

DESCRIPTION : 1W 3KVDC Isolated Dual Output DC/DC Converters

The TPNA series are miniature, isolated 1W DC/DC converters in a SIP 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、CE certification	Efficiency up to 89%	Power density 0.85W/cm^3
Operating temperature: -40℃to 105℃	UL 94V-0 package material	Input voltage:5V, 12V,15V,24V,48V
Industry standard pinout	Power sharing on output	Output voltage: ±5V, ±9V, ±12V, ±15V

SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Load Regulation (Max)	Efficiency (Typ.)
	V	V	mA	%	%
TPNA0505S	5	±5	±100/±10	5.1	84
TPNA0509S	5	±9	±55/±5.5	4.3	86
TPNA0512S	5	±12	±42/±4.2	4.6	86
TPNA0515S	5	±15	±33/±3.3	4.5	86
TPNA1205S	12	±5	±100/±10	3.9	84
TPNA1209S	12	±9	±55/±5.5	2.8	86
TPNA1212S	12	±12	±42/±4.2	2.9	88
TPNA1215S	12	±15	±33/±3.3	2.7	87
TPNA1505S	15	±5	±100/±10	3.5	84
TPNA1509S	15	±9	±55/±5.5	2.6	87
TPNA1512S	15	±12	±42/±4.2	2.6	87
TPNA1515S	15	±15	±33/±3.3	2.6	89
TPNA2405S	24	±5	±100/±10	3.6	84
TPNA2409S	24	±9	±55/±5.5	2.6	87
TPNA2412S	24	±12	±42/±4.2	2.6	87
TPNA2415S	24	±15	±33/±3.3	2.5	88
TPNA4805S	48	±5	±100/±10	4	80
TPNA4809S	48	±9	±55/±5.5	3	82
TPNA4812S	48	±12	±42/±4.2	3	83
TPNA4815S	48	±15	±33/±3.3	2.5	83

Add suffix “P” for continuous short circuit protection, for example TPNA0505SP.

INPUT CHARACTERISTICS

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

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ABSOLUTE MAXIMUM RATINGS

Lead temperature 1.5mm from case for 10 seconds	300℃
Internal power dissipation	320mW
Input voltage Vin, TPNA05	7V
Input voltage Vin, TPNA12	15V
Input voltage Vin, TPNA15	18V
Input voltage Vin, TPNA24	28V
Input voltage Vin, TPNA48	54V

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	Tested for 1 second	3000			VDC
Resistance	Viso= 1000VDC	1			GΩ

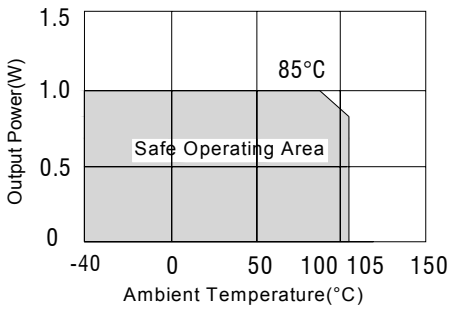
GENERAL CHARACTERISTICS

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

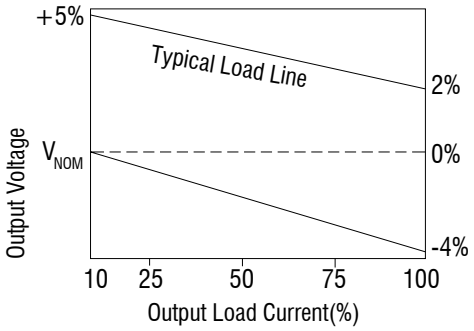
TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85°C	-40		105	℃
Storage		-50		125	℃
Case Temperature above ambient	5V output variants			25	℃
Case Temperature above ambient	All other output variants			25	℃
Cooling	Free air convection				

