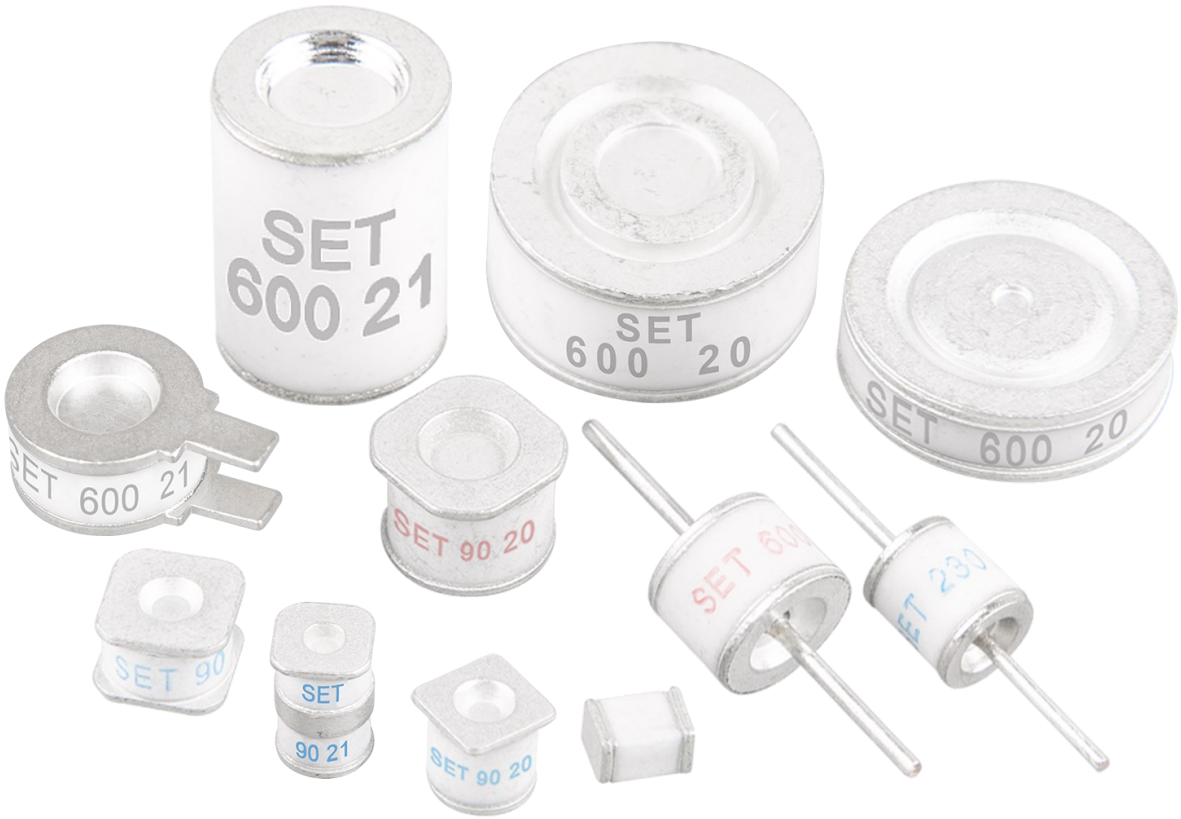
GDT

Gas Discharge Tube

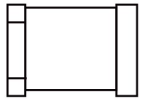
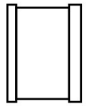
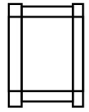
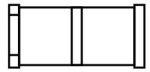


Features

- Fast Response
- Stable Performance Over Surface Life
- High Current Rating
- Low Capacitance
- High Insulation Resistance
- RoHS & REACH Compliant

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Gas Discharge Tube (GDT) Features & Model List Overview

DC Spark-over Voltage (V) \ Page	13	14	15	16	17	19	17	19	21
2000	○	○	○	○	○	○	○	○	○
1500	○	○	○	○	SD	SM	○	○	○
1200	○	○	○	○	SD	○	SS	○	○
1000	○	○	○	○	SD	SM	SS	○	○
800	○	○	○	SN	SD	SM	SS	○	○
600	○	SW	SX	SN	SD	SM	SS	SC	TZ
470	○	○	○	○	○	SM	SS	○	TZ
420	SZ	SW	SX	SN	SD	SM	SS	SC	TZ
350	○	○	○	SN	SD	SM	SS	○	TZ
300	SZ	SW	SX	SN	○	○	SS	SC	○
250	○	○	○	○	○	SM	SS	○	○
230	○	SW	SX	SN	SD	SM	SS	SC	TZ
200	SZ	SW	SX	SN	SD	SM	SS	SC	TZ
150	SZ	SW	SX	SN	SD	SM	SS	SC	TZ
90	SZ	SW	SX	SN	SD	SM	SS	SC	TZ
75	○	○	○	SN	SD	○	SS	○	TZ
70	○	○	○	SN	○	SM	○	○	○
Size (mm)	1.6 × 1.6 × 3.2	3.2 × 2.5 × 2.5	4.5 × 3.2 × 2.7	5 × 5 × 4.2	Φ5 × 5	Φ9.3 × 6	6.2 × 6.2 × 4.2	8.3 × 8.3 × 6	Φ5 × 7.6
Impulse Discharge Current (kA)	0.5	1	1 / 2	5	5	20	5	20	5 / 10
Product Structure	SMD Shape (Square)				 SMD Shape (One end is square and the other is round)		 SMD Shape (Middle circle and square at both ends)	 SMD Shape (Octagon)	 SMD Shape (One end is square and the other is round)

Model

+86 592-571-5838 www.SETsafe.com www.SETfuse.com E-mail : sales@SETfuse.com

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

SET safe | SET fuse

Gas Discharge Tube (GDT) Features & Model List Overview

DC Spark-over Voltage (V) \ Model	22	23	26	27	29	31	32	24	25
3600	SF	SE	○	○	○	○	○	○	○
3000	SF	SE	○	○	○	○	○	○	○
2500	SF	SE	○	○	○	○	SPI	○	○
2000	○	○	SPA	○	○	○	○	○	○
1500	SF	SE	SPA	SPB	SPC	SPJ	SPI	○	○
1400	○	○	○	○	○	○	○	○	○
1000	○	○	○	SPB	SPC	SPJ	SPI	○	○
800	SF	SE	SPA	SPB	SPC	SPJ	SPI	○	○
600	SF	SE	SPA	SPB	SPC	SPJ	SPI	TB	TR
470	SF	SE	SPA	○	○	○	○	TB	TR
420	○	○	○	○	○	○	○	TB	TR
350	SF	SE	SPA	SPB	SPC	SPJ	SPI	TB	TR
300	○	○	○	○	○	○	○	○	○
250	○	○	○	○	○	SPJ	○	○	○
230	SF	SE	○	○	SPC	SPJ	○	TB	TR
200	○	○	○	○	○	○	○	○	○
150	SF	SE	○	○	SPC	○	○	TB	TR
90	SF	SE	○	SPB	SPC	○	○	TB	TR
75	○	○	○	○	○	○	○	○	○
70	○	○	○	○	○	○	○	○	○
Size (mm)	Φ5.5 × 6	Φ8 × 6	Φ11.8 × 16	Φ11.8 × 6.2	Φ11.8 × 4.2	Φ16 × 4.5	Φ16 × 8	Φ6 × 8.5	Φ8 × 10
Impulse Discharge Current (kA)	3 / 5 / 10	5 / 10 / 20	30	20			40	5 / 10	5 / 10 / 20
Product Structure	Axial Shape							Radial Shape	

Page

+86 592-571-5838 www.SETsafe.com www.SETfuse.com E-mail : sales@SETfuse.com

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube

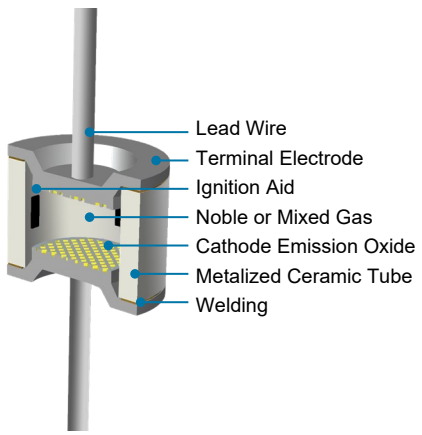
The Gas Discharge Tube (GDT) is a protective device which is filled with certain proportion of noble gas, or mixed gas or other discharge media in the space between metal electrodes and metalized ceramics, and then sealed at high temperature to form a single-gap or multi-gap switch type protective device. When the protected circuit or equipment suffers to surge, GDT will change from high impedance state to low impedance state and release the surge energy to reduce the residual voltage of the circuit, and then protect the equipment or human body from the hazard of transient overvoltage. SETsafe | SETfuse GDT product the voltage range 70 to 4500 V, and surge current (@8/20 μs) range 0.5 to 200 kA. It is widely used in the overvoltage protection of signals, power supplies and various ports; safety regulations Certificates include UL, cUL, TUV, and it meets for RoHS & REACH requirements.

