

SMD metal oxide varistors

SMD varistors, High Surge, 3225 series

Series/Type: VCRR3225*KJ**

Orderingcode:VCRR3225*KJ**

Date: January 2020

Version: 1

Features

- Improved component design in a compact case
- High surge current capability of up to 250A-1000A
- Superior performance at high temperature
- White package design without shadow in LED lighting application
- SMD mountable disk varistors, suitable for lead-free reflow / wave soldering

Applications

- Power supplies for telecommunication systems
- Protection for LED circuits
- Protection for consumer, industrial equipment
- Protection for automotive electronics

Type Code Designation

VCRR	3225	-	471	K
Logo	Size	Separate	Varistor voltage	J: ±5% K: ±10%
	2220(5750)		180=18V	
	3220(8050)		471=470V	
	3225(8060)		102=1000V	
	4032(1008)			

Internal Chip Size

Page Size	Chip Size	Page Size	Chip Size
2220	4*4mm	3225	5*5mm
3220	5*5mm	4032	7*7mm

General Technical Data

Parameter	Value	Unit
Operating temperature	-55 to +125	℃
Storage temperature	-55 to +150	℃
Electric strength	≥2.5	kV _{RMS}
Insulation resistance	≥100	MΩ

Electrical Characteristics

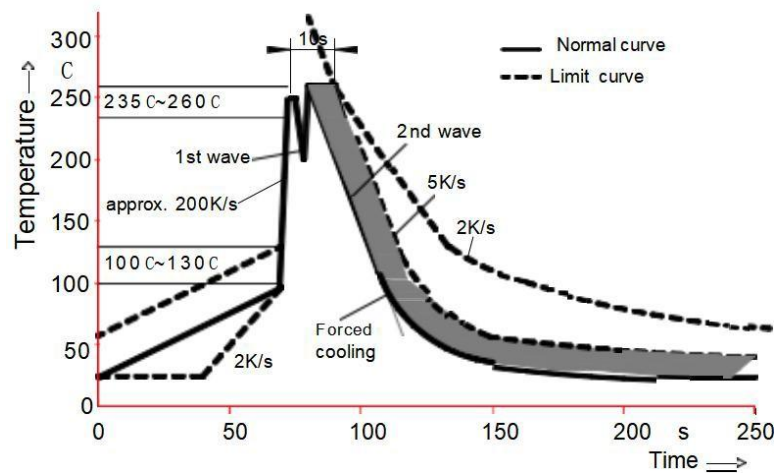
Part Number	Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current	Energy 10/1000 μ S		Rated Power	Typical Capacitance (Reference)
	AC (V)	DC (V)		IP(A)	VC(V)		(J) Standard	(J) High Surge		
Standard			V0.1mA(V)			I(A) Standard			(W)	@ 1 KHzPF
3225-180 KJ	11	14	18(15.3~20.7)	2.5	36	450	0.9	2.0	0.02	2800
3225-220 KJ	14	18	22(19.8~24.2)	2.5	43	450	1.1	2.4	0.02	2300
3225-270 KJ	17	22	27(24.3~29.7)	2.5	53	450	1.4	3.0	0.02	1800
3225-330 KJ	20	26	33(29.7~36.3)	2.5	65	450	1.7	3.5	0.02	1500
3225-390 KJ	25	31	39(35.1~42.9)	2.5	77	450	2.1	4.0	0.02	1300
3225-470 KJ	30	38	47(42.3~51.7)	2.5	93	450	2.5	5.0	0.02	1100
3225-560 KJ	35	45	56(50.4~61.6)	2.5	110	450	3.1	6.0	0.02	890
3225-680 KJ	40	56	68(61.2~74.8)	2.5	135	450	3.6	7.0	0.02	740
3225-820 KJ	50	65	82(73.8~90.2)	10	135	1750	5.5	10	0.25	600
3225-101 KJ	60	85	100(90~110)	10	165	1750	6.5	12	0.25	500
3225-121 KJ	75	100	120(108~132)	10	200	1750	7.8	12	0.25	420
3225-151 KJ	95	125	150(135~165)	10	250	1750	9.7	13	0.25	330
3225-181 KJ	115	150	180(162~198)	10	300	1750	11.7	16	0.25	280
3225-201 KJ	130	170	200(185~225)	10	330	1750	13	17	0.25	250
3225-221 KJ	140	180	220(198~242)	10	360	1750	14	19	0.25	230
3225-241 KJ	150	200	240(216~264)	10	395	1750	15	21	0.25	210
3225-271 KJ	175	225	270(243~297)	10	455	1750	18	24	0.25	185
3225-301 KJ	190	250	300(270~330)	10	505	1750	20	26	0.25	165
3225-331 KJ	210	275	330(297~363)	10	550	1750	23	28	0.25	150
3225-361 KJ	230	300	360(324~396)	10	595	1750	25	32	0.25	140
3225-391 KJ	250	320	390(351~429)	10	650	1750	25	35	0.25	130
3225-431 KJ	275	350	430(387~473)	10	710	1750	28	40	0.25	110
3225-471 KJ	300	385	470(423~517)	10	775	1750	30	42	0.25	105
3225-511 KJ	320	415	510(459~561)	10	845	1750	30	45	0.25	100
3225-561 KJ	350	460	560(504~616)	10	920	1750	30	49	0.25	90
3225-621 KJ	385	505	620(558~682)	10	1025	1750	33	55	0.25	80
3225-681 KJ	420	560	680(612~748)	10	1120	1750	33	60	0.25	75
3225-751 KJ	460	615	750(675~825)	10	1240	1750	65	67	0.25	70
3225-781 KJ	485	640	780(702~858)	10	1290	1750	65	67	0.25	70
3225-821 KJ	510	670	820(738~902)	10	1355	1750	65	70	0.25	60

