

Description

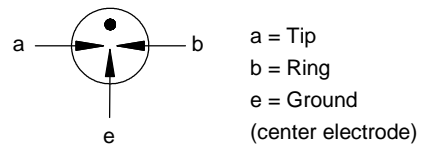
Gas discharge tubes (GDT) use noble gasses enclosed in ceramic tubes to provide an alternate circuit path for voltage spikes. The ceramic envelope and with nickel connectors allow for high loads. 3R-3S Gas Discharge Tubes (GDT) series has a surge rating of 2kA, 8/20µs. Offered in a Squared Surface Mount package, which helps to make pick and place on PCB process easier.

This GDT series is perfectly suited for broadband equipment applications. The GDT's low off-state capacitance is compatible with high bandwidth applications and this capacitance loading value does not vary if the voltage across the GDT changes.

3R-3S Gas Discharge Tube (GDT) series are specifically designed for protection of electrical, multimedia, and communication equipment against over voltage transients in surface mount assembly applications.



Electrical symbol



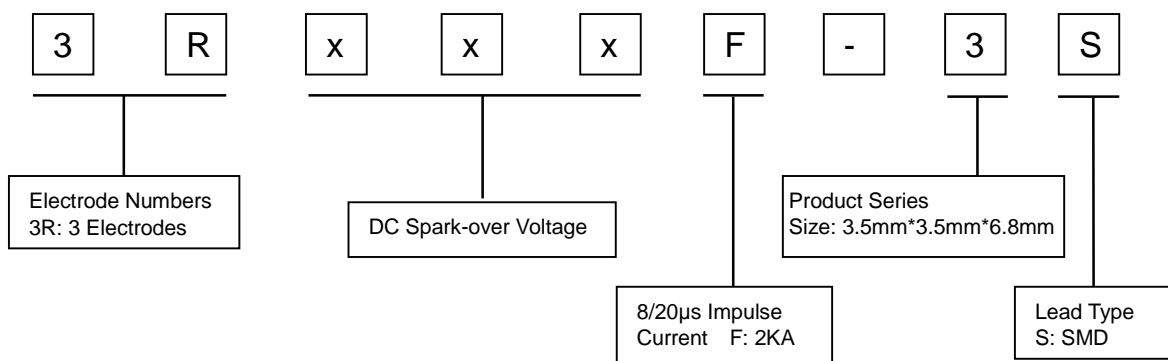
Features

- I Extremely small size
- I Excellent response to fast rising transients
- I Stable breakdown voltage
- I GHz working frequency
- I 8/20µs Impulse current capability: 2KA
- I Surface Mount package
- I Non-Radioactive
- I Ultra Low capacitance (<1pF)
- I High insulation resistance
- I Lead-free compliant
- I RoHS and REACH compliant
- I Size: 3.5mm*3.5mm*6.8mm
- I Storage and operational temperature: -40~+90°C

Applications

- I Communication equipment
- I CATV equipment
- I Data lines
- I Telecom SLIC protection
- I Broadband equipment
- I ADSL equipment, including ADSL2+
- I XDSL equipment
- I Satellite and CATV equipment
- I Test equipment
- I Consumer electronics
- I ESD protection

Part Number Code



Electrical Characteristics

Part Number	DC Spark-over Voltage ^{1) 2) 3)} @100V/S	Impulse Spark-over Voltage ³⁾		Insulation Resistance ^{3) 4)}	Capacitance @1MHz ³⁾	Glow Voltage @10mA ³⁾	Arc Voltage @1A ³⁾	Life Ratings			
		100V/μS	1KV/μS					Impulse Discharge Current @8/20μs ⁵⁾		Impulse Discharge Current @8/20μs ⁶⁾	Impulse Withstanding Voltage Capacity @10/700μS, 40W ±5 times ⁷⁾
		Max	Max					Nominal ±5 times	Max 1 time	Nominal 300 times	
		V	V					GΩ	pF	V	V
3R090F-3S	90±30%	500	600	1	1	60	10	2	3	100	6
3R150F-3S	150±30%	500	600	1	1	60	10	2	3	100	6
3R200F-3S	200±30%	600	700	1	1	60	10	2	3	100	6
3R230F-3S	230±30%	600	700	1	1	60	10	2	3	100	6
3R350F-3S	350±30%	800	900	1	1	60	15	2	3	100	6
3R400F-3S	400±30%	850	950	1	1	60	15	2	3	100	6
3R420F-3S	360-560	850	950	1	1	60	15	2	3	100	6
3R470F-3S	470±30%	900	1000	1	1	60	15	2	3	100	6

