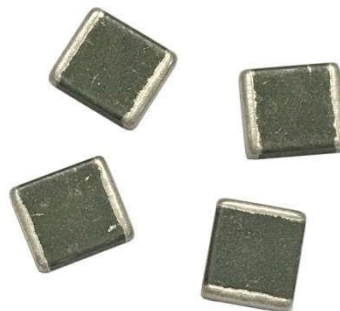


Features

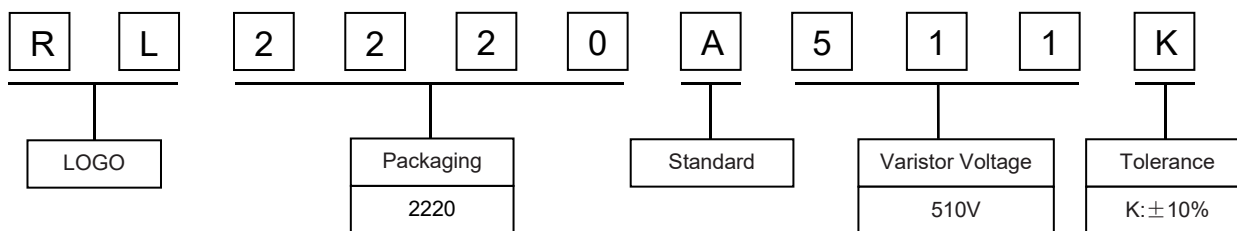
- EIA size:2220
- Variable capacitance
- MSL level 1
- Operating voltage: 14Vdc ~560Vdc
- High surge suppress capability
- Bidirectional and symmetrical V/I characteristics
- Multilayer ceramic construction technology
- RoHS & Halogen Free (HF) compliant
- Operating temperature range: -55℃ ~ +125℃
- Storage temperature range: 5℃ ~ +40℃



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.
- Protection of Components and Circuits Sensitive to ESD Transients Occurring on Power supplies, Control and Signal Lines.

Part Number Code



Electrical Characteristics

Type Number	Varistor Voltage	Max. Allowable Voltage		Max. Energy (10/1000μs)	Max. Clamping Voltage (8/20μs)		Withstanding Surge Current (8/20μs)
	V _{1mA} (V)	V _{AC} (V)	V _{DC} (V)	(J)	I _P (A)	V _C (V)	I(A)
RL2220A180K	16.8~21	10	14	2.5	10	42	1200
RL2220A240K	21.6~27	13	18	2.5	10	54	1200
RL2220A270K	24~30	14	20	2.5	10	60	1200
RL2220A300K	26.4~33	16	22	2.5	10	63	1200
RL2220A330K	28.8~36	17	24	2.5	10	68	1200
RL2220A360K	32.4~40.5	19	27	2.5	10	77	1200
RL2220A390K	33.6~42	20	28	2.5	10	80	1200
RL2220A420K	36~45	21	30	2.5	10	86	1200
RL2220A470K	42~52.5	25	35	2.5	10	95	1200
RL2220A560K	50.4~63	30	42	2.5	10	107	1200
RL2220A680K	60~75	35	50	3.2	10	128	1200
RL2220A820K	72~90	42	60	3.2	10	149	1200
RL2220A101K	90~110	53	75	3.2	10	176	1200
RL2220A121K	108~132	64	90	3.2	10	211	1200
RL2220A181K	162~198	115	150	3.2	10	300	500
RL2220A201K	180~220	120	160	3.2	10	340	500
RL2220A221K	198~242	130	170	3.2	10	360	500
RL2220A241K	216~264	150	200	5.6	10	415	500
RL2220A271K	243~297	175	225	5.6	10	475	500
RL2220A331K	297~363	210	275	5.6	10	550	500
RL2220A361K	324~396	230	300	5.6	10	595	500
RL2220A391K	351~429	250	320	8.5	10	675	500
RL2220A431K	387~473	275	350	8.5	10	710	500
RL2220A471K	423~517	300	385	8.5	10	775	500
RL2220A511K	459~561	320	410	8.5	10	850	500
RL2220A561K	504~616	350	455	8.5	10	925	400
RL2220A681K	612~748	420	560	8.5	10	1120	250

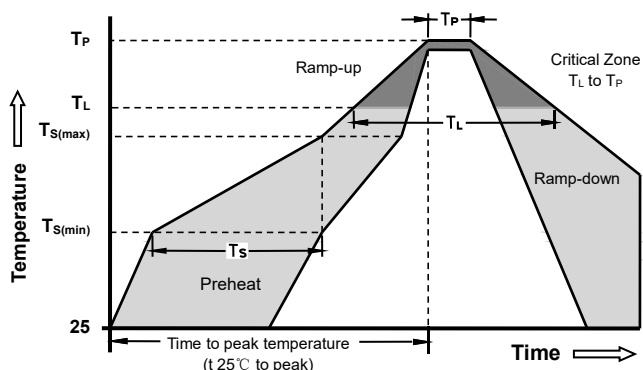
Environmental Performance

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, 30min.cycle, 5 cycles
Full Load Voltage	$V_V / V_V \leq \pm 10\%$	Working Voltage, 85°C, 1000 hrs

