



DESCRIPTION: 1W 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°C to 105°C
CE certification	Footprint over pins 1.64cm ²	Power density 1.36W/cm ³
Input voltage: 3.3V, 5V, 12V,15V,24V	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	3.3	±3.3	±152/±15.2	70
TPAT0305	3.3	±5	±100/±10	70
TPAT0309	3.3	±9	±55/±5.5	72
TPAT0312	3.3	±12	±42/±4.2	75
TPAT0315	3.3	±15	±33/±3.3	80
TPAT0503	5	±3.3	±152/±15.2	70
TPAT0505	5	±5	±100/±10	70
TPAT0509	5	±9	±55/±5.5	72
TPAT0512	5	±12	±42/±4.2	75
TPAT0515	5	±15	±33/±3.3	80
TPAT1203	12	±3.3	±152/±15.2	70
TPAT1205	12	±5	±100/±10	70
TPAT1209	12	±9	±55/±5.5	26
TPAT1212	12	±12	±42/±4.2	75
TPAT1215	12	±15	±33/±3.3	80
TPAT1515	15	±15	±33/±3.3	80
TPAT2403	24	±3.3	±152/±15.2	70
TPAT2405	24	±5	±100/±10	70
TPAT2409	24	±9	±55/±5.5	72
TPAT2412	24	±12	±42/±4.2	75
TPAT2415	24	±15	±33/±3.3	80

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

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

ABSOLUTE MAXIMUM RATINGS

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

All specifications typical at $T_A=25^\circ\text{C}$, nominal input voltage and rated output current unless otherwise specified.

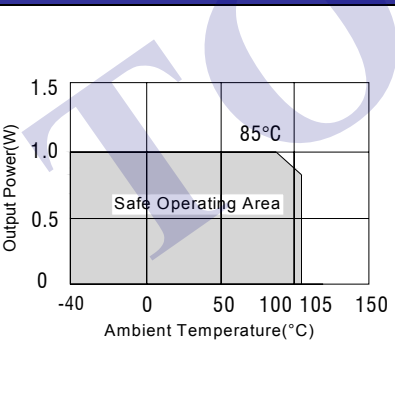
OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	$T_A=-40^\circ\text{C}$ to 85°C			1.0	W
Voltage Set Point Accuracy	See tolerance envelope				
Line regulation	High V_{IN} to low V_{IN}		1.0	1.2	%/%
Load Regulation(10% load to rated load)	0303 & 0503		9		%
Load Regulation(10% load to rated load)	5V output		9		%
Load Regulation(10% load to rated load)	0309		9.0		%
Load Regulation(10% load to rated load)	0509, 1209 & 2409		7		%
Load Regulation(10% load to rated load)	0312 & 0315		12		%
Load Regulation(10% load to rated load)	0512, 1212 & 2412		7		%
Load Regulation(10% load to rated load)	0515, 1215, 1515 & 2415		7		%

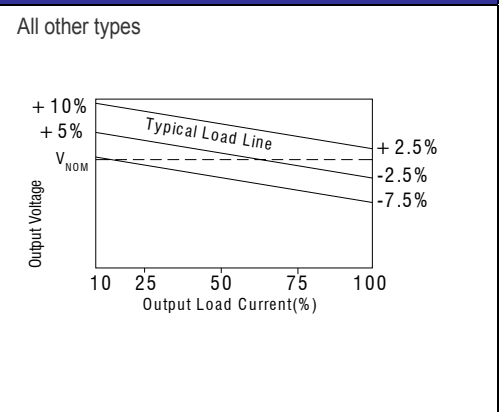
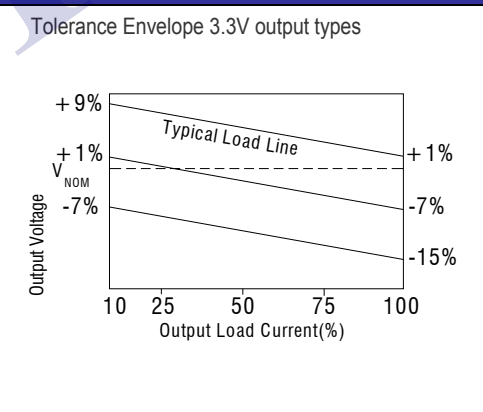
TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature $\geq 85^\circ\text{C}$	-40		105	$^\circ\text{C}$
Storage		-55		125	$^\circ\text{C}$
Cooling	Free air convection				