Soldering Guidelines

The usage of mild, non-activated fluxes for soldering is recommended, as well as proper cleaning of the PCB.

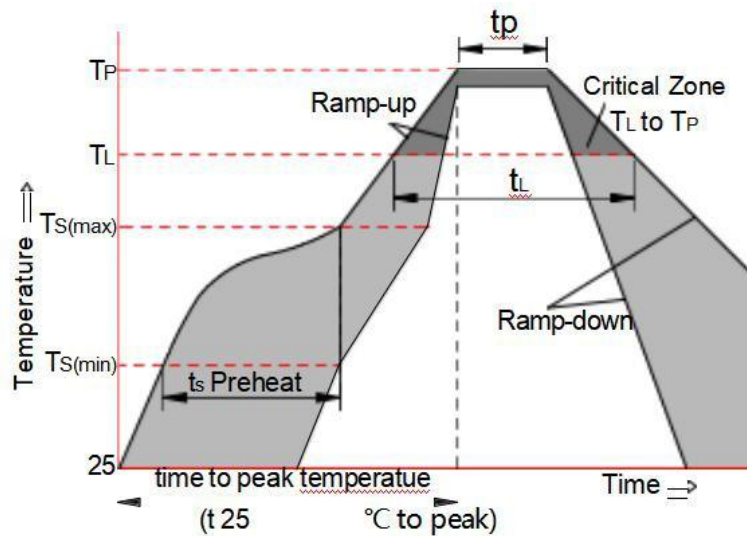
The components are suitable for reflow soldering per JEDEC J-STD-020C.

Wave Soldering



Temperature characteristics at component terminal with dual-wave soldering

Reflow Soldering



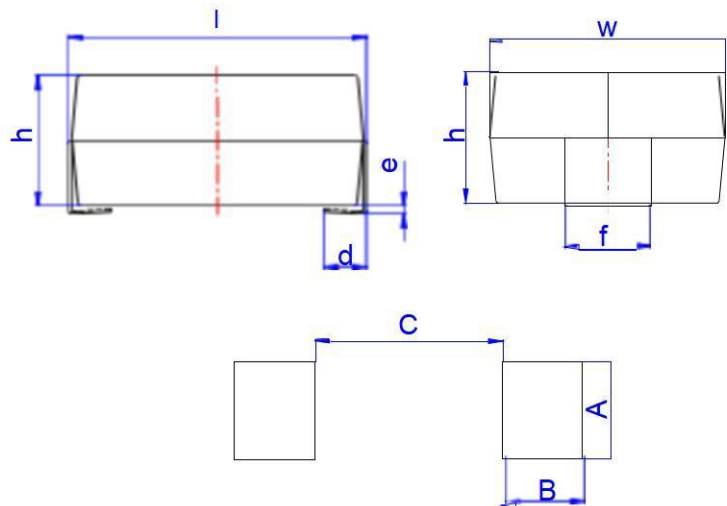
Profile feature		Sn-Pb assembly	Pb-Free assembly
Average ramp-up rate (T_{Smax} to T_p)		3 C/ sec. Max	3 C/ sec. Max
Preheat	-Temperature min. ($T_{s(min)}$)	+ 10 0 C	+ 15 0 C
	-Temperature max. ($T_{s(max)}$)	+ 15 0 C	+ 20 0 C
	-Time (t_{Smin} to t_{Smax})	60-120 secs.	60-180 secs.
$T_{s(max)}$ to T_L - Ramp-up Rate		3 C/ sec. Max	3 C/ sec. Max
Time maintained above	-Temperature min. (T_L)	+ 18 3 C	+ 21 7 C
	-Time (t_L)	60-150 secs.	60-150 secs.
Peak classification temperature (T_p)		+220 C to +240C	+240 C to +260C
Time within 5C of actual peak temperature (t_p)		10 secs. to 30 secs.	20 secs. to 40 secs.
Ramp-down rate		6 C/ sec. max.	6 C/ sec. max.
Time 25C to peak temperature		6 min. max.	8 min. max.