Glow to Arc transition Current..... ~0.3A

Weight..... ~0.30g

Operation and storage temperature..... -40~+90°C

Climatic category (IEC 60068-1)..... 40/90/21

Marking..... Without

Surface treatment..... Matte-tin plated

¹⁾ At delivery AQL 0.65 level II, DIN ISO 2859

²⁾ In ionized mode

³⁾ Tip or ring electrode to center electrode

⁴⁾ Insulation Resistance Measuring Voltage:
90V~150V at DC 50V
Other at DC 100V

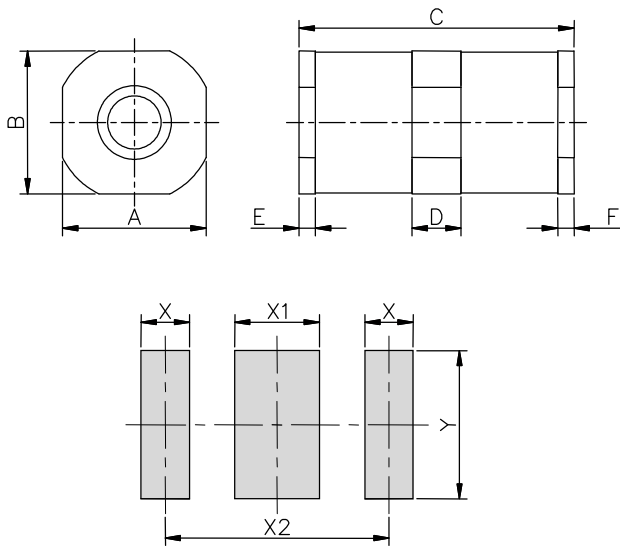
⁵⁾ Total current through center electrode, half value through tip respectively ring electrode.

⁶⁾ Tip to ring electrode.

⁷⁾ Tip to center electrode additional ring to center electrode.

Terms in accordance with ITU-T Rec. K.12, IEC 61643-311, GB/T 9043.

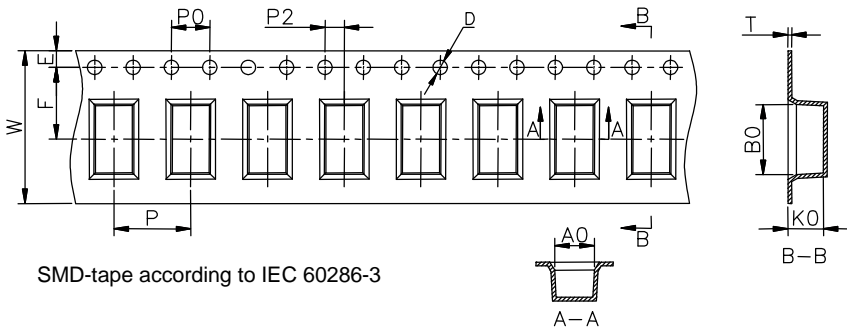
Dimensions



Recommended Soldering Pad Layout

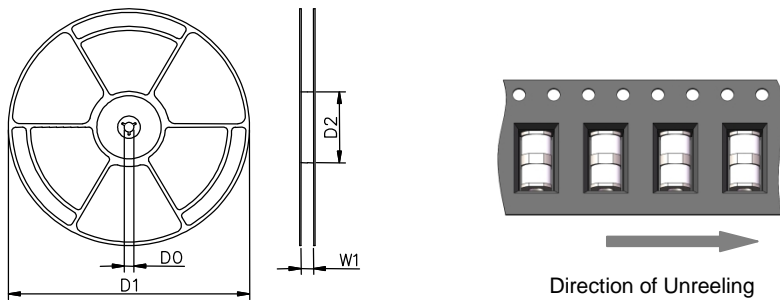
Symbol	Millimeters	Inches
A	3.5±0.2	0.138±0.008
B	3.5±0.2	0.138±0.008
C	6.8±0.3	0.268±0.012
D	1.2±0.3	0.047±0.012
E	0.4±0.2	0.016±0.008
F	0.4±0.2	0.016±0.008
X	1.4	0.055
X1	1.8	0.071
X2	6.7	0.264
Y	4.2	0.165

Taping and Reel Specifications



SMD-tape according to IEC 60286-3

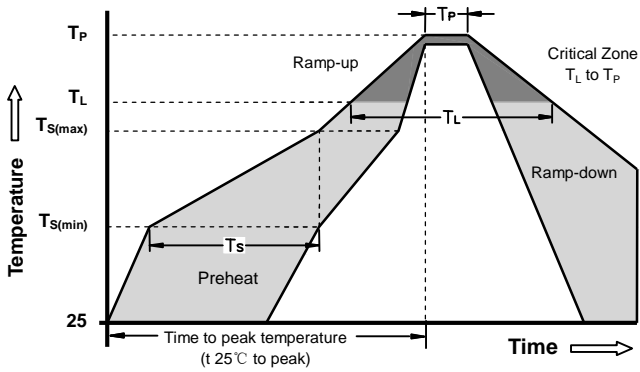
Symbol	Millimeters	Inches
W	16±0.3	0.630±0.012
A0	3.8±0.1	0.154±0.004
B0	7.0±0.1	0.276±0.004
K0	3.7±0.1	0.146±0.004
P	8±0.1	0.315±0.004
F	7.5±0.1	0.295±0.004
E	1.75±0.1	0.069±0.004
D	1.5+0.1/-0.0	0.059+0.004/-0.0
P0	4±0.1	0.157±0.004
P2	2±0.1	0.079±0.004
T	0.4±0.1	0.016±0.004
D0	13.3±0.15	0.524±0.006
D1	330±2	12.992±0.079
D2	100+1/-2	3.937+0.039/-0.079
W1	16.5±0.4	0.65±0.016



Packaging Quantity:

- 2,000 PCS per reel (13")
- 3 reels per inner box
- 6,000 PCS per inner box

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		5°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)		10 - 30 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		260°C