Applications

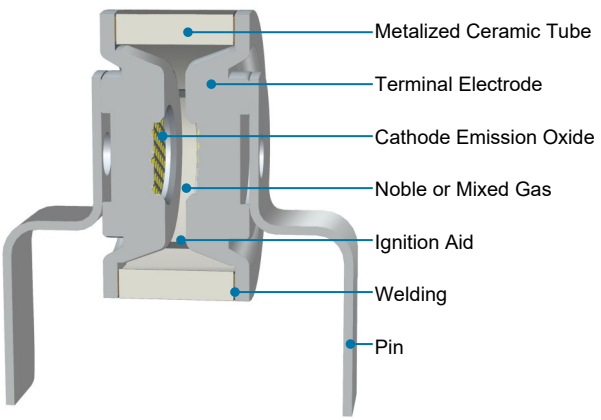
- WLAN xDSL
- CATV
- MDF
- Ethernet
- BTS (Base Station)
- Antenna and RF
- Power Supply
- Consumer Electronics
- N-PE Protection in AC Power

Structure

Small and Medium Surge GDT



Heavy Surge GDT



All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Part Number System

Small and Medium Surge GDT

SE 601 H - L

- L: Lead Type (L: Lead wire, Brank: without Lead Wire, SMD)
- H: Impulse Discharge Current (I_n = T: 3 kA, A: 5 kA, M: 10 kA, H: 20 kA)
- 601: D.C. Spark-over Voltage (100 V/s) (601: 60 x 10^1)
- SE: Product Series (Ref GDT Features & Model List Overview)

Heavy Surge GDT

SP I 601 D - XX

- XX: Pin Type (A: No Pin, B: Single Pin, C: Double Pins, 0, 1, 2……with Different Pins)
- D: Nominal Discharge Current (I_n = H: 20 kA , D: 40 kA , E: 50 kA , F: 60 kA)
- 601: D.C. Spark-over Voltage (100 V/s) (601: 60 x 10^1)
- I: Product Structure (Ref GDT Features & Model List Overview)
- SP: Product Series (SP Series)

Product Category

Small and Medium Surge GDT Series	Heavy Surge GDT Series
SZ、SW、SX、SN、SD、SS、SM、SC、SF、SE、TB、TR。	SPA、SPB、SPC、SPJ、SPI。

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Agency Approvals

Agency Mark	Standards	File No.	Category
	UL 497B	E513446	QGVQ2
	UL1449	E322662	VZCA2
	EN 61643-311	No.B107221001 Rev.00	N/A
	EN 61643-311	No.B107221002 Rev.00	N/A
	EN 61643-311	No.B107221003 Rev00	N/A
	EN 61643-311	On-going	N/A

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

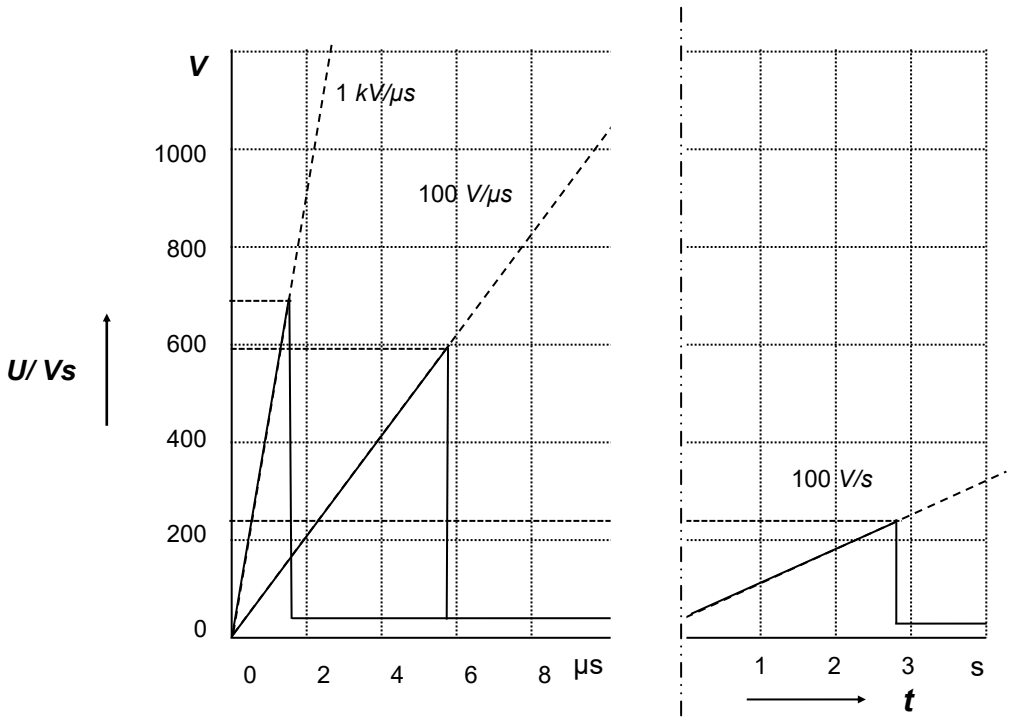
Glossary

Item	Description
V_s	**D.C.Spark-over Voltage** The voltage at which the GDT sparks over with slowly increasing d.c. voltage. — (IEC 61643-311)
V	**Impulse Spark-over Voltage** The highest Voltage which appears across the terminals of a GDT in the period between the application of an impulse of given wave-shape and the time when current begins to flow. — (ITU-T K.12)
V_a	**Arc Voltage** Voltage drop across the GDT during arc current flow. — (IEC 61643-311)
V_{gl}	**Glow Voltage** The peak value of the voltage drop across the GDT when a glow-current is flowing, It is sometimes called the glow mode voltage. — (ITU-T K.12)
8/20 μs	**8/20 Current Impulse** Current impulse with a nominal virtual front time of 8 μs and a nominal time to half-value of 20 μs. — (IEC 61643-11)
1.2/50 μs	**1.2/50 Voltage Impulse** Voltage impulse with a nominal virtual front time of 1.2 μs and a nominal time to half-value of 50 μs. — (IEC 61643-11)
I	**Alternating Discharge Current** The r.m.s. value of an approximately sinusoidal alternating current passing through the GDT. — (ITU-T K.12)
I_n	**Nominal Discharge Current** Crest value of the current through the GDT having a current waveshape of 8/20 μs. — (IEC 61643-11)
I_{max}	**Maximum Discharge Current** Crest value of a current through the GDT having an 8/20 μs waveshape and magnitude according to the manufacturers specification. I_{max} is equal to or greater than I_n. — (IEC 61643-11)

GDT

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

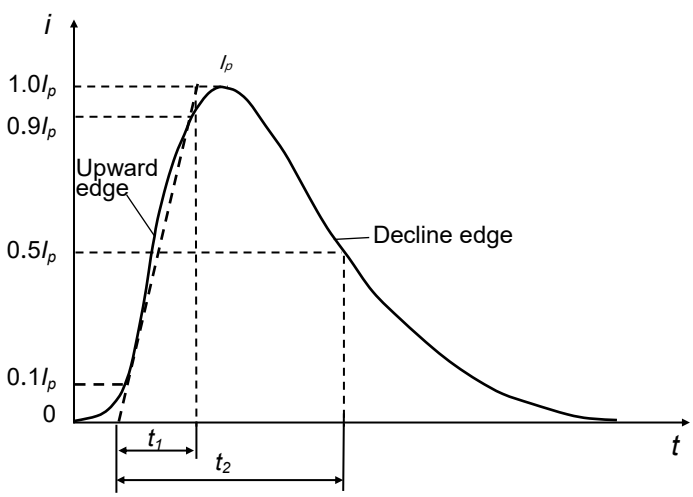
Reference Curve for Spark-over Voltage (Refer to 230 VDC)



Dynamic Response
Impulse Spark-over Voltage
(100 V/μs,1 kV/μs)

Static Response
D.C. Spark-over Voltage (100 V/s)

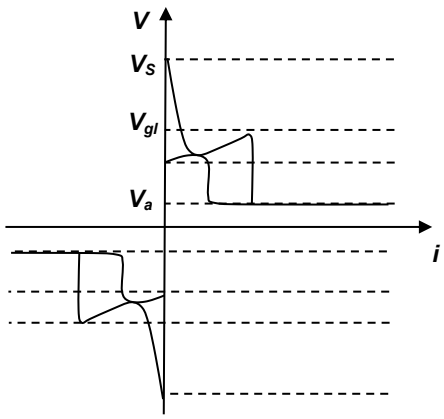
Reference Curve for Impulse Discharge Current



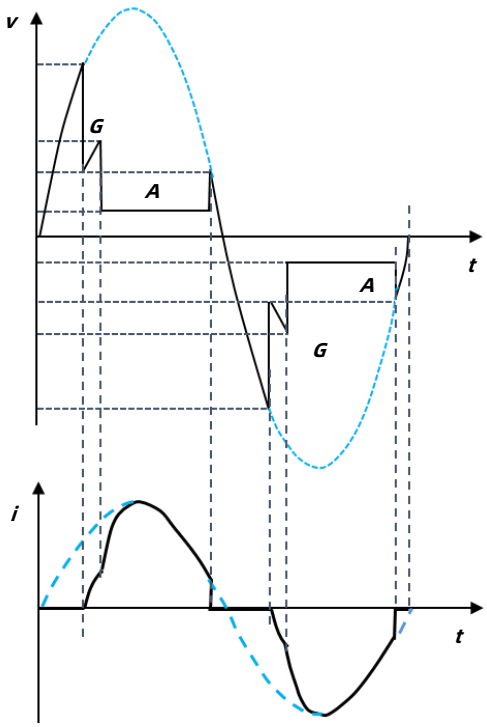
I_p: Peak current
t_1: Rise time in μs
t_2: Delay time to half value in μs

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Electrical Characteristics



Relationship between Current and Voltage

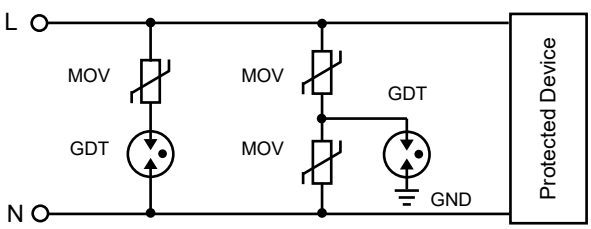


Time Variation Patterns of Voltage and Current

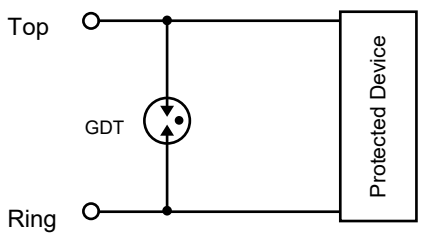
V_s : Spark-over Voltage
Vgl: Glow Voltage
Va : Arc Voltage
G : Glow Mode
A : Arc Mode

Application Example

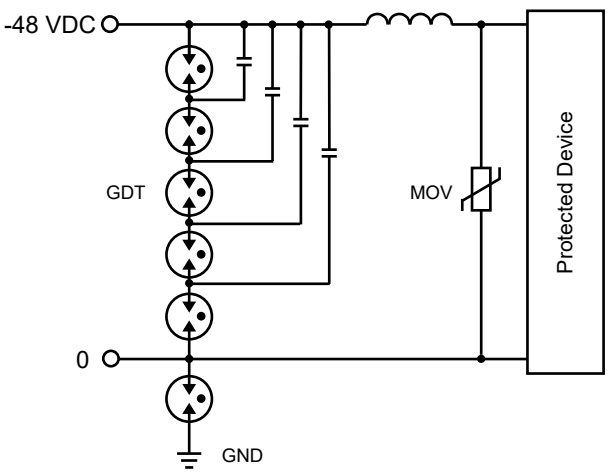
AC Power Protection



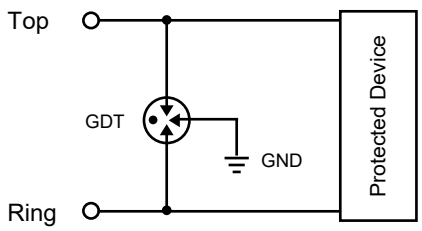
2-Electrod GDT Signal Circuit Protection



