Innovative Service Around the Globe YAGEO

DATA SHEET

SPARK GAP PROTECTORS
POWER SUPPLIES

BK1-H series

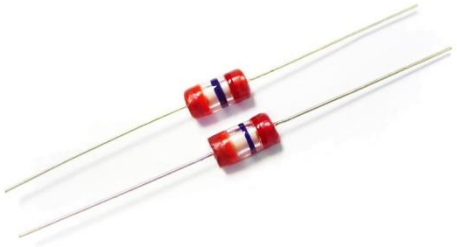
RoHS compliant & Halogen free



Product specification– February 23, 2021 V.1

Spark Gap (SPG) Data Sheet

Features

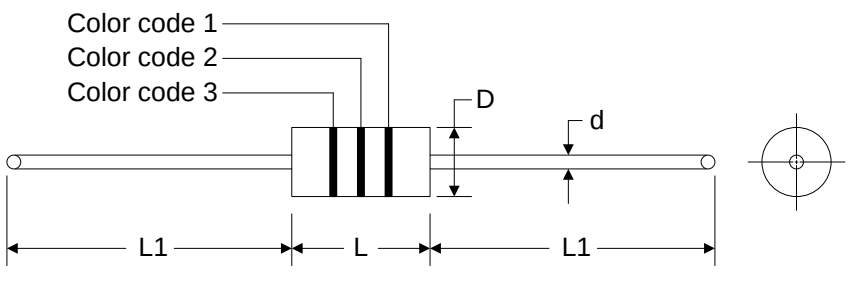


- Approximately zero leaking current before clamping voltage
- Less decay at on/off state.
- High capability to withstand repeated lightning strikes.
- Low electrode capacitance(≤1.0pF) and high isolation(≥100MΩ).
- RoHS compliant.
- Bilateral symmetrical.
- Temperature, humidity and lightness insensitive.
- No dark effect.
- Operating temperature: -40℃ ~ +85℃
- Storage temperature: -40℃ ~ +125℃
- Meets MSL level 1, per J-STD-020
- Safety certification: UL

Applications

- Power Supplies
- Motor sparks eliminating
- Relay switching spark absorbing
- Data line pulse guarding
- Electronic devices requiring UL497A and UL497B compliant
- Telephone/Fax/Modem
- High frequency signal transmitters/receivers
- Satellite antenna
- Radio amplifiers
- Alarm systems
- Cathode ray tubes in Monitors/TVs

Dimensions



Symbol	Dimension (mm)
L	9.0±1.5
L1	28.0±3.0
D	Φ4.1±0.5
d	Φ0.5±0.05

Electrical Characteristics

Part Number	Type ①	DC Spark-over Voltage	Minimum Insulation Resistance		Maximum Capacitance (1KHz-6V_{MAX})	Surge Current Capacity (8/20μs)	AC Withstanding Voltage
		Vs(V)	Test Voltage(V)	IR_{OHM} (MΩ)	C(pf)		
BK12005002	H	1000±20%	500	100	1.0	1500A	-
BK12007502	H	1500±20%	500	100	1.0	1500A	-
BK12009002	H	1800±20%	500	100	1.0	1500A	-
BK12010002	H	2000±20%	500	100	1.0	1500A	-
BK12012002	H	2400±20%	500	100	1.0	1500A	AC1200V, 3sec.
BK12013502	H	2700±20%	500	100	1.0	1500A	AC1200V, 3sec.
BK12015002	H	3000±20%	500	100	1.0	1500A	AC1500V, 3min.
BK12018002	H	3600±20%	500	100	1.0	1500A	AC1800V, 3sec.
BK12020002	H	4000±20%	500	100	1.0	1500A	AC1800V, 3sec.
BK12022502	H	4500±20%	500	100	1.0	1500A	AC2000V, 1min.
BK12025002	H	5000±20%	500	100	1.0	1500A	AC2000V, 1min.

Note：① Specific code by request.

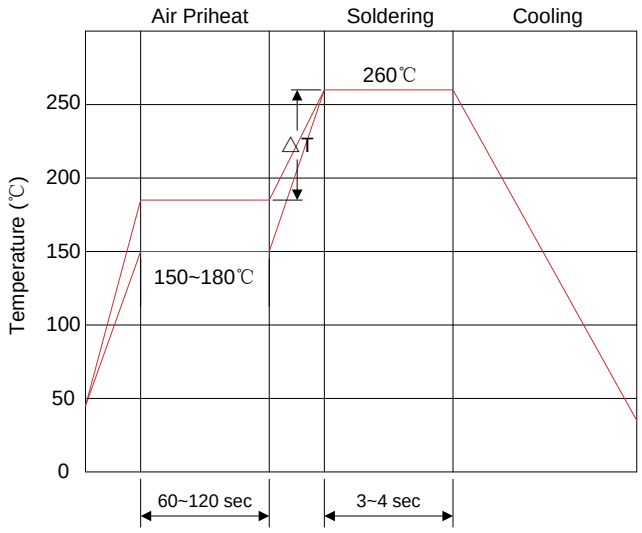
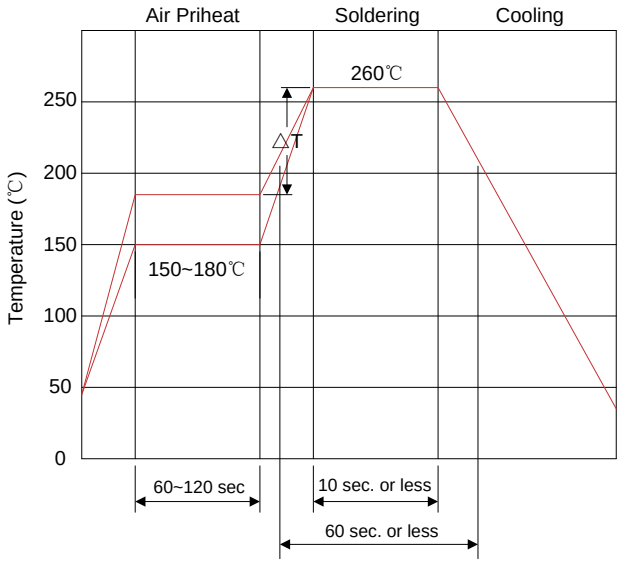
Color Code

