

# PRODUCT SPECIFICATION

## SMD type Metal Oxide Varistor

Size 2825

VS2825 Series

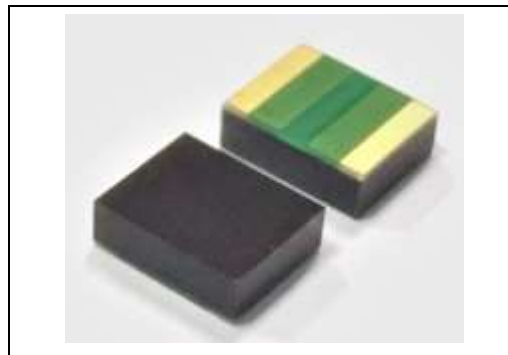
RoHS

Halogen Free

\*Contents in this sheet are subject to change without prior notice.

## 1. Scope

- (1) SMD type Metal Oxide Varistor
- (2) High transient current capability
- (3) Encapsulation material according to UL94-V0
- (4) RoHS compliant
- (5) UL/cUL 1449 approved



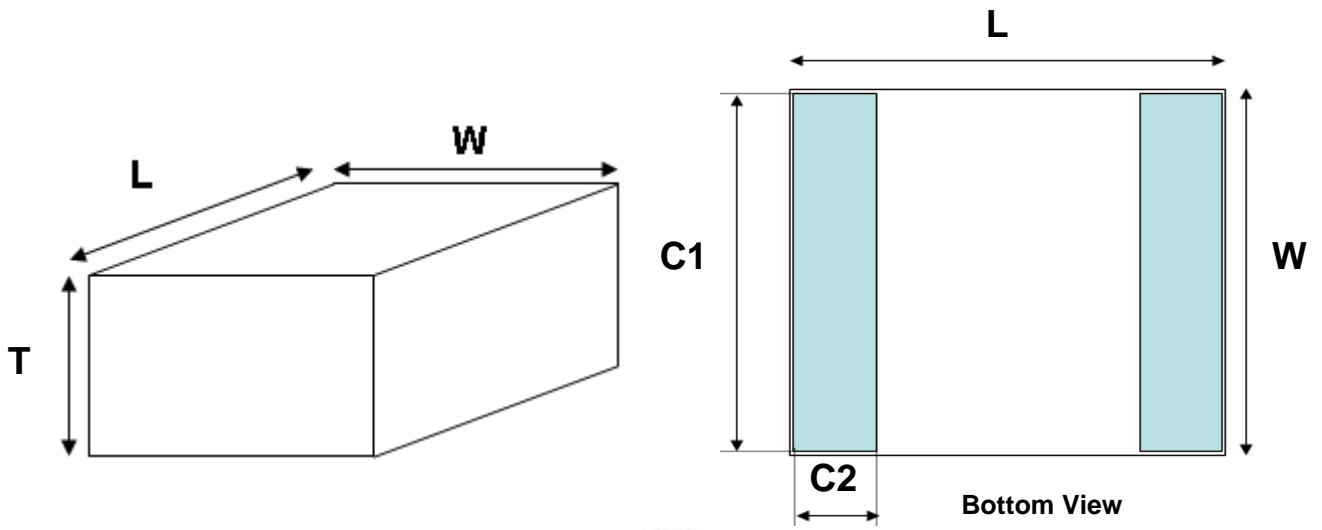
## 2. Applications

- (1) Power supply
- (2) Home appliance
- (3) Industrial equipment
- (4) Telecommunication or telephone system

## 3. Explanation of Part Number

VS	2825	D	241	K	
Type Code	Size	Style	Rated Voltage	Voltage range	Internal Code
Walsin Varistor for SMD type	2825	D: Disc	241 = 240V $24 \times 10^1 = 240$	K : +/-10%	Blank: None

#### 4. Construction & Dimension



Varistor voltage Range(v)	Unit : mm	2825
-	L	7.2 ± 0.2
-	W	6.4 ± 0.2
V <sub>1mA</sub> =18~ 270	T	3.2 ± 0.3
V <sub>1mA</sub> =300 ~ 510		4.2 ± 0.3
V <sub>1mA</sub> =560 ~ 680		5.6 ± 0.3
-	C1	5.3 ± 0.3
-	C2	1.1 ± 0.3

