

Radial Lead Varistor (MOV)

UNS3220- Series

Description

The UNS3220- series radial leaded varistors provides an ideal circuit protection solution for lower DC voltage applications by offering higher surge ratings than ever before available in such small discs.

The maximum peak surge current rating can reach up to 1KA (8/20 μ s pulse) to protect against high peak surges, including indirect lightning strike interference, system switching transients and abnormal fast transients from the power source.

Feature

- ◆ Wide operating voltages ranging from 11Vrms to 460Vrms
- ◆ Fast response time of less than 25ns, instantly clamping the transient over voltage.
- ◆ High surge current handling capability.
- ◆ High energy absorption capability.
- ◆ Low clamping voltages, providing better surge protection
- ◆ White package design without shadow in LED lighting application
- ◆ SMD mountable disk varistors, suitable for lead-free reflow / wave soldering

Applicable

- ◆ Power supplies for telecommunication systems
- ◆ Surge protection in industrial electronics.
- ◆ Protection for LED circuits
- ◆ Relay and electromagnetic valve surge absorption.



General Characteristics Definition

- ◆ Operating Temperature: $-55^{\circ}\text{C} \sim +125^{\circ}\text{C}$
- ◆ Storage Temperature: $-55^{\circ}\text{C} \sim +150^{\circ}\text{C}$
- ◆ Electric strength: $\geq 2.5\text{kV}_{\text{RMS}}$
- ◆ Insulation Resistance: $> 100\text{M}\Omega$

Part Numbering

UN - S - 3220 - 471 - K
 (1) (2) (3) (4) (6)

(1) UN: Logo

(2) Type : S: SMD

(3) Size(mm) : 8.0*6.3mm

(3) Varistor Voltage $V_{1\text{mA}}$: $47 \times 10^1 = 470\text{V}$

(4) Tolerance : K $\pm 10\%$, L $\pm 15\%$, M $\pm 20\%$

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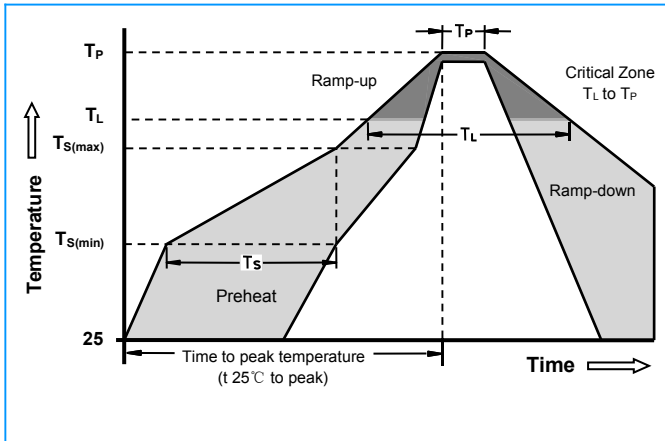
Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Part Number	Maximum Allowable Voltage		Varistor Voltage	Withstanding Surge Current 8/20μS	Max Clamping Voltage		Maximum Energy (2ms)	Rated Power
Standard	V _{AC} (V)	V _{DC} (V)	V _{1mA} (V)	I(A) Standard 1 Time	V _C (V)	I _P (A)	1 time (J)	(W)
UNS3220-180K	11	14	18(15-21)	250	36	2.5	0.4	0.02
UNS3220-220K	14	18	22(20-24)	250	43	2.5	0.5	0.02
UNS3220-270K	17	22	27(24-30)	250	53	2.5	0.7	0.02
UNS3220-330K	20	26	33(30-36)	250	65	2.5	0.8	0.02
UNS3220-390K	25	31	39(35-43)	250	77	2.5	0.9	0.02
UNS3220-470K	30	38	47(42-52)	250	93	2.5	1.1	0.02
UNS3220-560K	35	45	56(50-62)	250	110	2.5	1.3	0.02
UNS3220-680K	40	56	68(61-75)	250	135	2.5	1.6	0.02
UNS3220-820K	50	65	82(74-90)	1000	135	10	2.5	0.20
UNS3220-101K	60	85	100(90-110)	1000	165	10	3.0	0.20
UNS3220-121K	75	100	120(108-132)	1000	200	10	3.5	0.20
UNS3220-151K	95	125	150(135-165)	1000	250	10	4.5	0.20
UNS3220-181K	115	150	180(162-198)	1000	300	10	4.5	0.20
UNS3220-201K	130	170	200(185-225)	1000	340	10	6.0	0.20
UNS3220-221K	140	180	220(198-242)	1000	360	10	6.5	0.20
UNS3220-241K	150	200	240(216-264)	1000	395	10	7.5	0.20
UNS3220-271K	175	225	270(243-297)	1000	455	10	8.0	0.20
UNS3220-331K	210	275	330(297-363)	1000	545	10	9.5	0.20
UNS3220-361K	230	300	360(324-396)	1000	595	10	11.0	0.20
UNS3220-391K	250	320	390(351-429)	1000	650	10	12.0	0.20
UNS3220-431K	275	350	430(387-473)	1000	710	10	13.5	0.20
UNS3220-471K	300	385	470(423-517)	1000	775	10	15.0	0.20
UNS3220-511K	320	415	510(459-561)	1000	845	10	16.0	0.20
UNS3220-561K	350	460	560(504-616)	1000	930	10	16.5	0.20
UNS3220-621K	385	505	620(558-682)	1000	1025	10	17.0	0.20
UNS3220-681K	420	560	680(612-748)	1000	1120	10	18.0	0.20
UNS3220-751K	460	615	750(675-825)	1000	1240	10	18.5	0.20