Notes: All temperature refer to topside of the package, measured on the package body surface
Maximum number of reflow cycles: 3

Storage Condition

- As far as possible, the components should be employed within 24 months after delivery from Kangtai Semiconductor.
- They should be left in their original packing to avoid soldering problems due to oxidized contacts.
- Storage temperature: - 25 up to + 45°C.
- Relative humidity: < 75 % annual average, < 95 % on max. 30 days in a year.

Dimensional Drawings

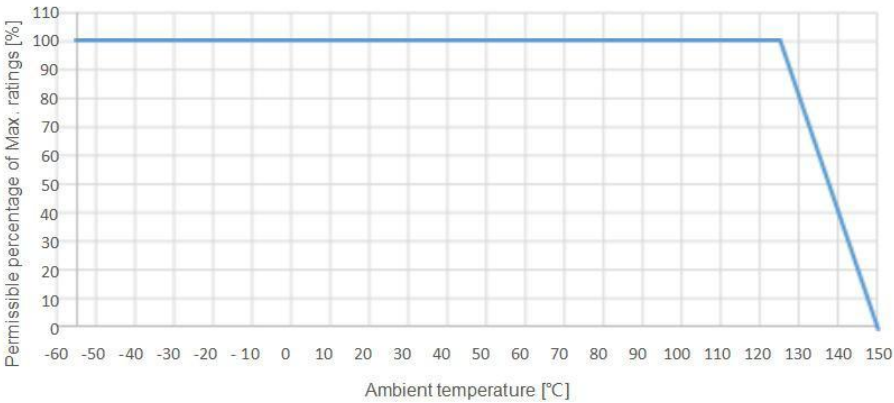


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
l	7.7		8.3	0.303		0.327
w	6.0		6.6	0.236		0.260
h	3.3		4.0	0.122		0.150
d	1.2		1.8	0.047		0.071
e	0		0.3	0		0.012
f	2.70		3.3	0.106		0.130
A		3.5			0.138	
B		2.8			0.110	
C		4.5			0.177	

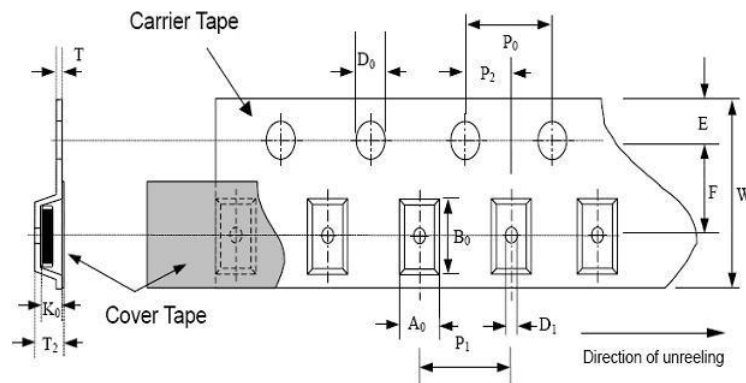
Recommended solder pad layout

Temperature Rating Curve

Max. current, energy, operating voltage and average power dissipation depending on ambient temperature

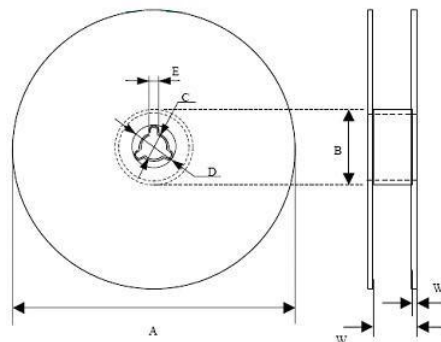


Packaging Specification



Type	A ₀ ±0.20	B ₀ ±0.20	K ₀ ±0.10	T max	T ₂ max	D ₀ +0.05	D ₁ ±0.05	P ₁ ±0.10	P ₂ ±0.05	P ₀ ±0.1	W ±0.30	E ±0.10	F ±0.05
3225	7.0	8.7	3.85	0.3	5.50	1.55	1.55	12.00	2.00	4.00	16.00	1.75	7.50
4032	8.4	10.8	3.85	0.3	5.50	1.55	1.55	12.00	2.00	4.00	24.00	1.75	11.50

Reel dimension



Type	A	B	C	D	E	W-W1	W ₁
3225	329.0±1.0	60.0±0.5	13.0±0.2	21.0±0.2	2.0±0.5	17.2±0.7	2.3±0.15

Quantity of taping packing(pcs) : 1000