DC Power Protection



3-Electrod GDT Signal Circuit Protection



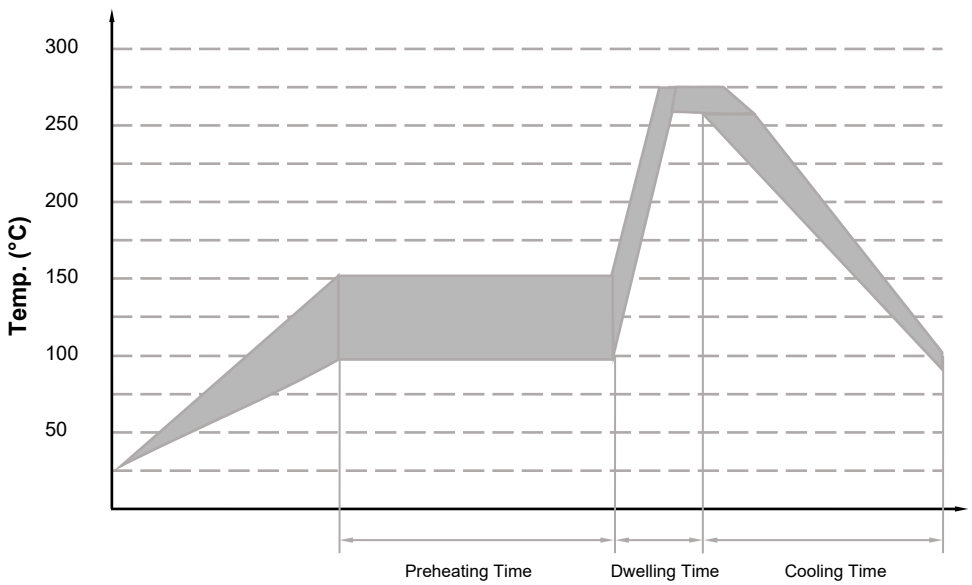
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Recommended Hand-soldering Parameters

Items	Condition
Soldering Iron Temperature	350 °C (Max.)
Soldering Time	4 s (Max.)
Space between soldering point and product body	2 mm (Min.)

GDT

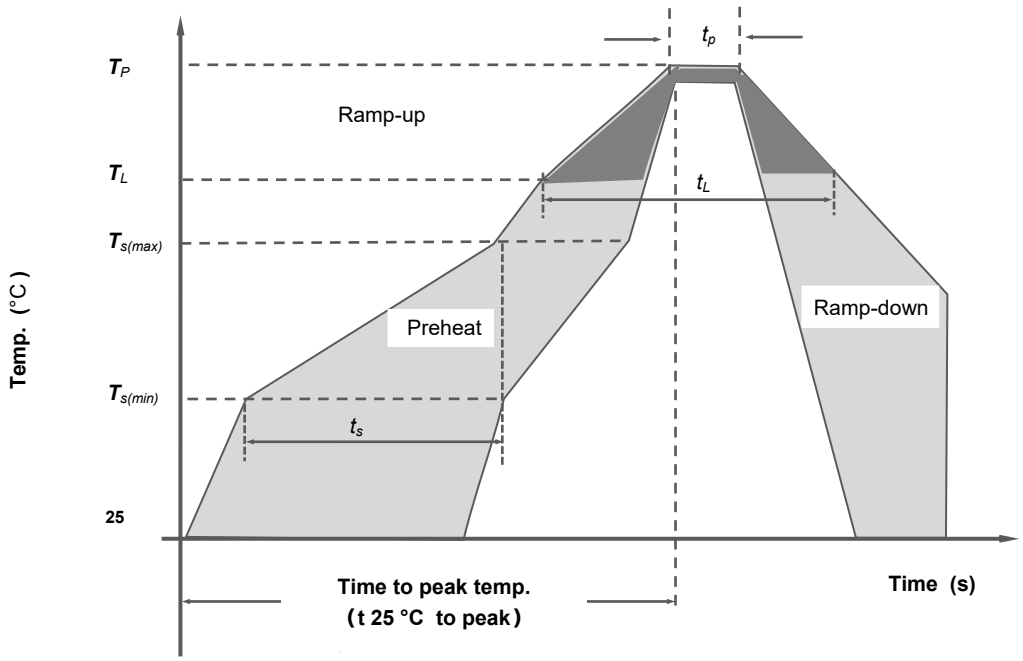
Wave Soldering Parameters (For Reference Only)



Item	Temp. (°C)	Time (s)
Preheating	90 to 150	< 150
Dwelling	255 to 280	3 to 10

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Reflow Soldering Parameters (For Reference Only)



Reflow Condition		Pb-Free Assembly
Preheat	Temp. Min $T_{s(min)}$	150 °C
	Temp. Max $T_{s(max)}$	200 °C
	Time (Min to Max) t_s	(60 to 180) s
Average ramp up rate (Liquidus Temp. (T_L) to peak)		3 °C / second max
$T_{s\ (max)}$ to T_L Ramp-up Rate		5 °C / second max
Reflow	Temp. (T_L) (Liquidus)	217 °C
	Temp. (t_L)	(60 to 150) s
Peak Temp. (T_P)		(255 to 260) °C
Time within 5 °C of actual peak Temp. (t_P)		(10 to 30) s
Ramp-down Rate		6 °C / second max
Time 25 °C to peak Temp. (T_P)		8 minutes max
Do not exceed		260 °C

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

ATTENTION

Usage

1. Do not operate GDT in power supply networks, whose maximum operation voltage exceeds the minimum spark-overvoltage of the GDT.
2. The GDT may become hot in the event of longer periods of current stress (burn risk). In the event of overload the connectors may fail or the component may be destroyed.
3. If the contacts of GDT are defective, current load can cause sparks and loud noises.
4. When air pressure is from 55 kPa to 106 kPa. The relative altitude shall be +5000 m to –500 m.

Replacement

The GDT is a non-repairable product. For safety sake, please use equivalent GDT for replacement.

Storage

The packaged GDT should be placed in a dry, ventilation and non-corrosive environment.

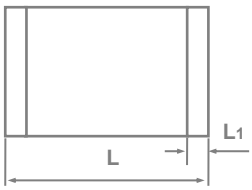
Installation Position

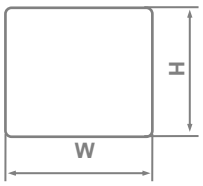
Do not install the GDT in a touchable position.

Mechanical Stress

Do not take violent action such as knocking when assembling, to avoid product failure.

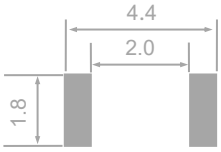
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3





Dimensions (mm)

L	W	H	L_1
3.2 ± 0.3	1.6 ± 0.2	1.6 ± 0.2	0.4



Recommended Pad Size (mm)

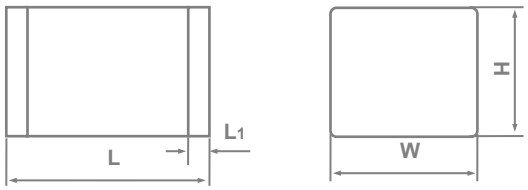
Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C		
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
SZ091Z - SMD	90	63 ~ 118	≤ 900	≈ 8	0.5	0.5	50	≥ 1	≤ 0.5	●	○
SZ151Z - SMD	150	105 ~ 195	≤ 900	≈ 8	0.5	0.5	50	≥ 1	≤ 0.5	●	○
SZ201Z - SMD	200	120 ~ 280	≤ 900	≈ 10	0.5	0.5	100	≥ 1	≤ 0.5	●	○
SZ231Z - SMD	230	153 ~ 300	≤ 1000	≈ 10	0.5	0.5	100	≥ 1	≤ 0.5	●	○
SZ301Z - SMD	300	210 ~ 390	≤ 1100	≈ 10	0.5	0.5	100	≥ 1	≤ 0.5	●	○
SZ351Z - SMD	350	245~ 455	≤ 1200	≈ 10	0.5	0.5	100	≥ 1	≤ 0.5	●	○
SZ401Z - SMD	400	280 ~ 520	≤ 1200	≈ 12	0.5	0.5	100	≥ 1	≤ 0.5	●	○
SZ471Z - SMD	470	330 ~ 610	≤ 1400	≈ 12	0.5	0.5	100	≥ 1	≤ 0.5	●	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.

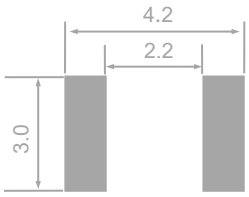
GDT

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3



Dimensions (mm)

L	W	H	L_1
3.2 ± 0.3	2.5 ± 0.2	2.5 ± 0.2	0.4



Recommended Pad Size (mm)

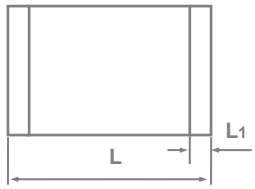
Specifications

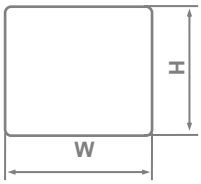
Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C	UL	TÜV
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
SW075Y - SMD	75	57 ~ 93	≤ 650	≈ 8	1	1	50	≥ 1	≤ 0.6	●	○
SW091Y - SMD	90	72 ~ 108	≤ 600	≈ 8	1	1	50	≥ 1	≤ 0.6	●	○
SW151Y - SMD	150	120 ~ 180	≤ 600	≈ 8	1	1	50	≥ 1	≤ 0.6	●	○
SW201Y - SMD	200	160 ~ 240	≤ 700	≈ 10	1	1	100	≥ 1	≤ 0.6	●	○
SW231Y - SMD	230	184 ~ 280	≤ 700	≈ 10	1	1	100	≥ 1	≤ 0.6	●	○
SW301Y - SMD	300	240 ~ 360	≤ 800	≈ 10	1	1	100	≥ 1	≤ 0.6	●	○
SW351Y - SMD	350	280 ~ 420	≤ 1000	≈ 10	1	1	100	≥ 1	≤ 0.6	●	○
SW401Y - SMD	400	320 ~ 480	≤ 1000	≈ 10	1	1	100	≥ 1	≤ 0.6	●	○
SW421Y - SMD	420	336 ~ 504	≤ 1000	≈ 12	1	1	100	≥ 1	≤ 0.6	●	○
SW471Y - SMD	470	376 ~ 564	≤ 1200	≈ 12	1	1	100	≥ 1	≤ 0.6	●	○
SW601Y - SMD	600	480 ~ 720	≤ 1400	≈ 15	1	1	100	≥ 1	≤ 0.6	●	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.

