

**DESCRIPTION: 1W 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	Efficiency up to 80%	Power density up to 0.85W/cm <sup>3</sup>
Operating temperature :-40°C to 85°C	Single and dual output from a single input rail	UL 94V-0 package material
Power sharing on output	3KVDC isolation	Industry standard pinout
Input voltage: 5V, 12V, 15V	Output voltage :5V,9V,12V,15V /±5V,±9V,±12V,±15V	/

**SELECTION GUIDE**

Part Number	Nominal Input Voltage	Output Voltage	Output Current	Efficiency	Package Style
	V	V	mA	%	
TPA0505D	5	±5	±100	67	DIP
TPA0505DA	5	5	200	68	DIP
TPA0509D	5	±9	±54	76	DIP
TPA0509DA	5	9	111	76	DIP
TPA0512D	5	±12	±43	79	DIP
TPA0512DA	5	12	83	79	DIP
TPA0515D	5	±15	±33	78	DIP
TPA0515DA	5	15	66	78	DIP
TPA0505S	5	±5	±100	67	SIP
TPA0509S	5	±9	±54	76	SIP
TPA0512S	5	±12	±43	79	SIP
TPA0515S	5	±15	±33	78	SIP
TPA1205D	12	±5	±100	68	DIP
TPA1205DA	12	5	200	68	DIP
TPA1209D	12	±9	±54	74	DIP
TPA1209DA	12	9	111	74	DIP
TPA1212D	12	±12	±43	77	DIP
TPA1212DA	12	12	83	77	DIP
TPA1215D	12	±15	±33	75	DIP
TPA1215DA	12	15	66	75	DIP
TPA1205S	12	±5	±100	68	SIP
TPA1209S	12	±9	±54	74	SIP
TPA1212S	12	±12	±43	77	SIP
TPA1215S	12	±15	±33	75	SIP
TPA1505D	15	±5	±100	71	DIP
TPA1505DA	15	5	200	71	DIP
TPA1512D	15	±12	±43	77	DIP
TPA1512DA	15	12	111	77	DIP
TPA1515D	15	±15	±33	80	DIP
TPA1515DA	15	15	66	80	DIP
TPA1505S	15	±5	±100	71	SIP
TPA1512S	15	±12	±43	77	SIP
TPA1515S	15	±15	±33	80	SIP

**INPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	5V input variants	4.5	5	5.5	V
Voltage range	12V input variants	10.7	12	13.1	V
Voltage range	15V input variants	13.5	15	16.5	V
Reflected ripple current			22	45	mA p-p

## ABSOLUTE MAXIMUM RATINGS

Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	450mW
Input voltage Vin, TPA05 variants	7V
Input voltage Vin, TPA12 variants	15V
Input voltage Vin, TPA15 variants	18V

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

## 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 & 12V input		5V output	10	13	%
Load Regulation 10% load to rated load	5V & 12V input		9V output	9	10	%
Load Regulation 10% load to rated load	5V & 12V input		12V output	7	8	%
Load Regulation 10% load to rated load	5V & 12V input		15V output	6	7.0	%
Load Regulation 10% load to rated load	15V input		5V output	6	10	%
Load Regulation 10% load to rated load	15V input		12V output	3	4	%
Load Regulation 10% load to rated load	15V input		15V output	3	4	%

## ISOLATION CHARACTERISTICS

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

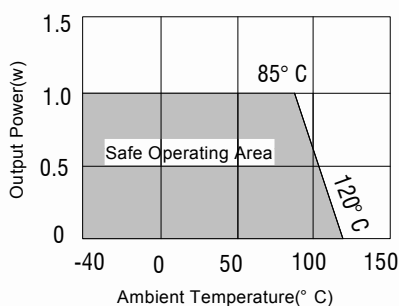
## GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	5V input		110		kHz
Switching frequency	12V input		130		kHz
Switching frequency	15V input		90		kHz

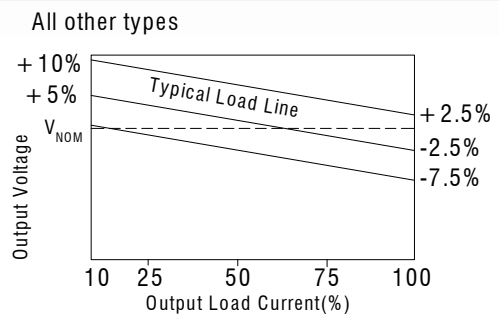
## TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	All output	-40		85	°C
Storage		-50		130	°C
Cooling	Free air convection				

