

## FEATURES AND APPLICATIONS

- 22 Pin SMD Package
- Single and Dual Output
- 3000 VDC Isolation
- Transfer Molded Package
- Extended Temperature Range
- RoHS compliant

## GENERAL DESCRIPTION

The VSV series is a family of cost effective 2 W single and dual output DC-DC converters with 3 kVDC isolation. These converters achieve low cost and miniature SMD Package without compromising performance or field reliability.

Models operate from an input bus voltage of 3.3, 5, 9, 12 or 15 VDC offering output voltage levels of 5, 9, 12, 15,  $\pm 5$ ,  $\pm 9$ ,  $\pm 12$  and  $\pm 15$  VDC.

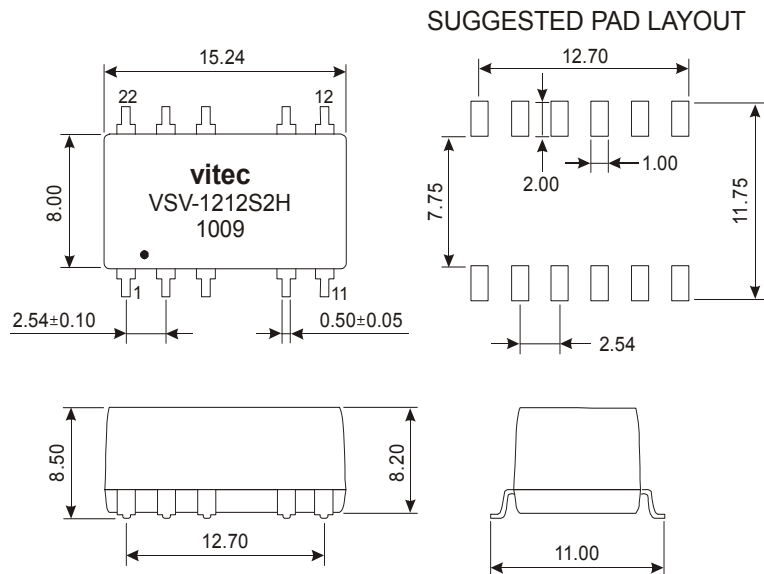
SMD 22 Package - Standard Types				
Type Number	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [mA]	Efficiency [% typ.]
VSV-xx05S2H	5	5	400	70
VSV-xx09S2H	9	9	222	75
VSV-xx12S2H	12	12	167	80
VSV-xx15S2H	15	15	133	80
VSV-xx05D2H	5	$\pm 5$	$\pm 200$	70
VSV-xx09D2H	9	$\pm 9$	$\pm 111$	75
VSV-xx12D2H	12	$\pm 12$	$\pm 84$	80
VSV-xx15D2H	15	$\pm 15$	$\pm 67$	80

xx input voltage

05	5.0 Vdc $\pm 10\%$
09	9.0 Vdc $\pm 10\%$
12	12 Vdc $\pm 10\%$
15	15 Vdc $\pm 10\%$

## SMD 22 Package

1kV Isolation		
Pin	Single Output	Dual Output
1	-INPUT	-INPUT
3	+INPUT	+INPUT
9	-OUTPUT	COMMON
11	NC	-OUTPUT
14	+OUTPUT	+OUTPUT
Other	NC	NC



Dimensions: mm Unless otherwise specified, all tolerances are  $\pm 0.25$

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## ELECTRICAL SPECIFICATIONS

Specifications typical at +25°C, nominal Input voltage, rated output current unless otherwise specified.

### Input Specifications

Voltage Range	±10%
Filter	Capacitor 1µF

### Isolation Specification

Rated Voltage	3000 VDC
Resistance	10 <sup>9</sup> Ω

### Output Specifications

Voltage Accuracy	±5%, max.
Ripple and Noise (20 MHz BW)	75 mVp-p, max.
Short Circuit Protection	no
Line Voltage Regulation	±1.2% / 1.0% of Vin max.
Load Voltage Regulation (10 to 100 % FL)	
5V & 9V Output Types	15 % max.
12V & 15V Output Types	10 % max.
Temperature Coefficient	±0,02%/°C

### General Specifications

Efficiency	see table
Switching Frequency	100 KHz, typ.
MTBF (MIL-HDBK-217@25°C)	3.5 Mhrs

