



**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 Vin, TPTA03	5.5V
Input voltage Vin, TPTA05	7V
Input voltage Vin, TPTA12	15V
Input voltage Vin, TPTA15	18V
Input voltage Vin, TPTA24	28V

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

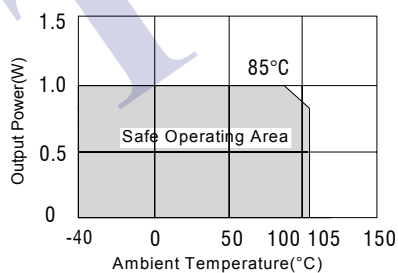
**OUTPUT CHARACTERISTICS**

Parameter	Conditions	Min.	Typ.	Max.	Units
Rated Power	TA=-40°C to 85°C			1.0	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		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		%

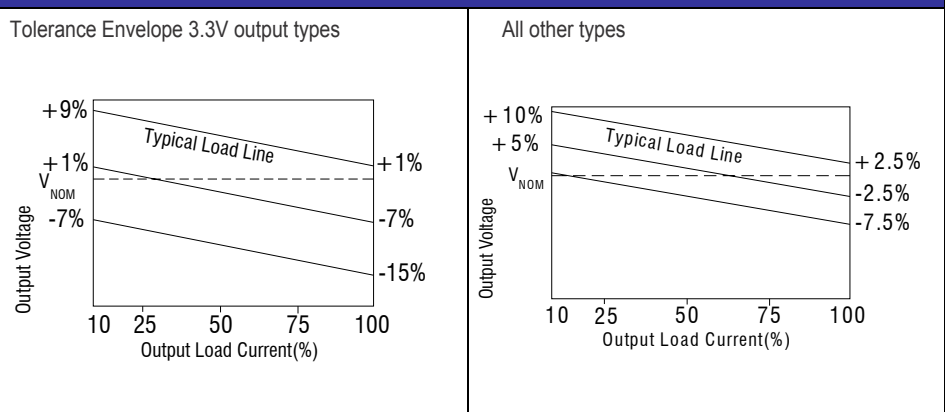