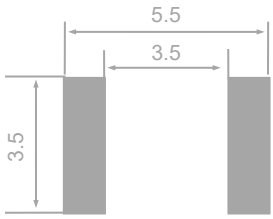
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube





Dimensions (mm)



Recommended Pad Size (mm)

L	W	H	L_1
4.5 ± 0.3	3.2 ± 0.2	2.7 ± 0.2	0.4

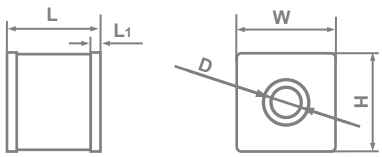
Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C		
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
SX091Y - SMD	90	72 ~ 108	≤ 600	≈8	1	1	50	≥ 1	≤ 0.6	●	○
SX151Y - SMD	150	120 ~ 180	≤ 600	≈ 8	1	1	50	≥ 1	≤ 0.6	●	○
SX201Y - SMD	200	160 ~ 240	≤ 700	≈ 10	1	1	100	≥ 1	≤ 0.6	○	○
SX231Y - SMD	230	184 ~ 280	≤ 700	≈ 10	1	1	100	≥ 1	≤ 0.6	●	○
SX301Y - SMD	300	240 ~ 360	≤ 800	≈ 10	1	1	100	≥ 1	≤ 0.6	○	○
SX351Y - SMD	350	280 ~ 420	≤ 1000	≈ 10	1	1	100	≥ 1	≤ 0.6	●	○
SX401Y - SMD	400	320 ~ 480	≤ 1000	≈ 12	1	1	100	≥ 1	≤ 0.6	○	○
SX421Y - SMD	420	336 ~ 504	≤ 1000	≈ 12	1	1	100	≥ 1	≤ 0.6	○	○
SX471Y - SMD	470	376 ~ 564	≤ 1200	≈ 12	1	1	100	≥ 1	≤ 0.6	●	○
SX601Y - SMD	600	480 ~ 720	≤ 1400	≈ 15	1	1	100	≥ 1	≤ 0.6	○	○
SX091X - SMD	90	72 ~ 108	≤ 600	≈ 8	2	2	50	≥ 1	≤ 0.6	●	○
SX151X - SMD	150	120 ~ 180	≤ 600	≈ 8	2	2	50	≥ 1	≤ 0.6	●	○
SX201X - SMD	200	160 ~ 240	≤ 700	≈ 10	2	2	100	≥ 1	≤ 0.6	○	○
SX231X - SMD	230	184 ~ 280	≤ 700	≈ 10	2	2	100	≥ 1	≤ 0.6	●	○
SX301X - SMD	300	240 ~ 360	≤ 800	≈ 10	2	2	100	≥ 1	≤ 0.6	○	○
SX351X - SMD	350	280 ~ 420	≤ 1000	≈ 10	2	2	100	≥ 1	≤ 0.6	●	○
SX401X - SMD	400	320 ~ 480	≤ 1000	≈ 12	2	2	100	≥ 1	≤ 0.6	○	○
SX421X - SMD	420	336 ~ 504	≤ 1000	≈ 12	2	2	100	≥ 1	≤ 0.6	○	○
SX471X - SMD	470	376 ~ 564	≤ 1200	≈ 12	2	2	100	≥ 1	≤ 0.6	●	○
SX601X - SMD	600	480 ~ 720	≤ 1400	≈ 15	2	2	100	≥ 1	≤ 0.6	○	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.

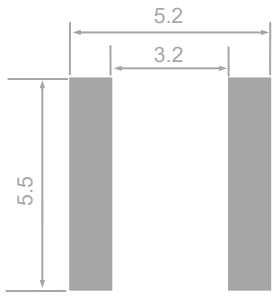
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube



Dimensions (mm)

L	W	H
4.2 ± 0.3	5.0 ± 0.2	5.0 ± 0.2
D	**L_1**	
Φ1.4	0.5	



Recommended Pad Size (mm)

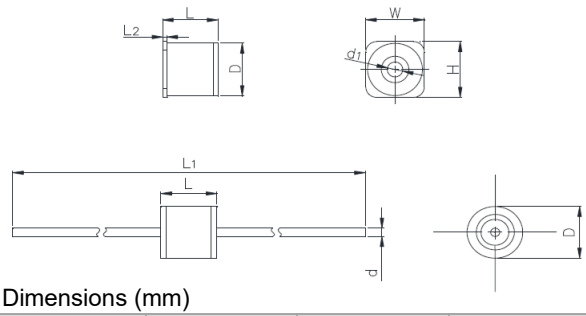
Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C	UL	TUV
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
SN071A - SMD	70	52 ~ 88	≤ 600	≈ 8	5	5	25	≥ 1	≤ 1.0	●	○
SN075A - SMD	75	57 ~ 93	≤ 650	≈ 8	5	5	25	≥ 1	≤ 1.0	●	○
SN091A - SMD	90	72 ~ 108	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
SN151A - SMD	150	120 ~ 180	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
SN201A - SMD	200	160 ~ 240	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SN231A - SMD	230	184 ~ 280	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SN301A - SMD	300	240 ~ 360	≤ 800	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SN351A - SMD	350	280 ~ 420	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SN401A - SMD	400	320 ~ 480	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SN421A - SMD	420	336 ~ 504	≤ 1000	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
SN471A - SMD	470	376 ~ 564	≤ 1020	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
SN601A - SMD	600	480 ~ 720	≤ 1400	≈ 15	5	5	100	≥ 1	≤ 1.0	●	○
SN801A - SMD	800	640 ~ 960	≤ 1600	≈ 15	5	5	100	≥ 1	≤ 1.0	●	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.

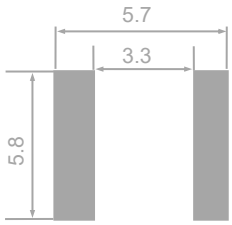
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube



Dimensions (mm)

L	L_1	H	W
5.0 ± 0.3	62.0 ± 3.0	5.3 ± 0.2	5.3 ± 0.2
L_2	D	d	d_1
0.5	Φ5.0 ± 0.2	Φ0.8	Φ1.4



Recommended Pad Size (mm)

Specifications

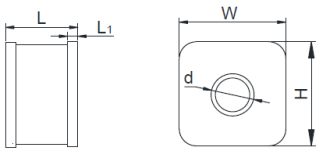
Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C	UL	TÜVRheinland
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
SD071A - *	70	52 ~ 88	≤ 600	≈ 8	5	5	25	≥ 1	≤ 1.0	●	○
SD075A - *	75	57 ~ 93	≤ 650	≈ 8	5	5	25	≥ 1	≤ 1.0	●	○
SD091A - *	90	72 ~ 108	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
SD151A - *	150	120 ~ 180	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
SD201A - *	200	160 ~ 240	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	○	○
SD231A - *	230	184 ~ 280	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SD251A - *	250	200 ~ 300	≤ 800	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SD351A - *	350	280 ~ 420	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
SD421A - *	420	336 ~ 504	≤ 1000	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
SD471A - *	470	376 ~ 564	≤ 1200	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
SD601A - *	600	480 ~ 720	≤ 1400	≈ 15	5	5	100	≥ 1	≤ 1.0	●	○
SD801A - *	800	640 ~ 960	≤ 1600	≈ 15	5	5	100	≥ 1	≤ 1.0	●	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.
3. "*" Means different wire type, such as "SMD" means SMD structure, "L" means lead wire.

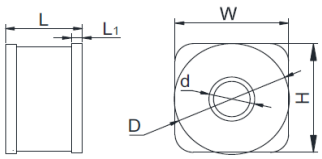
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube

"F" Type Devices



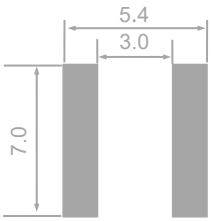
"C" Type Devices



Dimensions (mm)

L	W	H
4.2 ± 0.3	6.2 ± 0.2	6.2 ± 0.2
D	**L_1**	**d**
Φ6.2 ± 0.2	0.6	Φ2.5

Recommended Pad Size (mm)



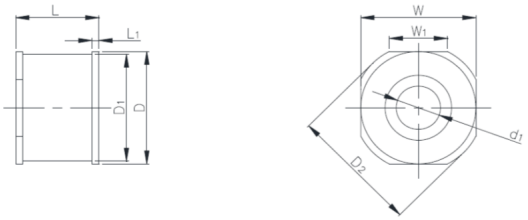
Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals		
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C			
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	UL1449	TUV
SS071A - SMD	70	52 ~ 88	≤ 600	≈ 8	5	5	25	≥ 1	≤ 1.0	●	N/A	○
SS075A - SMD	75	57 ~ 93	≤ 650	≈ 8	5	5	25	≥ 1	≤ 1.0	●	N/A	○
SS091A - SMD	90	72 ~ 108	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	N/A	○
SS151A - SMD	150	120 ~ 180	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	N/A	○
SS201A - SMD	200	160 ~ 240	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	N/A	○
SS231A - SMD	230	184 ~ 280	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	○	N/A	○
SS301A - SMD	300	240 ~ 360	≤ 800	≈ 10	5	5	100	≥ 1	≤ 1.0	●	N/A	○
SS351A - SMD	350	280 ~ 420	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	N/A	○
SS401A - SMD	400	320 ~ 480	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	○	N/A	○
SS421A - SMD	420	336 ~ 504	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	N/A	○
SS471A - SMD	470	376 ~ 564	≤ 1200	≈ 12	5	5	100	≥ 1	≤ 1.0	○	N/A	○
SS601A - SMD	600	480 ~ 720	≤ 1400	≈ 15	5	5	100	≥ 1	≤ 1.0	●	N/A	○
SS801A - SMD	800	640 ~ 960	≤ 1600	≈ 15	5	5	100	≥ 1	≤ 1.0	●	N/A	○
SS122A - SMD	1200	960 ~ 1440	≤ 2400	≈ 15	5	5	100	≥ 1	≤ 1.0	N/A	○	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
"○" means GDT is planed to apply for certification.

