



**DESCRIPTION:**

**2W 6KVDC Isolated Dual Output DC/DC Converters**

The TPS series are miniature, 6KVDC isolated 2W DC/DC-converters in a DIP package with dual output. 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.

**FEATURES**

RoHS compliant, CE certification	Dual outputs	Efficiency to 82%
Power density up to 0.44W/cm <sup>3</sup>	No heatsink required	Low profile package
UL 94V-0 package material	6KVDC isolation	Footprint 4.75cm <sup>2</sup>
Input voltage: 5V, 12V, 15V, 24V	Output voltage: ±5V, ±9V, ±12V, ±15V /5V, 9V, 12V, 15V	Operating temperature: -40°C to 105°C

**SELECTION GUIDE**

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency
	V	V	mA	%
TPS0505	5	±5	±200/±20	73
TPS0509	5	±9	±110/±11	75
TPS0512	5	±12	±84/±8.4	77
TPS0515	5	±15	±68/±6.8	77
TPS0505A	5	5	400/40	75
TPS0509A	5	9	222/22.2	76
TPS0512A	5	12	167/16.7	78
TPS1205	12	±5	±200/±20	78
TPS1209	12	±9	±110/±11	80
TPS1212	12	±12	±84/±8.4	82
TPS1215	12	±15	±68/±6.8	82
TPS1205A	12	5	400/40	75
TPS1209A	12	9	222/22.2	78
TPS1215A	12	15	133/13.3	78
TPS1515	15	±15	±67/±6.7	77
TPS1515A	15	15	133/13.3	81
TPS2405	24	±5	±200/±20	77
TPS2409	24	±9	±111/±11.1	78
TPS2415	24	±15	±67/±6.7	80
TPS2405A	24	5	400/40	77
TPS2409A	24	9	222/22.2	78
TPS2412A	24	12	167/16.7	81
TPS2415A	24	15	133/13.3	80

Add suffix "P" for continuous short circuit protection, for example TPS0505P.

**INPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	5V input	4.5	5	5.5	V
Voltage range	12V input	11	12	13.2	V
Voltage range	15V input	13.4	15	16.4	V
Voltage range	24V input	22	24	26.5	V

**OUTPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	TA= -40°C to 85°C			2	W
Voltage Set Point Accuracy	See tolerance envelope			10	%
Line regulation	High VIN to low VIN		1.0	1.2	%/%
Load Regulation(10% load to rated load)	5V output		9	16	%
Load Regulation(10% load to rated load)	9V output		7	16	%
Load Regulation(10% load to rated load)	12V output		7	16	%
Load Regulation(10% load to rated load)	15V output		7	16	%

**ABSOLUTE MAXIMUM RATINGS**

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	890mW
Input voltage Vin, TPS05	7V
Input voltage Vin, TPS12	15V
Input voltage Vin, TPS15	18V
Input voltage Vin, TPS24	28V

**ISOLATION CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Tested for 1 second	6000			VDC
Resistance	Viso= 1000VDC	1			GΩ

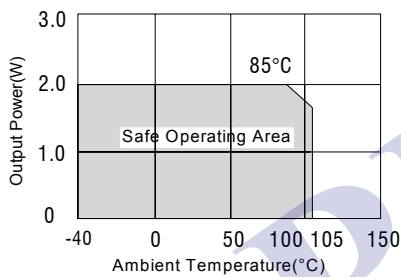
**GENERAL CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	All input types		40		kHz

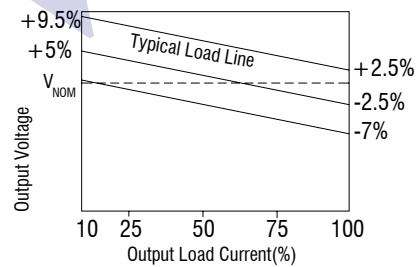
**TEMPERATURE CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85°C	-40		105	°C
Storage		-50		130	°C
Case Temperature above ambient	All output types			35	°C
Cooling	Free air convection				

