

1 Electrical Characteristics

1.1 Technical Data

	Symbol	Value	Unit
Maximum allowable continuous AC voltage*1	VRMS	50	V
Maximum allowable continuous DC voltage	VDC	65	V
Varistor voltage Measured*2	VB	82(10%)	V
Typical capacitance value measured*3	C	900	pF
Typical capacitance value tolerance		±30	%
Maximum clamping voltage measured*4	VC	135	V
Rated peak single pulse transient current at *5	I P	1000	A

1.2 Reference Data

	Symbol	Value	Unit
Maximum Energy Absorption 10/1000μs	E	2.5	J
Response time	T _{rise}	<2	ns
Leakage current at V _{DC} (At initial state)	I _L	<50	μA
Leakage current at V _{DC} (After reliability Test)	I _{LA}	<100	μA
Operating ambient temperature		-45~+125	°C
Reflow temperature profile(Recommend)		260	°C

1.3 Other Data

Body	ZnO
End termination	Ag/Ni/Sn
Packaging	Bulk/Tape
Complies with Standard	IEC61000-4-5

1.4 Notes:

*1 AC voltage at 50~60Hz	Measured at 1mA DC
*2 Varistor voltage	Measured at f=1MHz, V _{rms} =0.5V
*3 Capacitance	Measured at 10A by 8/20μs Pulse
*4 Maximum clamping voltage	Measured by 8/20μs Pulse
*5 Rated peak single pulse transient current	Measured at 1mA DC

1.5 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.

2 Type Code Designation

MVR **3220** — **820** **G**
 ① ② ③ ④

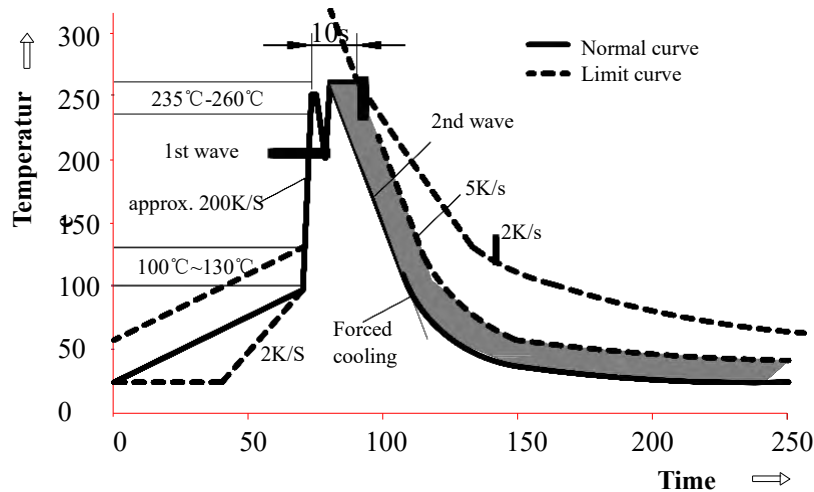
- ① MVR: Series name
- ② 3220 : Chip size –3220 (8.0 x 6.0 mm) size
- ③ 820 : Varistor voltage(Breakdown voltage) - 82Vdc
- ④ G : High absorption

3 Soldering guidelines

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

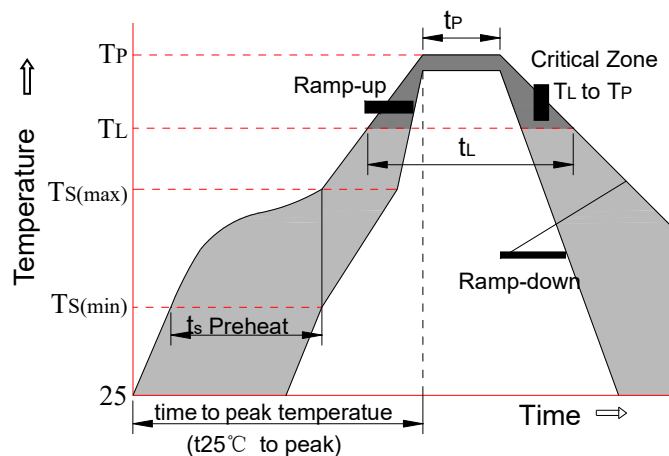
The components are suitable for reflow soldering per JEDEC J-STD-020C