## 5. Part ratings and characteristics (25±5°C)

Symbol	Working voltage		Varistor voltage	Leakage Current	Clamping Voltage	Peak current	Component thickness
	V <sub>RMS</sub>	V <sub>DC</sub>	V <sub>V</sub>	IL	V <sub>c</sub>	i <sub>max</sub>	T
Units	Volts	Volts	Volts	uA	Volts	Amps	mm
	(Max.)	(Max.)		(Max.)	(Max.)	(Max.)	
Test Condition			1mA DC	V <sub>V</sub> *80% (at initial state)	8/20μs	8/20μs	
VS2825D180K	11	14	16.2~19.8	50	40(1A)	150	3.2
VS2825D220K	14	18	19.8~24.2	50	48(1A)	150	3.2
VS2825D270K	17	22	24.3~29.7	50	60(1A)	150	3.2
VS2825D330K	20	26	29.7~36.3	50	73(1A)	150	4.2
VS2825D390K	25	31	35.1~42.9	50	80(1A)	150	4.2
VS2825D470K	30	38	42.3~51.7	50	104(1A)	150	4.2
VS2825D560K	35	45	50.4~61.6	50	123(1A)	150	4.2
VS2825D680K	40	56	61.2~74.8	50	145(1A)	150	4.2
VS2825D820K	50	66	73.8~90.2	50	150(5A)	400	3.2
VS2825D101K	60	85	90~110	50	175(5A)	400	3.2
VS2825D121K	75	102	108~132	50	210(5A)	400	4.2
VS2825D151K	95	127	135~165	50	260(5A)	400	4.2
VS2825D181K	120	160	170~207	50	320(5A)	400	4.2
VS2825D201K	130	175	185~225	50	355(5A)	400	4.2
VS2825D221K	140	180	198~242	50	380(5A)	400	4.2
VS2825D241K	150	200	216~264	50	415(5A)	400	4.2
VS2825D271K	180	230	255~311	50	475(5A)	400	4.2
VS2825D301K	195	250	270~330	50	520(5A)	400	4.2
VS2825D331K	210	275	297~363	50	570(5A)	400	4.2
VS2825D361K	230	300	324~396	50	620(5A)	400	4.2
VS2825D391K	250	330	351~429	50	675(5A)	400	4.2
VS2825D431K	275	370	387~473	50	745(5A)	400	5.6
VS2825D471K	300	385	423~517	50	810(5A)	400	5.6
VS2825D511K	320	420	459~561	50	845(5A)	400	5.6
VS2825D561K	360	470	504~616	50	920(5A)	400	5.6
VS2825D621K	390	505	558~682	50	1025(5A)	400	5.6
VS2825D681K	420	560	612~748	50	1120(5A)	400	5.6

VDC –Maximum DC operating voltage the varistor can maintain

VV – Voltage across the device measured at 1mA DC current.

Equivalent to Vb, “Breakdown Voltage”.

Vc – Maximum peak voltage across the varistor measured at 8/20us waveform .

imax – Maximum peak current which may be applied with 8/20us waveform without device failuredevice failure.



## 6. General electrical specifications

### 6.1 General technical data

Operating temperature	-40 ... +85°C
Storage temperature (on board)	-40... +85°C
Solderability	245±5°C, 3 ±1 sec
Solder leach resistance	260±5°C, 10 ±1sec

### 6.2 Storage Condition with package

Storage Time: 12 months max

Storage Temperature: 5 to 40°C

Relative Humidity: 65% max

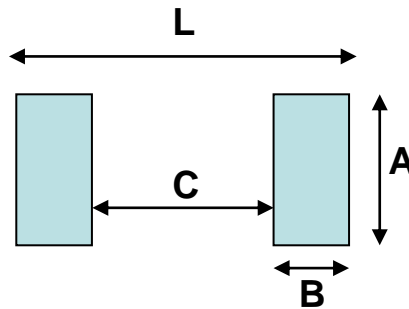


## 7. Precautions for Handling

### 7.1 Solder cream in reflow soldering

Refer to the recommendable land pattern as printing mask pattern for solder cream.

(1) Print solder in a thickness of 0.1mm



Unit: mm

Item		A	B	C	L
Size(EIA)	2825	6.8	1.5	4.6	7.6

### 7.2 Precaution for handling of substrate

Do not exceed to bend the board after soldering this product extremely.