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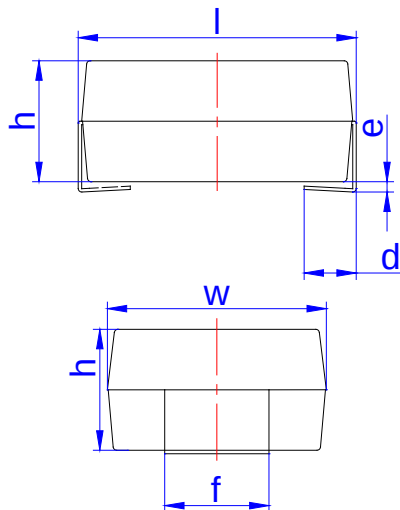
Soldering Parameters



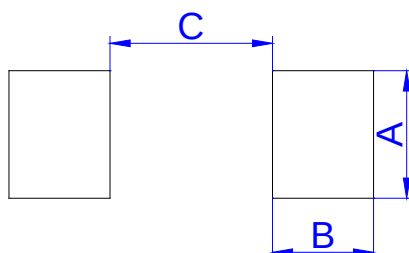
Reflow Condition		Lead-free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	150°C
	-Temperature Max ($T_{S(max)}$)	200°C
	- Time (min to max) (t_s)	60 -180 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (min to max) (t_s)	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
Do not exceed		280°C

