



# Datasheet

## Glass Gas Discharge (GGD)

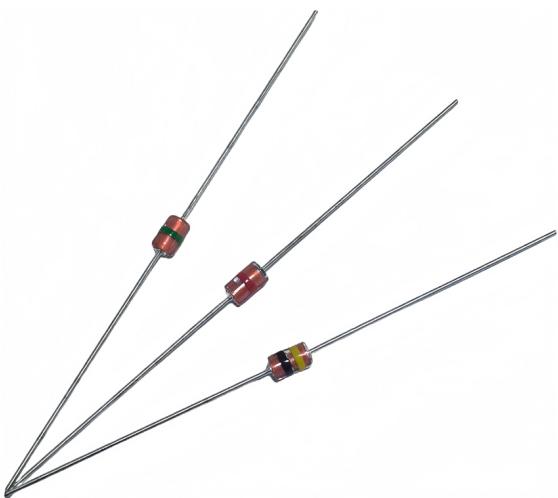
Series / Models	RL102 Series
Product Code	10.25.00.XXXX
Version	A1
Date	2025-10-09
File Number	SP-GGD-003

## Version History

Version	Date	Page	Description	Author
A0	2019-08-18	/	Initial draft	XianTao Jiang
A1	2025-10-09	All	<ol style="list-style-type: none"><li>1. Delete some models.</li><li>2. Add cover and version history</li><li>3. Add Color code &amp; Certifications</li><li>4. Update Packaging Information</li></ol>	Xia Wu

## Features

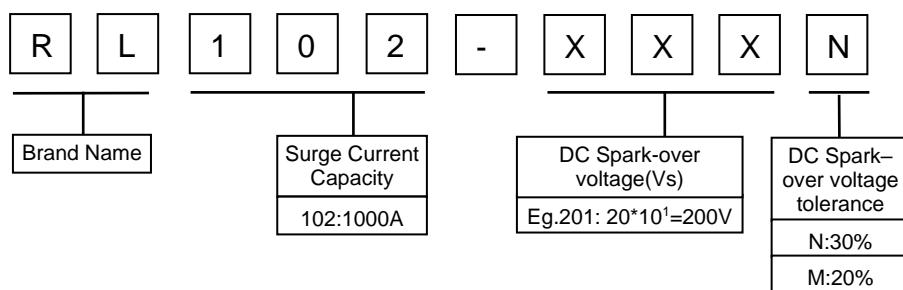
- | Bilateral symmetrical
- | Less decay at on/off state
- | Approximately zero leaking current before clamping voltage
- | High capability to withstand repeated lightning strikes.
- | Low electrode capacitance( $\leq 0.8\text{pF}$ ) and high isolation ( $\geq 100\text{M}\Omega$ ).
- | Temperature, humidity and lightness insensitive.
- | Working temperature range: :  $-45^\circ\text{C} \sim +125^\circ\text{C}$
- | Storage temperature range:  $-45^\circ\text{C} \sim +125^\circ\text{C}$



## Applications

- | Power Supplies
- | Motor sparks eliminating
- | Relay switching spark absorbing
- | Data line pulse guarding
- | Telephone/Fax/Modem
- | High frequency signal transmitters/receivers
- | Satellite antenna
- | Radio amplifiers
- | Alarm systems
- | Cathode ray tubes in Monitors/Television Viewing Systems

## Part Number Code



## Electrical Characteristics

Part Number	DC Spark-Over Voltage	Minimum Insulation Resistance		Maximum Capacitance (1kHz-6Vmax.)	Surge Current Capacity	Surge Life		Surge Electrostatic Life
	Vs	Test Voltage	I <sub>R</sub>	C <sub>j</sub>	@8/20μS	@8/20μS 300 times	@10/700μS ±5 times	@10KV
	V	V	MΩ	pF	A	A	KV	times
RL102-141N	140±30%	50	100	0.8	1000	100	4	200
RL102-201M	200±20%	100	100	0.8	1000	100	4	200
RL102-301M	300±20%	100	100	0.8	1000	100	4	200
RL102-401M	400±20%	250	100	0.8	1000	100	4	200
RL102-501M	500±20%	250	100	0.8	1000	100	4	200

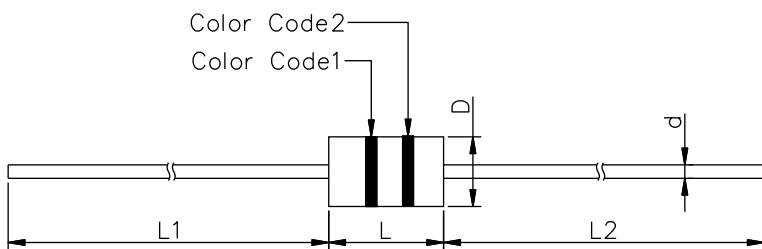
## Color code &amp; Certifications

Part Number	Color code1 <sup>1)</sup>	Color code2 <sup>1)</sup>	UL497B E465335
RL102-141N	Black	Yellow	--
RL102-201M	Red	--	◎
RL102-301M	Orange	--	◎
RL102-401M	Yellow	--	◎
RL102-501M	Green	--	--

<sup>1)</sup> Color order: black (0), brown (1), red (2), orange (3), yellow (4), green (5), blue (6), purple (7), gray (8), white (9).

