TOPPOWER

TPNA Series

1W Dual Output 1kVDC Isolated DC/DC Converters

DESCRIPTION

The TPNA series is the parts with high efficience and offers better regulation performance within 5% for applications where a wide output voltage variation can not be tolerated. They are very good for providing dual rail supplies, DIP type is available.

FEATURES

RoHS compliant	Efficiency from 81% up to 88%	Power density 0.85W/cm^3
Wide temperature performance at full 1 Watt load, –40°C to 85°C	UL 94V-0 package material	Output voltage: 5V, 9V, 12V, 15V
Industry standard pinout	Power sharing on output	Input voltage:5V, 12V,15V,24V,48V

SELECTION GUIDE

Order Code	Nominal Input Voltage	Output Voltage	Output Current	Input Current at Rated Load	Load Regulation (Typ)	Load Regulation (Max)	Ripple & Noise (Typ)	Ripple & Noise (Max)	Efficiency (Typ.)	Isolation Capacitance
	V	V	mA	mA	%		mVp-p		%	pF
TPNA0505S	5	±5	±100	232	4.8	5.1	13	25	84.	52
TPNA 0509S	5	±9	±55	227	3.7	4.3	9	22	86	54
TPNA 0512S	5	±12	±42	228	4	4.6	9	22	86	48
TPNA 0515S	5	±15	±33	225	3.7	4.5	8	22	86	47
TPNA 1205S	12	±5	±100	98	3.6	3.9	9	22	84	44
TPNA 1209S	12	±9	±55	95	2.4	2.8	8	22	86	61
TPNA 1212S	12	±12	±42	93	2.6	2.9	8	22	88	91
TPNA 1215S	12	±15	±33	94	2.2	2.7	7	22	87	74
TPNA1505S	15	±5	±100	79	3	3.5	8	22	84	41
TPNA1509S	15	±9	±55	76	2.2	2.6	7	22	87	65
TPNA 1512S	15	±12	±42	76	2	2.6	5	22	87	75
TPNA1515S	15	±15	±33	76	2	2.6	5	22	89	104
TPNA2405S	24	±5	±100	47	2.8	3.6	9	22	84	48
TPNA 2409S	24	±9	±55	46	1.9	2.6	8	22	87	81
TPNA2412S	24	±12	±42	46	1.6	2.6	4	22	87	85
TPNA 2415S	24	±15	±33	46	1.5	2.5	5	22	88	106
TPNA4805S	48	±5	±100	26	2.6	4	14	23	80	44
TPNA 4809S	48	±9	±55	26	1.9	3	8	22	82	72
TPNA4812S	48	±12	±42	26	1.6	3	8	22	83	92
TPNA4815S	48	±15	±33	26	1.3	2.5	6	22	83	109

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	5V input variants	4.5	5	5.5	V
	12V input variants	11	12	13.3	
	15V input variants	13.5	15	16.4	
	24V input variants	21.6	24	26	
	48V input variants	43	48	53	
Reflected ripple current	5V input variants		5	13	mA p-p
	12V input variants		5	10	
	15V input variants		4	10	
	24V input variants		4	10	
	48V input variants		25	40	

ABSOLUTE MAXIMUM RATINGS

Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	320mW
Input voltage VIN, TPNA05	7V
Input voltage VIN, TPNA12	15V

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	%/%

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Flash tested for 1 second	1000			VDC
Resistance	Viso= 1000VDC	10			GΩ

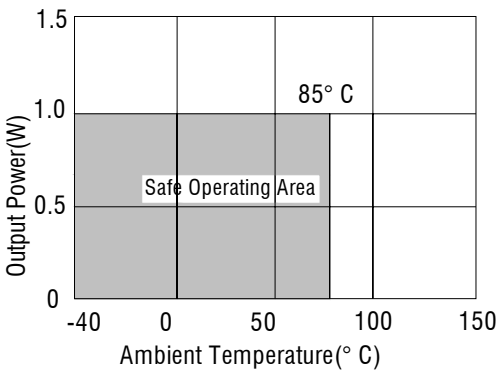
GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	5V input variants		65		kHz
	12V input variants		75		
	15V input variants		90		
	24V input variants		90		
	48V input variants		65		

