TOPPOWER

TPAT-W2 Series



DESCRIPTION : **0.25W 3KVDC Isolated Dual Output SMD DC/DC Converters**

Miniature surface mounted DC/DC Converters are an ideal and economical solution for many applications where noise reduction, voltage isolation, voltage conversion in distributed power systems is required. these converters are qualified for the higher temperatures requested by lead-free reflow solder processes, especially for automated SMD production lines.

FEATURES

RoHS compliant	Efficiency up to 78%	Operating temperature: -40℃ to 105℃
CE certification	Footprint over pins 1.64cm^2	Power density 1.36W/cm^3
Input voltage: 3.3V, 5V, 12V,15V	Output voltage: ±3.3V, ±5V, ±9V, ±12V,±15V	UL 94V-0 package material
3KVDC isolation	Custom solutions available	/

SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency
	V	V	mA	%
TPAT0303-W2	3.3	±3.3	±37.8/±3.78	70
TPAT0305-W2	3.3	±5	±25/±2.5	70
TPAT0309-W2	3.3	±9	±13.8/±1.38	72
TPAT0312-W2	3.3	±12	±10.4/±1.04	75
TPAT0315-W2	3.3	±15	±8.25/±0.82	80
TPAT0503-W2	5	±3.3	±37.8/±3.78	70
TPAT0505-W2	5	±5	±25/±2.5	70
TPAT0509-W2	5	±9	±13.8/±1.38	72
TPAT0512-W2	5	±12	±10.4/±1.04	75
TPAT0515-W2	5	±15	±8.25/±0.82	80
TPAT1203-W2	12	±3.3	±37.8/±3.78	70
TPAT1205-W2	12	±5	±25/±2.5	70
TPAT1209-W2	12	±9	±13.8/±1.38	26
TPAT1212-W2	12	±12	±10.4/±1.04	75
TPAT1215-W2	12	±15	±8.25/±0.82	80
TPAT1515-W2	15	±15	±37.8/±3.78	80

Add suffix “P” for continuous short circuit protection, for example TPAT0505P-W2. Add suffix “X” has not 5,10,14,16 pin, for example TPAT0505X-W2.

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	3V input variants	2.9	3.3	3.6	V
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	13.4	15	16.4	V
Voltage range	24V input variants	22	24	26.5	V
Reflected ripple current			40	50	mA p-p

ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 second	3000			VDC
Resistance	Viso= 1000VDC	1			GΩ

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	0312, 0315		110		kHz
Switching frequency	0303, 0305, 0503		115		kHz
Switching frequency	All other variants		120		kHz

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ABSOLUTE MAXIMUM RATINGS

Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300℃
Internal power dissipation	680mW
Input voltage Vin, TPAT03	5.5V
Input voltage Vin, TPAT05	7V
Input voltage Vin, TPAT12	15V
Input voltage Vin, TPAT15	18V
Input voltage Vin, TPAT24	28V

All specifications typical at TA=25℃, nominal input voltage and rated output current unless otherwise specified.

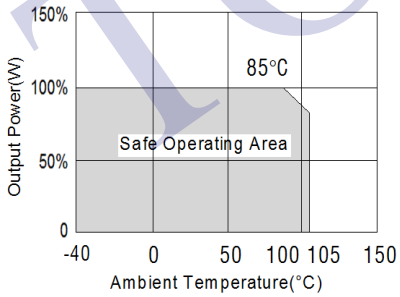
OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	TA=-40℃ to 85℃			0.25	W
Voltage Set Point Accuracy	See tolerance envelope				
Line regulation	High VIN to low VIN		1.0	1.2	%/%
Load Regulation(10% load to rated load)	0303 & 0503		10		%
Load Regulation(10% load to rated load)	5V output		10		%
Load Regulation(10% load to rated load)	0309		10		%
Load Regulation(10% load to rated load)	0509, 1209 & 2409		8		%
Load Regulation(10% load to rated load)	0312 & 0315		12		%
Load Regulation(10% load to rated load)	0512, 1212 & 2412		8		%
Load Regulation(10% load to rated load)	0515, 1215, 1515 & 2415		8		%

