Package Style
	V	V	V	mA	mA	%	
TPD050503D	5	5	3.3	100	151	69	DIP
TPD050505D	5	5	5	100	99	70	DIP
TPD050509D	5	5	9	100	55	79	DIP
TPD050512D	5	5	12	100	41	80	DIP
TPD050515D	5	5	15	100	35	79	DIP
TPD050503S	5	5	3.3	100	151	70	SIP
TPD050505S	5	5	5	100	99	70	SIP
TPD050509S	5	5	9	100	55	79	SIP
TPD050512S	5	5	12	100	41	80	SIP
TPD050515S	5	5	15	100	35	80	SIP
TPD050909D	5	9	9	56	56	76	DIP
TPD051212D	5	12	12	42	42	77	DIP
TPD051212S	5	12	12	42	42	77	SIP
TPD051515S	5	15	15	33	33	78	SIP
TPD120505D	12	5	5	100	99	70	DIP
TPD120509D	12	5	9	100	55	80	DIP
TPD120512D	12	5	12	100	41	80	DIP
TPD120515D	12	5	15	100	35	79	DIP
TPD120505S	12	5	5	100	99	70	SIP
TPD120509S	12	5	9	100	55	80	SIP
TPD120512S	12	5	12	100	41	79	SIP
TPD120515S	12	5	15	100	35	80	SIP
TPD120909S	12	9	9	56	56	78	SIP
TPD121212S	12	12	12	42	42	78	SIP
TPD121515S	12	15	15	33	33	80	SIP
TPD120909D	12	9	9	56	56	78	DIP
TPD240505S	24	5	5	100	99	71	SIP
TPD240909S	24	9	9	56	56	74	SIP
TPD241212S	24	12	12	42	42	76	SIP
TPD241515S	24	15	15	33	33	76	SIP
TPD240505D	24	5	5	100	100	71	DIP
TPD240909D	24	9	9	56	56	74	DIP
TPD241212D	24	12	12	42	42	76	DIP
TPD241515D	24	15	15	33	33	73	DIP

Add suffix "P" for continuous short circuit protection, for example TPD050505SP. Add suffix "N" Define different output pin, for example TPD050505S/N.

**INPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	5V input types	4.5	5.0	5.5	V
Voltage range	12V input types	11	12	13	V
Voltage range	24V input types	22	24	26.5	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)	3.3V output variants			14	%
Load regulation(10% load to rated load)	5V output variants			14	%
Load regulation(10% load to rated load)	9V output variants			9	%
Load regulation(10% load to rated load)	12V output variants			9	%
Load regulation(10% load to rated load)	15V output variants			9	%

**ABSOLUTE MAXIMUM RATINGS**

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Input voltage Vin, TPD05 variants	6.5V
Input voltage Vin, TPD12 variants	14.5V
Input voltage Vin, TPD24 variants	28V

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

**ISOLATION CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Tested for 1 second	3000			VDC
Resistance	Viso= 1000VDC	1			GΩ

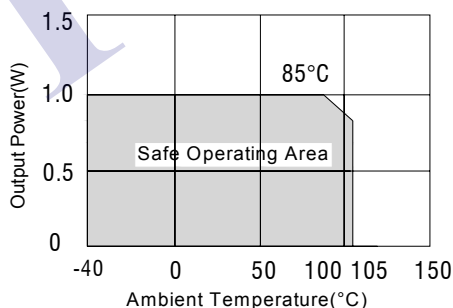
**GENERAL CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	All input types		110		kHz

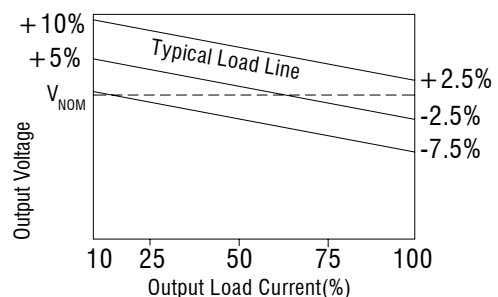
**TEMPERATURE CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85°C	-40		105	°C
Storage		-55		130	°C
Cooling	Free air convection				

