TOPPOWER

TP2H Series

3W Isolated Dual Output DC/DC Converters

DESCRIPTION

The TP2H is a series of high performance miniature DC/DC converters having regulated outputs over the wide temperature range of –40°C to +85°C. The input voltage range is 2:1 and the input to output isolation is 1kVDC. Continuous short circuit protection, external control. Nominal input voltages of 24 and 48V with output voltages of 12 and 15V are available.

FEATURES

RoHS compliant	Compact SIP form factor	2:1 Wide range voltage input
Continuous short circuit protection	Operating temperature range –40°C to +85°C	0.5% Load Regulation
1kVDC Isolation	Input voltage：24V, 48V	Output voltage: 12V, 15V
Power density 1.00W/cm^3	Remote on/off	

SELECTION GUIDE

Order code	Input voltage	Rated output voltage	Output current		Input current full	Efficiency (Min.)	Isolation capacitance
			Min. Load	Full load			
	V (Nom.)	V	mA	mA	mA	%	pF
TP2H2412S	24	±12	±31	124	156	80	40
TP2H2415S	24	±15	±26	99	154	81	40
TP2H4812S	48	±12	±31	124	79	79	42
TP2H4815S	48	±15	±26	99	79	79	42

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	24V input voltage types	18	24	36	VDC
	48V input voltage types	36	48	72	
Shutdown Power	24V input voltage types		10		mW
	48V input voltage types		15		

OUTPUT CHARACTERISTICS

Parameter	Conditions	MIN.	TYP.	MAX.	Units
Voltage set point accuracy	With external input/output capacitors		±1	±5	%
Line regulation	Low line to high line with external input/ output capacitors		0.06	0.2	%
Load regulation	Minimum load to rated load with external input/output capacitors		0.2	0.6	%
Cross regulation	% voltage change on negative output when positive load varies from 12% to 50% with negative load fixed at 50%		2.0	6.0	%

1 Absolute maximum value for 30 seconds. Prolonged operation may damage the product.

2 Measured at full load with external input/output capacitors. Refer to application note.

3 A lower load condition is entirely safe but higher levels of output ripple will be experienced.

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

ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	Continuous
Lead temperature 1.5mm from case for 10 seconds	300°C
Minimum output load for specification	25% of rated output
Control pin input current	15mA
Input voltage 24	40V
Input voltage 48	80V
Free air space	10mm MIN. around component

TEMPER ATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification		-40		85	°C
Operation		-40		100	
Storage		-50		130	
Case temperature rise above ambient	All types			40	

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	100% load VIN MIN.		130		kHz
	25% load VIN MAX.		450		

ISOLATION CHARACTERISTICS

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

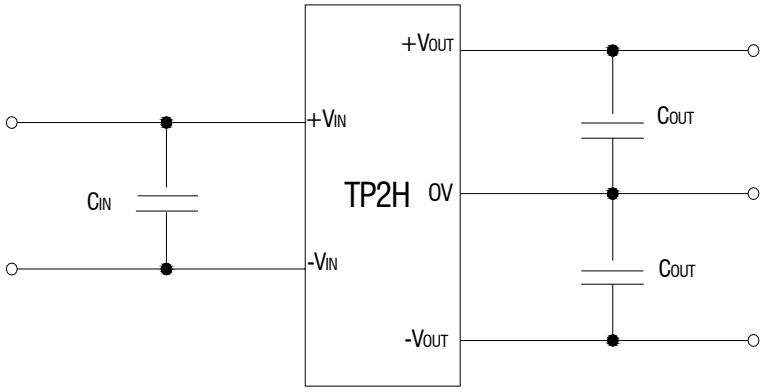
APPLICATION NOTES

Extemal capacitance

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

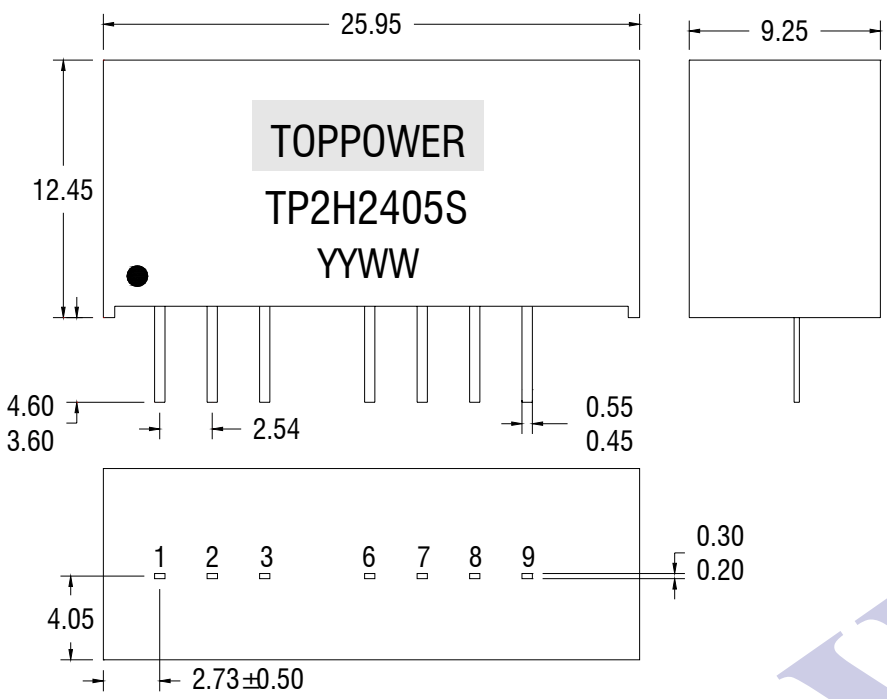
Value	
CIN	COUT
10uF,200V	47uF,25V

Test Circuit



PACKAGE SPECIFICATIONS

MECHANICAL DIMENSIONS



PIN CONNECTIONS

Pin	Function
1	-VIN
2	+VIN
3	CTRL
6	+VOUT
7	OV
8	N/A
9	-VOUT

Package Weight:6.5g

N/A - Not available for electrical connection

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

Unless otherwise stated all dimensions in mm±0.25 mm.

Cross Regulation

Load regulation: The best way is to keep positive and negative loads balance. When the loads are asymmetric, the negative output is not as tightly regulated as the positive output. To meet ripple specification minimum load of 25% full load is required, however, Cross regulation is defined as change in the negative output voltage as a percentage of nominal as the positive output load is changed from 12.5% to 50% with the negative load is fixed at 50% of full load.

RoHS COMPLIANCE INFORMATION

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