

**DESCRIPTION:**

**1W 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. The internal SMD construction with leadframe 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 85°C
UL 94V-0 Package material	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>
1KVDC isolation	Custom solutions available	/

**SELECTION GUIDE**

Part Number	Nominal Input Voltage	Output Voltage	Output Current	Efficiency
	V	V	mA	%
TPTA0303	3.3	±3.3	±152	72
TPTA0305	3.3	±5	±100	77
TPTA0309	3.3	±9	±55	75
TPTA0312	3.3	±12	±42	77
TPTA0315	3.3	±15	±33	77
TPTA0503	5	±3.3	±152	77
TPTA0505	5	±5	±100	69
TPTA0509	5	±9	±55	76
TPTA0512	5	±12	±42	77
TPTA0515	5	±15	±33	78
TPTA1203	12	±3.3	±152	77
TPTA1205	12	±5	±100	69
TPTA1209	12	±9	±55	76
TPTA1212	12	±12	±42	75
TPTA1215	12	±15	±33	77
TPTA1515	15	±15	±33	78
TPTA2403	24	±3.3	±152	77
TPTA2405	24	±5	±100	69
TPTA2409	24	±9	±55	76
TPTA2412	24	±12	±42	75
TPTA2415	24	±15	±33	77

**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	1000			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**

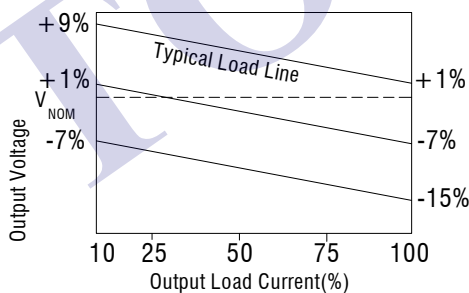
Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	$T_A=-40^\circ\text{C}$ to $85^\circ\text{C}$			1.0	W
Voltage Set Point Accuracy	See tolerance envelope				
Line regulation	High $V_{IN}$ to low $V_{IN}$		1.0	1.2	%/%
Load Regulation(10% load to rated load)	0303 & 0503		9		%
Load Regulation(10% load 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**

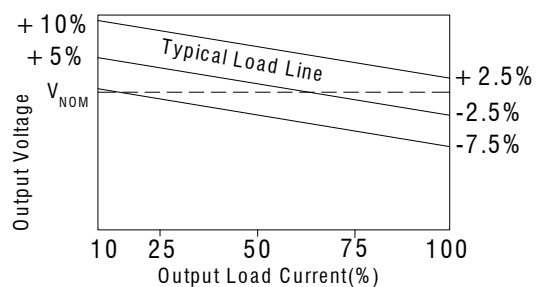
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	All output types	-40		85	$^\circ\text{C}$
Storage		-55		125	$^\circ\text{C}$
Cooling	Free air convection				

**TOLERANCE ENVELOPES**

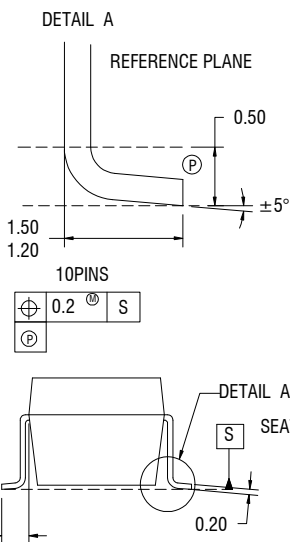
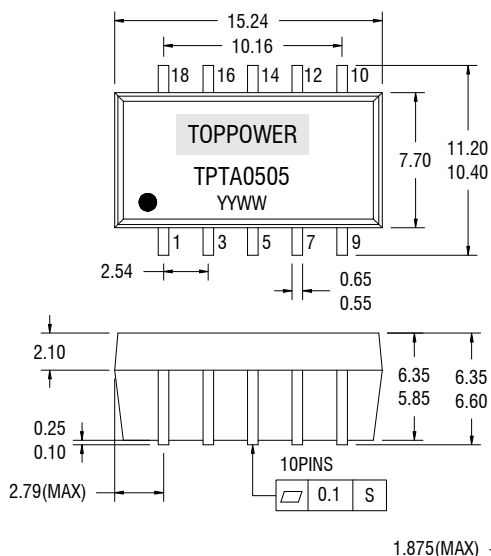
Tolerance Envelope 3.3V output types



All other types



**MECHANICAL DIMENSIONS**

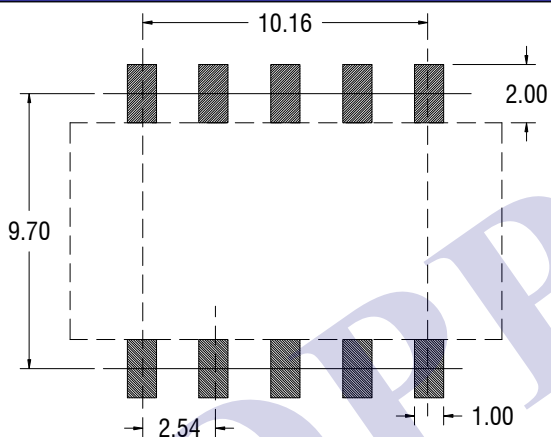


PIN CONNECTIONS	
Pin	Function
1	-Vin
3	+Vin
5	NA
7	OV
9	-Vout
10	NA
12	+Vout
14	NA
16	NA
18	NA

