

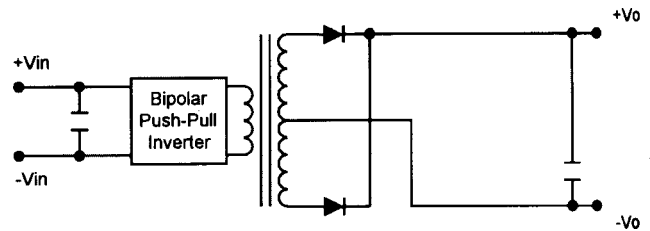
# 1 Watt SMT Single Series DC/DC Converters



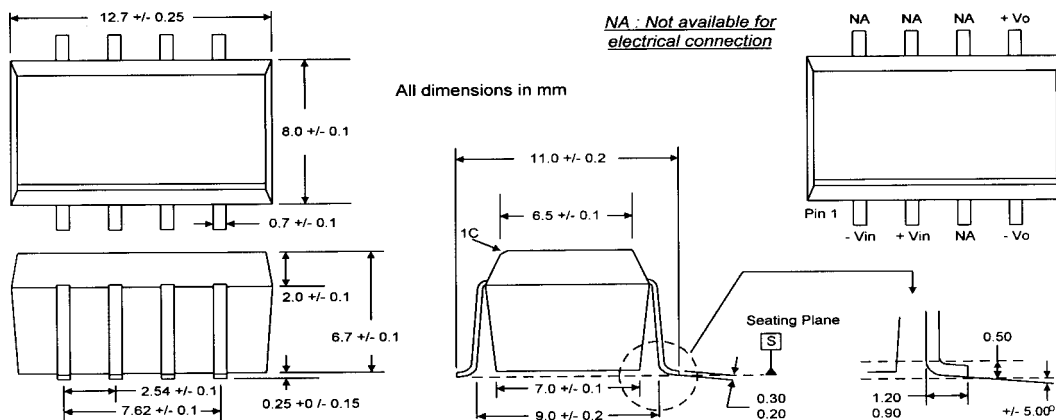
## Features

- Lead Frame Technology
- Wide Temperature Performance
- I/O Isolation 1000VDC
- Efficiency Up to 82%
- MTBF >2,000,000 Hours
- RoHS Compliant

Selection Chart					
Model	Input Range VDC		Output		
	Min	Max	VDC	mA	Power W
5S5.200SMT	4.5	5.5	5	200	1
5S9.110SMT	4.5	5.5	9	110	1
5S12.084SMT	4.5	5.5	12	84	1
5S15.067SMT	4.5	5.5	15	67	1
12S5.200SMT	10.8	13.2	5	200	1
12S9.110SMT	10.8	13.2	9	110	1
12S12.084SMT	10.8	13.2	12	84	1
12S15.067SMT	10.8	13.2	15	67	1



## Mechanical Configuration & Pin Connections



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Input Parameters						
Model		5S5.200SMT	5S9.110SMT	5S12.084SMT	5S15.067SMT	Units
Voltage Range	MIN	4.5				VDC
	TYP	5.0				
	MAX	5.5				
Input Current No Load	TYP	30	30	30	30	mA
	Full Load	250	254	252	248	
Reverse Polarity Input Current	MAX	0.3				A
Input Filter		Internal Capacitor				
Efficiency	TYP	80	78	80	81	%
Switching Frequency	MIN	70				kHz
	TYP	100				
	MAX	140				
Input Surge Voltage (1000 ms)	MIN	-0.7				VDC
	MAX	9				
Internal Power Dissipation	MAX	450				mW
Recommended Fuse		500 mA Slow Blow Type				mA

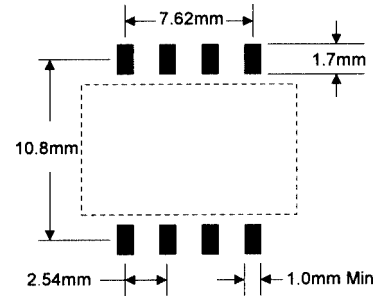
Input Parameters						
Model		12S5.200SMT	12S9.110SMT	12S12.084SMT	12S15.067SMT	Units
Voltage Range	MIN	10.8				VDC
	TYP	12.0				
	MAX	13.2				
Input Current No Load	TYP	15	15	15	15	mA
	Full Load	103	106	104	102	
Reverse Polarity Input Current	MAX	0.3				A
Input Filter		Internal Capacitor				
Efficiency	TYP	81	78	81	82	%
Switching Frequency	MIN	70				kHz
	TYP	100				
	MAX	140				
Input Surge Voltage (1000 ms)	MIN	-0.7				VDC
	MAX	18				
Internal Power Dissipation	MAX	450				mW
Recommended Fuse		200 mA Slow Blow Type				mA

