

# GS41 DIP 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 ( $\leq 1.0\text{pF}$ ) 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:  $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$

### 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

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### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number	DC Spark-over Voltage	Minimum Insulation Resistance		Maximum Capacitance (1KHz-6V <sub>max</sub> )	Surge Current Capacity	AC Withstanding Voltage
	V <sub>s</sub> (V)	Test Voltage	R (MΩ)	C(pF)	@8/20μs (A)	
GS41-102ML	1000±30%	500VDC	100	1.0	3000	-
GS41-152ML	1500±20%	500VDC	100	1.0	3000	-
GS41-182ML	1800±20%	500VDC	100	1.0	3000	-
GS41-202ML	2000±20%	500VDC	100	1.0	3000	-
GS41-242ML	2400±20%	500VDC	100	1.0	3000	AC1200V, 3sec.
GS41-272ML	2700±20%	500VDC	100	1.0	3000	AC1200V, 3sec.
GS41-302ML	3000±20%	500VDC	100	1.0	3000	AC1500V, 3min.
GS41-362ML	3600±20%	500VDC	100	1.0	3000	AC1800V, 3sec.
GS41-402ML	4000±20%	500VDC	100	1.0	3000	AC1800V, 3sec.

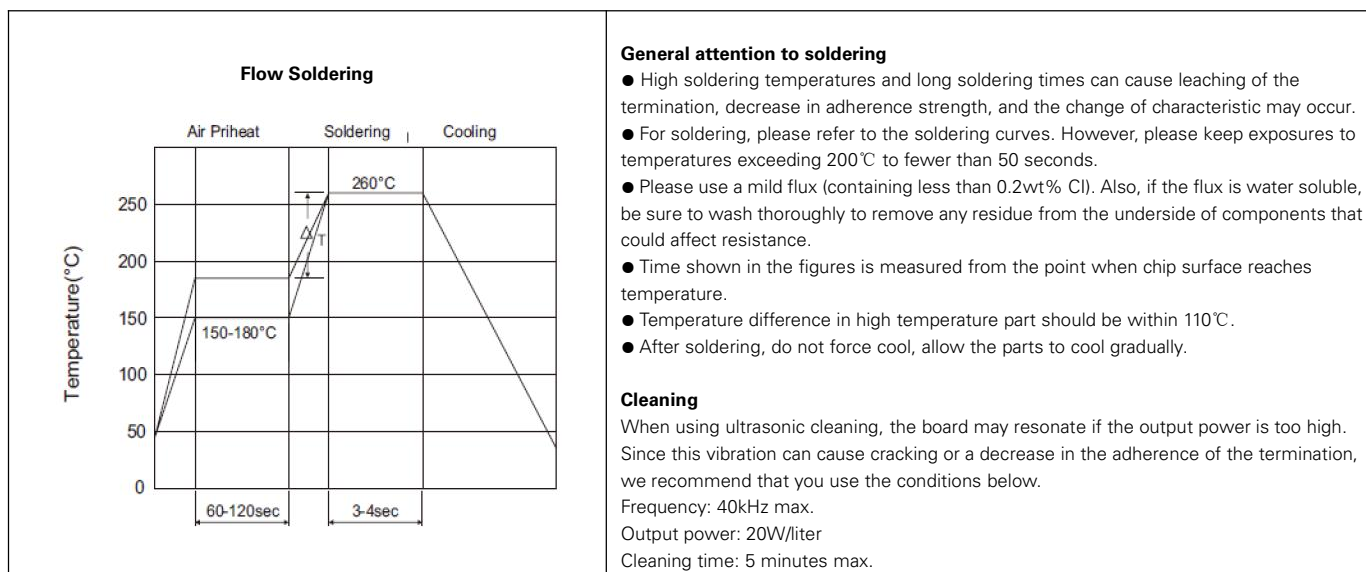
### Test Methods and Results

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	8/20μs, 3000A, ±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℃(30Min.), room temp., (4 Min.), 125±2℃(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±5℃). 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±5℃ solder for 10±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