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

Dimensions Unit:mm



RECOMMENDED SOLDER PAD LAYOUT



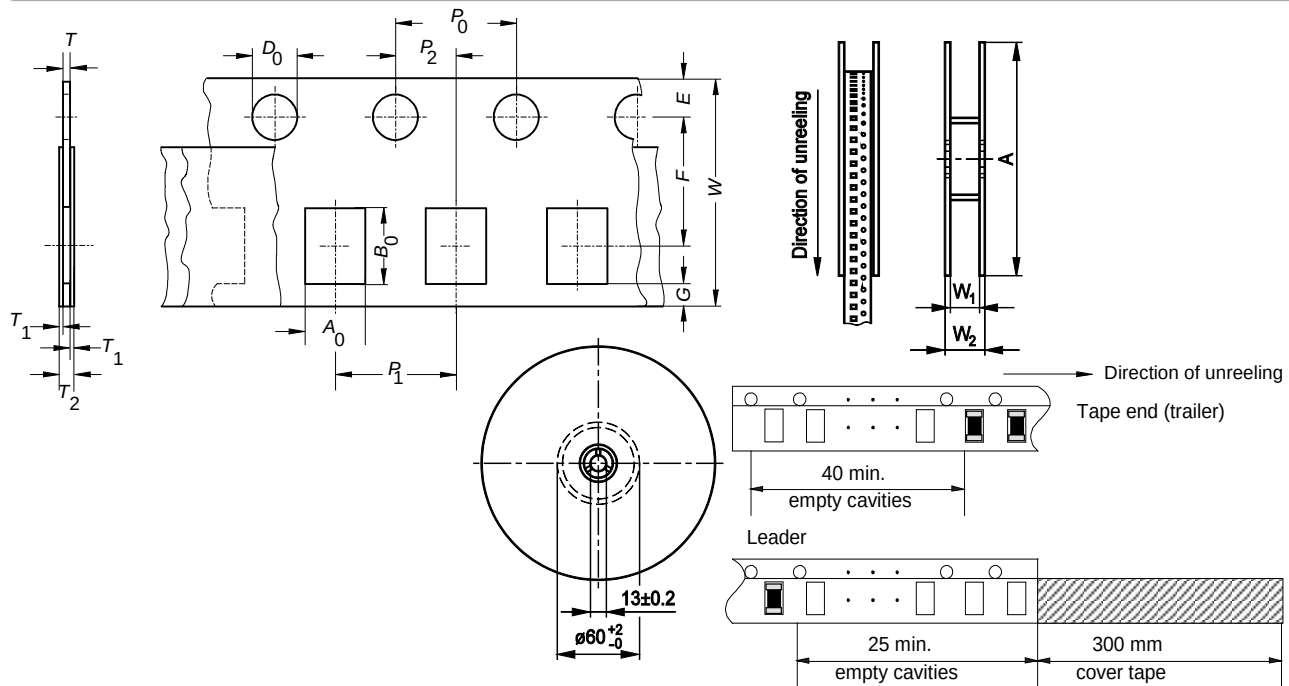
Ref.	Dimension					
	Millimeters			inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
l	7.7		8.0	0.303		0.327
w	6.0		6.6	0.236		0.260
h	3.1		3.8	0.122		0.150
d	1.2		1.8	0.047		0.071
e	0		0.3	0		0.012
f	3.7		3.3	0.106		0.130

Ref.	Dimension					
	Millimeters			inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A		3.5			0.138	
B		2.8			0.110	
C		4.5			0.177	

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Taping And Packaging Information



Definition	Symbol	Dimension					
		Millimeters			inches		
		Min.	Typ.	Max.	Min.	Typ.	Max.
Compartment width	A_0	6.8	7.0	7.2	0.268	0.276	0.283
Compartment length	B_0	8.5	8.7	8.9	0.335	0.343	0.350
Sprocket hole diameter	D_0	1.5	-	1.6	0.059	-	0.063
Sprocket hole pitch	P_0	3.9	4.0	4.1	0.154	0.157	0.161
Distance center hole to center compartment	P_2	1.95	2.00	2.05	0.077	0.079	0.081
Pitch of the component compartments	P_1	11.9	12.0	12.1	0.469	0.472	0.476
Tape width	W	15.7	16.0	16.3	0.618	0.630	0.642
Distance edge to center of hole	E	1.65	1.75	1.85	0.065	0.069	0.073
Distance center hole to center compartment	F	7.45	7.50	7.55	0.293	0.295	0.297
Distance compartment to edge	G	0.75	-	-	0.030	-	-
Overall thickness	T_2	-	-	5.5	-	-	0.217
Thickness tape	T	-	-	0.3	-	-	0.012
Reel diameter	A	328	-	330	12.91	-	12.99
Reel width (inside)	W_1	16.4	-	17.9	0.646	-	0.705
Reel width (outside)	W_2	-	-	22.4	-	-	0.882

1) Quantity of taping packing(pcs): 1000