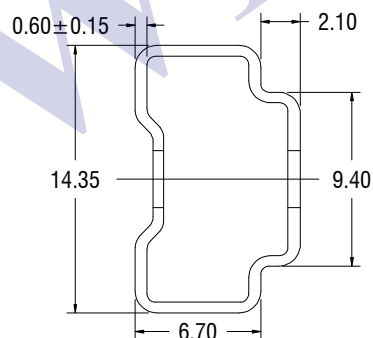
All dimensions in mm ±0.25mm. All pins on a 2.54 pitch. Weight: 1.53g

NA – Not available for electrical connection.

**RECOMMENDED FOOTPRINT DETAILS**

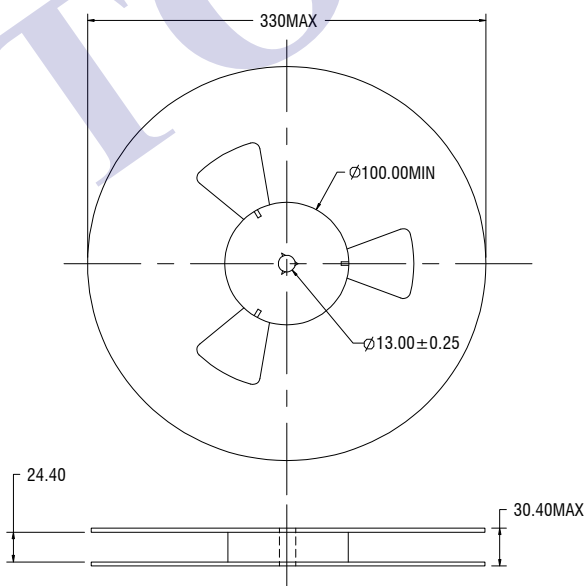


**TUBE OUTLINE DIMENSIONS**

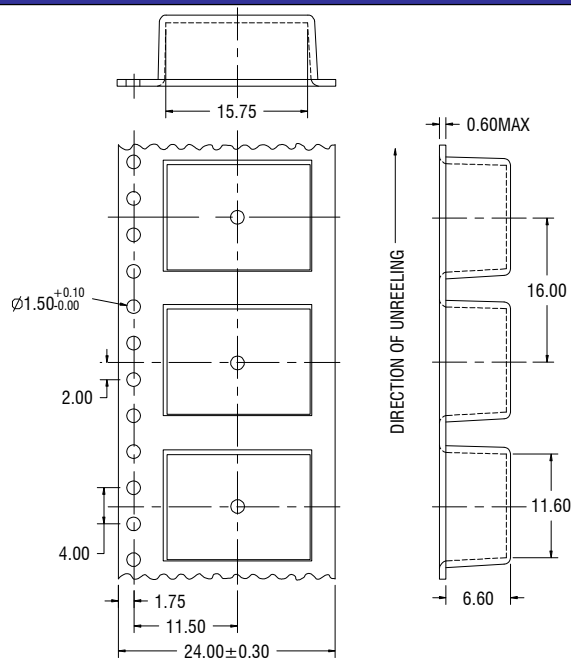


Unless otherwise stated all dimensions in mm±0.5mm.  
 Tube length: 475mm±2.0mm Tube Quantity: 25

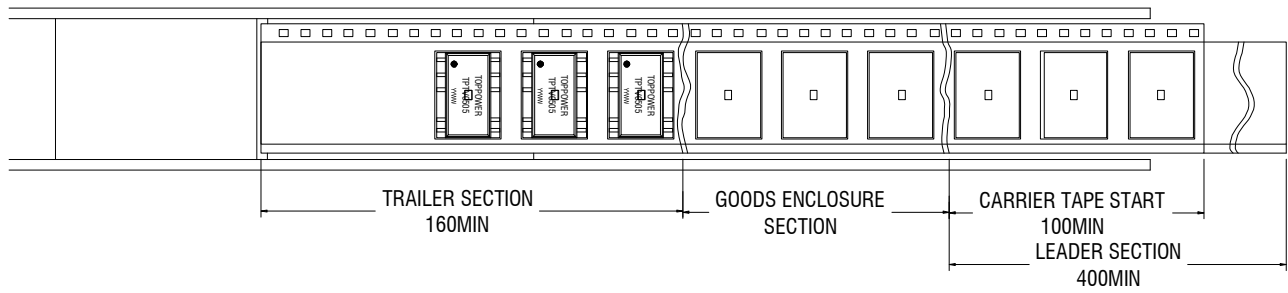
**REEL OUTLINE DIMENSIONS**



**TAPE OUTLINE DIMENSIONS**



**REEL PACKAGING DETAILS**



Product Orientation

Pin 1, located nearest to carrier drive sprocket

Reel quantity : 500

E ENVELOPE

TOPPOWER