TPV 3.3V,5V,9V,12V&15V Series



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	Efficiency to 80%	Power density up to 0.85W/cm^3
Operating temperature: -40ºC to 105ºC	Single or dual output	UL 94V-0 package material
Power sharing on dual output	3KVDC isolation (1 minute)	Input voltage: 3.3V,5V,9V,12V,15V
CE certification	/	Output voltage: 3.3V,5V,9V,12V,15V,24V /±5V,±9V,±12V,±15V

SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency	Package Style
	V	V	mA	%	
TPV0303DA	3.3	3.3	303/30.3	72	DIP
TPV0305DA	3.3	5	200/20	72	DIP
TPV0503DA	5	3.3	303/30.3	73	DIP
TPV0505DA	5	5	200/20	72	DIP
TPV0509DA	5	9	111/11.1	75	DIP
TPV0512DA	5	12	84/8.4	76	DIP
TPV0515DA	5	15	67/6.7	78	DIP
TPV0524DA	5	24	42/4.2	79	DIP
TPV0303SA	3.3	3.3	303/30.3	72	SIP
TPV0305SA	3.3	5	200/20	72	SIP
TPV0503SA	5	3.3	303/30.3	73	SIP
TPV0505SA	5	5	200/20	83	SIP
TPV0509SA	5	9	111/11.1	75	SIP
TPV0512SA	5	12	84/8.4	76	SIP
TPV0515SA	5	15	67/6.7	78	SIP
TPV0524SA	5	24	42/4.2	79	SIP
TPV0909SA	9	9	111/11.1	79	SIP
TPV0915SA	9	15	67/6.7	82	SIP
TPV1205DA	12	5	200/20	72	DIP
TPV1209DA	12	9	111/11.1	75	DIP
TPV1212DA	12	12	84/8.4	77	DIP
TPV1215DA	12	15	67/6.7	78	DIP
TPV1203SA	12	3.3	303/30.3	70	SIP
TPV1205SA	12	5	200/20	72	SIP
TPV1209SA	12	9	111/11.1	75	SIP
TPV1212SA	12	12	84/8.4	77	SIP
TPV1215SA	12	15	67/6.7	78	SIP
TPV1224SA	12	24	42/4.2	79	SIP
TPV1505DA	15	5	200/20	69	DIP
TPV1505SA	15	5	200/20	72	SIP
TPV1509SA	15	9	111/11.1	73	SIP
TPV1512SA	15	12	84/8.4	74	SIP
TPV1515SA	15	15	67/6.7	78	SIP
TPV0505D	5	±5	±100/±10	72	DIP
TPV0509D	5	±9	±55/±5.5	77	DIP
TPV0512D	5	±12	±43/±4.3	78	DIP
TPV0515D	5	±15	±33/±3.3	80	DIP
TPV0505S	5	±5	±100/±10	72	SIP
TPV0509S	5	±9	±55/±5.5	77	SIP
TPV0512S	5	±12	±43/4.3	78	SIP
TPV0515S	5	±15	±33/±3.3	80	SIP
TPV1205D	12	±5	±100/±10	72	DIP
TPV1209D	12	±9	±55/±5.5	74	DIP
TPV1212D	12	±12	±43/±4.3	76	DIP
TPV1215D	12	±15	±33/±3.3	77	DIP

Download from alldatasheet.com

TPV 3.3V,5V,9V,12V&15V Series

SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency	Package Style
	V	V	mA	%	
TPV1205S	12	±5	±100/±10	72	SIP
TPV1209S	12	±9	±55/±5.5	74	SIP
TPV1212S	12	±12	±43/±4.3	76	SIP
TPV1215S	12	±15	±33/±3.3	77	SIP
TPV1505S	15	±5	±100/±10	72	SIP
TPV1512S	15	±12	±43/±4.3	74	SIP
TPV1515S	15	±15	±33/±3.3	78	SIP

Add suffix “P” for continuous short circuit protection,automatic recovery; for example TPV0505SAP.

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	9V input variants	8.03	9	10	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 / continuous short circuit protection
Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	540mW
Input voltage Vin, TPV03 variants	5.5V
Input voltage Vin, TPV05 variants	6.6V
Input voltage Vin, TPV09 variants	11.5V
Input voltage Vin, TPV12 variants	14.5V
Input voltage Vin, TPV15 variants	18V

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	TA=-45℃ to 85℃			1	W
Voltage Set Point Accuracy	See tolerance envelope				
Line regulation	High VIN to low VIN (voltage variation +/-5%)		1.0	1.2	%/%

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Tested for 1 minute	3000			VDC
Resistance	Viso= 1000VDC	1			G°C

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	9V input variants		120	140	kHz
Switching frequency	12V input variants		145	180	kHz
Switching frequency	15V input variants		90	180	kHz

