



# SMD Metal Oxide Varistors

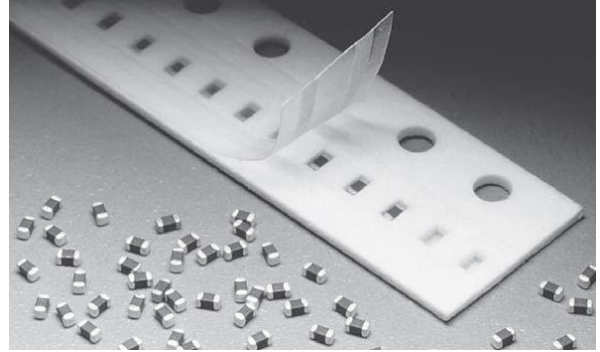
**BL3220A Series**



## Metal Oxide Varistors - BL3220A Series

### Features

- EIA size:3220
- Variable capacitance
- Operating voltage: 22Vdc ~385Vdc
- High surge suppress capability
- Bidirectional and symmetrical V/I characteristics
- Multilayer ceramic construction technology
- RoHS & Halogen Free (HF) compliant
- Operating temperature range: -40°C ~ +85°C
- Storage temperature range: -40°C ~ +125°C



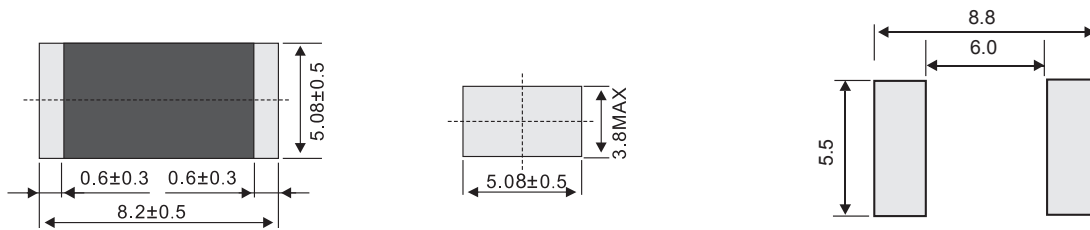
### Applications

- Used to Help Achieve Electromagnetic Compliance of End Products
- Provides On-Board Transient Voltage Protection for ICs, CMOS and MOSFET.
- Suppression of Inductive Switching or Other Transient Events Such as EFT and Surge Voltage at the Circuit Board Level.
- Protection of Components and Circuits Sensitive to ESD Transients Occurring on Power supplies,Control and Signal Lines.

### Product Name

B	L	3	2	2	0	A	3	3	0	K
↓		↓				↓	↓		↓	
LOGO		Packaging				Standard	Varistor Voltage		Tolerance	
		3220					33V		K:±10%	

### Dimensions And Recommended Pad Layout (Unit:mm)

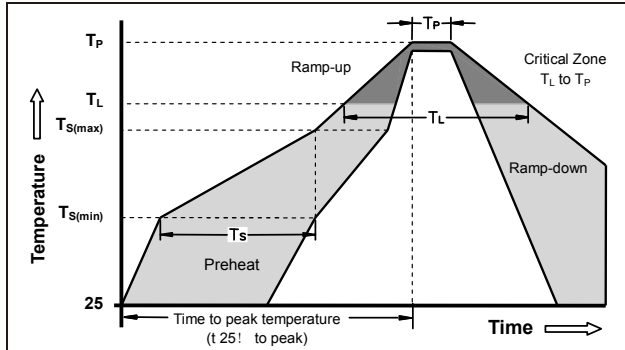


**Metal Oxide Varistors - BL3220A Series****Electrical Characteristics**

Type Number	Varistor Voltage	Maximum Allowable Voltage		Maximum Energy (10/1000 $\mu$ s)	Maximum Clamping Voltage		Withstanding Surge Current (8/20 $\mu$ s)
	V1mA(V)	VAC(V)	VDC(V)	(J)	IP(A)	VC(V)	I(A)
BL3220A270K	24~30	17	22	0.5	10	42	800
BL3220A330K	29~36	20	26	0.6	10	54	800
BL3220A390K	36~45	25	30	0.7	10	85	800
BL3220A470K	43.2~57	30	38	0.9	10	96	800
BL3220A530K	46.8-58.5	32	42	1	10	111	800
BL3220A560K	54-67.5	35	45	1.1	10	125	800
BL3220A600K	57.6-72	37	48	1.2	10	132	800
BL3220A680K	61~75	40	56	1.3	10	150	800
BL3220A760K	72-90	43	60	1.5	10	160	800
BL3220A820K	78-97.5	47	65	1.8	10	172	800
BL3220A101K	102-127.5	60	85	2.2	10	225	800
BL3220A121K	108~132	75	100	2.5	10	200	800
BL3220A151K	135~165	95	125	3.4	10	250	800
BL3220A181K	161~198	115	150	3.6	10	300	800
BL3220A201K	184~225	130	170	4.2	10	340	800
BL3220A221K	198~242	140	180	4.5	10	360	800
BL3220A241K	216~264	150	200	4.9	10	395	800
BL3220A271K	243~297	175	225	5.6	10	455	800
BL3220A361K	324~396	230	300	7.2	10	595	800
BL3220A391K	351~429	250	320	8.2	10	650	800
BL3220A431K	387~473	275	350	8.6	10	710	800
BL3220A471K	423~517	300	385	9.6	10	775	800

