



DESCRIPTION: 3W 1KVDC Isolated Wide Input DC/DC Converters

The TP2Y series are a range of isolated 3 Watt converters in a low profile DIP package, 2:1 wide input range and tightly regulated output voltage qualifies these converters for many cost critical applications in industrial and consumer electronics. Operating temperature ranges from -40°C to 85°C, the internal SMD construction makes it possible to offer a product with high performance at low cost

FEATURES

RoHS compliant	Industry standard footprint	Efficiency up to 82%
Power density 0.90W/cm ³	2:1 wide input range	Single isolated output
Short circuit protection	Low profile 24 pin case	UL 94V-0 package material
Operating temperature :-40°C to 85°C	Input voltage: 5V, 12V, 24V, 48V	Output voltage: 3.3V, 5V, 9V, 12V, 15V

SELECTION GUIDE

Part Number	Input voltage		Rated output voltage	Output current		Efficiency (Min.) %
	Voltage(VDC)			Min. Load	Full load	
	Rated	Range values	V	mA	mA	
TP2Y0505	5 (2:1)	4.5-9	5	100-150	390-590	65
TP2Y0509	5 (2:1)	4.5-9	9	55-83	220-332	71
TP2Y0512	5 (2:1)	4.5-9	12	43-63	165-250	71
TP2Y0515	5 (2:1)	4.5-9	15	32-49	132-200	72
TP2Y1205	12 (2:1)	9-18	5	150	595	71
TP2Y1209	12 (2:1)	9-18	9	83	330	78
TP2Y1212	12 (2:1)	9-18	12	62	251	78
TP2Y1215	12 (2:1)	9-18	15	50	200	79
TP2Y2403	24 (2:1)	18-36	3.3	228	910	70
TP2Y2405	24 (2:1)	18-36	5	149	600	70
TP2Y2409	24 (2:1)	18-36	9	82	332	77
TP2Y2412	24 (2:1)	18-36	12	61	251	80
TP2Y2415	24 (2:1)	18-36	15	49	200	82
TP2Y4803	48 (2:1)	36-72	3.3	228	910	71
TP2Y4805	48 (2:1)	36-72	5	149	600	74
TP2Y4809	48 (2:1)	36-72	9	82	332	80
TP2Y4812	48 (2:1)	36-72	12	61	251	82
TP2Y4815	48 (2:1)	36-72	15	49	200	82

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	All TP2Y05xx	4.5	5	9	VDC
Voltage range	All TP2Y12xx	9	12	18	VDC
Voltage range	All TP2Y24xx	18	24	36	VDC
Voltage range	All TP2Y48xx	36	48	72	VDC

ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	Continuous
Lead temperature 1.5mm from case for 10 seconds	300°C
Minimum load	25% of rated load
05V input	10V
12V input	20V
24V input	40V
48V input	80V
Internal dissipation	1.7W

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
Voltage set point accuracy	With external input/output capacitors		±1	±5	%
Line regulation(external input/output capacitors added)	Low line to high line, 3.3V output		0.06	0.26	%
Line regulation(external input/output capacitors added)	Low line to high line, all other outputs		0.06	0.5	%
Load regulation(external input/output capacitors added)	25% load to 100% load, 3.3V output types		0.7	1.0	%
Load regulation(external input/output capacitors added)	25% load to 100% load, all other outputs types		0.3	0.5	%

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Flash tested for 1 second	1000			VDC
Resistance	Viso=500VDC	1			GΩ

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	100% load with normal input voltage, 3.3V output types	150		210	kHz
Switching frequency	25% load with normal input voltage, 3.3V output types	280		550	kHz
Switching frequency	100% load with normal input voltage, all other output types	90		210	kHz
Switching frequency	25% load with normal input voltage, all other output types	280		550	kHz

TEMPERATURE CHARACTERISTICS

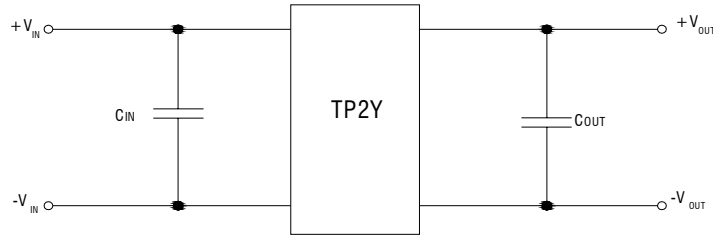
Parameter	Conditions	Min.	Typ.	Max.	Units
Operation	Ambient temperature	-40		85	°C
Storage		-50		130	°C
Cooling	Free air convection				

RECOMMENDED INPUT & OUTPUT CAPACITORS

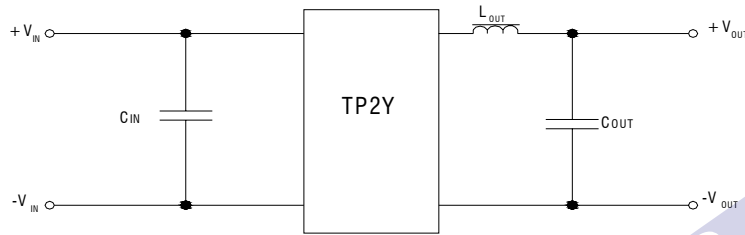
These converters will work without external capacitors, in order to guarantee the full parametric performance over the full line and load range we recommend you to use the value we listed at right side. All parts have been tested and characterized using the following values and test circuit.

