



**DESCRIPTION: 1W 1.5KVDC Isolated Single 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. The internal SMD construction with lead frame technology makes it possible to offer a product with high performance, 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 <sup>2</sup>	Lead frame technology
Input voltage: 3.3V, 5V, 12V, 15V, 24V	Output voltage: 3.3V, 5V, 9V, 12V, 15V	Power density 1.36W/cm <sup>3</sup>
1.5KVDC isolation	Custom solutions available	UL 94V-0 package material

**SELECTION GUIDE**

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency
	V	V	mA	%
TPTA0303A	3.3	3.3	303/30.3	72
TPTA0305A	3.3	5	201/20.1	77
TPTA0309A	3.3	9	111/11.1	75
TPTA0312A	3.3	12	83/8.3	77
TPTA0315A	3.3	15	67/6.7	77
TPTA0503A	5	3.3	303/30.3	77
TPTA0505A	5	5	201/20.1	69
TPTA0509A	5	9	111/11.1	76
TPTA0512A	5	12	83/8.3	77
TPTA0515A	5	15	67/6.7	78
TPTA1203A	12	3.3	303/30.3	77
TPTA1205A	12	5	201/20.1	69
TPTA1209A	12	9	111/11.1	76
TPTA1212A	12	12	83/8.3	75
TPTA1215A	12	15	67/6.7	77
TPTA1515A	15	15	67/6.7	78
TPTA2403A	24	3.3	303/30.3	77
TPTA2405A	24	5	201/20.1	69
TPTA2409A	24	9	111/11.1	76
TPTA2412A	24	12	83/8.3	75
TPTA2415A	24	15	67/6.7	77

Add suffix "P" for continuous short circuit protection, for example TPTA0505AP. Add suffix "X" has not 5,10,14,16 pin, for example TPTA0505AX.

**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	1500			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 $V_{in}$ , TPTA03	5.5V
Input voltage $V_{in}$ , TPTA05	7V
Input voltage $V_{in}$ , TPTA12	15V
Input voltage $V_{in}$ , TPTA15	18V
Input voltage $V_{in}$ , TPTA24	28V

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

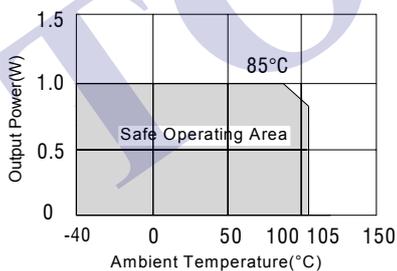
**OUTPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	$T_A=-40^\circ\text{C}$ to $85^\circ\text{C}$			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**

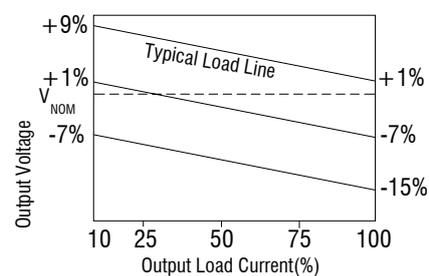
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature $\geq 85^\circ\text{C}$	-40		105	$^\circ\text{C}$
Storage		-55		125	$^\circ\text{C}$
Cooling	Free air convection				