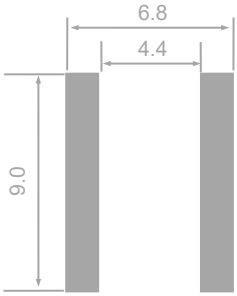
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube



Dimensions (mm)

L	W	D	D_1
6.0 ± 0.5	8.3 ± 0.3	Φ8.3 ± 0.3	Φ7.9 ± 0.3
L_1	W1	D_2	d_1
0.5	4.2	Φ9.3 ± 0.3	3.2



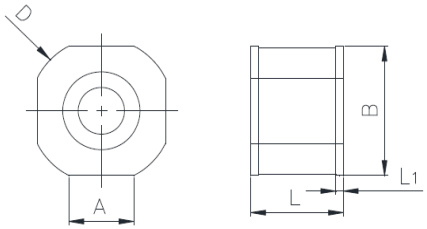
Recommended Pad Size (mm)

Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C	UL	TUV
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
SM071H - SMD	70	52 ~ 88	≤ 600	≈ 8	20	20	25	≥ 1	≤ 1.5	●	●
SM075H - SMD	75	57 ~ 93	≤ 650	≈ 8	20	20	25	≥ 1	≤ 1.5	●	●
SM091H - SMD	90	72 ~ 108	≤ 600	≈ 8	20	20	50	≥ 1	≤ 1.5	●	●
SM151H - SMD	150	120 ~ 180	≤ 600	≈ 8	20	20	50	≥ 1	≤ 1.5	●	●
SM231H - SMD	230	184 ~ 280	≤ 700	≈ 10	20	20	100	≥ 1	≤ 1.5	●	●
SM251H - SMD	250	200 ~ 300	≤ 800	≈ 10	20	20	100	≥ 1	≤ 1.5	●	●
SM351H - SMD	350	280 ~ 420	≤ 1000	≈ 10	20	20	100	≥ 1	≤ 1.5	●	●
SM421H - SMD	420	336 ~ 504	≤ 1000	≈ 12	20	20	100	≥ 1	≤ 1.5	●	●
SM471H - SMD	470	376 ~ 564	≤ 1200	≈ 12	20	20	100	≥ 1	≤ 1.5	●	●
SM601H - SMD	600	480 ~ 720	≤ 1400	≈ 15	20	20	100	≥ 1	≤ 1.5	●	●
SM801H - SMD	800	640 ~ 960	≤ 1600	≈ 15	20	20	100	≥ 1	≤ 1.5	●	●

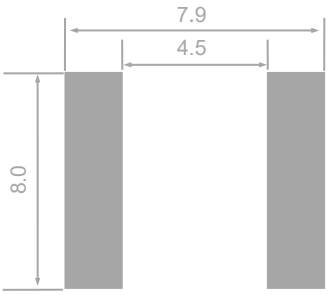
Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3



Dimensions (mm)

D	B	L
Φ9.3 ± 0.2	8.3 ± 0.2	6.0 ± 0.2
L_1	A	
0.5	4.2	



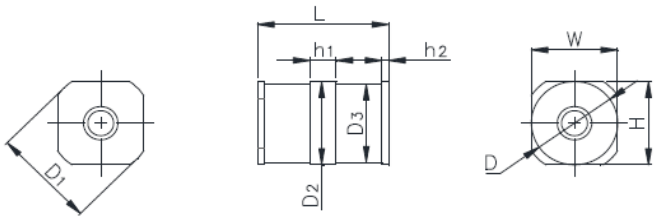
Recommended Pad Size (mm)

Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C		
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
SC071H - SMD	70	52 ~ 88	≤ 600	≈ 8	20	20	25	≥ 1	≤ 1.5	●	○
SC075H - SMD	75	57 ~ 93	≤ 650	≈ 8	20	20	25	≥ 1	≤ 1.5	●	○
SC091H - SMD	90	72 ~ 108	≤ 600	≈8	20	20	50	≥ 1	≤ 1.5	●	○
SC151H - SMD	150	120 ~ 180	≤ 600	≈8	20	20	50	≥ 1	≤ 1.5	●	○
SC201H - SMD	200	160 ~ 240	≤ 700	≈10	20	20	100	≥ 1	≤ 1.5	○	○
SC231H - SMD	230	184 ~ 280	≤ 700	≈10	20	20	100	≥ 1	≤ 1.5	●	○
SC251H - SMD	250	200 ~ 300	≤ 700	≈10	20	20	100	≥ 1	≤ 1.5	●	○
SC301H - SMD	300	240 ~ 360	≤ 800	≈10	20	20	100	≥ 1	≤ 1.5	○	○
SC351H - SMD	350	280 ~ 420	≤ 1000	≈10	20	20	100	≥ 1	≤ 1.5	●	○
SC421H - SMD	420	366 ~ 504	≤ 1000	≈12	20	20	100	≥ 1	≤ 1.5	●	○
SC471H - SMD	470	376 ~ 564	≤ 1200	≈12	20	20	100	≥ 1	≤ 1.5	●	○
SC601H - SMD	600	480 ~ 720	≤ 1400	≈15	20	20	100	≥ 1	≤ 1.5	●	○
SC801H - SMD	800	640 ~ 960	≤ 1600	≈ 15	20	20	100	≥ 1	≤ 1.5	●	○

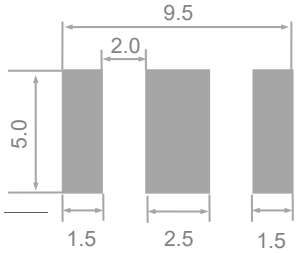
Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3



Dimensions (mm)

L	W	H	D	D_1
7.6 ± 0.2	5.0 ± 0.2	5.0 ± 0.2	Φ5.0 ± 0.2	Φ6.0
h_1	h_2	D_2	D_3	
1.5	0.4	Φ5.0 ± 0.2	Φ4.7 ± 0.2	



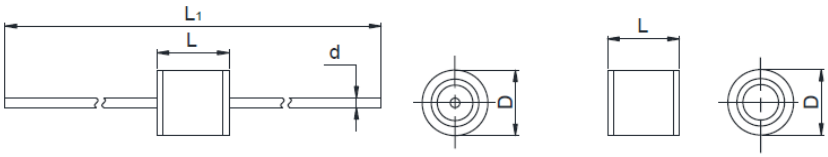
Recommended Pad Size (mm)

Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C	UL	TÜVRheinland
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
TZ071A - *	70	53 ~ 88	≤ 650	≈ 8	5	5	25	≥ 1	≤ 1.0	●	○
TZ075A - *	75	57 ~ 93	≤ 650	≈ 8	5	5	25	≥ 1	≤ 1.0	●	○
TZ091A - *	90	72 ~ 108	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
TZ151A - *	150	120 ~ 180	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
TZ231A - *	230	184 ~ 280	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
TZ251A - *	250	200 ~ 300	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
TZ351A - *	350	280 ~ 420	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
TZ421A - *	420	336 ~ 504	≤ 1000	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
TZ471A - *	470	376 ~ 564	≤ 1200	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
TZ601A - *	600	480 ~ 720	≤ 1400	≈ 15	5	5	100	≥ 1	≤ 1.0	●	○
TZ071M - *	70	53 ~ 88	≤ 650	≈ 8	10	10	25	≥ 1	≤ 1.0	●	○
TZ075M - *	75	57 ~ 93	≤ 650	≈ 8	10	10	25	≥ 1	≤ 1.0	●	○
TZ091M - *	90	72 ~ 108	≤ 600	≈ 8	10	10	50	≥ 1	≤ 1.0	●	○
TZ151M - *	150	120 ~ 180	≤ 600	≈ 8	10	10	50	≥ 1	≤ 1.0	●	○
TZ231M - *	230	184 ~ 280	≤ 700	≈ 10	10	10	100	≥ 1	≤ 1.0	●	○
TZ251M - *	250	200 ~ 300	≤ 700	≈ 10	10	10	100	≥ 1	≤ 1.0	●	○
TZ351M - *	350	280 ~ 420	≤ 1000	≈ 10	10	10	100	≥ 1	≤ 1.0	●	○
TZ421M - *	420	336 ~ 504	≤ 1000	≈ 12	10	10	100	≥ 1	≤ 1.0	●	○
TZ471M - *	470	376 ~ 564	≤ 1200	≈ 12	10	10	100	≥ 1	≤ 1.0	●	○
TZ601M - *	600	480 ~ 720	≤ 1400	≈ 15	10	10	100	≥ 1	≤ 1.0	●	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.
3. "*" Means different wire type, such as "SMD" means SMD structure, "L" means lead wire.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3



Dimensions (mm)

