



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

The TPA 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 and 3KVDC isolation.

**FEATURES**

RoHS compliant, CE certification	Efficiency up to 81%	Power density up to 0.86W/cm <sup>3</sup>
Single and dual output from a single input rail	UL 94V-0 package material	No heat sink required
3KVDC isolation	Industry standard pinout	Power sharing on output
Input voltage: 24V, 48V	Output voltage: 5V, 9V, 12V, 15V, 24V / ±5V, ±9V, ±12V, ±15V, ±24V	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	%	
TPA2405DA	24	5	200/20	69	DIP
TPA2409DA	24	9	111/11.1	78	DIP
TPA2412DA	24	12	83/8.3	81	DIP
TPA2415DA	24	15	66/6.6	81	DIP
TPA2424DA	24	24	42/4.2	81	DIP
TPA4805DA	48	5	200/20	69	DIP
TPA4809DA	48	9	111/11.1	80	DIP
TPA4812DA	48	12	83/8.3	80	DIP
TPA4815DA	48	15	66/6.6	79	DIP
TPA2405D	24	±5	±100/±10	69	DIP
TPA2409D	24	±9	±56/±5.6	78	DIP
TPA2412D	24	±12	±41/±4.1	81	DIP
TPA2415D	24	±15	±32/±3.2	81	DIP
TPA2424D	24	±24	±21/±2.1	81	DIP
TPA2405S	24	±5	±100/±10	69	SIP
TPA2409S	24	±9	±56/±5.6	78	SIP
TPA2412S	24	±12	±42/±4.2	81	SIP
TPA2415S	24	±15	±34/±3.4	80	SIP
TPA2424S	24	±24	±21/±2.1	81	SIP
TPA4805D	48	±5	±100/±10	69	DIP
TPA4809D	48	±9	±56/±5.6	80	DIP
TPA4812D	48	±12	±42/±4.2	80	DIP
TPA4815D	48	±15	±34/±3.4	79	DIP
TPA4805S	48	±5	±100/±10	70	SIP
TPA4809S	48	±9	±56/±5.6	79	SIP
TPA4812S	48	±12	±43/±4.3	79	SIP
TPA4815S	48	±15	±33/±3.3	79	SIP

Add suffix "P" for continuous short circuit protection, for example TPA2405SP.

**INPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	24V input variants	22	24	27	V
Voltage range	48V input variants	44	48	53	V

**OUTPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	TA=-40°C to 85°C			1	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)	5V output			14	%
Load Regulation(10% load to rated load)	all other output			12	%

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

**ABSOLUTE MAXIMUM RATINGS**

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	450mW
Input voltage $V_{in}$ , TPA24	28V
Input voltage $V_{in}$ , TPA48	54V

**ISOLATION CHARACTERISTICS**

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

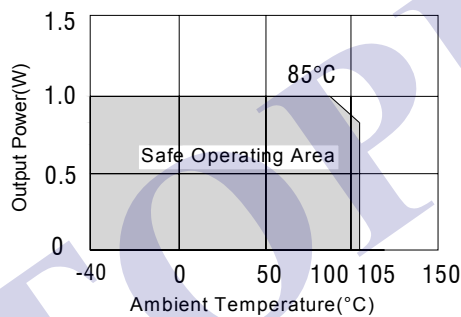
**GENERAL CHARACTERISTICS**

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

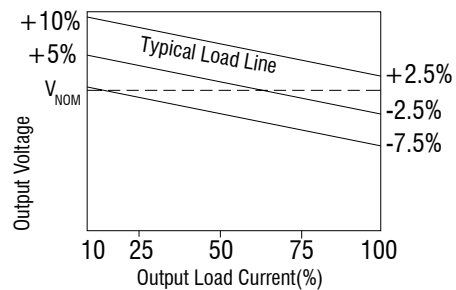
**TEMPERATURE CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature $\geq 85^\circ\text{C}$	-40		105	$^\circ\text{C}$
Storage		-55		150	$^\circ\text{C}$
Cooling	Free air convection				