TEMPERATURE CHARACTERISTICS

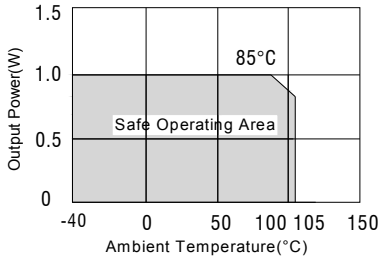
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85°C	-40		105	℃
Storage		-50		130	℃
Case Temperature above ambient	5V output variants			30	℃
Case Temperature above ambient	All other output variants			30	℃
Cooling	Free air convection				

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

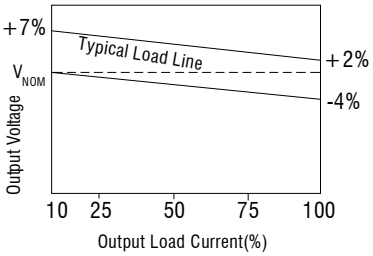
Download from alldatasheet.com

TPV 3.3V,5V,9V,12V&15V Series

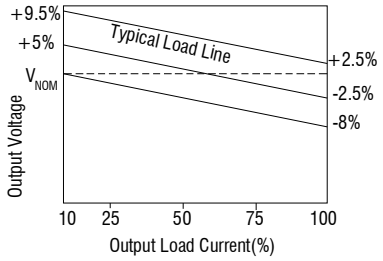
TEMPERATURE DERATING GRAPHS



TPV0505SA TOLERANCE ENVELOPES

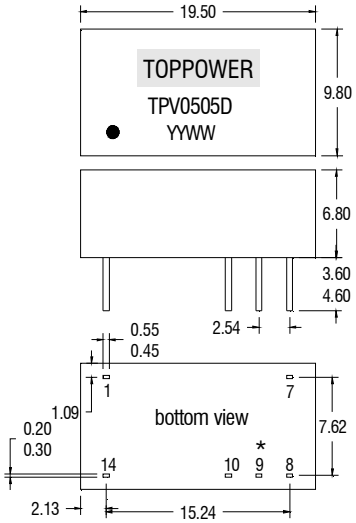


OTHER TOLERANCE ENVELOPES

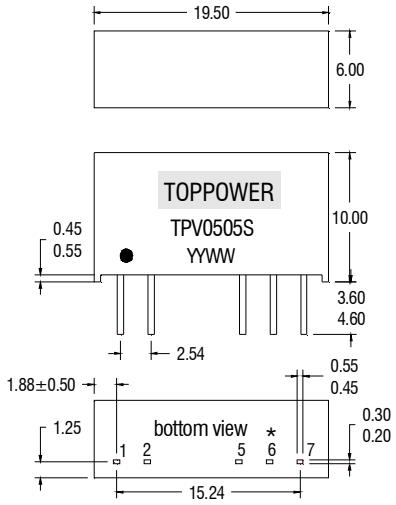


MECHANICAL DIMENSIONS

DIP Package



SIP Package



* Pin not fitted on single output variants. Weight: 2.4g (DIP) 2.1g (SIP)
All dimensions in mm ±0.25mm. All pins on a 2.54 mm pitch and within ±0.25mm of true position.

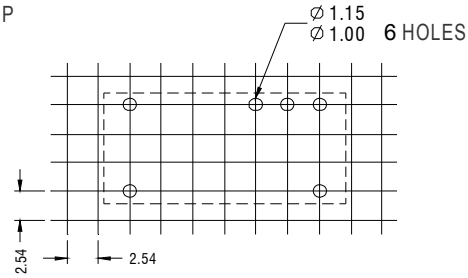
PIN CONNECTIONS

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

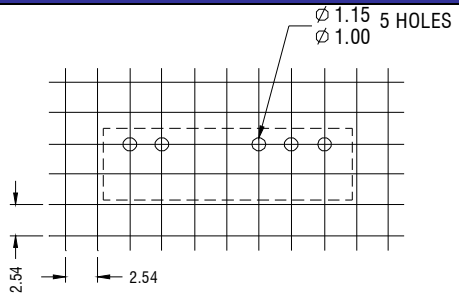
Single output variants	
14 PIN DIP	
Pin	Function
1	-Vin
7	NC
8	+Vout
10	-Vout
14	+Vin
7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
5	-Vout
7	+Vout

RECOMMENDED FOOTPRINT DETAILS

14Pin DIP

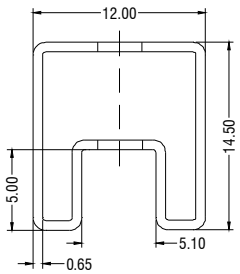


7Pin SIP

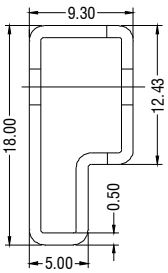


TUBE OUTLINE DIMENSIONS

14Pin DIP



7Pin SIP



Unless otherwise stated all dimensions in mm ±0.5mm.

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

Tube length (7 Pin SIP) : 520mm ±2mm.

Tube Quantity : 25PCS

SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300℃ for 10 seconds, this series are backward compatible with Sn/Pb soldering systems.

Download from alldatasheet.com