## Metal Oxide Varistors - BL3220A Series

### Soldering Parameters



Reflow Condition		Pb-Free assembly
Pre Heat	-Temperature Min ( $T_{S(min)}$ )	+150°C
	-Temperature Max ( $T_{S(max)}$ )	+200°C
	-Time (min to max) ( $T_S$ )	60 -180 Seconds
Average ramp up rate ( Liquidus Temp $T_L$ to peak)		3°C/Second Max
$T_{S(max)}$ to $T_L$ - Ramp-up Rate		3°C/Second Max
Reflow	- Temperature ( $T_L$ ) (Liquidus)	+217°C
	- Time (min to max) ( $T_L$ )	60 -150 Seconds
Peak Temperature ( $T_P$ )		260 +0/-5°C
Time within 5°C of actual peak Temperature ( $T_P$ )		20-40 Seconds
Ramp-down Rate		6°C/Second Max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes Max

### Precaution for soldering

Note that this product will be easily damaged by rapid heating, rapid cooling or local heating.  
Do not give heat shock over 100°C in the process of soldering.  
We recommend to take preheating and gradual cooling

### Soldering gun procedure

Note the follows, in case of using solder gun for replacement.  
1) The tip temperature must be less than 280 for the period within 3 seconds by using soldering gun under 30W  
2) The soldering gun tip shall not touch this product directly.

### Soldering volume

Note that excess of soldering volume will easily get crack the body of this product.

### General Technical Data

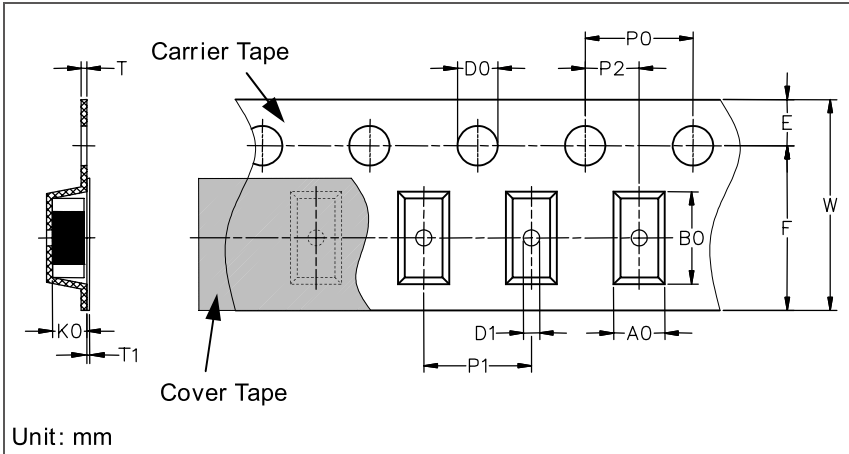
Operating Temperature		-40 ~ +85 °C
Storage Temperature		-40 ~ +125°C
Response Time		<1 ns
Solderability		245±5 °C, 3±1sec
Solder leach resistance		260±5 °C, 10±1sec
Taping Package Storage Condition	Storage Temperature	5 ~ 40°C
	Relative Humidity	To 65%
	Storage Time	12 Months max

### Environmental Performance

Item	Specifications	Test Condition
Bias Humidity	$V_V / V_V \leq \pm 10 \%$	90%RH, 40°C, Working Voltage, 1000 hrs
Thermal Shock	$V_V / V_V \leq \pm 10 \%$	-40°C to 85°C, 30 min. cycle, 5 cycles
Full Load Voltage	$V_V / V_V \leq \pm 10 \%$	Working Voltage, 85°C, 1000 hrs

## Metal Oxide Varistors - BL3220A Series

### Packing specifications



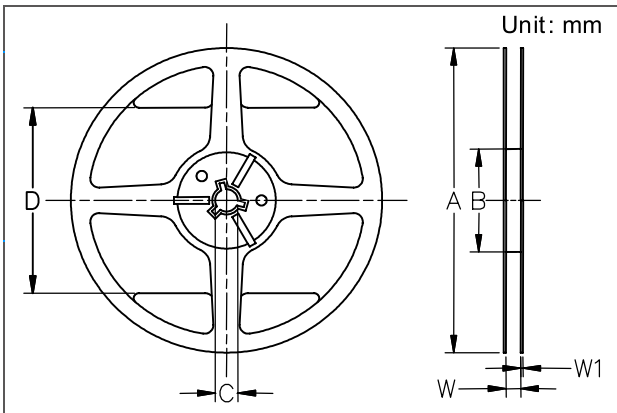
Carrier tape transparent cover tape should be heat-sealed to carry the products, and the reel should be used to reel the carrier tape.

The adhesion of the heat-sealed cover tape shall be 40+20/-15 grams.

Both the head and the end portion of taping shall be empty for reel package and SMT auto-pickup machine. And a normal paper tape shall be connected in the head of taping for the operator handle.

Symbol	A0 ±0.10	B0 ±0.10	K0 ±0.10	T ±0.05	T1 ±0.05	D0 +0.10 -0.00	D1 ±0.05	P1 ±0.10	P2 ±0.05	P0 ±0.050	W ±0.20	E ±0.10	F ±0.05
3220	5.3	8.5	2.80	0.25	0.10	1.50	1.00	4.00	2.00	4.00	8.00	1.75	3.50

### Taping Reel Dimensions



Symbol	A	B	C	D	W	W1
3220	178.0±1.0	60.0±0.5	13.0±0.2	110.0±0.5	13.5±0.5	1.5±0.15

### 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 heat of taping.

### Quantity of products in the taping package

SIZE EIA (EIAJ)	3220
Standard Packing Quantity (PCS / reel)	1000

The contents of a box :  
3220 Series: 6 reels / inner box

### Label and Marking:

The paper label shall be plastered on the obvious side of the reel, and the information show as right side