L_1	L	D	d
62.0 ± 3.0	6.0 ± 0.5	Φ5.5 ± 0.5	0.8 ± 0.05

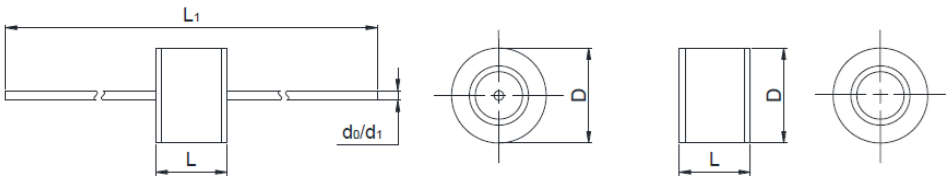
Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals		
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C			
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	UL1449	TUV
SF075A - *	75	57 ~ 93	≤ 650	≈ 8	5	5	50	≥ 1	≤ 1.0	●	N/A	●
SF091A - *	90	72 ~ 108	≤ 700	≈ 8	5	5	50	≥ 1	≤ 1.0	●	N/A	●
SF151A - *	150	120 ~ 180	≤ 700	≈ 8	5	5	50	≥ 1	≤ 1.0	●	N/A	●
SF231A - *	230	184 ~ 280	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	N/A	●
SF351A - *	350	280 ~ 420	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	N/A	●
SF471A - *	470	376 ~ 564	≤ 1200	≈ 12	5	5	100	≥ 1	≤ 1.0	●	N/A	●
SF601A - *	600	480 ~ 720	≤ 1400	≈ 15	5	5	100	≥ 1	≤ 1.0	●	N/A	●
SF801A - *	800	640 ~ 960	≤ 1600	≈ 15	5	5	100	≥ 1	≤ 1.0	○	○	●
SF152A - *	1500	1200 ~ 1800	≤ 2400	≈ 15	5	5	100	≥ 1	≤ 1.0	N/A	○	●
SF075M - *	75	57 ~ 93	≤ 650	≈ 8	10	10	50	≥ 1	≤ 1.0	●	N/A	●
SF091M - *	90	72 ~ 108	≤ 700	≈ 15	10	10	50	≥ 1	≤ 1.0	●	N/A	●
SF151M - *	150	120 ~ 180	≤ 700	≈ 15	10	10	50	≥ 1	≤ 1.0	●	N/A	●
SF231M - *	230	184 ~ 280	≤ 700	≈ 15	10	10	100	≥ 1	≤ 1.0	●	N/A	●
SF351M - *	350	280 ~ 420	≤ 1000	≈ 15	10	10	100	≥ 1	≤ 1.0	●	N/A	●
SF471M - *	470	376 ~ 564	≤ 1200	≈ 15	10	10	100	≥ 1	≤ 1.0	●	N/A	●
SF601M - *	600	480 ~ 720	≤ 1400	≈ 15	10	10	100	≥ 1	≤ 1.0	●	N/A	●
SF252T - *	2500	2000 ~ 3000	≤ 4000	≈ 15	3	3	100	≥ 1	≤ 1.0	N/A	●	●
SF302T - *	3000	2400 ~ 3600	≤ 4500	≈ 15	3	3	100	≥ 1	≤ 1.0	N/A	●	●
SF362T - *	3600	2880 ~ 4320	≤ 5000	≈ 15	3	3	100	≥ 1	≤ 1.0	N/A	●	●

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.
3. "*" Means different wire type, such as "SMD" means SMD shape, "L" means lead wire.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube



Dimensions (mm)

L_1	L	D	d_0 ①	d_1 ②
62.0 ± 3.0	6.0 ± 0.5	Φ8.0 ± 0.5	0.8 ± 0.05	1.0 ± 0.05

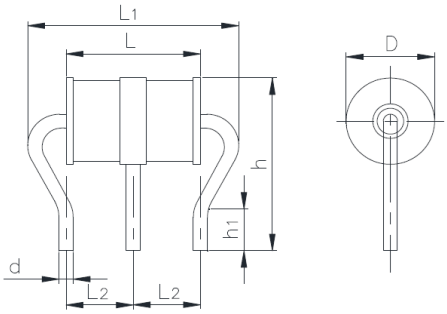
Note:
① This dimension is for I_n = 10 kA & below
② This dimension is for I_n = 20 kA

Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals		
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C	UL		TUV
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	UL1449	TUV
SE075M - *	75	57~ 93	≤ 650	≈ 8	10	10	50	≥ 1	≤ 1.5	●	N/A	●
SE091M - *	90	72 ~ 108	≤ 700	≈ 8	10	10	50	≥ 1	≤ 1.5	●	N/A	●
SE151M - *	150	120 ~ 180	≤ 700	≈ 8	10	10	50	≥ 1	≤ 1.5	●	N/A	●
SE231M - *	230	184 ~ 280	≤ 700	≈ 10	10	10	100	≥ 1	≤ 1.5	●	N/A	●
SE351M - *	350	280 ~ 420	≤ 1000	≈ 10	10	10	100	≥ 1	≤ 1.5	●	N/A	●
SE471M - *	470	376 ~ 564	≤ 1200	≈ 12	10	10	100	≥ 1	≤ 1.5	●	N/A	●
SE601M - *	600	480 ~ 720	≤ 1400	≈ 15	10	10	100	≥ 1	≤ 1.5	●	N/A	●
SE801M - *	800	640 ~ 960	≤ 1600	≈ 15	10	10	100	≥ 1	≤ 1.5	○	○	●
SE102M - *	1000	800 ~ 1200	≤ 2000	≈ 15	10	10	100	≥ 1	≤ 1.5	N/A	●	●
SE152M - *	1500	1200 ~ 1800	≤ 2400	≈ 15	10	10	100	≥ 1	≤ 1.5	N/A	●	●
SE075H - *	75	57~ 93	≤ 650	≈ 8	10	10	50	≥ 1	≤ 1.5	●	N/A	●
SE091H - *	90	72 ~ 108	≤ 700	≈ 15	20	20	50	≥ 1	≤ 1.5	●	●	●
SE151H - *	150	120 ~ 180	≤ 700	≈ 15	20	20	50	≥ 1	≤ 1.5	●	N/A	●
SE231H - *	230	184 ~ 280	≤ 700	≈ 15	20	20	100	≥ 1	≤ 1.5	●	N/A	●
SE351H - *	350	280 ~ 420	≤ 1000	≈ 15	20	20	100	≥ 1	≤ 1.5	●	N/A	●
SE471H - *	470	376 ~ 564	≤ 1200	≈ 15	20	20	100	≥ 1	≤ 1.5	●	N/A	●
SE601H - *	600	480 ~ 720	≤ 1400	≈ 15	20	20	100	≥ 1	≤ 1.5	●	●	●
SE801H - *	800	640 ~ 960	≤ 1600	≈ 15	20	20	100	≥ 1	≤ 1.5	N/A	●	●
SE252A - *	2500	2000 ~ 3000	≤ 4000	≈ 15	5	5	100	≥ 1	≤ 1.5	N/A	●	●
SE302A - *	3000	2400 ~ 3600	≤ 4500	≈ 15	5	5	100	≥ 1	≤ 1.0	N/A	●	●
SE362A - *	3600	2880 ~ 4320	≤ 5000	≈ 15	5	5	100	≥ 1	≤ 1.5	N/A	○	●

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
"○" means GDT is planed to apply for certification.
3. "*" Means different wire type, such as "SMD" means SMD shape, "L" means lead wire.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3



Dimensions (mm)

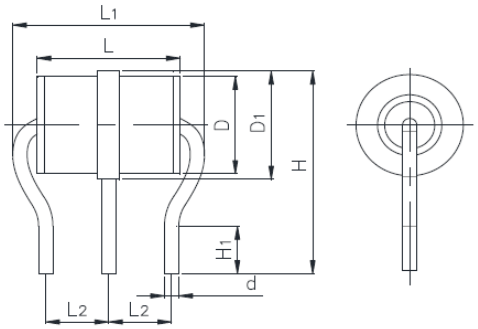
D	h	L	d	h_1	L_1	L_2
Φ6.0 ± 0.2	10.0 ± 1.0	8.5 ± 0.2	Φ0.8 ± 0.1	2.5	12.0 Max	4.4 ± 0.3

Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C	UL	TÜVRheinland
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
TB071A - L	70	52 ~ 88	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
TB091A - L	90	72 ~ 108	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
TB151A - L	150	120 ~ 180	≤ 600	≈ 8	5	5	50	≥ 1	≤ 1.0	●	○
TB231A - L	230	184 ~ 280	≤ 700	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
TB351A - L	350	280 ~ 420	≤ 1000	≈ 10	5	5	100	≥ 1	≤ 1.0	●	○
TB421A - L	420	336 ~ 504	≤ 1000	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
TB471A - L	470	376 ~ 564	≤ 1200	≈ 12	5	5	100	≥ 1	≤ 1.0	●	○
TB601A - L	600	480 ~ 720	≤ 1400	≈ 15	5	5	100	≥ 1	≤ 1.0	●	○
TB071M - L	70	52 ~ 88	≤ 600	≈ 8	10	5	50	≥ 1	≤ 1.0	●	○
TB075M - L	75	57 ~ 93	≤ 650	≈ 8	10	5	50	≥ 1	≤ 1.0	●	○
TB091M - L	90	72 ~ 108	≤ 600	≈ 8	10	10	50	≥ 1	≤ 1.0	●	○
TB151M - L	150	120 ~ 80	≤ 600	≈ 8	10	10	50	≥ 1	≤ 1.0	●	○
TB231M - L	230	184 ~ 280	≤ 700	≈ 10	10	10	100	≥ 1	≤ 1.0	●	○
TB251M - L	250	200 ~ 300	≤ 700	≈ 10	10	10	100	≥ 1	≤ 1.0	●	○
TB351M - L	350	280 ~ 420	≤ 1000	≈ 10	10	10	100	≥ 1	≤ 1.0	●	○
TB421M - L	420	336 ~ 504	≤ 1000	≈ 12	10	10	100	≥ 1	≤ 1.0	●	○
TB471M - L	470	376 ~ 564	≤ 1200	≈ 12	10	10	100	≥ 1	≤ 1.0	●	○
TB601M - L	600	480 ~ 720	≤ 1400	≈ 15	10	10	100	≥ 1	≤ 1.0	●	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.
3. "*" Means different wire type, such as "SMD" means SMD shape, "L" means lead wire.
4. Impulse discharge current value refers to the current value of simultaneous discharge of both ends to the ground.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3



Dimensions (mm)

D	H	L	d
Φ7.2 ± 0.2	15.0 ± 1.0	10.0 ± 0.2	Φ1.0± 0.1
D_1	H_1	L_1	L_2
Φ8.0 ± 0.2	4.0	13.4Max	4.4 ± 0.3

