GS14 SMD Series
Spark Gap

Description

SPG (Spark Gap Protectors) is a discharge micro gap obtained by the distance between electrodes. The tube is filled with inert gas and sealed with glass tube and Du magnesium wire. When the voltage at both ends of SPG increases, the nearby gas is ionized and discharge phenomena begin to occur at the micro gap. As the voltage drop between the two poles gradually increases, the discharge current also increases, and its ionization zone expands. At this time, the discharge current flows through the gas ionization zone to the other pole. When the current continues to increase to a certain extent, there is a transition from glow discharge to arc discharge inside the tube, and the product enters a low resistance state from a high resistance state. The voltage at both ends of the SPG also decreases, thus protecting the subsequent circuit. After the abnormal voltage disappears, the product returns to a high resistance state.

Additional Information

Resources | Accessories | Samples

Features

- Approximately zero leaking current before clamping voltage
- Less decay at on/off state
- High capability to withstand repeated lightning strikes
- Low electrode capacitance (≤0.8pF) and high isolation (≥100MΩ)
- Bilateral symmetrical
- Temperature, humidity and lightness insensitive
- RoHS compliant
- Meets MSL level 1, per J-STD-020
- Operating temperature: -40℃ ~ +85℃
- Storage temperature: -40℃ ~ +125℃

Application

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

GS14 SMD Series
Spark Gap

Electrical Characteristics (T_A=25℃ unless otherwise noted)

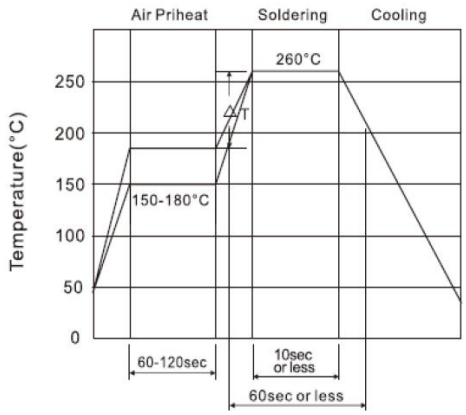
Part Number	DC Spark-over Voltage	Minimum Insulation Resistance		Maximum Capacitance (1KHz-6V_{max})	Surge Current Capacity
	V_S (V)	Test Voltage	R (MΩ)	C(pF)	@8/20μs (A)
GS14-141NM	140±30%	50VDC	100	0.8	300
GS14-201MM	200±20%	100VDC	100	0.8	300
GS14-301MM	300±20%	100VDC	100	0.8	300

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	1.2/50μs & 8/20μs,300A, ±5 times, interval 60s.	No crack and no failures
Cold Resistance	-40±3℃(1000hrs) / room temp., normal humidity(4hrs) , measure the properties.	Features are conformed to rated spec.
Heat Resistance	125±2℃(1000hrs) / room temp., normal humidity(4hrs) , measure the properties.	Features are conformed to rated spec.
Humidity Resistance	After 85±2℃, 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±3℃(30 Min.), room temp., (4 Min.), 125±2℃(30 Min.), room temp., normal humidity (4hrs) .	Features are conformed to rated spec.

Recommended Soldering Conditions

Reflow Soldering



General attention to soldering

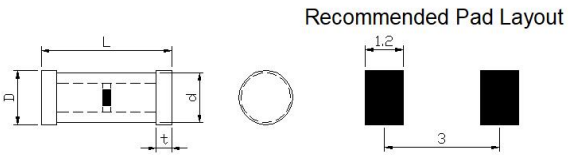
- High soldering temperatures and long soldering times can cause leaching of the termination, decrease in adherence strength, and the change of characteristic may occur.
- For soldering, please refer to the soldering curves. However, please keep exposures to temperatures exceeding 200℃ to fewer than 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.
- Time shown in the figures is measured from the point when chip surface reaches temperature.
- Temperature difference in high temperature part should be within 110℃.
- After soldering, do not force cool, allow the parts to cool gradually.

Cleaning

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.
Frequency: 40kHz max.
Output power: 20W/liter
Cleaning time: 5 minutes max.

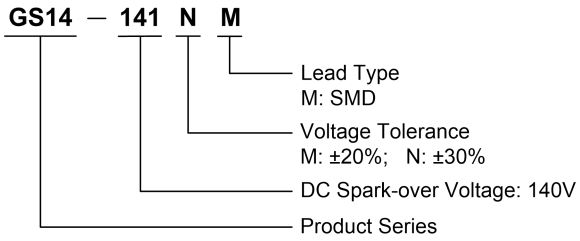
GS14 SMD Series
Spark Gap

Dimensions



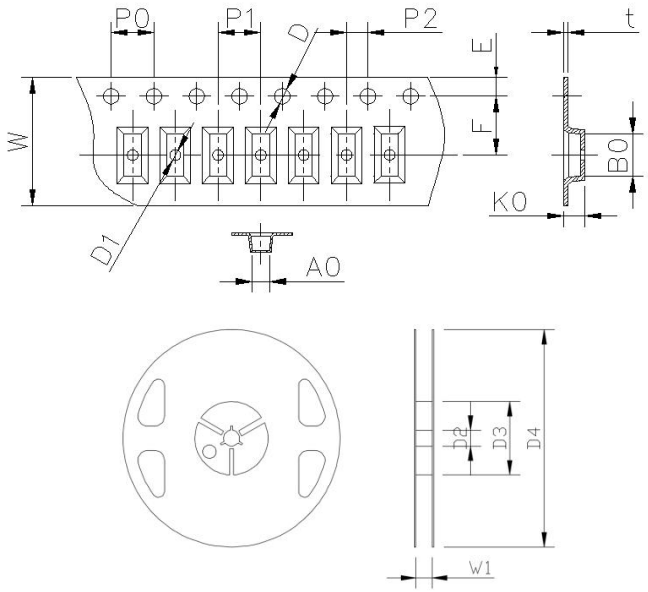
Symbol	Millimeters	Inches
L	3.4±0.5	0.134±0.020
D	1.4±0.5	0.055±0.020
d	1.3±0.5	0.051±0.020
t	0.4±0.2	0.016±0.008

Part Numbering System



Packaging Specification

Part number	Quantity	Packaging Option
GS14-xxxXM	3000	Tape & Reel - 8mm tape/7" reel



Symbol	Millimeters	Inches
W	8.0±0.2	0.315±0.008
P0	4.0±0.2	0.157±0.008
P1	4.0±0.1	0.315±0.004
P2	2.0±0.1	0.079±0.004
D	1.55±0.1	0.061±0.004
D1	1.0±0.1	0.039±0.004
E	1.75±0.1	0.069±0.004
F	3.5±0.1	0.138±0.004
A0	1.6±0.1	0.063±0.004
B0	4.0±0.1	0.157±0.004
K0	1.6±0.1	0.063±0.004
t	0.2±0.1	0.008±0.004
D2	13.0±1.0	0.512±0.039
D3	60.0±1.0	2.362±0.039
D4	178.0±2.0	7.001±0.079
W1	8.5±0.2	0.335±0.008