**TEMPERATURE DERATING GRAPHS**

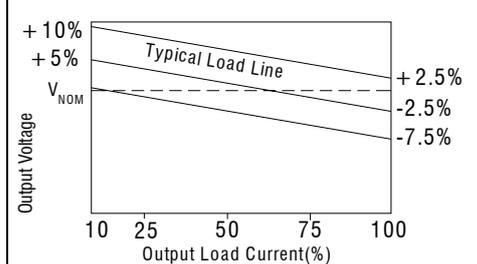


**TOLERANCE ENVELOPES**

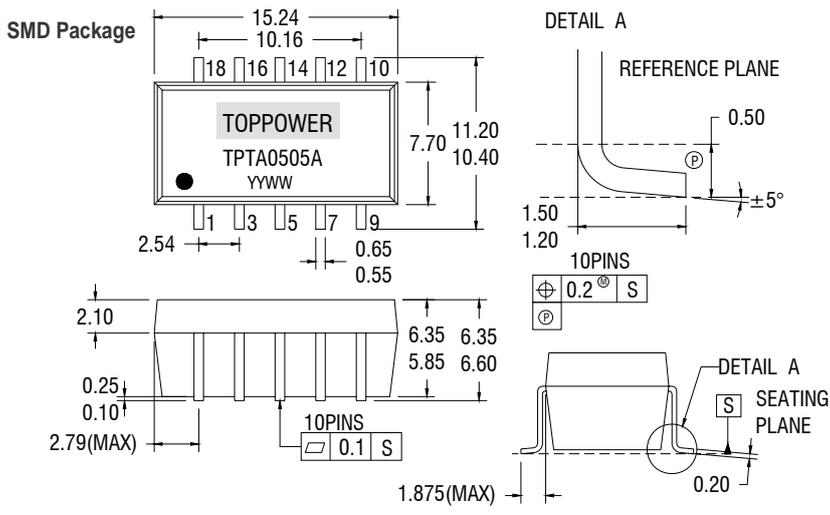
Tolerance Envelope 3.3V output types



All other types



**MECHANICAL DIMENSIONS** **PIN CONNECTIONS**

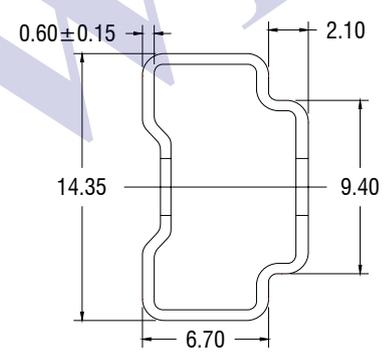
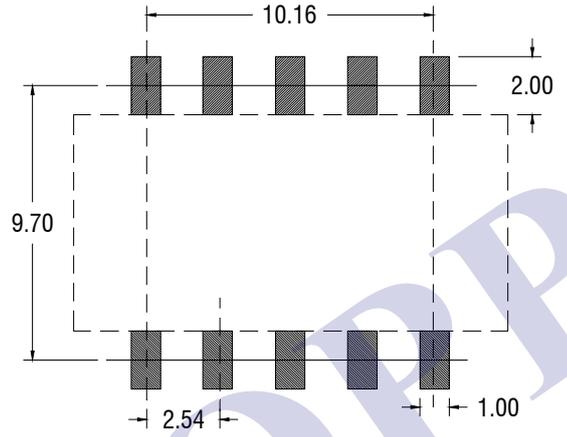


10 PIN SMD		
Pin	Function	Add suffix "X" function
1	-Vin	-Vin
3	+Vin	+Vin
5	NA	No Pin
7	OV	OV
9	-Vout	-Vout
10	NA	No Pin
12	+Vout	+Vout
14	NA	No Pin
16	NA	No Pin
18	NA	NA

NA - Not available for electrical connection.

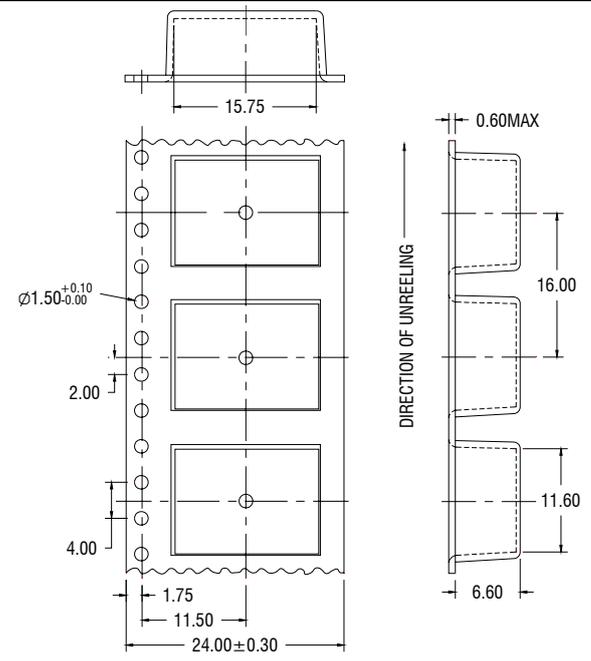
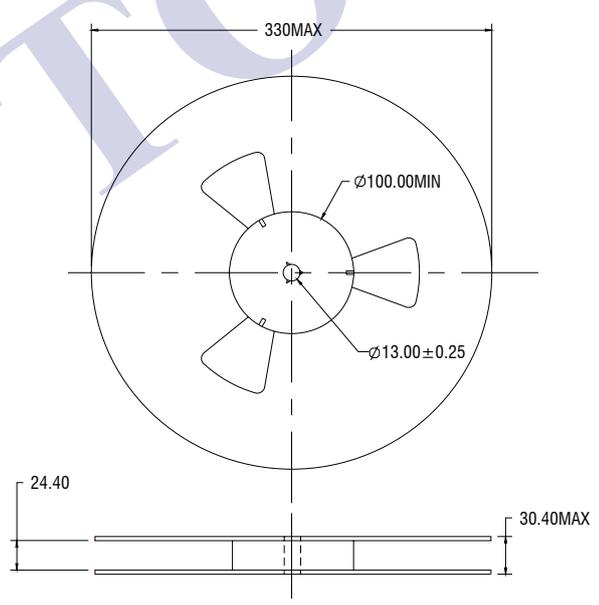
All dimensions in mm  $\pm 0.25$ mm. All pins on a 2.54 pitch. Weight: 1.53g