TEMPERATURE CHARACTERISTICS

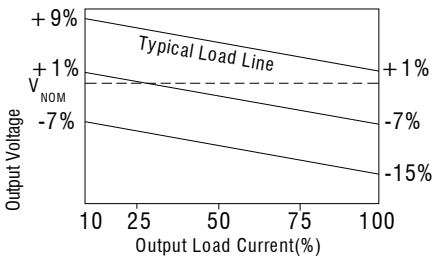
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature ≥85°C	-40		105	℃
Storage		-55		125	℃
Reflow Soldering Temperature		Peak temp.≤245℃, maximum duration time≤60s at 217℃. For actual application, please refer to IPC/JEDEC J-STD-020D.1.			
Cooling	Free air convection				

TEMPERATURE DERATING GRAPHS

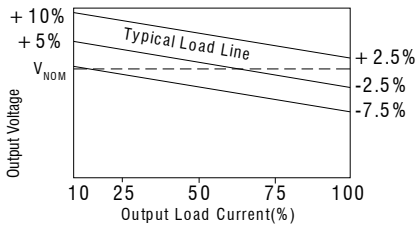


TOLERANCE ENVELOPES

Tolerance Envelope 3.3V output types



All other types

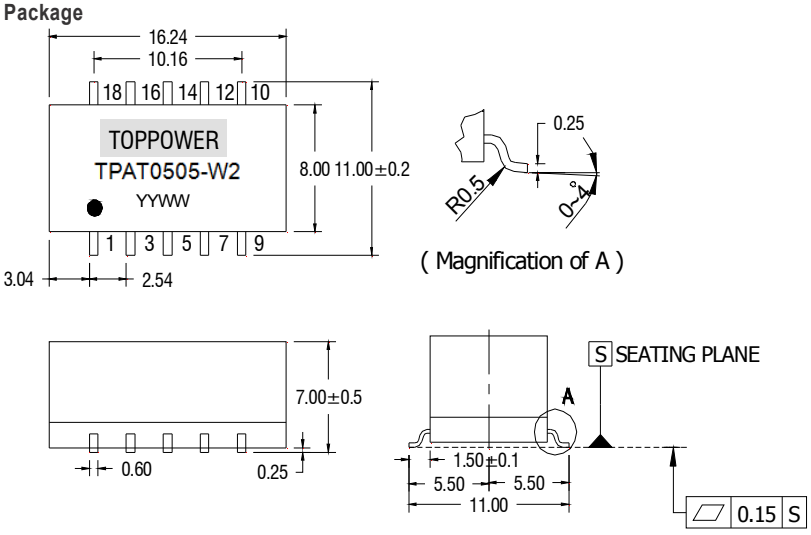


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MECHANICAL DIMENSIONS

SMD Package



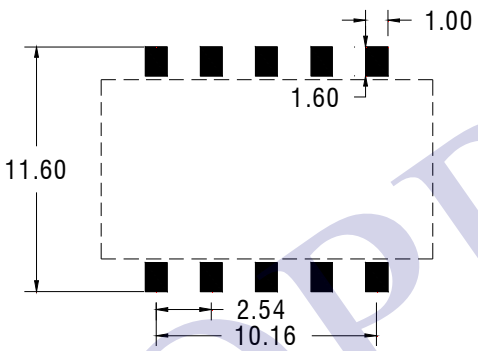
All dimensions in mm ±0.25mm. All pins on a 2.54 pitch. Weight: 1.53g

PIN CONNECTIONS

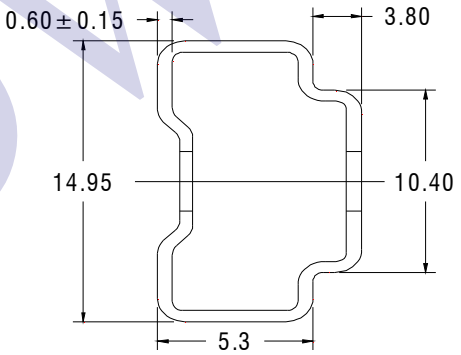
10 PIN SMD		
Pin	Function	Add suffix "X" function
1	-Vin	-Vin
3	+Vin	+Vin
5	NA	No Pin
7	OV	OV
9	-Vout	-Vout
10	NA	No Pin
12	+Vout	+Vout
14	NA	No Pin
16	NA	No Pin
18	NA	NA

NA - Not available for electrical connection.

