

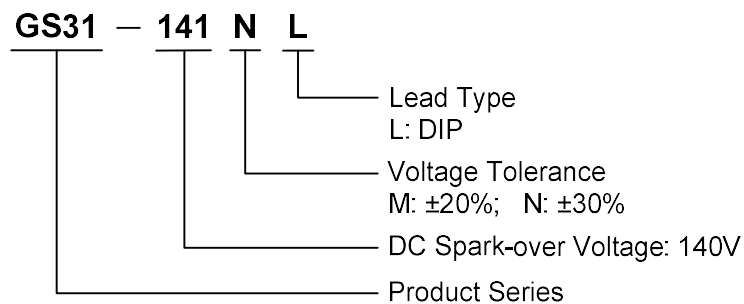
Features

- Approximately zero leaking current before clamping voltage
- Less decay at on/off state
- High capability to withstand repeated lightning strikes
- Low electrode capacitance($\leq 0.8\text{pF}$) and high isolation($\geq 100\text{M}\Omega$)
- Bilateral symmetrical
- Temperature, humidity and lightness insensitive
- RoHS compliant
- Meets MSL level 1, per J-STD-020
- Operating temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- Storage temperature: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$

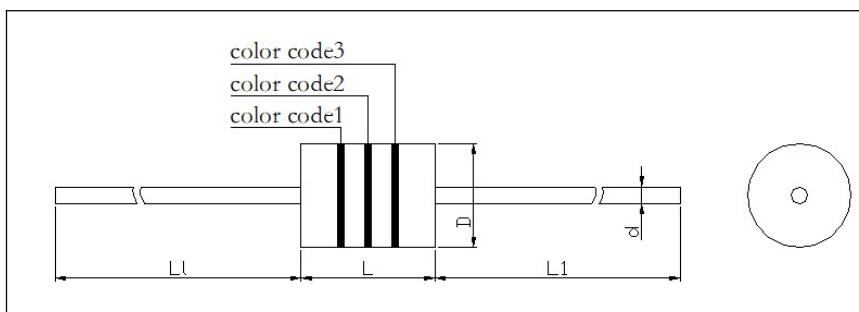
Applications

- 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/TVs

Part Number Code



Dimensions



Symbol	Dimensions(mm)
L	4.0 ± 0.5
L1	28.0 ± 3.0
D	3.1 ± 0.5
d	0.5 ± 0.05

Color Code

Part Number	Color Code 1	Color Code 2	Color Code 3
GS31-141NL	Black	Yellow	-
GS31-201ML	Red	-	-
GS31-301ML	Orange	-	-
GS31-401ML	Yellow	-	-
GS31-501ML	Green	-	-
GS31-601ML	Blue	-	-
GS31-701ML	Purple	-	-

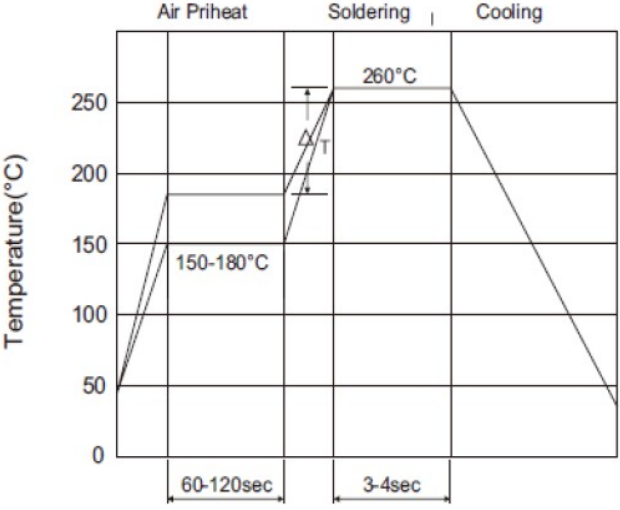
Electrical Characteristics (T_A=25°C)

Part Number	DC Spark-over Voltage	Minimum Insulation Resistance		Maximum Capacitance (1KHz-6V _{MAX})	Surge Current Capacity	Surge Voltage Capacity
	V _s (V)	Test Voltage(V)	IR _{OHM} (MΩ)	C(pf)	@8/20μs	@10/700μs
GS31-141NL	140V±30%	50V	100MΩ	0.8pF	2000A	4000V
GS31-201ML	200V±20%	100V	100MΩ	0.8pF	2000A	4000V
GS31-301ML	300V±20%	100V	100MΩ	0.8pF	2000A	4000V
GS31-401ML	400V±20%	250V	100MΩ	0.8pF	2000A	4000V
GS31-501ML	500V±20%	250V	100MΩ	0.8pF	2000A	4000V
GS31-601ML	600V±20%	250V	100MΩ	0.8pF	2000A	4000V
GS31-701ML	700V±20%	250V	100MΩ	0.8pF	2000A	4000V

