



# GDT

## Gas Discharge Tubes Selection Guide



2009-2010



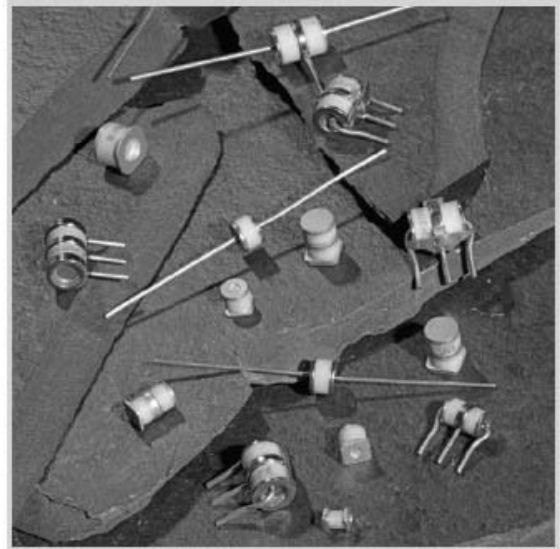
**CONTECNTS**

SMD SIEREIS	SWPS -----	1-3
	SWPA -----	4-6
	SWPC -----	7-9
	SWPT -----	10-12
	SWP3D -----	13-15
SMD SIEREIS	SWP4G -----	16-18
	SWP5G -----	19-21
	SWP6G -----	22-24
	SWP8G -----	25-27
	SWP3R -----	28-30

Semiwill GDTs (Gas Discharge Tubes) are placed in front of, and in parallel with , sensitive telecom equipment such as power lines , communication lines , signal lines and data transmission lines to help protect them from damage caused by transient surge voltages that may result from lightning strikes and equipment switching operations . These devices do not influence the signal in normal operation . However,in the event of an overvoltage surge , such as a lightning strike , the GDT switches to alow impedance state and diverts the energy away from the sensitive equipment . Semiwill GDTs offer a high level of surge protection,a broad voltage range , low capacitance , and many form factors including new surface mount devices , which makes them suitable for applications such as MDF(MainDistributionFrame) modules , high data-rate telecom applications (e.g.ADSL,VDSL) , and surge protection on power lines. Their low capacitance also results in less signal distortion.



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## Feature

- RoHS compliant
- High insulation resistance.
- Low capacitance (<1pF).
- High holdover voltage.
- Accord with IEC61000-4-5 standard. Max Surge current capacity 1KA 8/20s.
- Micro-Gap Design
- Size : 3.2\*1.6\*1.6mm(1206)



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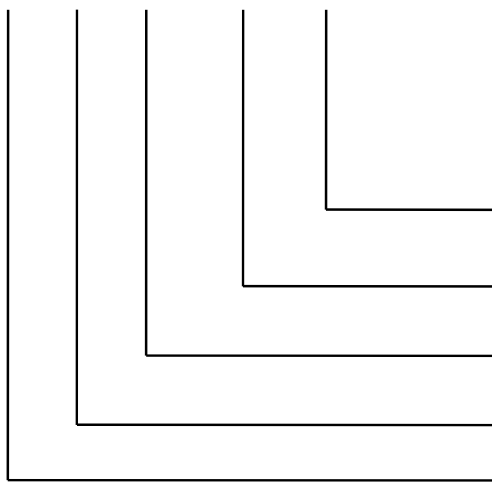
## Benefits

- Helps provide overvoltage fault protection against damage caused by high energy surges
- Suitable for sensitive equipment due to impulse sparkover response
- Suitable for high-frequency applications
- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