(Reference examples)

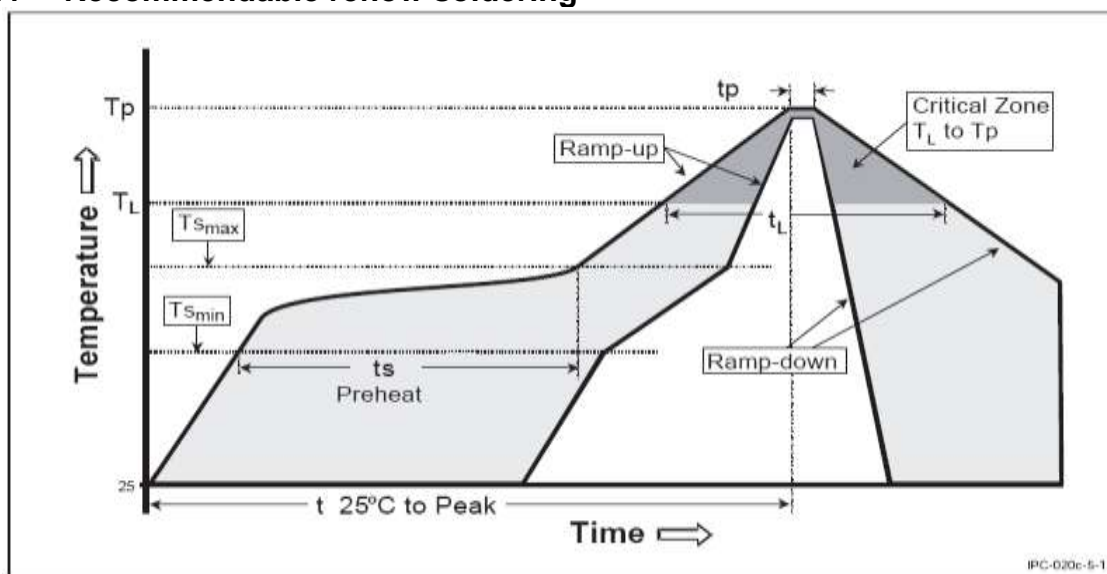
- Mounting place must be as far as possible from the position, which is close to the break line of board, or on the line of large holes of board.
- Do not bend extremely the board, in mounting another component.  
If necessary, use back-up pin (support pin) to prevent from bending extremely.
- Do not break the board by hand. We recommend using the machine or the jig to break it.

### 7.3 Precaution for soldering

Note that rapid heating, rapid cooling or local heating will easily damage this product.

Do not give heat shock over 100°C in the process of soldering. We recommend taking preheating and gradual cooling

## 7.4 Recommendable reflow soldering



\*According to J-STD-020C

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T <sub>Smax</sub> to T <sub>p</sub> )	3° C/second max.
<b>Preheat</b> – Temperature Min (T <sub>Smin</sub> ) – Temperature Max (T <sub>Smax</sub> ) – Time (t <sub>Smin</sub> to t <sub>Smax</sub> )	150°C 200°C 60-180 seconds
Time maintained above: – Temperature (T <sub>L</sub> ) – Time (t <sub>L</sub> )	217°C 60-150 seconds
Peak/Classification Temperature (T <sub>p</sub> )	260°C
Time within 5 °C of actual Peak Temperature (t <sub>p</sub> )	20-40 seconds
Ramp-Down Rate	6°C/second max.
Time 25 °C to Peak Temperature	8 minutes max.

## 7.5 Soldering gun procedure

Note the follows, in case of using solder gun for replacement.

- (1)The tip temperature must be less than 280°C for the period within 3 seconds by using soldering gun less than 30 W.
- (2)The soldering gun tip shall not touch this product directly.

