


DESCRIPTION: 1W 3KVDC Isolated Single & Dual Output DC/DC Converters

The TPV 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 and 3KVDC isolation.

FEATURES

RoHS compliant, CE certification	Efficiency to 80%	Power density up to 0.85W/cm ³
Single or dual output	UL 94V-0 package material	Power sharing on dual output
Footprint from 1.17cm ²	Industry standard pinout	3KVDC isolation (1 minute)
Input voltage: 24V, 48V	Output voltage: 3.3V, 5V, 9V, 12V, 15V / $\pm 5V$, $\pm 9V$, $\pm 12V$, $\pm 15V$	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	%	
TPV2405DA	24	5	200/20	71	DIP
TPV2409DA	24	9	111/11.1	79	DIP
TPV2412DA	24	12	84/8.4	80	DIP
TPV2415DA	24	15	67/6.7	81	DIP
TPV2403SA	24	3.3	303/30.3	70	SIP
TPV2405SA	24	5	200/20	71	SIP
TPV2409SA	24	9	111/11.1	79	SIP
TPV2412SA	24	12	84/8.4	80	SIP
TPV2415SA	24	15	67/6.7	81	SIP
TPV2424SA	24	24	42/4.2	77	SIP
TPV4805DA	48	5	200/20	71	DIP
TPV4809DA	48	9	111/11.1	79	DIP
TPV4812DA	48	12	84/8.4	80	DIP
TPV4815DA	48	15	67/6.7	81	DIP
TPV4803SA	48	3.3	303/30.3	71	SIP
TPV4805SA	48	5	200/20	71	SIP
TPV4809SA	48	9	111/11.1	79	SIP
TPV4812SA	48	12	84/8.4	80	SIP
TPV4815SA	48	15	67/6.7	81	SIP
TPV2405D	24	± 5	$\pm 100/\pm 10$	71	DIP
TPV2409D	24	± 9	$\pm 56/\pm 5.6$	79	DIP
TPV2412D	24	± 12	$\pm 41/\pm 4.1$	80	DIP
TPV2415D	24	± 15	$\pm 33/\pm 3.3$	81	DIP
TPV2405S	24	± 5	$\pm 100/\pm 10$	71	SIP
TPV2409S	24	± 9	$\pm 56/\pm 5.6$	79	SIP
TPV2412S	24	± 12	$\pm 41/\pm 4.1$	80	SIP
TPV2415S	24	± 15	$\pm 33/\pm 3.3$	81	SIP
TPV4805D	48	± 5	$\pm 100/\pm 10$	71	DIP
TPV4809D	48	± 9	$\pm 56/\pm 5.6$	79	DIP
TPV4812D	48	± 12	$\pm 41/\pm 4.1$	80	DIP
TPV4815D	48	± 15	$\pm 33/\pm 3.3$	81	DIP
TPV4805S	48	± 5	$\pm 100/\pm 10$	71	SIP
TPV4809S	48	± 9	$\pm 56/\pm 5.6$	79	SIP
TPV4812S	48	± 12	$\pm 41/\pm 4.1$	80	SIP
TPV4815S	48	± 15	$\pm 33/\pm 3.3$	81	SIP

Add suffix "P" for continuous short circuit protection, for example TPV2405SAP.

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	24V input variants	22	24	26.5	V
Voltage range	48V input variants	43	48	53	V

ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Input voltage V_{in} , TPV24 variants	28V
Input voltage V_{in} , TPV48 variants	54V

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	$T_A = -40^{\circ}\text{C}$ to 85°C			1	W
Voltage Set Point Accuracy	See tolerance envelope				
Line regulation	High V_{in} to low V_{in}			1.32	%/%

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Tested for 1 minute	3000			VDC
Resistance	$V_{iso} = 1000\text{VDC}$	1			$\text{G}\Omega$

GENERAL CHARACTERISTICS

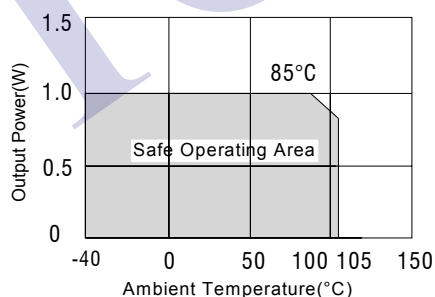
Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	All input variants		110		kHz

TEMPERATURE CHARACTERISTICS

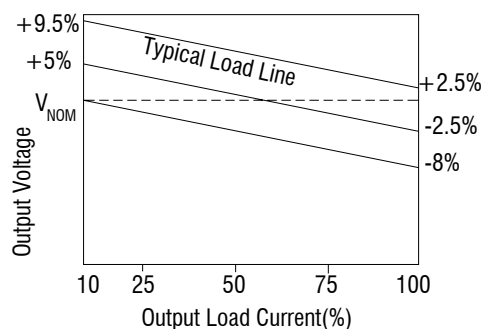
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature $\geq 85^{\circ}\text{C}$	-40		105	$^{\circ}\text{C}$
Storage		-55		130	$^{\circ}\text{C}$
Cooling	Free air convection				

All specifications typical at $T_A = 25^{\circ}\text{C}$, nominal input voltage and rated output current unless otherwise specified.