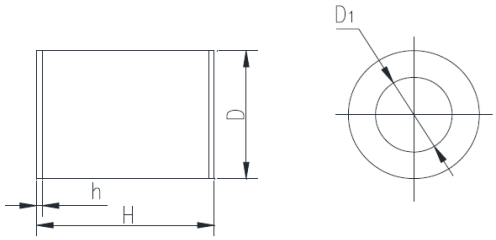
Specifications

Model	D.C. Spark-over Voltage @100 V/s	Tolerance of V_s	Impulse Spark-over Voltage @1 kV/μs	Arc Voltage @1 A	Impulse Discharge Current @8/20 μs	Alternating Discharge Current @50Hz 1 s	Insulation Resistance		Capacitance 0.5 VDC @ 1MHz	Agency Approvals	
	V_s	V_s	V	V_a	I_n	I	V_{DC}	IR	C		
	V	V	V	V	kA	A (r.m.s.)	V	GΩ	(pF)	UL497B	TUV
TR071M - L	70	52~ 88	≤ 600	≈ 8	10	10	50	≥ 1	≤ 1.0	●	○
TR091M - L	90	72 ~ 108	≤ 600	≈ 8	10	10	50	≥ 1	≤ 1.0	●	○
TR151M - L	150	120 ~ 180	≤ 600	≈ 8	10	10	50	≥ 1	≤ 1.0	●	○
TR231M - L	230	184 ~ 280	≤ 700	≈ 10	10	10	100	≥ 1	≤ 1.0	●	○
TR351M - L	350	280 ~ 420	≤ 1000	≈ 12	10	10	100	≥ 1	≤ 1.0	●	○
TR421M - L	420	336 ~ 504	≤ 1000	≈ 12	10	10	100	≥ 1	≤ 1.0	●	○
TR471M - L	470	376 ~ 564	≤ 1200	≈ 12	10	10	100	≥ 1	≤ 1.0	●	○
TR601M - L	600	480 ~ 720	≤ 1400	≈ 15	10	10	100	≥ 1	≤ 1.0	●	○
TR071H - L	70	52~ 88	≤ 600	≈ 8	20	10	50	≥ 1	≤ 1.0	●	○
TR075H - L	75	57~ 93	≤ 650	≈ 8	20	10	50	≥ 1	≤ 1.0	●	○
TR091H - L	90	72 ~ 108	≤ 600	≈ 8	20	10	50	≥ 1	≤ 1.0	●	○
TR151H - L	150	120 ~ 180	≤ 600	≈ 8	20	10	50	≥ 1	≤ 1.0	●	○
TR231H - L	230	184 ~ 280	≤ 700	≈ 10	20	10	100	≥ 1	≤ 1.0	●	○
TR251H - L	250	200 ~ 300	≤ 700	≈ 10	20	10	100	≥ 1	≤ 1.0	●	○
TR351H - L	350	280 ~ 420	≤ 1000	≈ 12	20	20	100	≥ 1	≤ 1.0	●	○
TR421H - L	420	336 ~ 504	≤ 1000	≈ 12	20	10	100	≥ 1	≤ 1.0	●	○
TR471H - L	470	376 ~ 564	≤ 1200	≈ 12	20	10	100	≥ 1	≤ 1.0	●	○
TR601H - L	600	480 ~ 720	≤ 1400	≈ 15	20	10	100	≥ 1	≤ 1.0	●	○

Note:
1. The above parameters based on ITU - T K12 & IEC61643.311 standards.
2. "●" means GDT has gained the certification.
   "○" means GDT is planed to apply for certification.
3. "*" Means different wire type, such as "SMD" means SMD shape, "L" means lead wire.
4. Impulse discharge current value refers to the current value of simultaneous discharge of both ends to the ground.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube



Dimensions (mm)

D	D_1	H	h
Φ11.8 ± 0.3	Φ6.9	16.0 ± 0.5	0.5

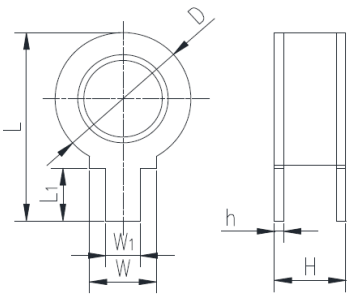
Specifications

Model			SPA351D-XX	SPA601D-XX	SPA801D-XX	SPA152H-XX	SPA202H-XX	Units
Category			II	II	II	II	II	
Application			N - PE	N - PE	N - PE	N - PE	N - PE	
Nominal D.C. Spark-over Voltage (100 V/s)			350	600	800	1500	2000	V
D.C.Spark-over Voltage (100 V/s)			280 ~ 420	480 ~ 720	640 ~ 960	1200 ~ 1800	1600 ~ 2400	V
Impulse Spark-over Voltage @1 kV/μs			< 900	< 1400	< 1600	< 2800	< 4000	V
GB/T18802.311								
Nominal Impulse Discharge Current @8/20 μs I_n			40	40	40	20	20	kA
Maximum Impulse Discharge Current @8/20 μs I_{max}			60	60	60	40	40	kA
Class II (Comply with IEC61643-11)								
Max Continuous Operating Voltage U_c 50/60 Hz			110	255	255	320	440	Vrms
Follow Current Cut-off Ability AC 50/60 Hz I_f			100	100	100	100	100	Arms
Nominal Discharge Current @8/20 μs I_n			20	20	20	20	20	kA
Maximum Discharge Current @8/20 μs I_{max}			40	40	40	40	40	kA
Insulation Resistance (100 VDC)			> 1000	> 1000	> 1000	> 1000	> 1000	MΩ
Capacitance at 100 kHz			< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	pF
Agency Approvals	UL1449		●	●	●	○	○	
	TUV		○	○	○	○	○	

Notes: Pin type can be customized.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube



Dimensions (mm)

D	H	L	W	W_1	L_1	h
Φ11.8 ± 0.3	6.2 ± 0.2	16.8 ± 0.2	5.8	3.0	4.7	0.8

Specifications

Model			SPB091H - XX	SPB151H - XX	SPB351H - XX	SPB601H - XX	Units
Category			II	II	II	II	
Application			N - PE	N - PE	N - PE	N - PE	
Nominal D.C. Spark-over Voltage (100 V/s)			90	150	350	600	V
D.C.Spark-over Voltage (100 V/s)			72 ~ 108	120 ~ 180	280 ~ 420	480 ~ 720	V
Impulse Spark-over Voltage @1 kV/μs			< 600	< 600	< 900	< 1400	V
GB/T18802.311							
Nominal Impulse Discharge Current @8/20 μs I_n			20	20	20	20	kA
Maximum Impulse Discharge Current @8/20 μs I_{max}			40	40	40	40	kA
Class II (Comply with IEC61643-11)							
Max Continuous Operating Voltage U_c 50/60 Hz			-	-	110	255	Vrms
Follow Current Cut-off Ability AC 50/60 Hz I_f			-	-	100	100	Arms
Nominal Discharge Current @8/20 μs I_n			-	-	20	20	kA
Maximum Discharge Current @8/20 μs I_{max}			-	-	40	40	kA
Insulation Resistance (100 VDC)			> 1000	> 1000	> 1000	> 1000	MΩ
Capacitance at 100 kHz			< 5.0	< 5.0	< 5.0	< 5.0	pF
Agency Approvals	UL1449		●	○	●	●	
	TUV		○	○	○	○	

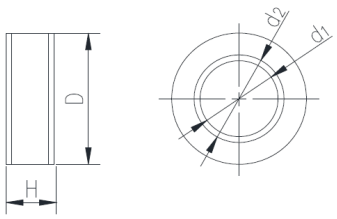
All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Specifications

Model			SPB801H - XX	SPB102H - XX	SPB152H - XX	SPB202H - XX	Units
Category			II	II	II	II	
Application			N - PE	N - PE	N - PE	N - PE	
Nominal D.C. Spark-over Voltage (100 V/s)			800	1000	1500	2000	V
D.C.Spark-over Voltage (100 V/s)			640 ~ 960	800 ~ 1200	1200 ~ 1800	1600 ~ 2400	V
Impulse Spark-over Voltage @1 kV/μs			< 1600	< 2000	< 2800	< 4000	V
GB/T18802.311							
Nominal Impulse Discharge Current @8/20 μs I_n			20	20	20	20	kA
Maximum Impulse Discharge Current @8/20 μs I_{max}			40	40	40	40	kA
Class II (Comply with IEC61643-11)							
Max Continuous Operating Voltage U_c 50/60 Hz			255	275	320	440	Vrms
Follow Current Cut-off Ability AC 50/60 Hz I_f			100	100	100	100	Arms
Nominal Discharge Current @8/20 μs I_n			20	20	20	20	kA
Maximum Discharge Current @8/20 μs I_{max}			40	40	40	40	kA
Insulation Resistance (100 VDC)			> 1000	> 1000	> 1000	> 1000	MΩ
Capacitance at 100 kHz			< 5.0	< 5.0	< 5.0	< 5.0	pF
Agency Approvals	UL1449		●	●	●	○	
	TUV		○	○	○	○	

Notes: Pin type can be customized.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3



Dimensions (mm)

D	H	d_1	d_2
Φ11.8 ± 0.3	4.2 ± 0.6	Φ8.5	Φ6.95

Specifications

Model			SPC091H - XX	SPC151H - XX	SPC231H - XX	SPC351H - XX	Units
Category			II	II	II	II	
Application			N - PE	N - PE	N - PE	N - PE	
Nominal D.C. Spark-over Voltage (100 V/s)			90	150	230	350	V
D.C.Spark-over Voltage (100 V/s)			72 ~ 108	120 ~ 180	184 ~ 280	280 ~ 420	V
Impulse Spark-over Voltage @1 kV/μs			< 600	< 600	< 700	< 800	V
GB/T18802.311							
Nominal Impulse Discharge Current @8/20 μs I_n			20	20	20	20	kA
Maximum Impulse Discharge Current @8/20 μs I_{max}			40	40	40	40	kA
Class II (Comply with IEC61643-11)							
Max Continuous Operating Voltage U_c 50/60 Hz			-	-	-	110	Vrms
Follow Current Cut-off Ability AC 50/60 Hz I_f			-	-	-	100	Arms
Nominal Discharge Current @8/20 μs I_n			-	-	-	20	kA
Maximum Discharge Current @8/20 μs I_{max}			-	-	-	40	kA
Insulation Resistance (100 VDC)			> 1000	> 1000	> 1000	> 1000	MΩ
Capacitance at 100 kHz			< 5.0	< 5.0	< 5.0	< 5.0	pF
Agency Approvals	UL1449		○	○	○	○	
	TUV		○	○	○	○	