Output Parameters										
Model		5S5.200SMT	12S5.200SMT	5S9.110SMT	12S9.110SMT	5S12.084SMT	12S12.084SMT	5S15.067SMT	12S15.067SMT	Units
Output Voltage		5		9		12		15		VDC
Output Current	MIN	4		2		1.5		1		mA
	MAX	200		110		84		67		
Output Voltage Accuracy	TYP	±1.0								%
	MAX	±3.0								
Load Regulation, I <sub>o</sub> =20% to 100%	MAX	10	8	10	8	8	5	7	5	%
Line Regulation, for Vin change 1%	TYP	±1.2								%
	MAX	±1.5								
Ripple & Noise (20MHz)	TYP	60								mV P-P
	MAX	120								
Ripple & Noise (20MHZ), Over Line, Load & Temp	MAX	150								mV P-P
Ripple & Noise (20MHZ)	MAX	5								mV RMS
Over Load	MIN	120								%
Temperature Coefficient	TYP	±0.01								%/°C
	MAX	±0.02								
Short Circuit	MAX	0.5 Second								

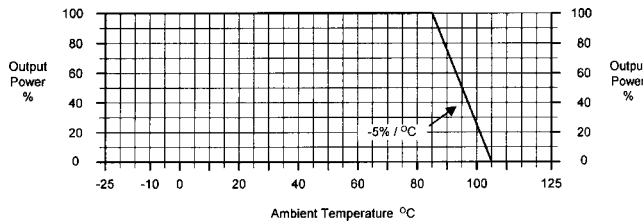
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General Specifications			
All Models			Units
<b>Isolation</b>			
Rated Isolation Voltage, 60 Seconds	MIN	1000	VDC
Isolation Resistance, 500 VDC	TYP	1000	Mohms
Isolation Capacitance, 100kHz, 1V	TYP MAX	40 100	pF
<b>Environmental</b>			
Operating Temperature	MIN MAX	-40 +85	°C
Storage Temperature	MIN MAX	-40 +125	°C
Humidity	MAX	95	%
Cooling	Free-Air Convection		

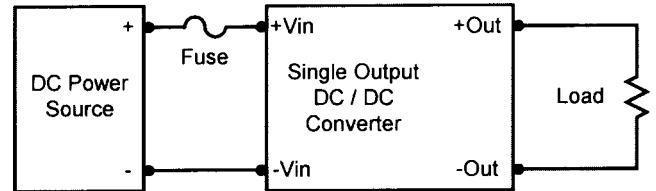
## Connecting Pin Patterns



## Derating Curve



## Typical Applications



## Solder Reflow Profile

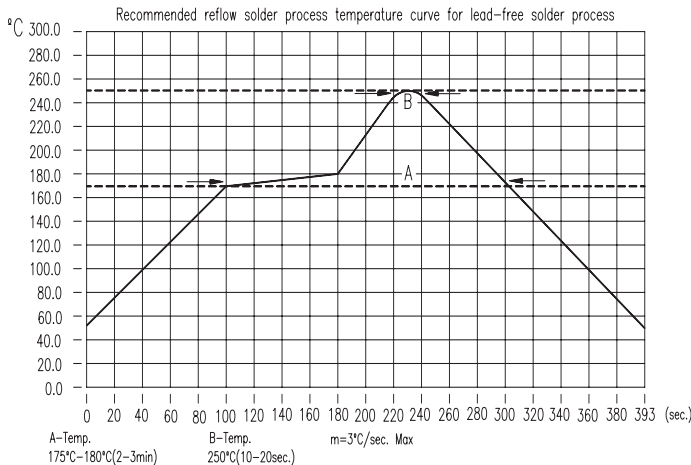


Figure 1.

The profile in Figure 1 should be used as a starting point for your own experiments. Obviously your optimal profile will be a function of many factors including, type of paste, paste thickness, board thickness, number of conductive layers, copper weight, the density of surrounding components, etc. It is recommended that the peak temperature should not exceed +245°C for an extended period of time.