TEMPERATURE DERATING GRAPHS



TOLERANCE ENVELOPES

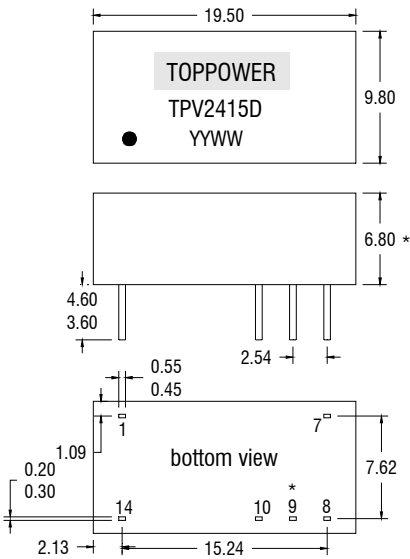


SOLDERING INFORMATION

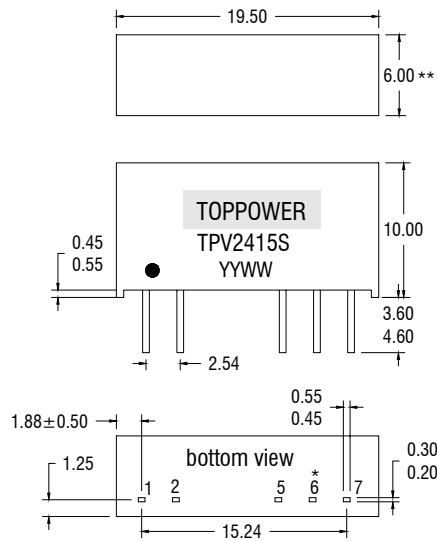
This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. Both SIP and DIP types in this series are backward compatible with Sn/Pb soldering systems.

MECHANICAL DIMENSIONS

DIP Package



SIP Package



Pin not fitted on single output variants. All dimensions in mm ± 0.25 mm.
 *7.70 for 48V variants **7.50 for 48V variants
 All pins on a 2.54mm pitch and within ± 0.25 mm of true position.
 Weight: 2.11g (DIP and SIP)

PIN CONNECTIONS

Dual output variants 14 PIN DIP

Pin	Function
1	-Vin
7	NC
8	+Vout
9	0V
10	-Vout
14	+Vin

7 PIN SIP

Pin	Function
1	+Vin
2	-Vin
5	-Vout
6	0V
7	+Vout

Single output variants 14 PIN DIP

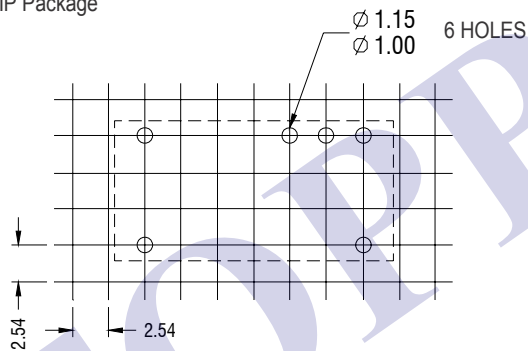
Pin	Function
1	-Vin
7	NC
8	+Vout
10	-Vout
14	+Vin

7 PIN SIP

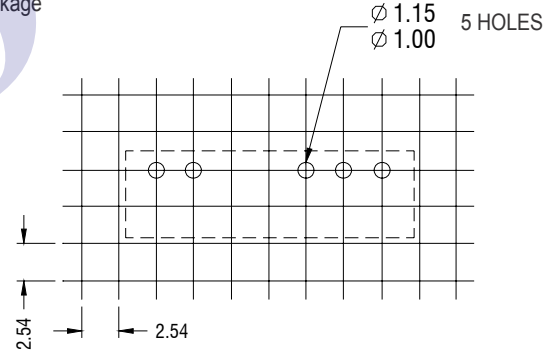
Pin	Function
1	+Vin
2	-Vin
5	-Vout
7	+Vout

RECOMMENDED FOOTPRINT DETAILS

14Pin DIP Package

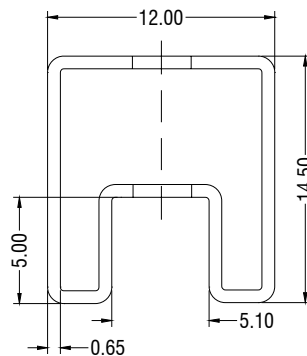


7Pin SIP Package

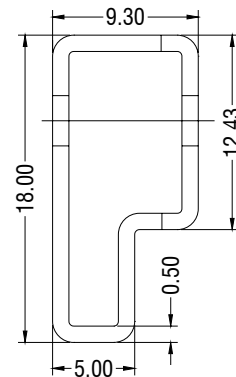


TUBE OUTLINE DIMENSIONS

14Pin DIP Tube



7Pin SIP Tube



Unless otherwise stated all dimensions in mm ± 0.5 mm.

Tube length (14 Pin DIP) : 520mm ± 2 mm.

Tube length (7 Pin DIP) : 520mm ± 2 mm.

Tube Quantity : 25PCS