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Specifications

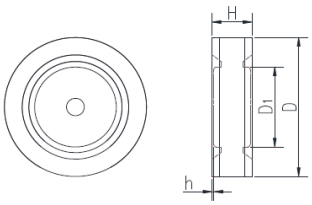
Model			SPC601H - XX	SPC801H - XX	SPC102H - XX	SPC152H - XX	Units
Category			II	II	II	II	
Application			N - PE	N - PE	N - PE	N - PE	
Nominal D.C. Spark-over Voltage (100 V/s)			600	800	1000	1500	V
D.C.Spark-over Voltage (100 V/s)			480 ~ 720	640 ~ 960	800 ~ 1200	1200 ~ 1800	V
Impulse Spark-over Voltage @1 kV/μs			< 1400	< 1600	< 2000	< 2800	V
GB/T18802.311							
Nominal Impulse Discharge Current @8/20 μs I_n			20	20	20	20	kA
Maximum Impulse Discharge Current @8/20 μs I_{max}			40	40	40	40	kA
Class II (Comply with IEC61643-11)							
Max Continuous Operating Voltage U_c 50/60 Hz			255	255	275	320	Vrms
Follow Current Cut-off Ability AC 50/60 Hz I_f			100	100	100	100	Arms
Nominal Discharge Current @8/20 μs I_n			20	20	20	20	kA
Maximum Discharge Current @8/20 μs I_{max}			40	40	40	40	kA
Insulation Resistance (100 VDC)			> 1000	> 1000	> 1000	> 1000	MΩ
Capacitance at 100 kHz			< 5.0	< 5.0	< 5.0	< 5.0	pF
Agency Approvals	UL1449		●	○	●	○	
	TUV		○	○	○	○	

Notes: Pin type can be customized.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube

SPJ Series



Dimensions (mm)

D	D_1	H	h
Φ16.0 ± 0.3	Φ9.2	4.5 ± 0.6	0.2

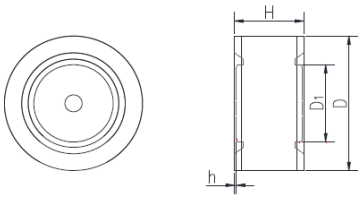
Model			SPJ351D - XX	SPJ601D - XX	SPJ801D - XX	SPJ102H - XX	SPJ152H - XX	Units
Category			II	I & II	I & II	I & II	II	
Application			N - PE	N - PE	N - PE	N - PE	N - PE	
Nominal D.C. Spark-over Voltage (100 V/s)			350	600	800	1000	1500	V
D.C.Spark-over Voltage (100 V/s)			280 ~ 420	480 ~ 720	640 ~ 960	800 ~ 1000	1200 ~ 1800	V
Impulse Spark-over Voltage @1 kV/μs			< 900	< 1400	< 1600	< 2000	< 2800	V
GB/T18802.311								
Nominal Impulse Discharge Current @8/20 μs I_n			40	40	40	20	20	kA
Maximum Impulse Discharge Current @8/20 μs I_{max}			60	60	60	40	40	kA
Class II (Comply with IEC61643-11)								
Max Continuous Operating Voltage Uc 50/60 Hz			110	255	255	275	320	Vrms
Follow Current Cut-off Ability AC 50/60 Hz			100	100	100	100	100	Arms
Nominal Discharge Current @8/20 μs I_n			20	20	20	20	20	kA
Maximum Discharge Current @8/20 μs I_{max}			40	40	40	40	40	kA
Insulation Resistance (100 VDC)			> 1000	> 1000	> 1000	> 1000	> 1000	MΩ
Capacitance at 100 kHz			< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	pF
Agency Approvals	UL1449		○	●	●	○	●	
	TUV		○	○	○	○	○	

Notes: Pin type can be customized.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

GDT
Gas Discharge Tube

SPI Series



Dimensions (mm)

D	D_1	H	h
Φ16.0 ± 0.3	Φ9.2	8 ± 0.6	0.2

Model			SPI351D - XX	SPI601D - XX	SPI801D - XX	SPI152H - XX	SPI252H - XX	Units
Category			II	I & II	I & II	II	II	
Application			N - PE	N - PE	N - PE	N - PE	N - PE	
Nominal D.C. Spark-over Voltage (100 V/s)			350	600	800	1500	2500	V
D.C.Spark-over Voltage (100 V/s)			280 ~ 420	480 ~ 720	640 ~ 960	1200 ~ 1800	2000 ~ 3000	V
Impulse Spark-over Voltage @1 kV/μs			< 800	< 1200	< 1600	< 2800	< 4500	V
GB/T18802.311								
Nominal Impulse Discharge Current @8/20 μs I_n			40	40	40	20	20	kA
Maximum Impulse Discharge Current @8/20 μs I_{max}			80	80	80	40	40	kA
Class II (Comply with IEC61643-11)								
Max Continuous Operating Voltage Uc 50/60 Hz			110	255	255	320	440	Vrms
Follow Current Cut-off Ability AC 50/60 Hz			100	100	100	100	100	Arms
Nominal Discharge Current @8/20 μs I_n			30	30	30	20	20	kA
Maximum Discharge Current @8/20 μs I_{max}			60	60	60	40	40	kA
Insulation Resistance (100 VDC)			> 1000	> 1000	> 1000	> 1000	> 1000	MΩ
Capacitance at 100 kHz			< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	pF
Agency Approvals	UL1449		○	●	●	○	●	
	TUV		○	●	●	●	●	

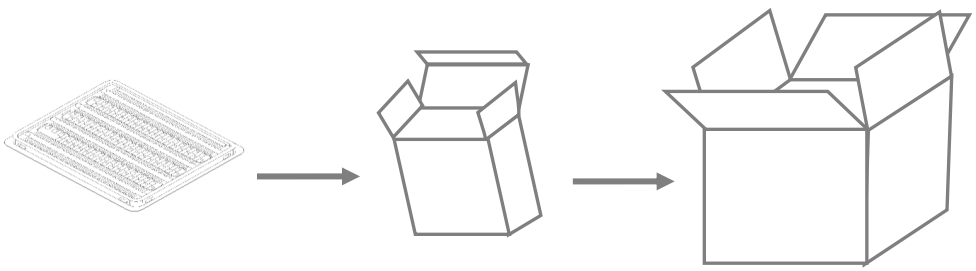
Notes: Pin type can be customized.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

Packaging Information

1. PC Box Package (Leaded Type Shaped Lead Devices)

Series	Dimensions (mm)			Quantity (PCS)		
	PC Box	Inner Box	Carton	PC Box	Inner Box	Carton
SE	215 × 205 × 10.5	230 × 210 × 60	440 × 250 × 325	100	500	5000
SF	215 × 205 × 10.5	230 × 210 × 60	440 × 250 × 325	100	500	5000
TB	215 × 205 × 11.5	230 × 210 × 60	440 × 250 × 325	100	500	5000
TR	215 × 205 × 11.5	230 × 210 × 60	440 × 250 × 325	100	500	5000
Notes: Packaging dimensions and quantity are for reference only.						

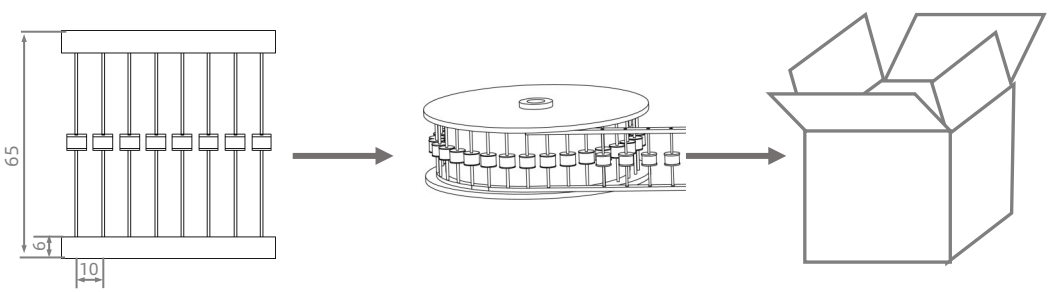


PC Box Inner Box Carton

Please refer to the specifications for the packaging details.

2. Taping Package (Leaded Type Straight Axial Devices)

Series	Dimensions (mm)		Quantity (PCS)	
	Reel	Carton	Reel	Carton
SE	Φ340 × 73	360 × 360 × 360	1000	4000
SF	Φ340 × 73	360 × 360 × 360	1250	5000
Notes: Packaging dimensions and quantity are for reference only.				



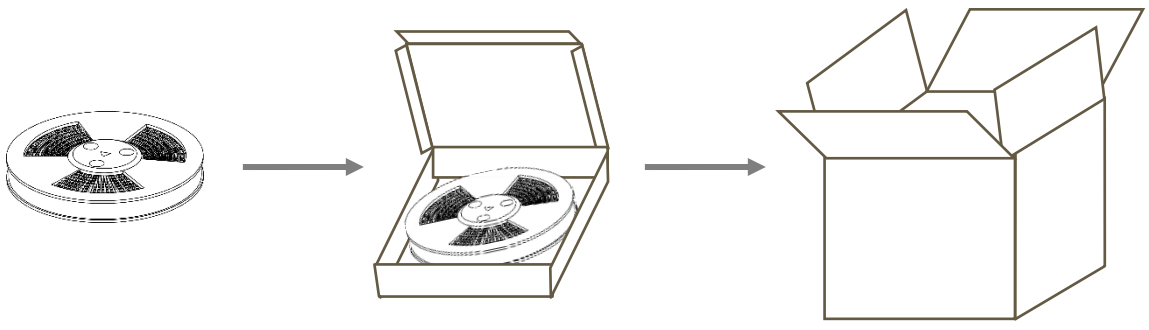
Tape Reel Carton

Unit: mm.
Please refer to the specifications for the packaging details.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3

3. Taping Package (SMD GDT)

Series	Dimensions (mm)			Quantity (PCS)		
	Reel	Inner Box	Carton	Reel	Inner Box	Carton
SZ	Φ178 × 12.8	200 × 200 × 20	220 × 220 × 180	3000	3000	24000
SW	Φ330 × 12.8	340 × 340 × 40	360 × 360 × 360	2500	5000	40000
SX	Φ330 × 12.8	340 × 340 × 40	360 × 360 × 360	2500	5000	40000
SN	Φ330 × 16.8	340 × 340 × 40	360 × 360 × 360	1000	2000	14000
SD	Φ330 × 16.8	340 × 340 × 40	360 × 360 × 360	1000	2000	14000
SM	Φ330 × 16.8	340 × 340 × 40	360 × 360 × 360	600	1400	8400
SS	Φ330 × 16.8	340 × 340 × 40	360 × 360 × 360	800	1600	11200
SC	Φ330 × 16.8	340 × 340 × 40	360 × 360 × 360	600	1200	8400
TZ	Φ330 × 16.8	340 × 340 × 40	360 × 360 × 360	1000	2000	14000
Notes: Packaging dimensions and quantity are for reference only.						



Reel Inner Box Carton

Please refer to the specifications for the packaging details.

All Rights Reserved by Xiamen SET Electronics Co., Ltd. 2021-2023 V2.3