



**DESCRIPTION: 0.5W 3KVDC Isolated Single & Dual Output DC/DC Converters**

The TPV-W5 series are miniature, isolated 0.5W 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 <sup>3</sup>
Single or dual output	UL 94V-0 package material	Power sharing on dual output
Footprint from 1.17cm <sup>2</sup>	Industry standard pinout	3KVDC isolation (1 minute)
Input voltage: 3.3V,5V,12V,15V	Output voltage: 3.3V,5V,9V,12V,15V,24V ±5V,±9V,±12V,±15V	Operating temperature: -40°C to 85°C

**SELECTION GUIDE**

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency	Package Style
	V	V	mA	%	
TPV0303DA-W5	3.3	3.3	152/15.2	72	DIP
TPV0305DA-W5	3.3	5	100/10	72	DIP
TPV0505DA-W5	5	5	100/10	72	DIP
TPV0509DA-W5	5	9	55.5/5.55	75	DIP
TPV0512DA-W5	5	12	41.7/4.17	76	DIP
TPV0515DA-W5	5	15	33.3/3.33	78	DIP
TPV0303SA-W5	3.3	3.3	152/15.2	72	SIP
TPV0305SA-W5	3.3	5	100/10	72	SIP
TPV0505SA-W5	5	5	100/10	83	SIP
TPV0509SA-W5	5	9	55.5/5.55	75	SIP
TPV0512SA-W5	5	12	41.7/4.17	76	SIP
TPV0515SA-W5	5	15	33.3/3.33	78	SIP
TPV0524SA-W5	5	24	20.84/2.084	79	SIP
TPV1205DA-W5	12	5	100/10	72	DIP
TPV1209DA-W5	12	9	55.5/5.55	75	DIP
TPV1212DA-W5	12	12	41.7/4.17	77	DIP
TPV1215DA-W5	12	15	33.3/3.33	78	DIP
TPV1205SA-W5	12	5	100/10	72	SIP
TPV1209SA-W5	12	9	55.5/5.55	75	SIP
TPV1212SA-W5	12	12	41.7/4.17	77	SIP
TPV1215SA-W5	12	15	33.3/3.33	78	SIP
TPV1505SA-W5	15	5	100/10	72	SIP
TPV1512SA-W5	15	12	41.7/4.17	74	SIP
TPV1515SA-W5	15	15	33.3/3.33	78	SIP
TPV0505D-W5	5	±5	±50/±5	72	DIP
TPV0509D-W5	5	±9	±27.75/±2.775	77	DIP
TPV0512D-W5	5	±12	±20.85/±2.085	78	DIP
TPV0515D-W5	5	±15	±16.65/±1.665	80	DIP
TPV0505S-W5	5	±5	±50/±5	72	SIP
TPV0509S-W5	5	±9	±27.75/±2.775	77	SIP
TPV0512S-W5	5	±12	±20.85/±2.085	78	SIP
TPV0515S-W5	5	±15	±16.65/±1.665	80	SIP
TPV1205D-W5	12	±5	±50/±5	72	DIP
TPV1209D-W5	12	±9	±27.75/±2.775	74	DIP
TPV1212D-W5	12	±12	±20.85/±2.085	76	DIP
TPV1215D-W5	12	±15	±16.65/±1.665	77	DIP
TPV1205S-W5	12	±5	±50/±5	72	SIP
TPV1209S-W5	12	±9	±27.75/±2.775	74	SIP
TPV1212S-W5	12	±12	±20.85/±2.085	76	SIP
TPV1215S-W5	12	±15	±16.65/±1.665	77	SIP
TPV1505S-W5	15	±5	±50/±5	72	SIP
TPV1512S-W5	15	±12	±20.85/±2.085	74	SIP
TPV1515S-W5	15	±15	±16.65/±1.665	78	SIP

Add suffix "P" for continuous short circuit protection, for example TPV0505SAP-W5.

## INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	3.3V input variants	2.9	3.3	3.6	V
Voltage range	5V input variants	4.4	5	5.6	V
Voltage range	12V input variants	11	12	13.3	V
Voltage range	15V input variants	13.4	15	16.4	V

## ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Input voltage $V_{in}$ , TPV03 variants	5.5V
Input voltage $V_{in}$ , TPV05 variants	6.6V
Input voltage $V_{in}$ , TPV12 variants	14.5V
Input voltage $V_{in}$ , TPV15 variants	18V

## OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	$T_A = -40^{\circ}\text{C}$ to $85^{\circ}\text{C}$			0.5	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			$G\Omega$

## GENERAL CHARACTERISTICS

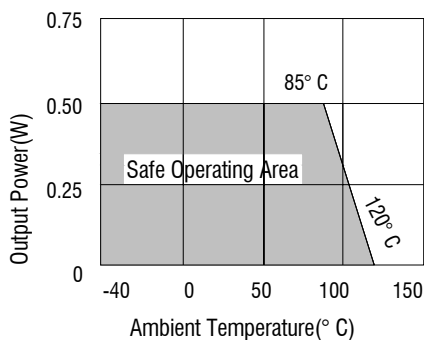
Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	3.3V input variants		95		kHz
Switching frequency	5V input variants		120	140	kHz
Switching frequency	12V input variants		145	180	kHz
Switching frequency	15V input variants		90	180	kHz