## TEMPERATURE DERATING GRAPHS

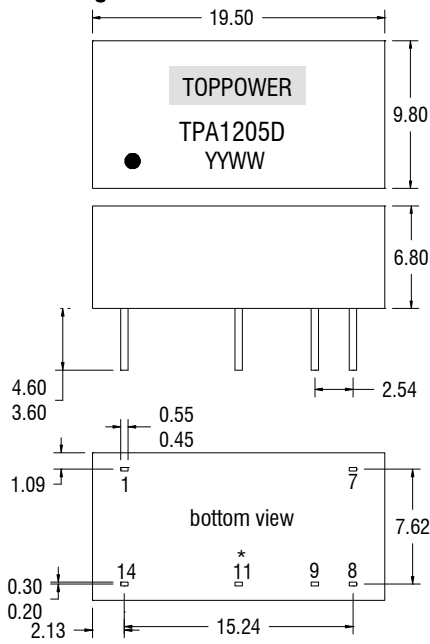


## TOLERANCE ENVELOPES

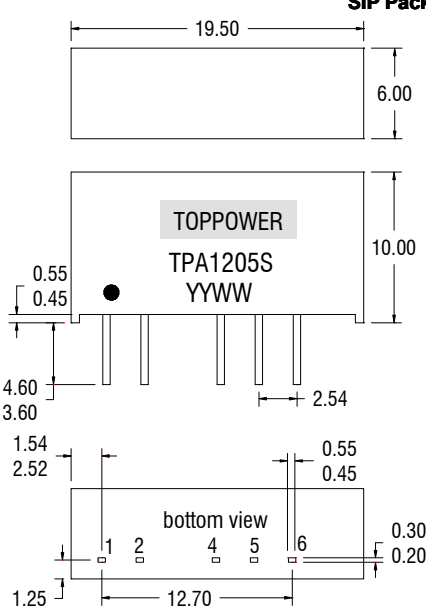


## MECHANICAL DIMENSIONS

### DIP Package



### SIP Package



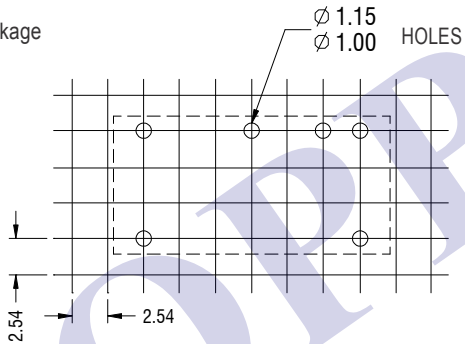
PIN CONNECTIONS-14 PIN DIP	
Pin	Function
1	-Vin
7	NC
8	OV
9	+Vout
11*	-Vout
14	+Vin

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

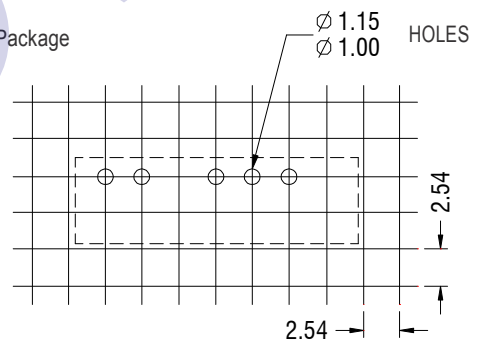
All dimensions in mm±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.  
 Weight: 2.4g (DIP) 2.1g (SIP)  
 \*Pin not fitted on single output variants

## RECOMMENDED FOOTPRINT DETAILS

### 14 Pin DIP Package

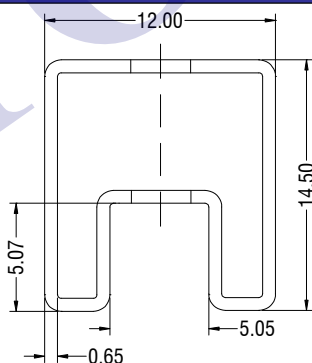


### 7 Pin SIP Package

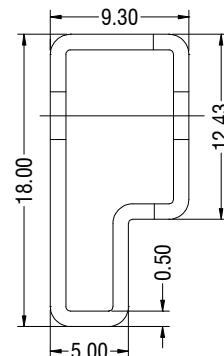


## TUBE OUTLINE DIMENSIONS

### 14Pin DIP Tube



### 7Pin SIP Tube



Tube length (14 Pin DIP) : 520mm±2mm.  
 Tube Quantity : 25

## 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.