**TEMPERATURE DERATING GRAPHS**



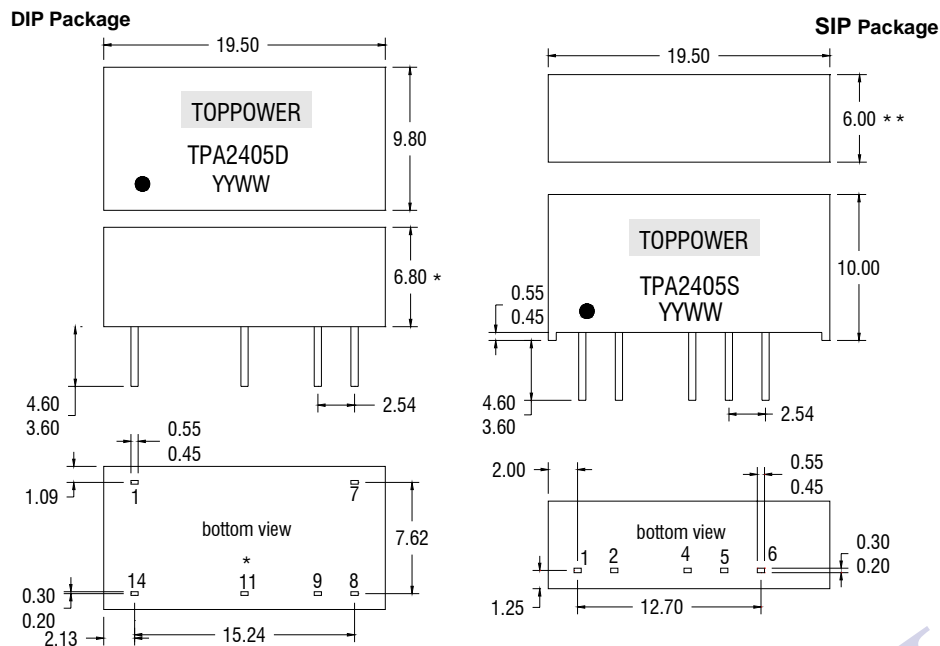
**TOLERANCE ENVELOPES**



**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** **PIN CONNECTIONS**

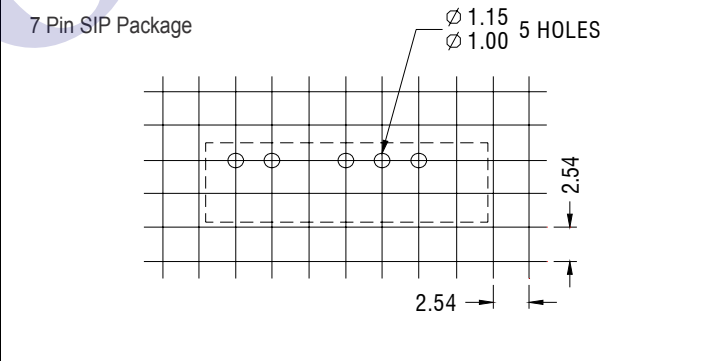
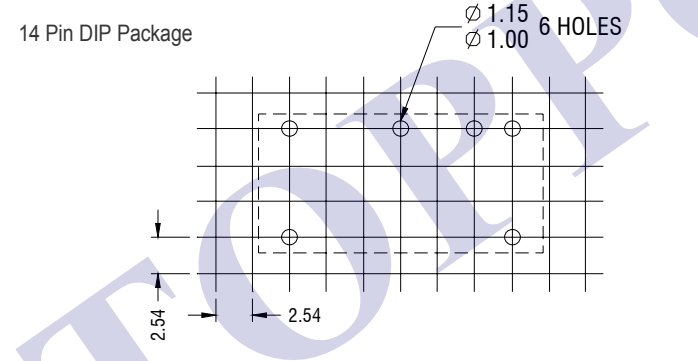


14 PIN DIP	
Pin	Function
1	-Vin
7	NC
8	OV
9	+Vout
11*	-Vout
14	+Vin

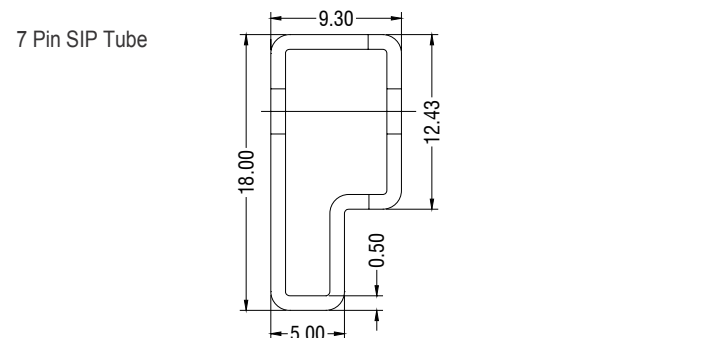
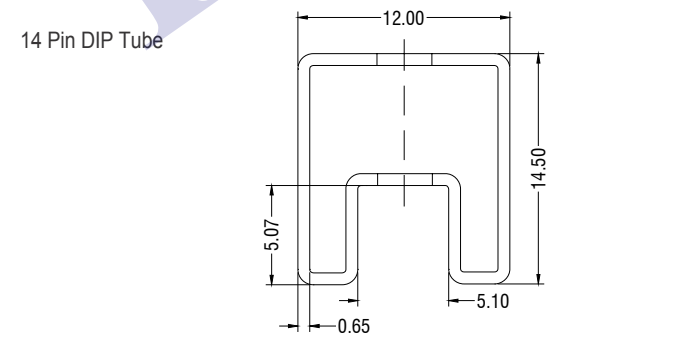
7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
4	-Vout
5	OV
6	+Vout

All dimensions in mm  $\pm 0.25$ mm. All pins on a 2.54 mm pitch and within  $\pm 0.25$  mm of true position.  
 \*7.70 for 48V variants                      \*\*7.50 for 48V  
 Weight: 2.4g (24V DIP)    2.9g (48V DIP)    2.2 g(24V SIP)    2.9g(48V SIP)  
 \*Pin not fitted on single output variants

**RECOMMENDED FOOTPRINT DETAILS**



**RoHS COMPLIANCE INFORMATION**



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