Innovative Service Around the Globe YAGEO

DATA SHEET

SPARK GAP PROTECTORS
POWER SUPPLIES

BK3-MH series

RoHS compliant & Halogen free



Product specification– February 23, 2021 V.1

Spark Gap (SPG) Data Sheet

Features

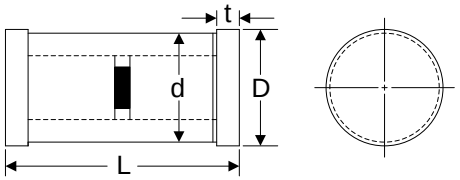


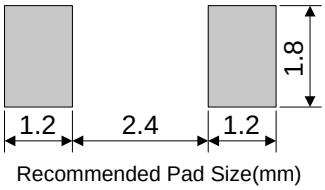
- Approximately zero leaking current before clamping voltage
- Less decay at on/off state.
- High capability to withstand repeated lightning strikes.
- Low electrode capacitance(≤0.8pF) and high isolation(≥100MΩ).
- RoHS compliant.
- Bilateral symmetrical.
- Temperature, humidity and lightness insensitive.
- 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





Recommended Pad Size(mm)

Symbol	Dimension (mm)
L	4.0±0.5
D	Φ2.1±0.5
d	Φ2.0±0.5
t	0.4±0.1

Electrical Characteristics

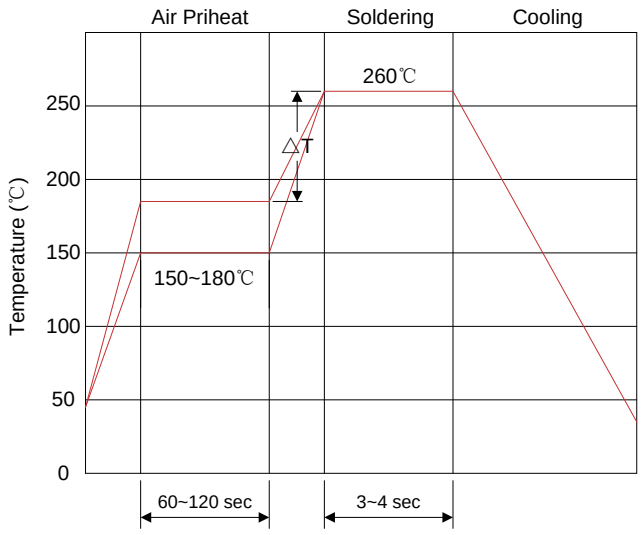
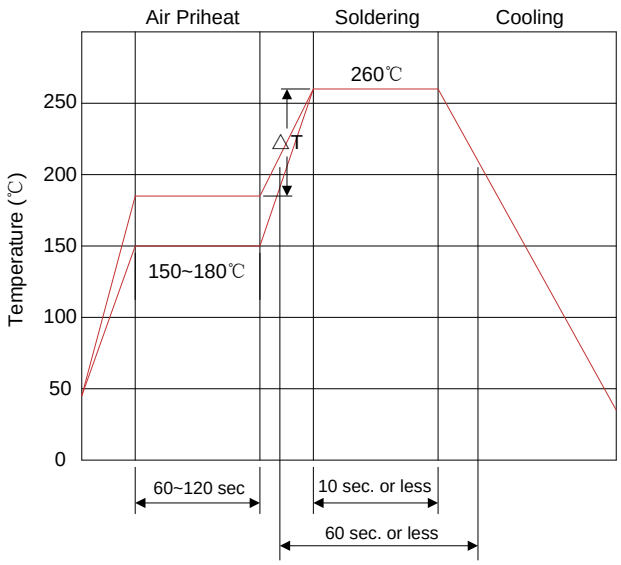
Part Number	Type ①	DC Spark-over Voltage	Minimum Insulation Resistance		Maximum Capacitance (1KHz-6V_{MAX})	Surge Current Capacity (8/20μs)	Surge Voltage Capacity (10/700μs)
		Vs(V)	Test Voltage(V)	IR_{OHM} (MΩ)	C(pf)		
BK33000702-M	H	140±30%	50	100	0.8	500A	4KV
BK32001002-M	H	200±20%	100	100	0.8	500A	4KV
BK32001102-M	H	220±20%	100	100	0.8	500A	4KV
BK32001502-M	H	300±20%	100	100	0.8	500A	4KV
BK32002002-M	H	400±20%	250	100	0.8	500A	4KV
BK32002502-M	H	500±20%	250	100	0.8	500A	4KV
BK32003002-M	H	600±20%	250	100	0.8	500A	4KV
BK32003502-M	H	700±20%	250	100	0.8	500A	4KV
BK32005002-M	H	1000±20%	500	100	0.8	500A	4KV

Note：① Specific code by request.

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 100V/s(Vs＜1000V) or 500V/s(Vs≥1000V).	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.	
Static Life	10KV with 1500pf condenser is discharged through 0Ω resistor. 200 times at an interval of 10sec.	Rate-of-change, within ±30% insulation resistance & capacitance, conformed to rated spec.
Surge Current Capacity	1.2/50μs & 8/20μs, 500A, ±5 times, each time interval 60 seconds. Thereafter, outer appearance shall be visually examined.	No crack and no failures
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.

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

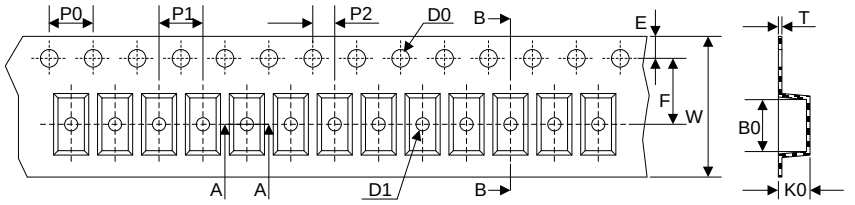
● High soldering temperatures and long soldering times can cause leaching of the termination, decrease in adherence strength, and the change of characteristic may occur.
● For soldering, please refer to the soldering curves above. However, please keep exposures to temperatures exceeding 200℃ to fewer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

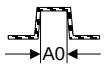
When using ultrasonic cleaning, the board may resonate if the output power is too high. Since this vibration can cause cracking or a decrease in the adherence of the termination, we recommend that you use the conditions below.
Frequency: 40kHz max.
Output power: 20W/liter
Cleaning time: 5 minutes max.

Packaging

Tape



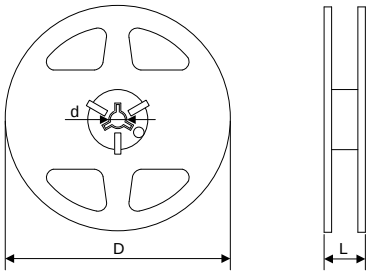
SECTION B-B



SECTION A-A

Symbol	Dimension (mm)
W	12.00±0.20
P0	4.00±0.10
P1	4.00±0.10
P2	2.00±0.05
D0	Φ1.5±0.05
D1	Φ1.0±0.10
E	1.75±0.10
F	5.50±0.05
A0	2.40±0.10
B0	4.20±0.10
K0	2.20±0.10
T	0.25±0.05

Reel



D	178.0±3.0
d	13.0±1.0
L	15.0±3.0
Quantity: 2000PCS	