**RECOMMENDED FOOTPRINT DETAILS** **TUBE OUTLINE DIMENSIONS**

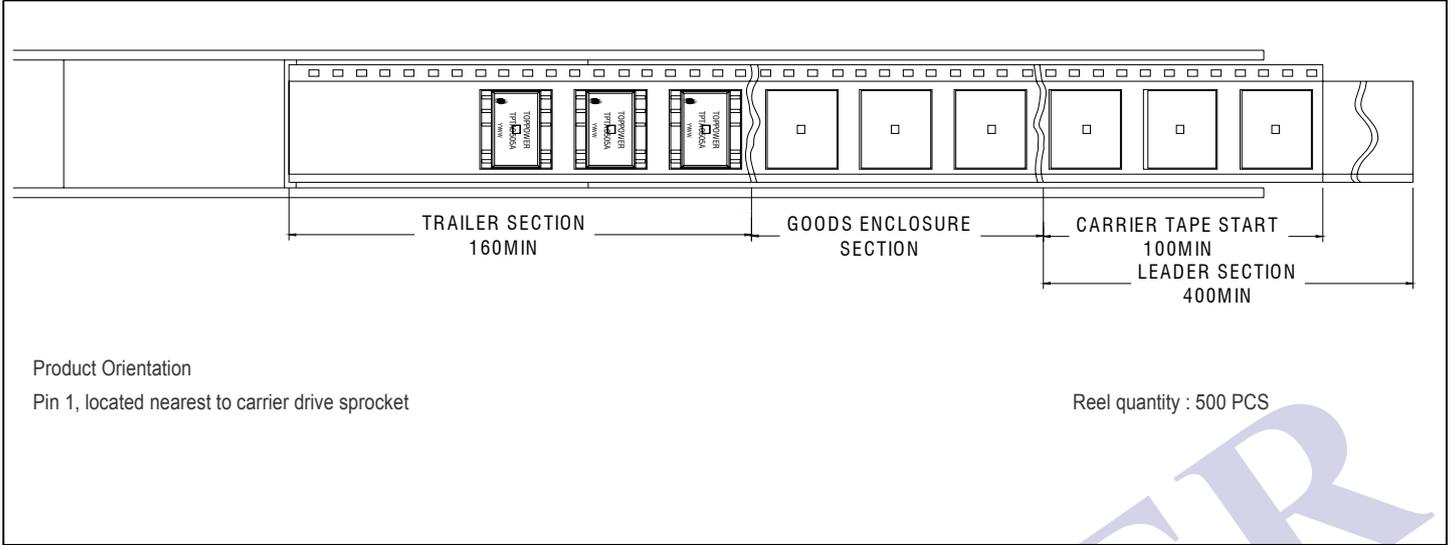


Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.  
 Tube length: 475mm  $\pm 2.0$ mm Tube Quantity: 25PCS

**REEL OUTLINE DIMENSIONS** **TAPE OUTLINE DIMENSIONS**



REEL PACKAGING DETAILS



ENVELOPE

TOPPOWER