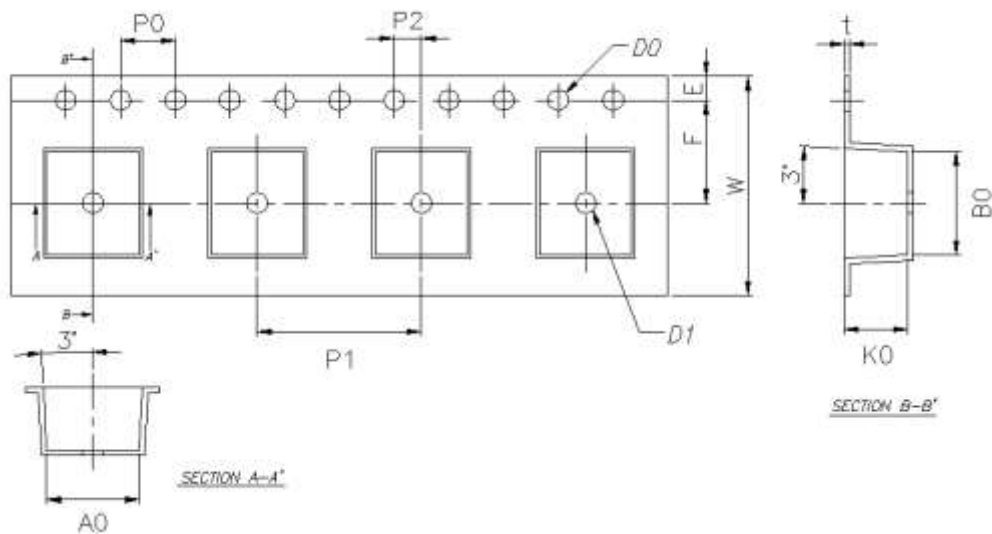
## 7.6 Soldering volume

Apply proper volume of solder paste, too much may cause crack of component body.



## 8. Taping Package and Label Marking

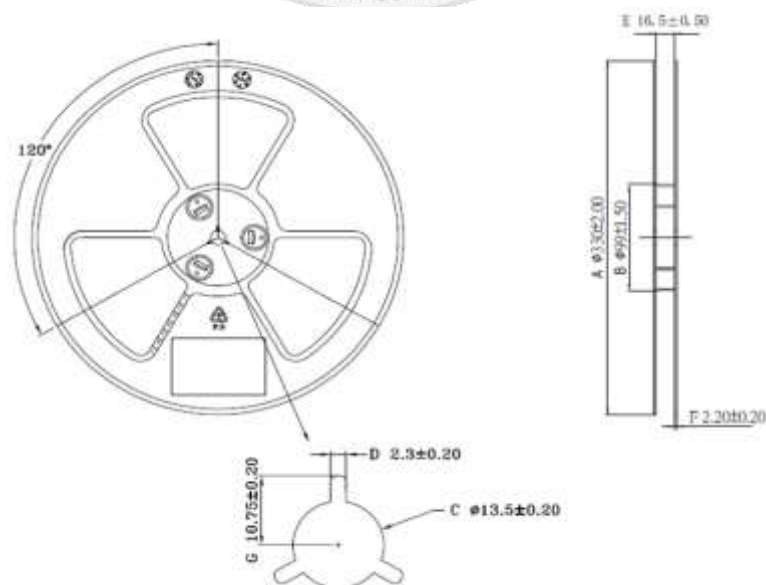
### 8.1 Carrier tape dimensions



Type	W	E	F	D0	D1	P0	P0 x10
2825	16.00 ±0.30	1.75 ±0.10	7.50 ±0.15	1.50 +0.10/-0.00	1.50 +0.10/-0.00	4.00 ±0.10	40.00 ±0.20
	t	A0	B0	K0		P1	P2
	0.50 ±0.05	6.75 +0.15/-0.05	7.55 +0.15/-0.05	6.20(max)		12.00 ±0.10	2.00 ±0.15

### 8.2 Taping reel dimensions

Type	A	B	C	D	E	F	G
13"	330 ±2.00	99 ±1.50	13.50 ±0.20	2.30 ±0.20	16.50 ±0.50	2.20 ±0.20	10.75 ±0.20



### 8.3 Taping specifications

There shall be the portion having no product in both the head and the end of taping, and there shall be the cover tape in the head of taping.

### 8.4 Label Marking

The label specified as follows shall be put on the side of reel.

(1) Part No.

(2) Quantity

(3) Lot No.

\*Part No. And Quantity shall be marked on outer packaging.

### 8.5 Quantity of products in the taping package

(1) Standard quantity:

900pcs/Reel for VS2825 T=5.6mm ·

1100pcs/Reel for VS2825 T=4.2mm ·

1400pcs/Reel for VS2825 T=3.2mm ◦

(2) Shipping quantity is a multiple of standard quantity.