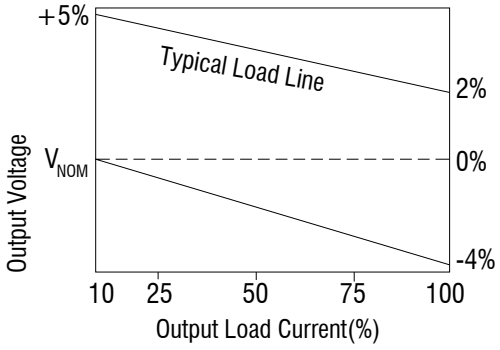
TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	All output variants	-40		85	°C
Storage		-50		125	
Case Temperature above ambient	5V output variants			25	
	All other output variants			25	
Cooling	Free air convection				

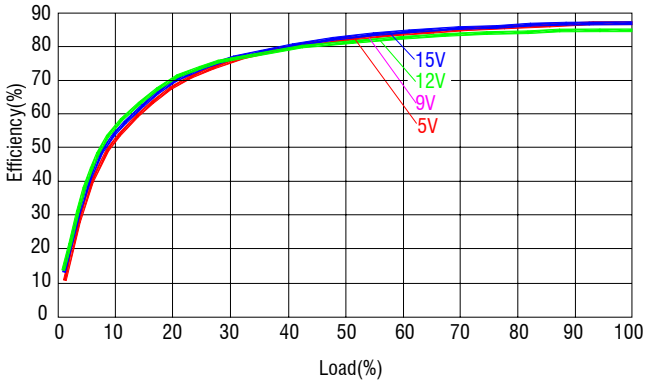
TEMPERATURE DERATING GRAPHS



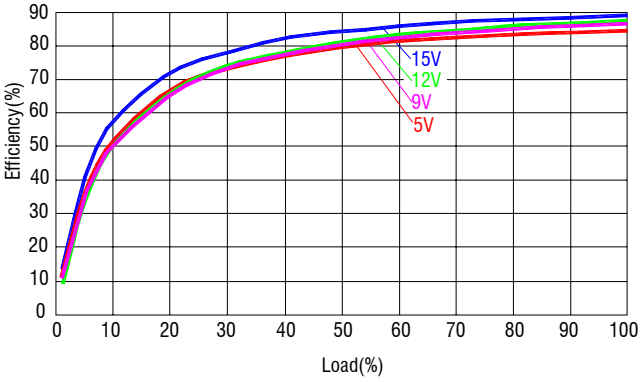
TOLERANCE ENVELOPES



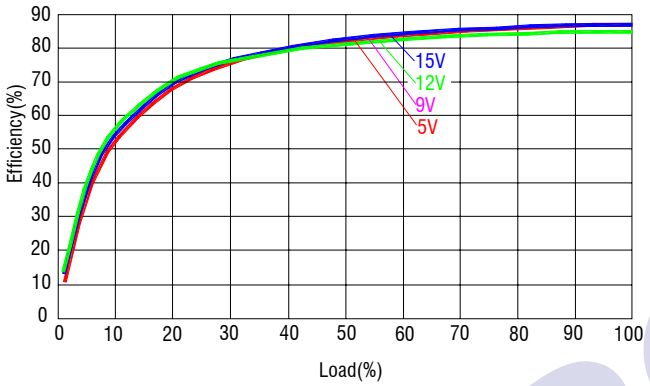
TPNA 5V Input Voltage



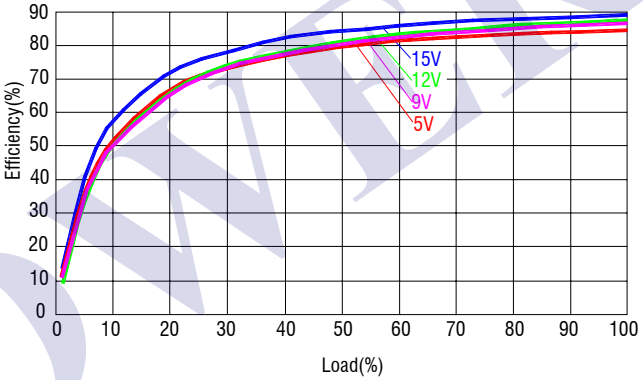
TPNA 12V Input Voltage



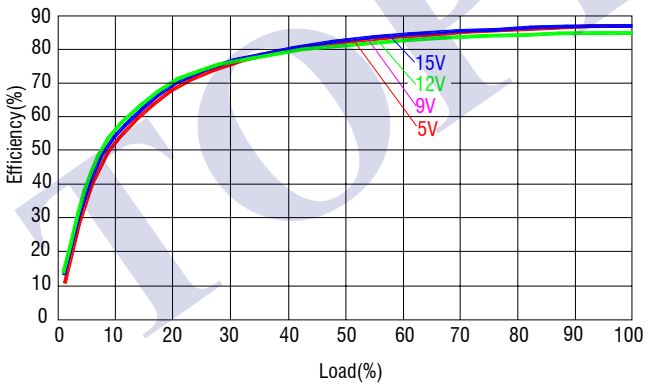