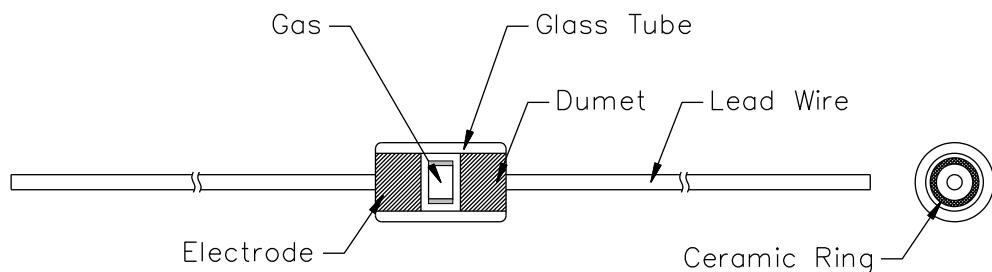
<sup>2)</sup> ◎ indicates that the product has passed the certification, --indicates that the product is not certified.

## Dimensions



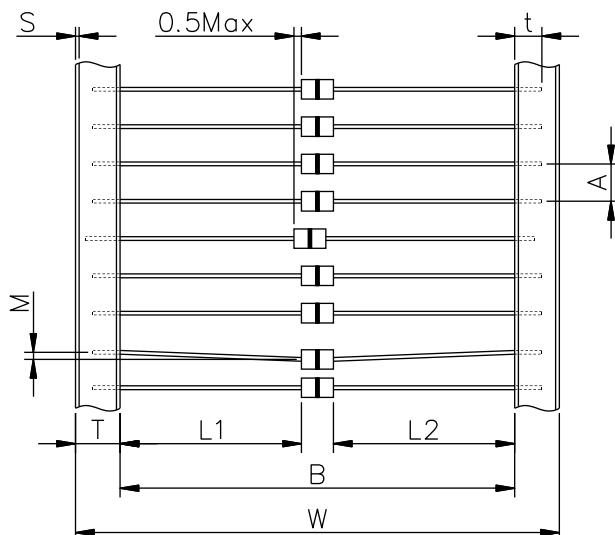
Symbol	Millimeters	Inches
L	4.3±0.3	0.169±0.012
D	φ2.6±0.3	Φ0.102±0.012
L1	28±2	1.102±0.079
L2	28±2	1.102±0.079
d	φ0.5±0.05	Φ0.020±0.002

## Structure



## Packaging Information

## Taping



Symbol	Millimeters	Inches
W	65.5 Max	2.579 Max
A	$5.0 \pm 0.5$	$0.197 \pm 0.020$
B	$52 + 0.5 / -0.00$	$2.047 + 0.020 / -0.00$
L1-L2	0.5 Max	0.020Max
M	1.2Max	0.047Max
S	0.8 Max	0.031Max
T	$6.0 \pm 1.0$	$0.236 \pm 0.039$
t	5.0 Max	0.197Max

	Inner box	Carton
Size	255×75×68mm	390×270×290mm
Quantity	MPQ/MOQ: 1 Inner box =2,000pcs	1 Carton=20 Inner boxes =40,000pcs
Photos		

## General Electrical Parameters

Item	Method	Specification
<b>DC Spark-over Voltage</b>	Gradually increase and measure the maximum DC voltage to obtain the discharge voltage, measure current at 1mA, 1 second maximum.	It depends on each spec.
<b>Insulation Resistance</b>	Measure the insulation resistance of two end of lead-wire under the specified DC voltage.	100MΩ min.
<b>Capacitance</b>	Measure the Electrostatic Capacitance under the test condition of 1KHz,DC 6V(max)	0.8pF max.