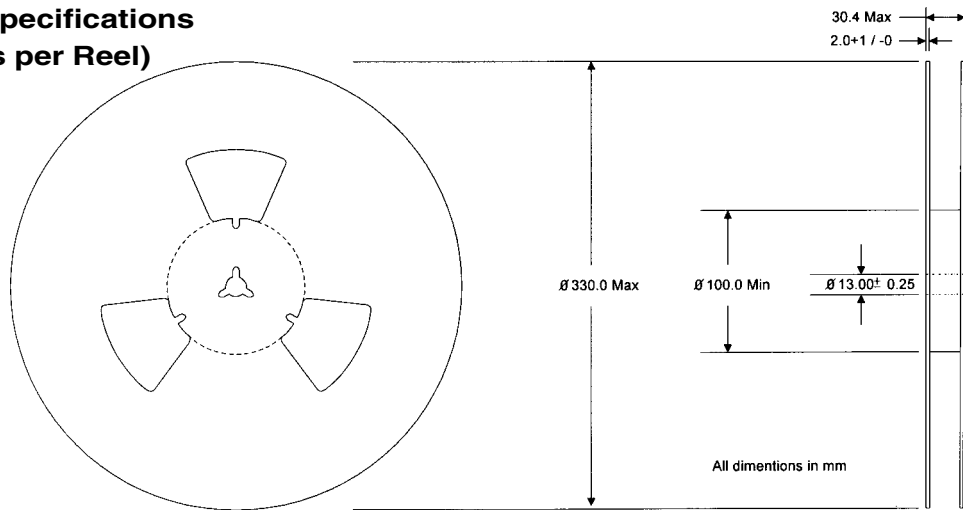
## NOTES

- (1) Specifications typical at  $T_a = +25^\circ\text{C}$ , resistive load, nominal input voltage, rated output current unless otherwise noted.
- (2) Specifications subject to change without notice.
- (3) Water Washability - Calex DC/DC converters are designed to withstand most solder/wash processes. Careful attention should be used when assessing the applicability in your specific manufacturing process. Converters are not hermetically sealed.
- (4) RoHS Compliance means conformity to EU Directive 2002/95/EC of 27 January 2003, on the restriction of the use of certain hazardous substances in electrical and electronic equipment, lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls, and polybrominated diphenyl ethers are not present in quantities exceeding the following maximum concentrations in any homogeneous material, except for applicable exemptions. 0.1% (by weight of homogeneous material) lead, mercury, hexavalent chromium, polybrominated biphenyls, polybrominated diphenyl ethers, or 0.01% (by weight of homogeneous material) cadmium. The RoHS marking is as follows.

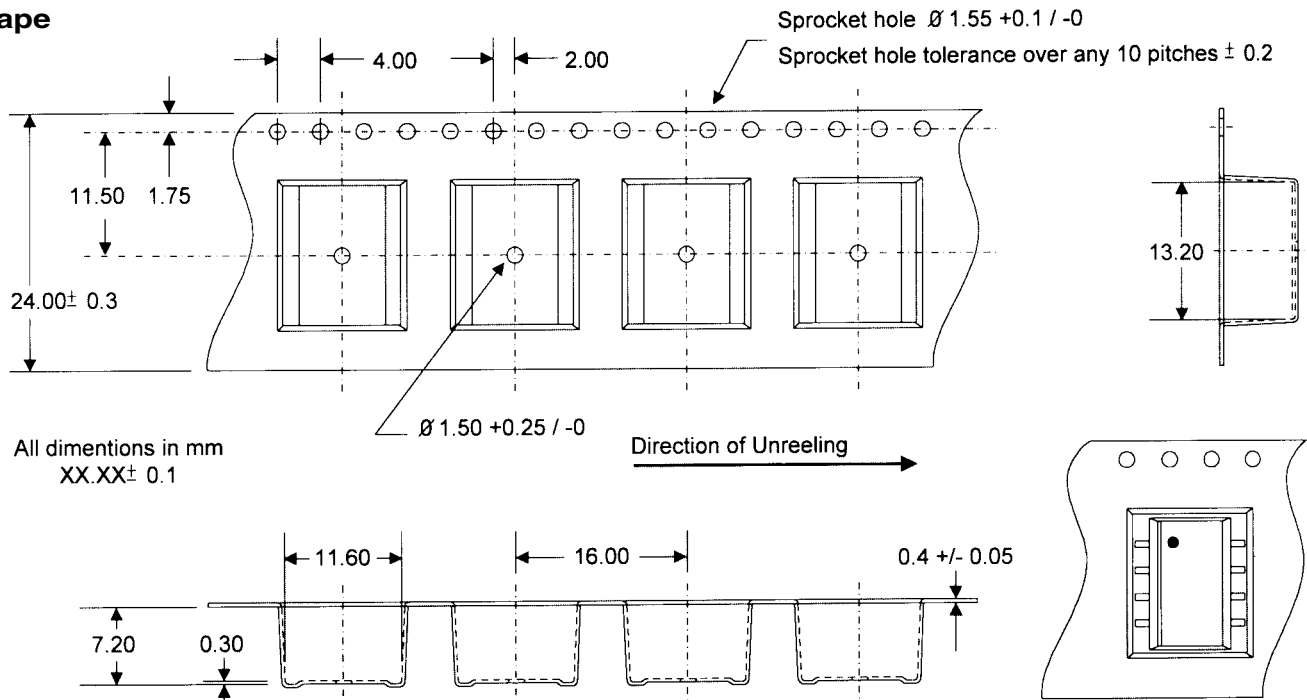


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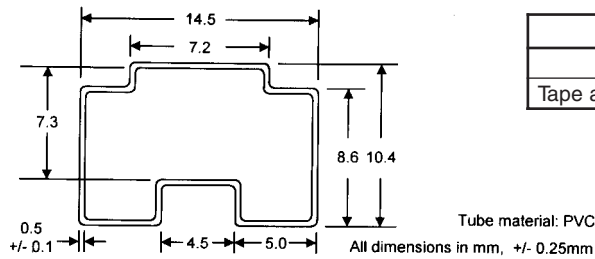
## Packaging Specifications Reel (500pcs per Reel)



## Tape



## Tube (25pcs per Tube)



## Packaging Details

Packaging Style	Quantity
Tube	25
Tape and Reel to IEC 286-3 Specifications	500