**TEMPERATURE DERATING GRAPHS**



**TOLERANCE ENVELOPES**



**SOLDERING INFORMATION**

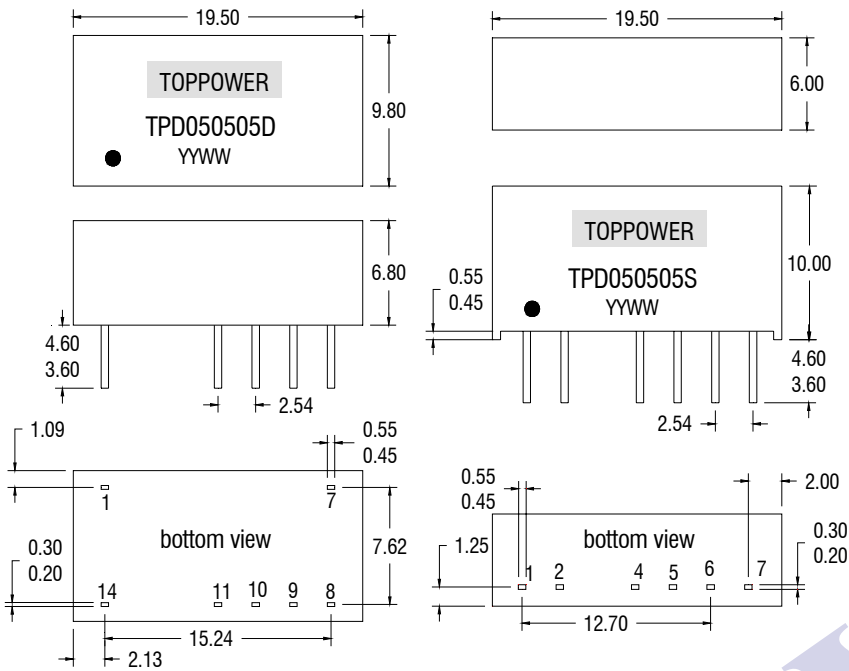
This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. Both SIP and DIP types in this series are backward compatible with Sn/Pb soldering systems.

**MECHANICAL DIMENSIONS**

**PIN CONNECTIONS**

**DIP Package**

**SIP Package**



14 PIN DIP		
Pin	Function	Add suffix "/N" function
1	-Vin	-Vin
7	NC	NC
8	-Vout2	+Vout2
9	+Vout2	-Vout2
10	-Vout1	+Vout1
11	+Vout1	-Vout1
14	+Vin	+Vin

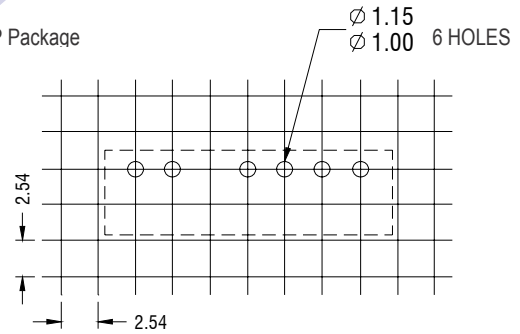
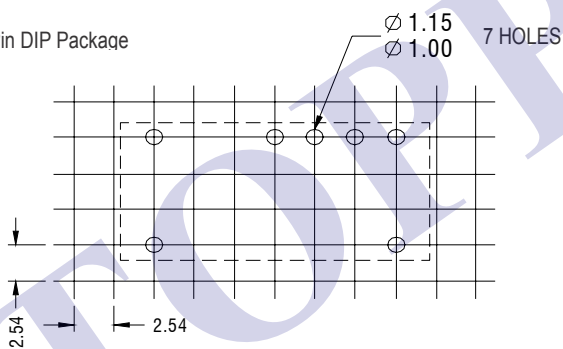
7 PIN SIP		
Pin	Function	Add suffix "/N" function
1	+Vin	+Vin
2	-Vin	-Vin
4	+Vout1	-Vout1
5	-Vout1	+Vout1
6	+Vout2	-Vout2
7	-Vout2	+Vout2

All dimensions in mm  $\pm 0.25$ mm. All pins on a 2.54mm pitch and within  $\pm 0.25$ mm of true position.  
Weight: 2.3g (DIP & SIP)

**RECOMMENDED FOOTPRINT DETAILS**

**14Pin DIP Package**

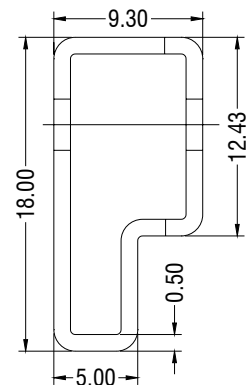
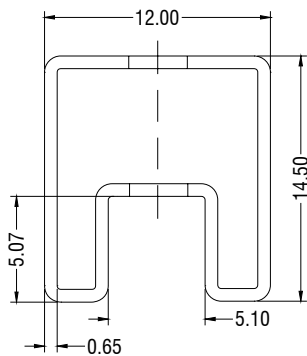
**7Pin SIP Package**



**TUBE OUTLINE DIMENSIONS**

**14Pin DIP Tube**

**7Pin SIP Tube**



Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.  
 Tube length (14 Pin DIP) : 520mm  $\pm 2$ mm      Tube Quantity : 25PCS  
 Tube length (7 Pin SIP) : 520mm  $\pm 2$ mm      Tube Quantity : 25PCS