TEMPERATURE DERATING GRAPHS

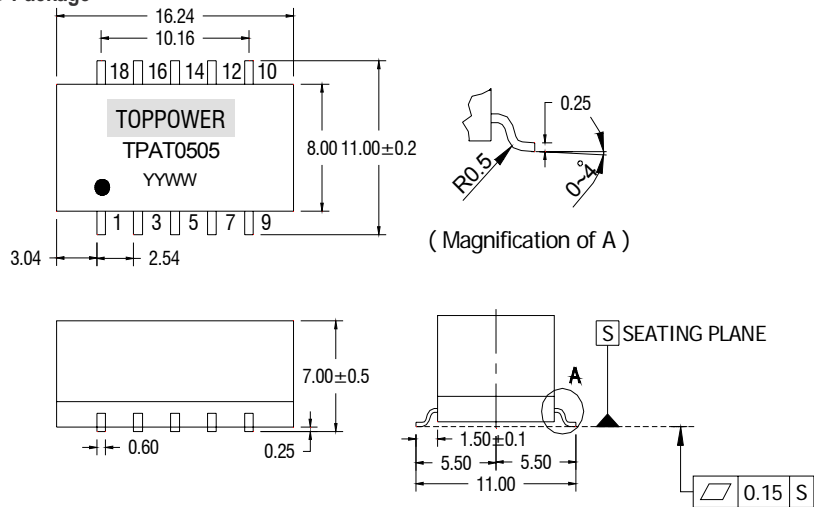


TOLERANCE ENVELOPES



MECHANICAL DIMENSIONS

SMD Package



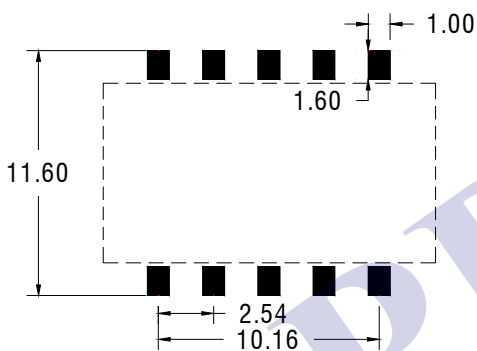
All dimensions in mm ±0.25mm. All pins on a 2.54 pitch. Weight: 1.53g

PIN CONNECTIONS

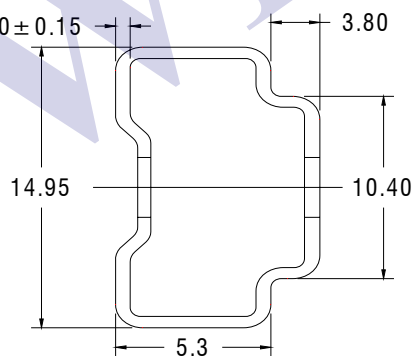
10 PIN SMD		
Pin	Function	Add suffix "X" function
1	-Vin	-Vin
3	+Vin	+Vin
5	NA	No Pin
7	OV	OV
9	-Vout	-Vout
10	NA	No Pin
12	+Vout	+Vout
14	NA	No Pin
16	NA	No Pin
18	NA	NA

NA - Not available for electrical connection.