## TEMPERATURE CHARACTERISTICS

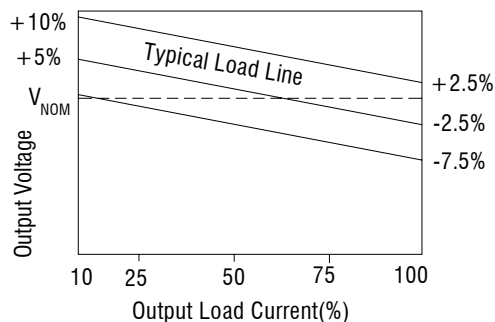
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	All output variants	-40		85	$^{\circ}\text{C}$
Storage		-55		130	$^{\circ}\text{C}$
Cooling	Free air convection				

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

## TEMPERATURE DERATING GRAPHS

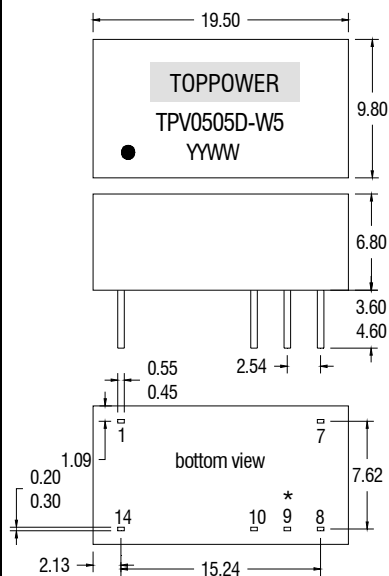


## TOLERANCE ENVELOPES

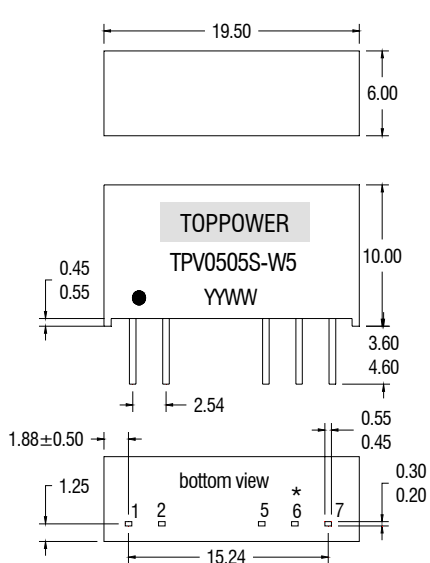


## MECHANICAL DIMENSIONS

### DIP Package



### SIP Package



Pin not fitted on single output variants. All dimensions in mm  $\pm 0.25$ mm.  
 \*7.70 for 48V variants      \*\*7.50 for 48V variants  
 All pins on a 2.54mm pitch and within  $\pm 0.25$ 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

### Single output variants 14 PIN DIP

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

### 7 PIN SIP

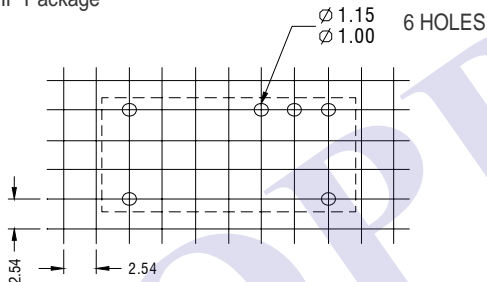
Pin	Function
1	+Vin
2	-Vin
5	-Vout
6	0V
7	+Vout

### 7 PIN SIP

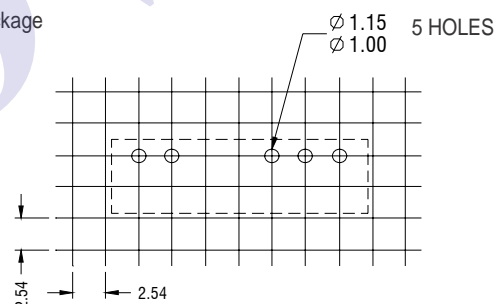
Pin	Function
1	+Vin
2	-Vin
5	-Vout
7	+Vout

## RECOMMENDED FOOTPRINT DETAILS

### 14Pin DIP Package

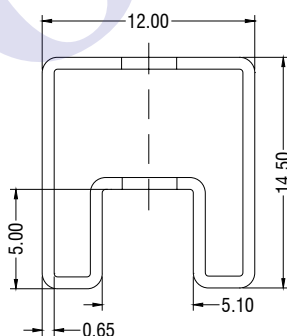


### 7Pin SIP Package

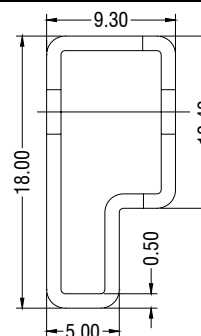


## TUBE OUTLINE DIMENSIONS

### 14Pin DIP Tube



### 7Pin SIP Tube



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

Tube Quantity : 25PCS

## 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.