3.1 Wave soldering



Temperature characteristics at component terminal with dual-wave soldering

3.2 Reflow soldering

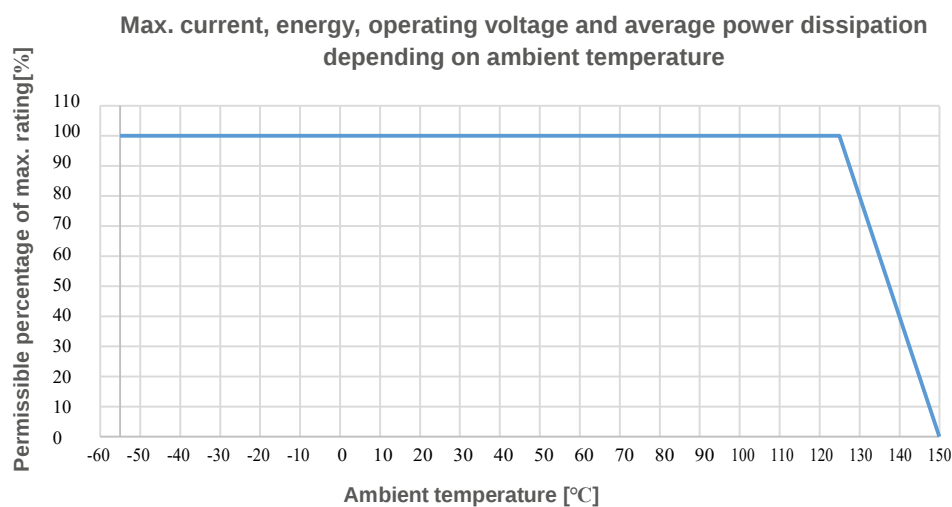


Profile feature		Sn-Pb assembly	Pb-Free assembly
Average ramp-up rate (TSmax to TP)		3°C/sec. Max	3°C/sec. Max
Preheat	-Temperature min. (TS(min))	+100°C	+150°C
	-Temperature max.(TS(max))	+150°C	+200°C
	-Time (tSmin to tSmax)	60-120 secs.	60-180 secs.
TS(max) to TL - Ramp-up Rate		3°C/sec. Max	3°C/sec. Max
Time maintained above	-Temperature min. (TL)	+183°C	+217°C
	-Time (tL)	60-150 secs.	60-150 secs.
Peak classification temperature (TP)		+220°C to +240°C	+240°C to +260°C
Time within 5°C of actual peak temperature (tp)		10 secs. to 30 secs.	20 secs. to 40 secs.
Ramp-down rate		6°C/sec. max.	6°C/sec. max.
Time 25°C to peak temperature		6 min. max.	8 min. max.

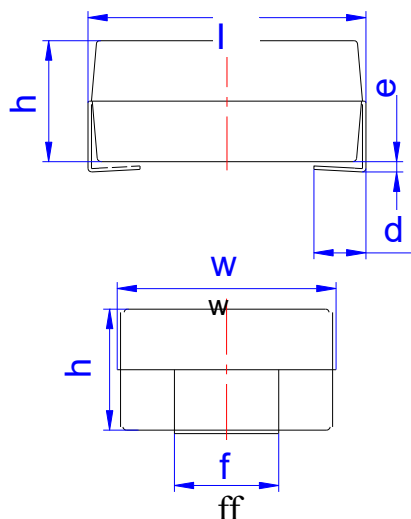
Notes: All temperature refer to topside of the package, measured on the package body surface

Maximum number of reflow cycles: 3

4 Temperature derating curve

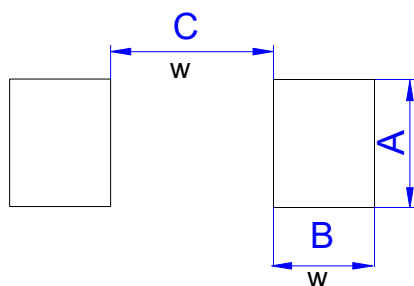


5 Dimensional drawings



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	3.1		3.8	0.122		0.150
d	1.2		1.8	0.047		0.071
e	0		0.3	0		0.012
f	2.7		3.3	0.106		0.130

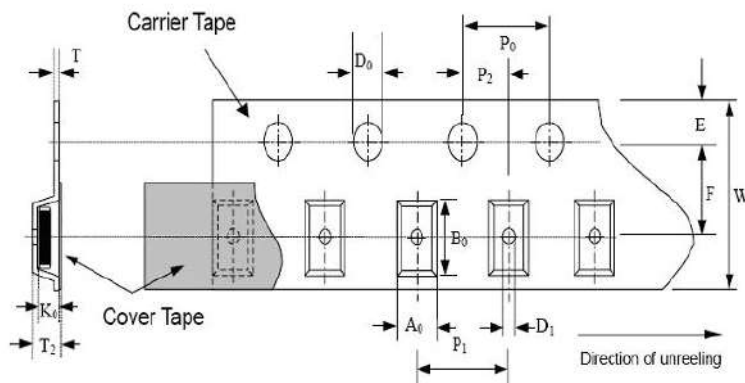
6 Recommended solder pad layout



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.5			0.138	
B		2.8			0.110	
C		4.5			0.177	

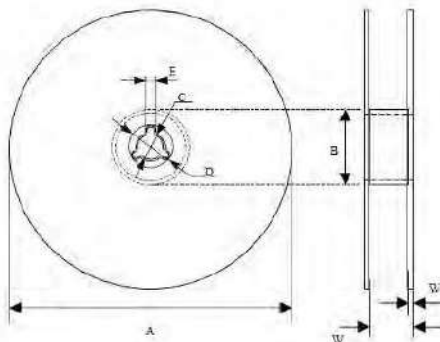
7 Taping and packaging Specification

7.1 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
3220	7.0	8.7	—	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	—	0.3	5.50	1.55	1.55	12.00	2.00	4.00	16.00	1.75	7.50

7.2 reel dimension



type	A	B	C	D	E	W-W1	W ₁
3220-4032	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

1) Quantity of taping packing(pcs): 1000