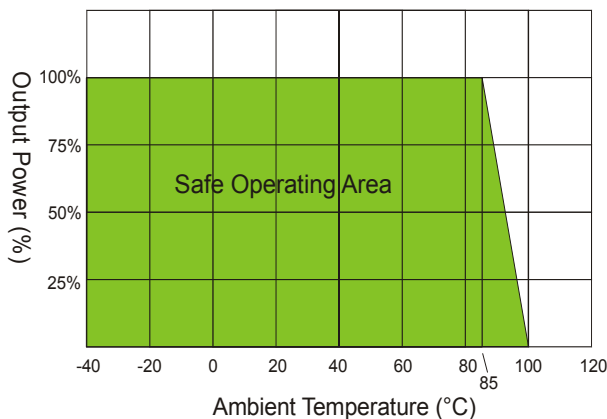
### Environmental Specification

Operating Temperature	-40°C to +85°C
Max. Case Temperature	+100°C
Storage Temperature	-50 to +100°C
Derating	None
Humidity	20% to 95% not condensing
Cooling	Free-air convection
RoHS	full compliance

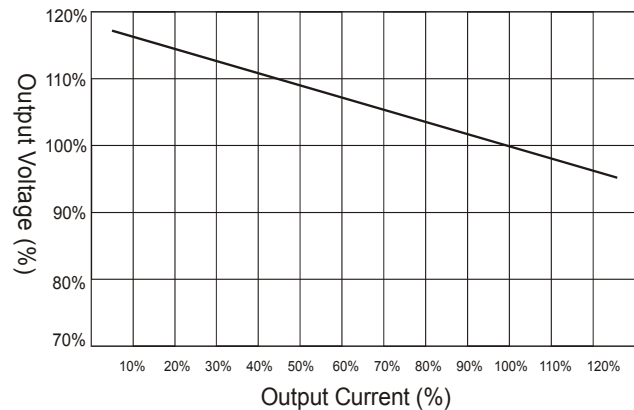
### Physical Characteristics

Dimension SMD	15.24 x 8.00 x 8.50 mm
Weight	1.8 g
Case Material	UL 94V-0 Package material