**TEMPERATURE DERATING GRAPHS**

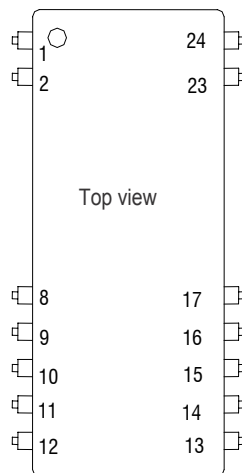
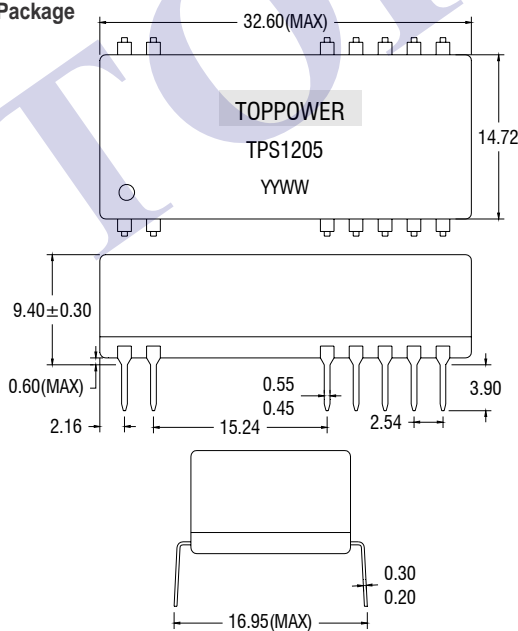


**TOLERANCE ENVELOPES**



**MECHANICAL DIMENSIONS**

**DIP Package**

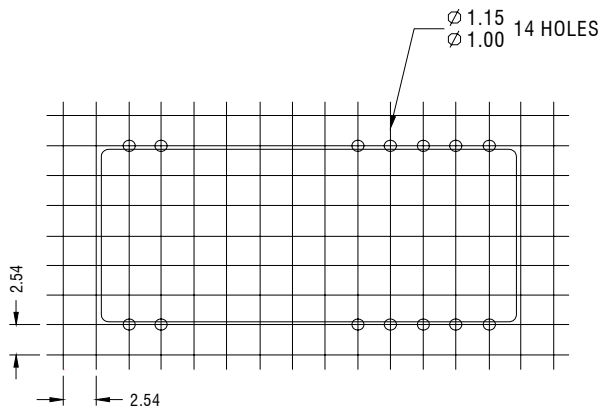


**PIN CONNECTIONS**

24 PIN DIP		
Pin	Dual output	Single output
1	+Vin	+Vin
2	-Vin	-Vin
8	-Vout	NC
9	NC	NC
10	OV	OV
11	NC	NC
12	+Vout	+Vout
13	+Vout	+Vout
14	NC	NC
15	OV	OV
16	NC	NC
17	-Vout	NC
23	NC	NC
24	NC	NC

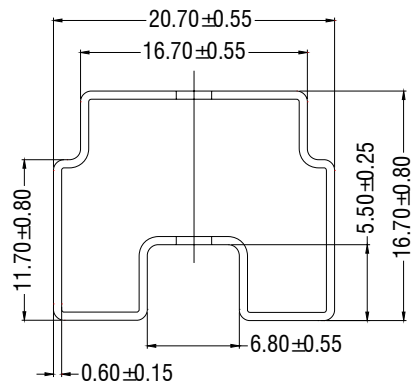
All dimensions in mm ±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.

**RECOMMENDED FOOTPRINT DETAILS**



Unless otherwise stated all dimensions in mm±0.5mm.

**TUBE OUTLINE DIMENSIONS**



Unless otherwise stated all dimensions in mm±0.5mm.

Tube length : 520mm±2mm.

Tube Quantity : 15PCS

**SOLDERING INFORMATION**

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. The series is backward compatible with Sn/Pb soldering systems.