Test Methods and Results

Items	Test Method	Standard
DC Spark-over Voltage	the DC spark-over voltage ascend up within 500V/s. Test current is 0.5mA max.	Meet specified value
Minimum Insulation Resistance	across the terminal at regular voltage. But the test voltage doesn't over the DC spark-over voltage.	Meet specified value
Maximum Capacitance	by applying a voltage of less than 6V (at 1KHz) between terminals.	Meet specified value
Surge Current Capacity	1.2/50 μ s & 8/20 μ s, 2000A, \pm 5 times, interval 60s.	No crack and no failures
Surge Voltage Capacity	10/700 μ s, 4000V, \pm 5 times, interval 60s.	No crack and no failures
Cold Resistance	-40 \pm 3 $^{\circ}$ C (1000hrs) / room temp., normal humidity(4hrs) , measure the properties.	Features are conformed to rated spec.
Heat Resistance	125 \pm 2 $^{\circ}$ C (1000hrs) / room temp., normal humidity(4hrs) , measure the properties.	Features are conformed to rated spec.
Humidity Resistance	After 85 \pm 2 $^{\circ}$ C, 85% RH (1000hrs)/room temp., normal humidity(4hrs) cycle, measure the properties.	Features are conformed to rated spec.
Temperature Cycle	25 times repetition of cycle -40 \pm 3 $^{\circ}$ C (30Min.), room temp., (4 Min.), 125 \pm 2 $^{\circ}$ C (30 Min.), room temp., normal humidity (4hrs) .	Features are conformed to rated spec.
Solder Ability	Apply flux and immerse in molten solder, up to the point of 3mm from the body, for 5 sec. (265 \pm 5 $^{\circ}$ C). Wash the lead wire and check for soldering adhesion.	Lead wire is evenly covered by solder
Solder Heat	Lead wire is dipped up to the point of 2mm from the body, into 265 \pm 5 $^{\circ}$ C solder for 10 \pm 1 sec. And measure the properties.	Conformed to rated spec.
Pull Strength	Apply 2.5kg load for 10sec.	Lead shall not pull out to snap
Flexural Strength	Bend lead wire at the point of 2mm from body under 0.25 load and back to its original point. Repeat 1 time.	Lead shall not pull out to snap

Recommended Soldering Conditions

Flow Soldering	Hand Soldering
 <p>The graph shows the temperature profile for flow soldering. It is divided into three stages: Air Preheat (60-120 seconds), Soldering (3-4 seconds), and Cooling. The temperature starts at 50°C, rises to 150-180°C during the preheat phase, then reaches 260°C during the soldering phase. A temperature difference ΔT is shown between the preheat and soldering phases. The cooling phase shows a gradual decrease in temperature.</p>	<p>Solder iron temperature: $350 \pm 5^\circ\text{C}$ Heating time: 3 seconds max.</p> <p>General attention to soldering</p> <ul style="list-style-type: none"> • High soldering temperatures and long soldering times can cause leaching of the termination, decrease in adherence strength, and the change of characteristic may occur. • For soldering, please refer to the soldering curves above. However, please keep exposures to temperatures exceeding 200°C to fewer than 50 seconds. • 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.
<ol style="list-style-type: none"> 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°C. 3) After soldering, do not force cool, allow the parts to cool gradually. 	
<p>Cleaning</p> <p>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.</p> <p>Frequency: 40kHz max. Output power: 20W/liter Cleaning time: 5 minutes max.</p>	

Packaging Specification

Tape	Symbol	Dimension (mm)	
	W	52.0±1.5	
	P	5.0±0.5	
	L1-L2	1.0max.	
	T	6.0±1.0	
	Z	1.2max.	
	R	Terminals must not project from tape	
	t	3.2max.	
	S	0.8max.	
	D	Φ3.6max.	
	D1	Φ0.5±0.05	
	L	4.5max.	
	<p data-bbox="89 1099 213 1128">Inner Box</p>	A	74.0±5.0
		B	77.0±5.0
		C	252.0±5.0
Quantity: 1500pcs			