### Derating



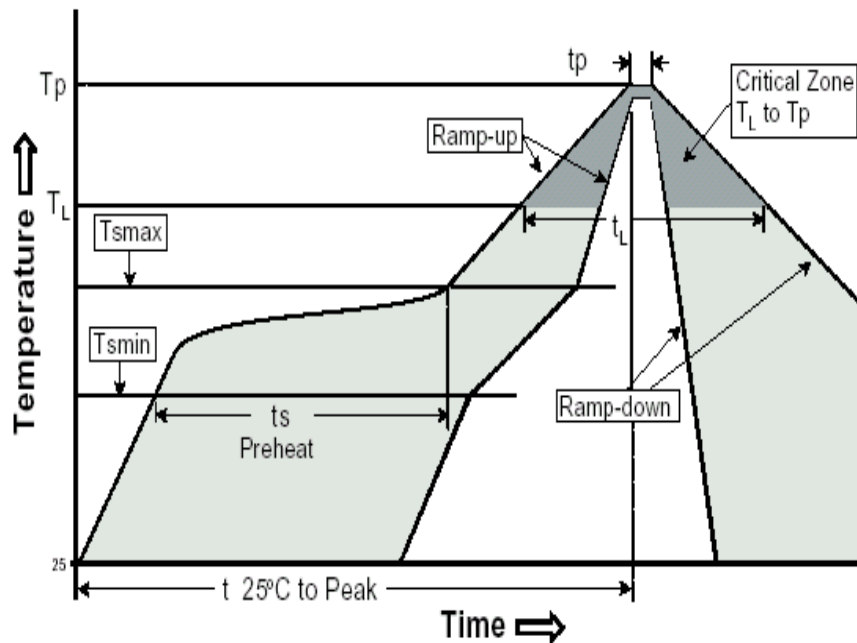
### Tolerance Envelope Graph



### Soldering Information (RoHS compliant type)

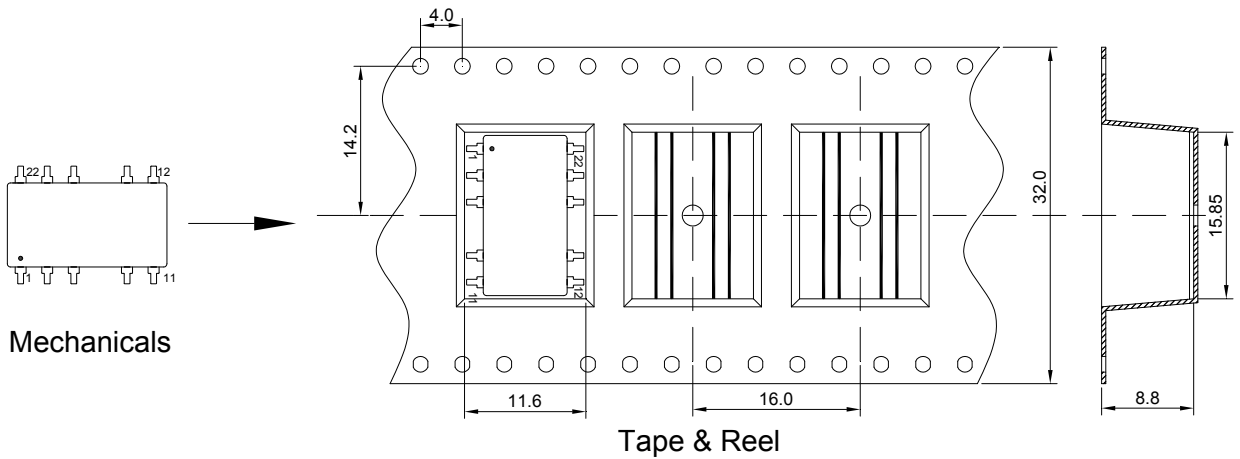
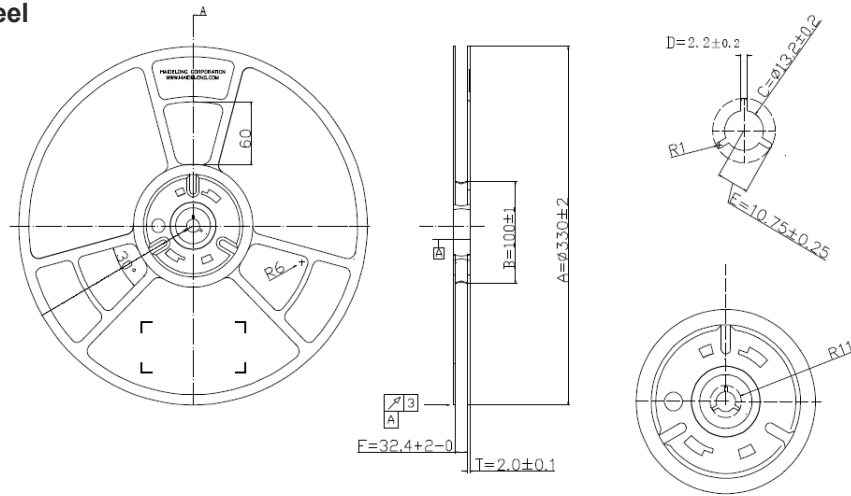
Our RoHS parts just can withstand IR Reflow peak temperature: 240°C as the following profile:

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (Ts max to Tp)	3°C/second max.
<b>Preheat</b> -Temperature Min (Ts min) -Temperature Max (Ts max) -Time (ts min to ts max)	150°C 200°C 60-180 seconds
<b>Time maintained above:</b> -Temperature (TL) -Time (tL)	217°C 60-150 seconds
Peak/Classification Temperature (Tp)	240°C, max.
Time of actual Peak Temperature (tp)	20-40 seconds
Ramp-Down Rate	6°C/seconds max
Time 25°C to Peak Temperature	6 minutes max.



**Packing Information Tape & Reel**

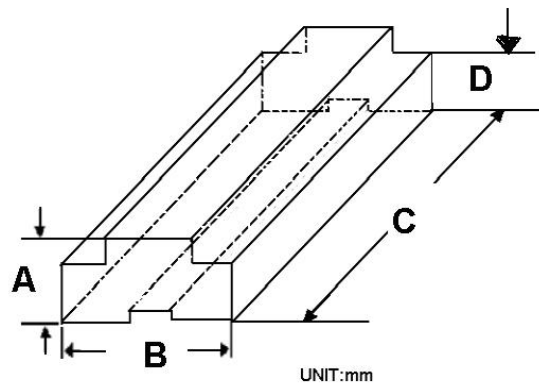
- 1.Weight-----1.5 grams/pcs
- 2.Tape & Reel----- 350 pcs
- 3.Outer carton unit: 2800pcs/box
- 4.Outer carton unit: 8T&R/box
- 5.Weight: 9.2kg per carton



**Packing Information Tube**

- Weight----- 1.5 grams/pcs
- TUBE ----- 33pcs
- Weight: 73.5g per tube
- Outer carton unit: 2640pcs/80Tube/box
- Weight: 6.9kg per carton

Size (mm)	
A	12.7
B	19.2
C	520
D	7.2



Specifications can be changed without prior notice.

Products are not intended for and must not be used in life support systems, human implantation, nuclear facilities or systems or any other application where product failure or malfunction of the component could lead to loss of life or catastrophic property damage