Part Number	Type	Color Code 1	Color Code 2	Color Code 3
BK12005002	H	Brown	Black	Red
BK12007502	H	Brown	Green	Red
BK12009002	H	Brown	Gray	Red
BK12010002	H	Red	Black	Red
BK12012002	H	Red	Yellow	Red
BK12013502	H	Red	Purple	Red
BK12015002	H	Orange	Black	Red
BK12018002	H	Orange	Blue	Red
BK12020002	H	Yellow	Black	Red
BK12022502	H	Yellow	Green	Red
BK12025002	H	Green	Black	Red

Test Methods and Results

Items	Test Method	Standard
DC Spark-over Voltage	Measure starting discharge voltage (Vs) by gradually increasing applied DC voltage. Test current is 0.5mA max. And the DC voltage ascends up within 500V/second.	Meet specified value.
Insulation Resistance	Measure the insulation resistance across the terminal at regular voltage. But the test voltage doesn't over the DC spark-over voltage.	
Capacitance	Measure the electrostatic capacitance by applying a voltage of less than 6V (at 1KHz) between terminals.	
Surge Current Capacity	Charge a 1.2/50μs & 8/20μs, 1500A, and apply it to the sample. Do this 10 time.	No crack and no failures
Surge Life	Apply a standard impulse current (8/20μs of 100A) for 300 times at 60 seconds intervals.	
Cold Resistance	Measurement after -40℃/1000 HRS & normal temperature/2 HRS.	Features are conformed to rated spec.
Heat Resistance	Measurement after 125℃/1000 HRS & normal temperature/2 HRS.	
Humidity Resistance	Measurement after humidity 90~95℃(45℃) /1000 HRS & normal temperature/2 HRS.	
Temperature Cycle	10 times repetition of cycle -40℃/30min →normal, temp/2 min →125℃/30min, measurement after normal temp/2 HRS.	
Solder Ability	Apply flux and immerse in molten solder 230±5℃ for 3sec up to the point of 1.5mm from body. Check for solder adhesion.	Lead wire is evenly covered by solder.
Solder Heat	Measurement after lead wire is dipped up to the point of 1.5mm from body into 260±5℃ solder for 10sec.	Conformed to rated spec.
Pull Strength	Apply 0.5kg 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.	

Recommended Soldering Conditions

Flow Soldering Conditions	Reflow Soldering Conditions
	

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℃.
3) After soldering, do not force cool, allow the parts to cool gradually.

Hand Soldering

Solder iron temperature: 350±5℃
Heating time: 3 seconds max.

General attention to soldering

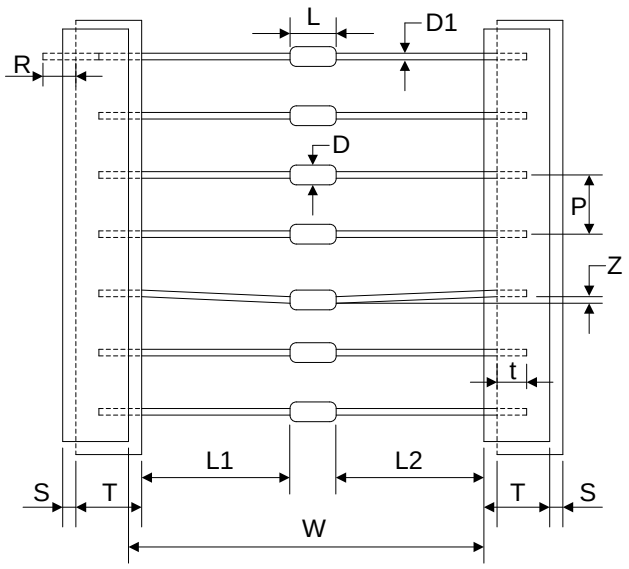
● High soldering temperatures and long soldering times can cause leaching of the termination, decrease in adherence strength, and the change of characteristic may occur.
● For soldering, please refer to the soldering curves above. However, please keep exposures to temperatures exceeding 200℃ to fewer 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.

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.

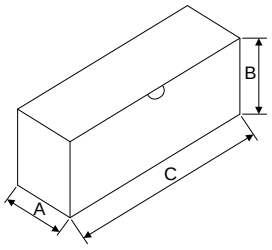
Packaging

Tape



Symbol	Dimension (mm)
W	52.0±1.5
P	10.0±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	Φ4.6max.
D1	Φ0.5±0.05
L	10.5max.

Inner Box



A	75.0±5.0
B	114.0±5.0
C	250.0±5.0
Quantity: 1000PCS	