## Surge Characteristics

<b>Surge Current Capacity</b>	Apply impulse current of 1500A 8/20μS waveform, 3 times at an interval of 3 minutes (in accordance with ITU-TK-12).	No break or damage
<b>Surge Life</b>	Apply a standard impulse 10/700μS of 4KV for 5 times with intervals of 60 seconds., then change the polarity of the surge and apply the pulse again for 5 times. Then measure DC spark-over voltage, IR & Capacitance.	VS: $\Delta V_s/V_s \leq 30\%$
	Apply an impulse 8/20μS of 100A, total apply 300 times. Then measure DC spark-over voltage, IR & Capacitance.	VS: $\Delta V_s/V_s \leq 30\%$
<b>Surge Electrostatic Life</b>	10KV, 1500pF capacitor is discharged through a 2KΩ resistor, 200 times at an interval of 10seconds.	VS: $\Delta V_s/V_s \leq 30\%$ IR: 100MΩ min. C: 0.8 pF max.

## Solder Characteristics

Item	Method	Specification
Solder ability (According to JIS C0050,4.6)	Apply flux and immerse in molten solder, up to the point of 3mm from the body, for 5 seconds (265°C±5°C). Wash the lead-wire and check for soldering adhesion.	Lead wire is evenly covered by solder over 90%.
Solder Heat (According to JIS C0051)	Lead wire is dipped up to the point of 2mm from the body, into 265 °C ±5 °C solder for 10±1 seconds And measure the properties.	Within standard mentioned in Initial Characteristics.

## Environmental Reliability

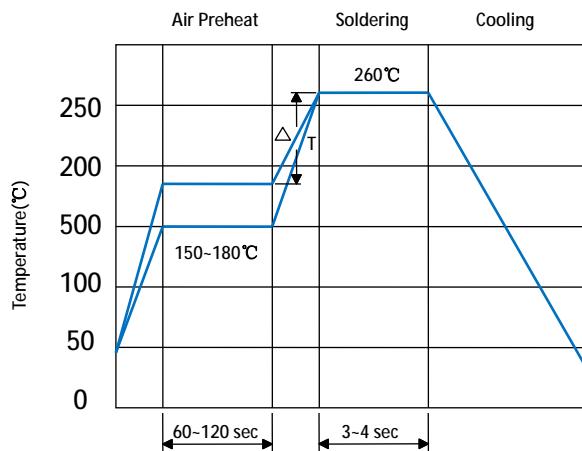
Item	Method	Specification
<b>Cold Resistance</b> (According to JIS C0020)	After -40±3°C(1000hrs) / room temp., normal humidity (4 hours) cycle, measure the properties.	Within standard mentioned in Initial Characteristics.
<b>Heat Resistance</b> (According to JIS C0021)	After 125±2°C(1000hrs) / room temp., normal humidity (4 hours) cycle, measure the properties.	Within standard mentioned in Initial Characteristics.
<b>Humidity Resistance</b> (According to JIS C0020)	After 85±2°C, 85% RH (1000hrs)/room temp., normal humidity (4hrs)cycle, measure the properties.	Within standard mentioned in Initial Characteristics.
<b>Temperature Cycle</b> (According to JIS C0025)	25 times repetition of cycle -40±3°C (30 Min.), room temp., (4 Min.), 125±2 °C (30 Min.), room temp., normal humidity(4hrs) .	Within standard mentioned in Initial Characteristics.

## Mechanical Reliability

Item	Method	Specification
<b>Pull Strength</b> (According to JIS C0051)	Apply 2.5Kg load approximately 30 seconds, then check for pull-out and breaking of the lead wire.	Within standard mentioned in Initial Characteristics.
<b>Flexure Strength</b> (According to JIS C0051)	Bend the lead wire, with jig which radius is 0.75~0.8mm, at the point of 2mm from the body, under 0.25Kg load applied at the right angle the direction of the axle and get the bent lead wire back to its original after the procedure was repeated 2 times.	Within standard mentioned in Initial Characteristics.

## Recommended Soldering Conditions

## Wave Soldering



## Hand Soldering

Solder iron temperature:  $350 \pm 5^\circ\text{C}$   
Heating time: 3 seconds max.

## General attention to soldering

1. High soldering temperatures and long soldering times can cause leaching of the termination, decrease in adherence strength, and the change of characteristic may occur.
2. For soldering, please refer to the soldering curves above. However, please keep exposures to temperatures exceeding  $200^\circ\text{C}$  to fewer than 50 seconds.
3. Please use a mild flux (containing less than 0.2wt% Cl). Also, if the flux is water soluble, be sure to wash thoroughly to remove any residue from the underside of components that could affect resistance.

- 1) Time shown in the above figures is measured from the point when chip surface reaches temperature.
- 2) Temperature difference in high temperature part should be within  $110^\circ\text{C}$
- 3) After soldering, do not force cool, allow the parts to cool gradually.

## Cleaning

- I When using ultrasonic cleaning, the board may resonate if the output power is too high. Since this vibration can cause cracking or a decrease in the adherence of the termination, we recommend that you use the conditions below.
- I Frequency: 40 KHz max.
- I Output power: 20 W/liter
- I Cleaning time: 5 minutes max.