**TEMPERATURE CHARACTERISTICS**

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

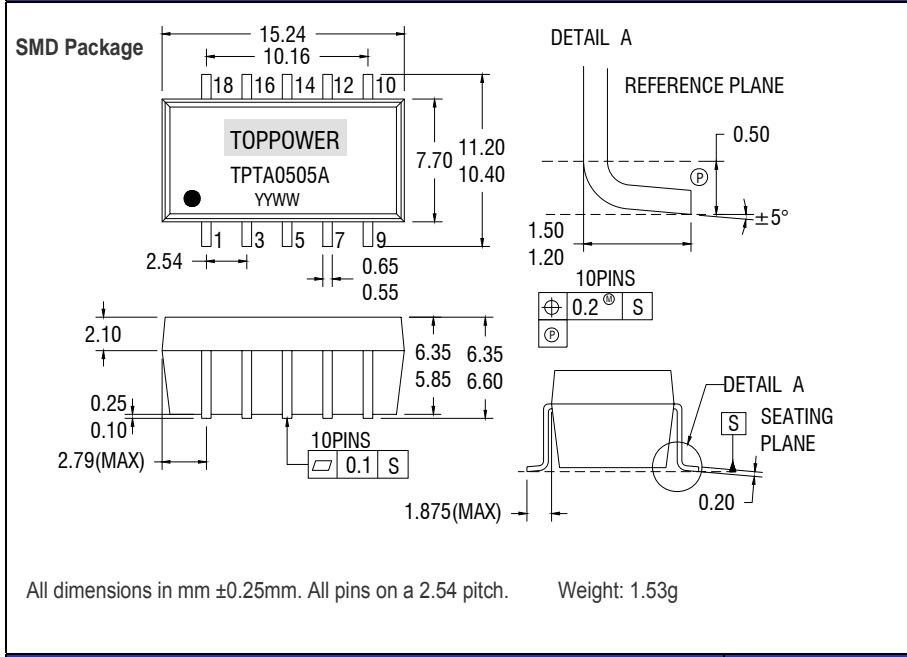
**TEMPERATURE DERATING GRAPHS**



**TOLERANCE ENVELOPES**



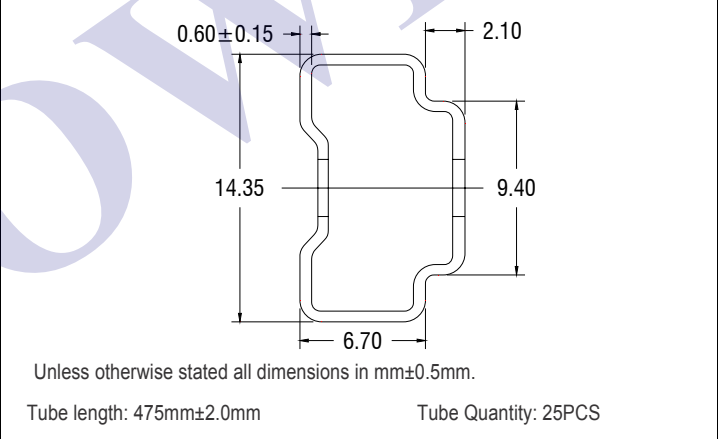
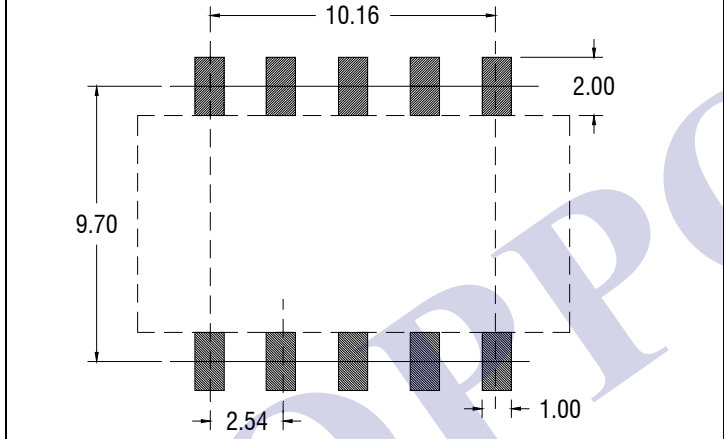
**MECHANICAL DIMENSIONS** **PIN CONNECTIONS**



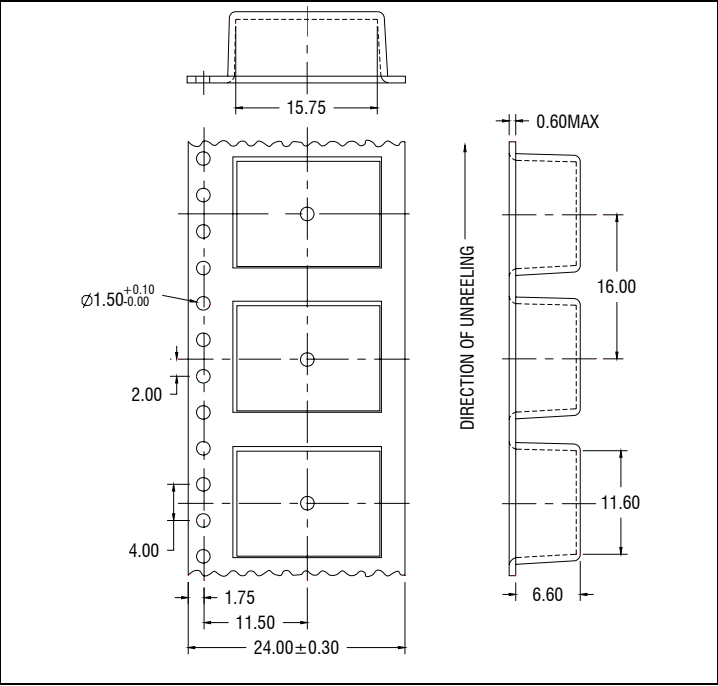
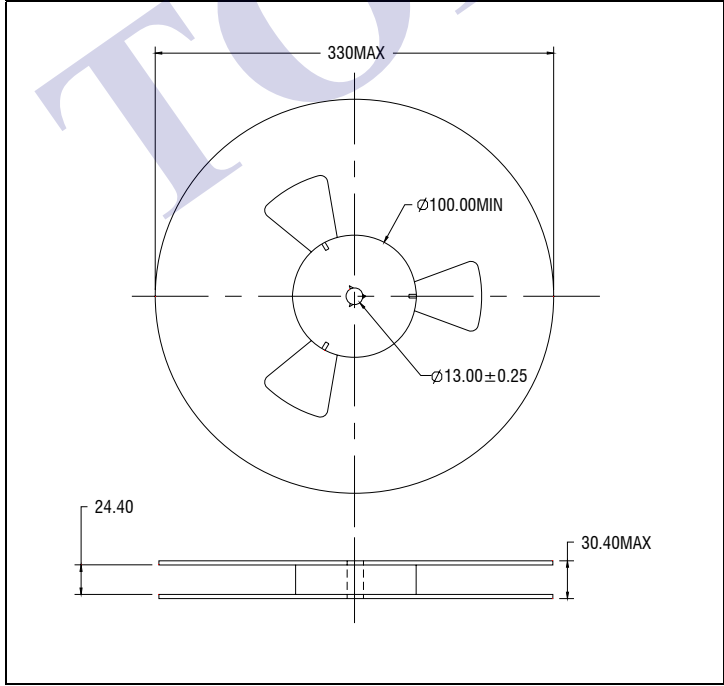
10 PIN SMD		
Pin	Function	Add suffix "X" function
1	-Vin	-Vin
3	+Vin	+Vin
5	NA	No Pin
7	OV	OV
9	NA	NA
10	NA	No Pin
12	+Vout	+Vout
14	NA	No Pin
16	NA	No Pin
18	NA	NA