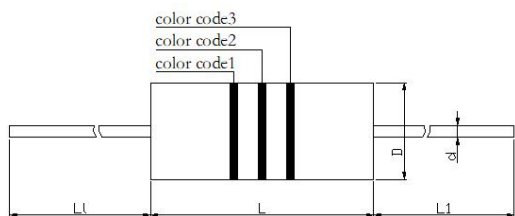
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### Recommended Soldering Conditions



### Dimensions



Symbol	Millimeters	Inches
<b>L</b>	9.5±1.0	0.374±0.039
<b>L1</b>	28.0±3.0	1.102±0.118
<b>D</b>	4.1±0.5	0.161±0.020
<b>d</b>	0.5±0.05	0.020±0.002

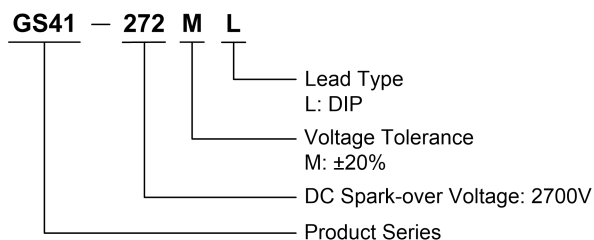
### Color Code

Part Number	Color Code 1	Color Code 2	Color Code 3
GS41-102ML	Brown	Black	Red
GS41-152ML	Brown	Green	Red
GS41-182ML	Brown	Gray	Red
GS41-202ML	Red	Black	Red
GS41-242ML	Red	Yellow	Red
GS41-272ML	Red	Purple	Red
GS41-302ML	Orange	Black	Red
GS41-362ML	Orange	Blue	Red
GS41-402ML	Yellow	Black	Red

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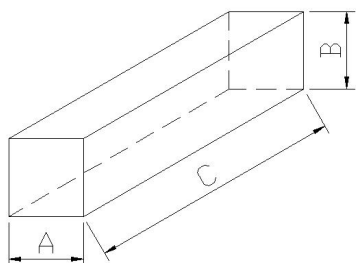
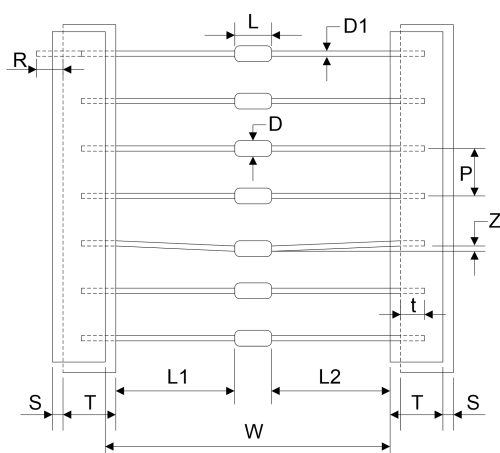
## Spark Gap

### Part Numbering System



### Packaging Specification

Part number	Quantity	Packaging Option
GS41-xxxML	1000	Tape & Box



Symbol	Millimeters	Inches
W	52.0 $\pm$ 1.5	2.047 $\pm$ 0.059
P	10.0 $\pm$ 0.5	0.394 $\pm$ 0.020
L1-L2	1.0 max.	0.039 max.
T	6.0 $\pm$ 1.0	0.236 $\pm$ 0.039
Z	1.2 max.	0.047 max.
R	Terminals must not project from tape	Terminals must not project from tape
t	3.2 max.	0.126 max.
S	0.8 max.	0.031 max.
D	$\Phi$ 4.6 max.	0.181 max.
D1	$\Phi$ 0.5 $\pm$ 0.05	0.197 $\pm$ 0.002
L	10.5 max.	0.413 max.
A	75.0 $\pm$ 5.0	2.953 $\pm$ 0.197
B	114.0 $\pm$ 5.0	4.488 $\pm$ 0.197
C	250.0 $\pm$ 5.0	9.843 $\pm$ 0.197