TPNA 24V Input Voltage



TPNA 15V Input Voltage

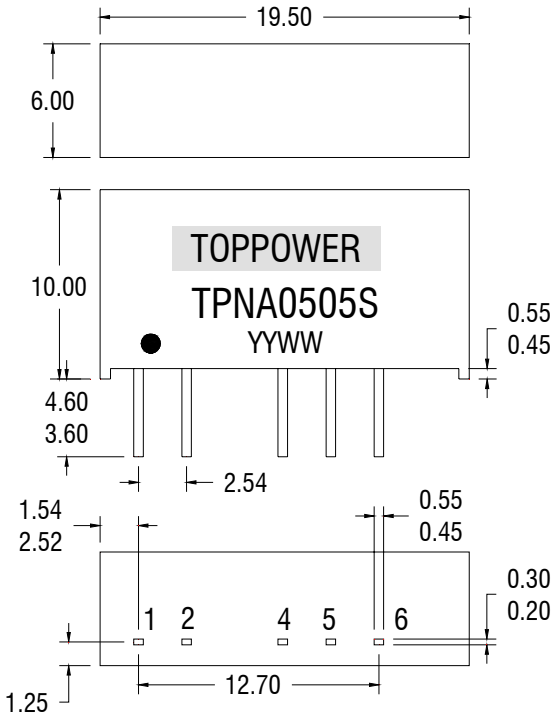


TPNA 48V Input Voltage



PACKAGE SPECIFICATIONS

MECHANICAL DIMENSIONS



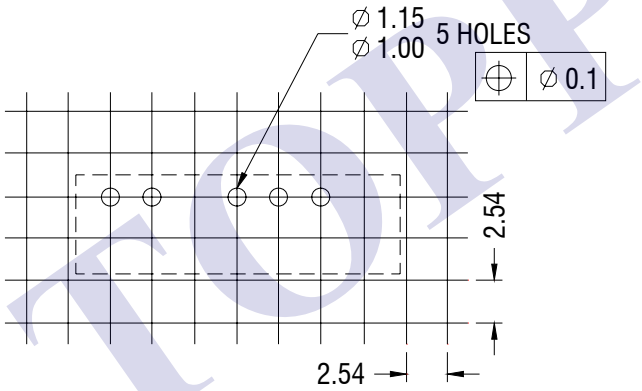
All dimensions in mm±0.25mm.All pins on a 2.54 mm pitch and within±0.25 mm of true position

Weight:2.3g

PIN CONNECTIONS

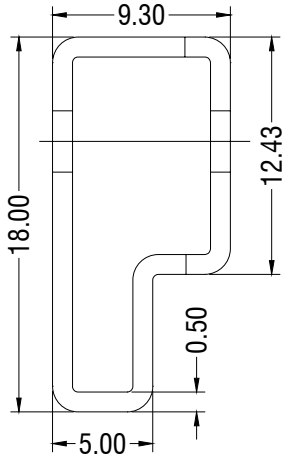
PIN	Function
1	+VIN
2	-VIN
4	-VOUT
5	0V
6	+VOUT

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 : 25

RoHS COMPLIANCE INFORMATION

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