RECOMMENDED FOOTPRINT DETAILS



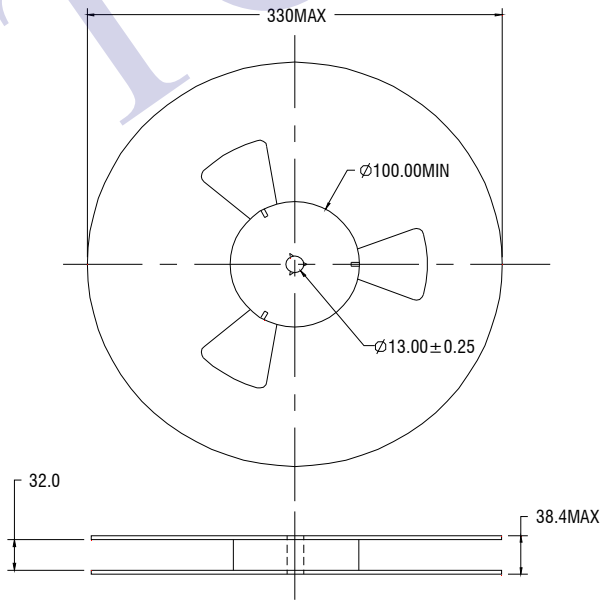
TUBE OUTLINE DIMENSIONS



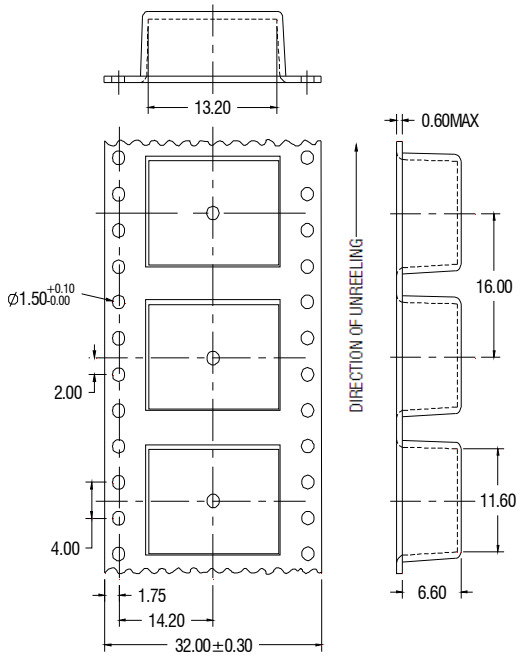
Unless otherwise stated all dimensions in mm±0.5mm.

Tube length: 475mm±2.0mm Tube Quantity: 25PCS

REEL OUTLINE DIMENSIONS

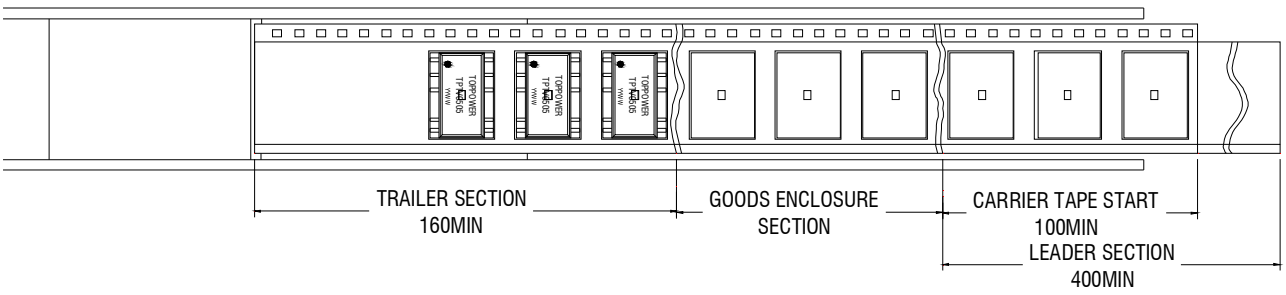


TAPE OUTLINE DIMENSIONS



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REEL PACKAGING DETAILS



Product Orientation

Pin 1, located nearest to carrier drive sprocket

Reel quantity : 500 PCS

Less than 500pcs, will be tube packaging

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