General Technical Data

Response Time	<1ns	
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

Soldering Parameters - Reflow Soldering (Surface Mount Devices)



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 (Liquids 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) (Liquids)	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		260°C

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

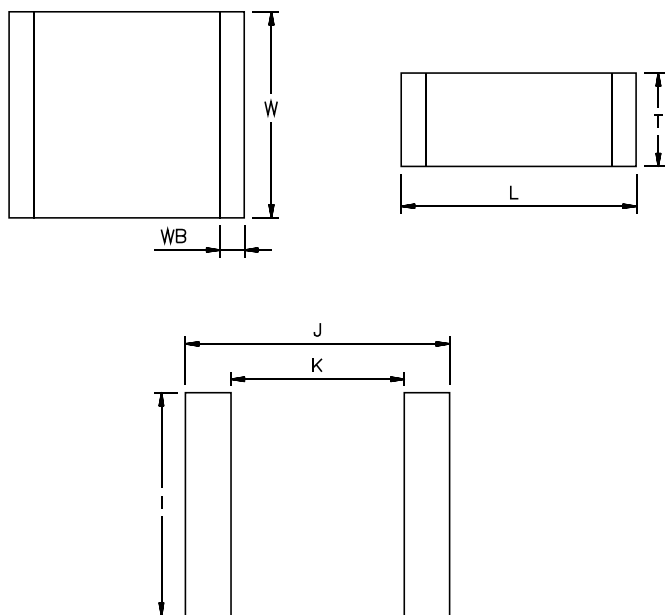
Soldering gun procedure

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.

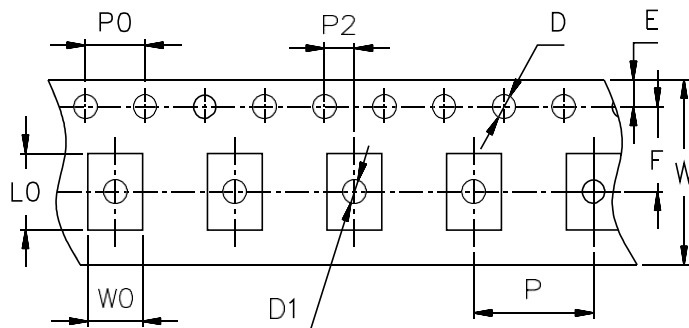
Dimensions



Recommended Soldering Pad Layout

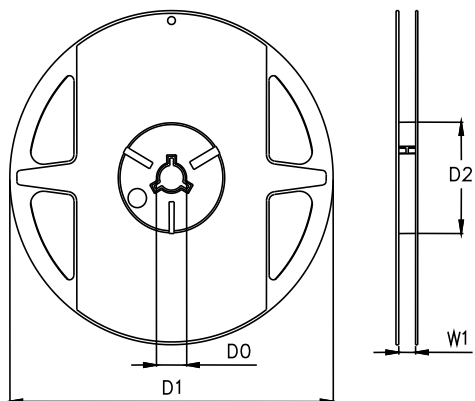
Symbol	Millimeters	Inches
L	5.70±0.50	0.224±0.02
W	5.08±0.50	0.20±0.02
T_{max.}	3.80	0.15
WB	0.60±0.25	0.024±0.01
I	5.5	0.217
J	6.4	0.252
K	4.2	0.165

Taping and Reel Specifications



Symbol	Millimeters	Inches
W	12.00±0.20	0.472±0.008
E	1.75±0.10	0.069±0.004
F	5.50±0.05	0.217±0.002
D	1.55±0.05	0.061±0.002
D1	Φ1.50±0.05	Φ0.059±0.002
P	8.00±0.10	0.315±0.004
P0	4.00±0.05	0.157±0.002
P2	2.00±0.05	0.079±0.002
L0	7.62±0.10	0.300±0.004
W0	6.57±0.10	0.259±0.004

Packing Specifications



Symbol	Millimeters	Inches
D0	13.5±0.1	0.531±0.004
D1	178±2.0	7.008±0.079
D2	Φ60.0±0.5	Φ2.362±0.02
W1	12.82±0.2	0.505±0.008

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.

Model	SIZE EIA (EIAJ)	
180K~271k	Standard Packing Quantity (PCS/reel)	1000
331K~681k	Standard Packing Quantity (PCS/reel)	500