TEMPERATURE DERATING GRAPHS

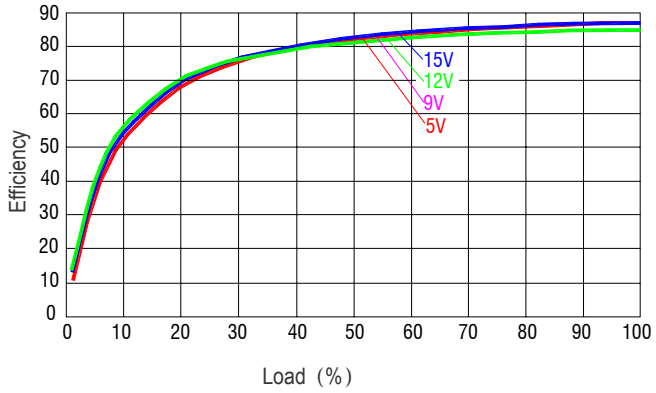


TOLERANCE ENVELOPES

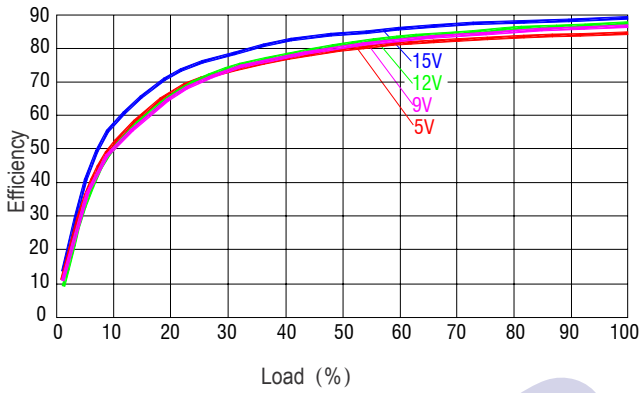


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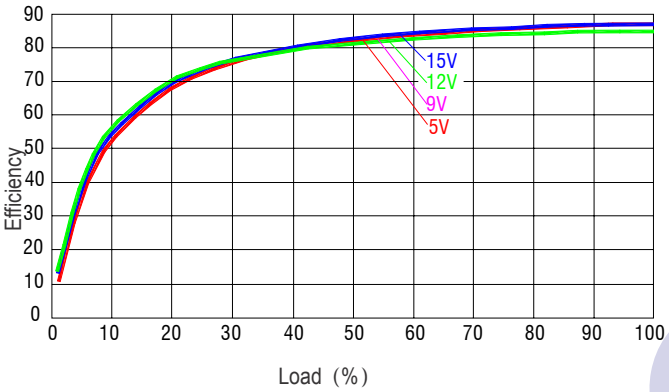
TPNA 5V INPUT VOLTAGE



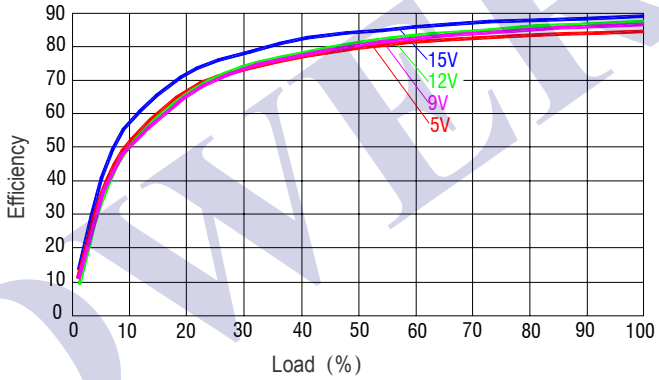
TPNA 12V INPUT VOLTAGE



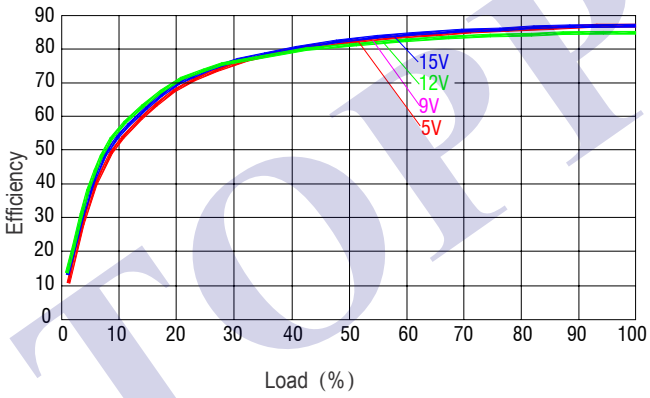
TPNA 24V INPUT VOLTAGE



TPNA 15V INPUT VOLTAGE



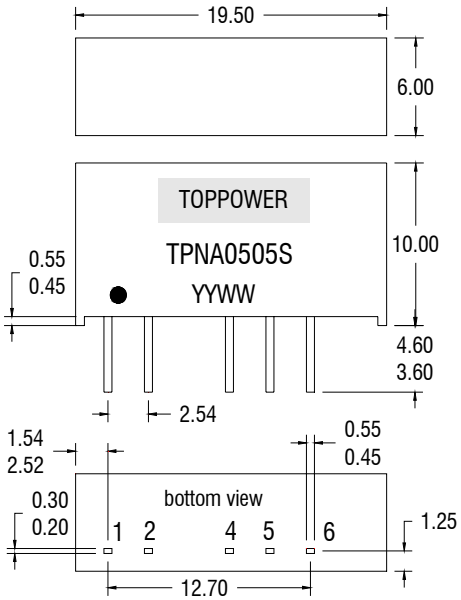
TPNA 48V INPUT VOLTAGE



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MECHANICAL DIMENSIONS

SIP Package



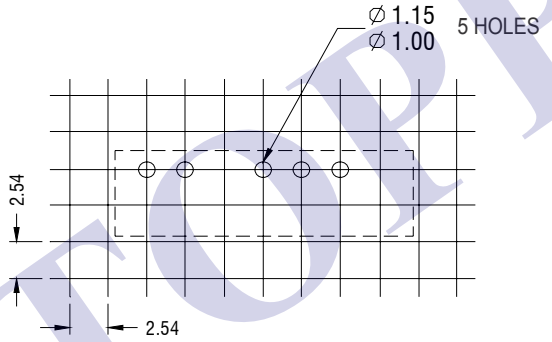
All dimensions in mm±0.25mm.All pins on a 2.54 mm pitch and within±0.25 mm of true position

Weight: 2.3 g

PIN CONNECTIONS

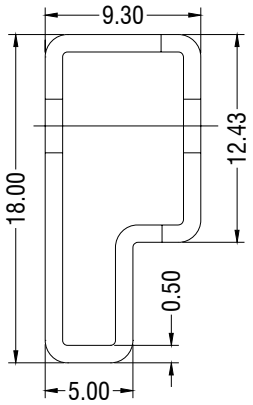
7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
4	-Vout
5	OV
6	+Vout

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 : 25PCS

SOLDERING 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.

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