NA - Not available for electrical connection.

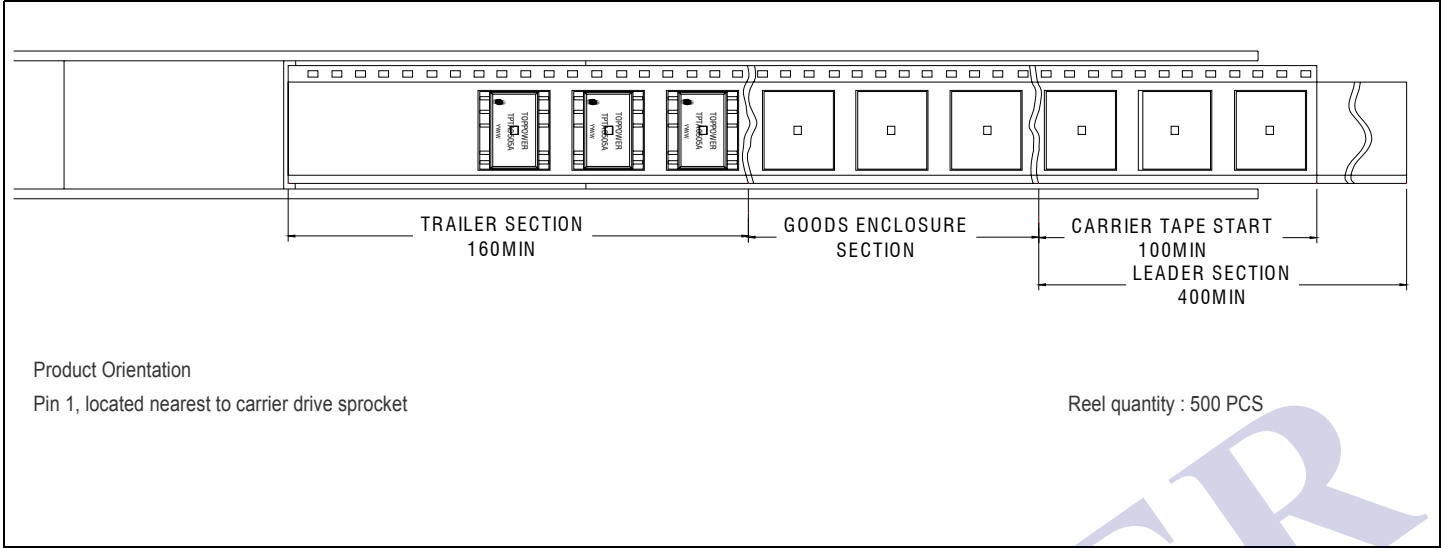
**RECOMMENDED FOOTPRINT DETAILS** **TUBE OUTLINE DIMENSIONS**



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



REEL PACKAGING DETAILS



ENVELOPE

TOPPOWER