RECOMMENDED FOOTPRINT DETAILS



TUBE OUTLINE DIMENSIONS

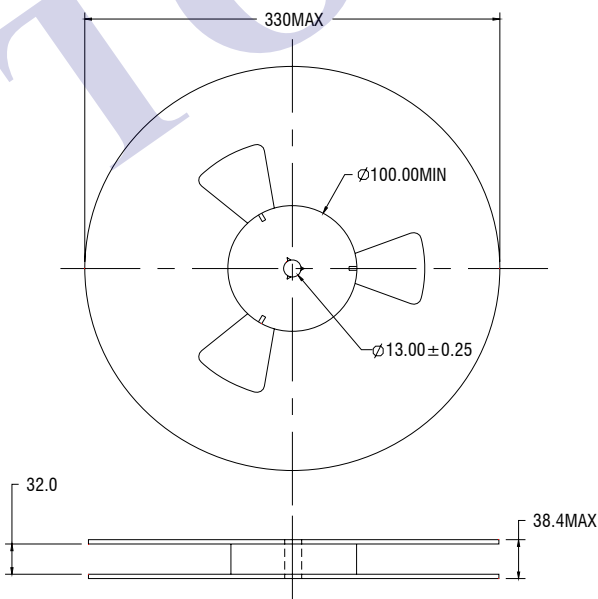


Unless otherwise stated all dimensions in mm±0.5mm.

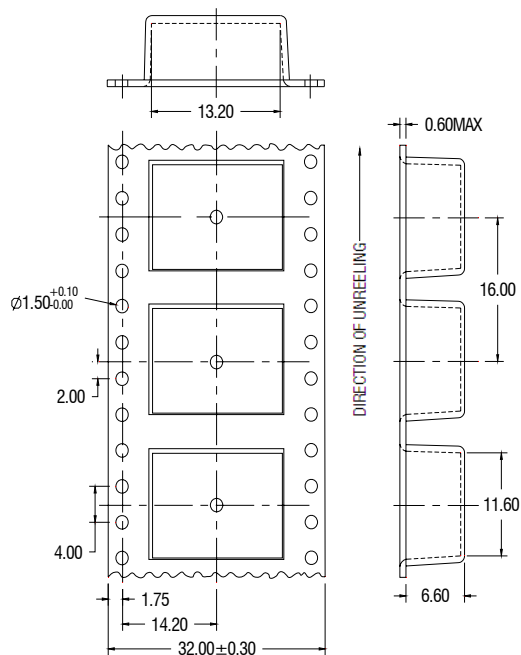
Tube length: 475mm±2.0mm

Tube Quantity: 25PCS

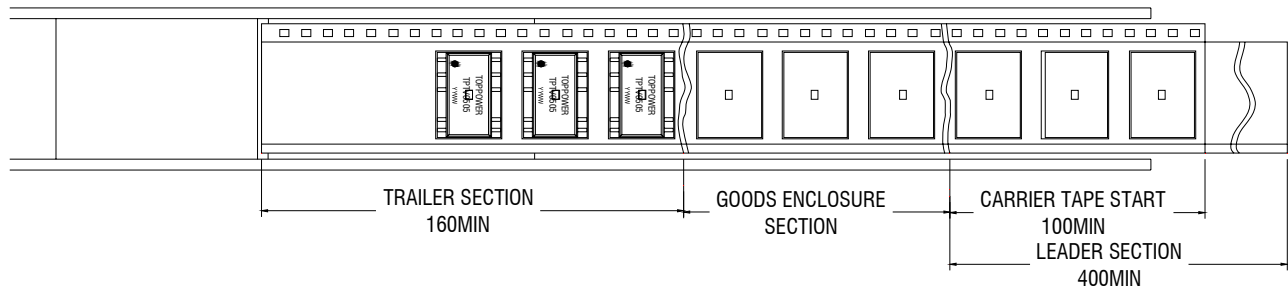
REEL OUTLINE DIMENSIONS



TAPE OUTLINE DIMENSIONS



REEL PACKAGING DETAILS



Product Orientation

Pin 1, located nearest to carrier drive sprocket

Reel quantity : 500 PCS

ENVELOPE

TOPPOWER