Value		
Cin	Cout	Lout
10μF, 200V good low esr capacitor	100μF, 25V good low esr capacitor	10uH, 1.4A

TEST CIRCUIT, 5V, 12V AND 15V OUTPUT



CIRCUIT FOR REDUCED RIPPLE 3.3V OUTPUT



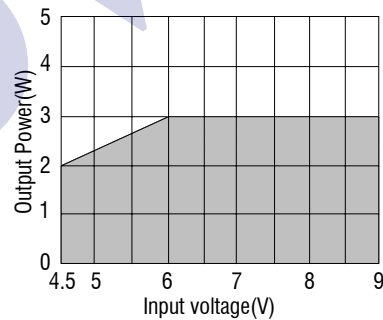
OUTPUT LOAD

The minimum rated load across the whole input voltage range is 25% of the full load output

SOLDERING INFORMATION

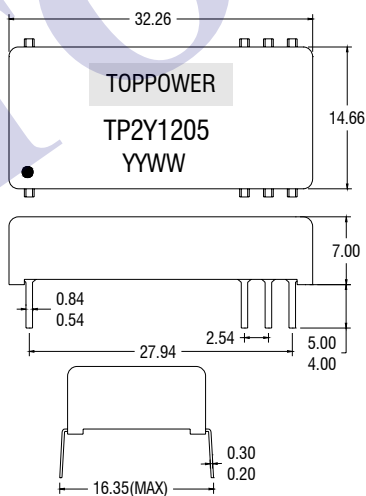
This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. The series is backward compatible with Sn/Pb soldering systems.

TP2Y05 POWER DERATING CURVE



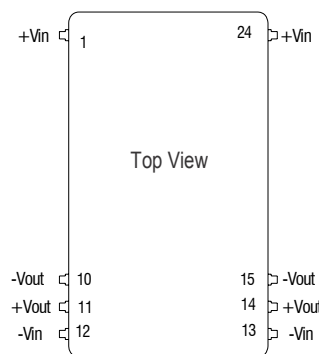
MECHANICAL DIMENSIONS

DIP Package

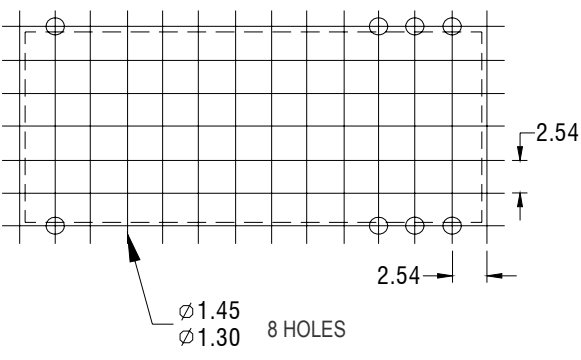
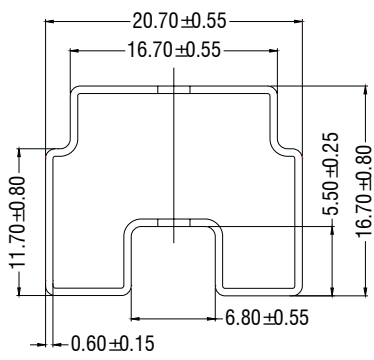


All dimensions in mm ±0.25mm. All pins on a 2.54mm pitch and within ±0.25mm of true position.
Weight: 6.2g (3.3V: 6.7g)

PIN CONNECTIONS(TOP VIEW)



24 PIN DIP	
Pin	Function
1	+Vin
10	-Vout
11	+Vout
12	-Vin
13	-Vin
14	+Vout
15	-Vout
16	+Vout
17	-Vin
18	-Vin
19	+Vout
20	-Vout
21	+Vout
22	-Vin
23	-Vin
24	+Vin

RECOMMENDED FOOTPRINT DETAILS	TUBE OUTLINE DIMENSIONS
 <p> $\varnothing 1.45$ $\varnothing 1.30$ 8 HOLES </p> <p>Unless otherwise stated all dimensions in mm $\pm 0.5\text{mm}$.</p>	 <p> 20.70 ± 0.55 16.70 ± 0.55 11.70 ± 0.80 5.50 ± 0.25 16.70 ± 0.80 6.80 ± 0.55 0.60 ± 0.15 </p> <p> All dimensions in mm $\pm 0.5\text{mm}$. Tube length : 20mm $\pm 2\text{mm}$. Tube Quantity:15PCS </p>

TOPPOWER