**SW P S 090 M**



Tolerance of Vs  
M: ±20% N: ±30%

DC Breakdown Voltage  
090: 90V

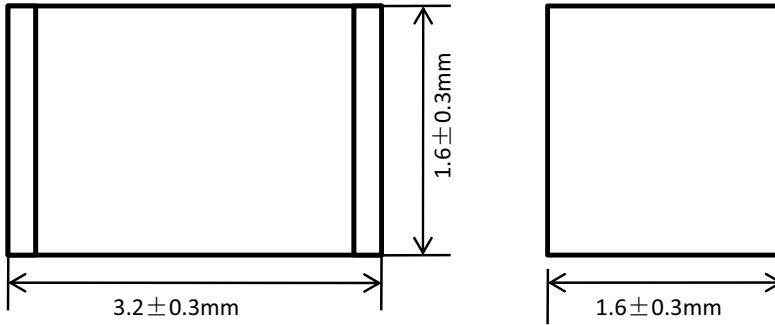
Dimension:  
S:3.2\*1.6\*1.6mm

GDT Product

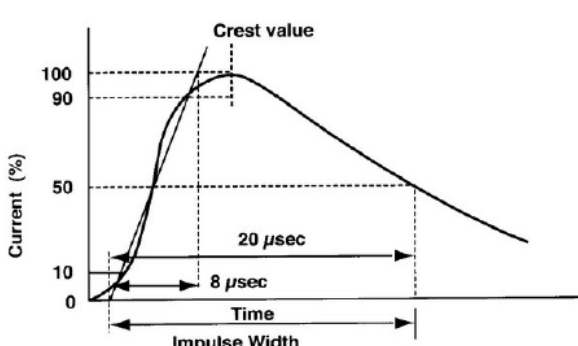
Semiwill Company

Electrical Characteristic

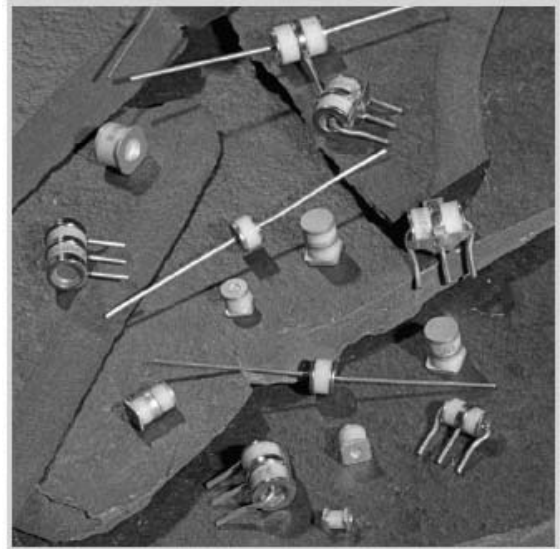
Part Number	DC Breakdown Voltage 100V/S	Tolerance of Vs	Insulation Resistance		Impulse Discharge Current 8/20uS	C 1MHz
	V	%	GΩ	DC		
SWPS071M	70	20	≥1	25V	0.5	≤1
SWPS091M	90	20	≥1	25V	0.5	≤1
SWPS151M	150	20	≥1	50V	0.5	≤1
SWPS201M	230	20	≥1	100V	0.5	≤1
SWPS301M	300	20	≥1	100V	0.5	≤1
SWPS401M	400	20	≥1	100V	0.5	≤1
SWPS501M	500	20	≥1	250V	0.5	≤1
SWPS601M	600	20	≥1	250V	0.5	≤1
SWPS071N	70	30	≥1	25V	0.5	≤1
SWPS091N	90	30	≥1	25V	0.5	≤1
SWPS151N	150	30	≥1	50V	0.5	≤1
SWPS201N	230	30	≥1	100V	0.5	≤1
SWPS301N	300	30	≥1	100V	0.5	≤1
SWPS401N	400	30	≥1	100V	0.5	≤1
SWPS501N	500	30	≥1	250V	0.5	≤1
SWPS601N	600	30	≥1	250V	0.5	≤1



Electrical Rating

Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20<math>\mu</math>s that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p> 	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25%$ from its initial measured DC breakdown voltage. IR > 108 ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal.please see above spec	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency:1MHz	

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## Feature

- RoHS compliant
- High insulation resistance.
- Low capacitance (<0.5pF).
- High holdover voltage.
- Accord with IEC61000-4-5 standard. Max Surge current capacity 1KA 8/20s.
- Micro-Gap Design
- Size : 4.5\*3.2\*2.72mm(1812)



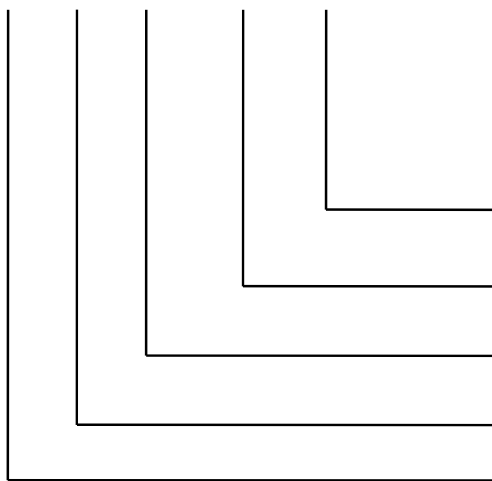
4

## Benefits

- Helps provide overvoltage fault protection against damage caused by high energy surges
- Suitable for sensitive equipment due to impulse sparkover response
- Suitable for high-frequency applications
- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

**SW P A 090 M**

Tolerance of  $V_s$   
 M:  $\pm 20\%$  N:  $\pm 30\%$

DC Breakdown Voltage  
 090: 90V

Dimension:  
 A:4.5\*3.2\*2.7mm

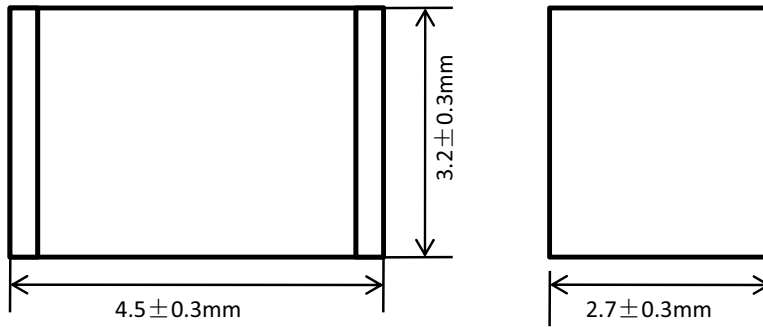
GDT Product

Semiwill Company

## Electrical Characteristic

Part Number	DC Breakdown Voltage 100V/S	Tolerance of $V_s$	Insulation Resistance		Impulse Discharge Current 8/20 $\mu$ S	C 1MHz
	V		%	G $\Omega$		DC
SWPA071M	70	20	$\geq 1$	25V	1	$\leq 1$
SWPA091M	90	20	$\geq 1$	25V	1	$\leq 1$
SWPA151M	150	20	$\geq 1$	50V	1	$\leq 1$
SWPA201M	230	20	$\geq 1$	100V	1	$\leq 1$
SWPA301M	300	20	$\geq 1$	100V	1	$\leq 1$
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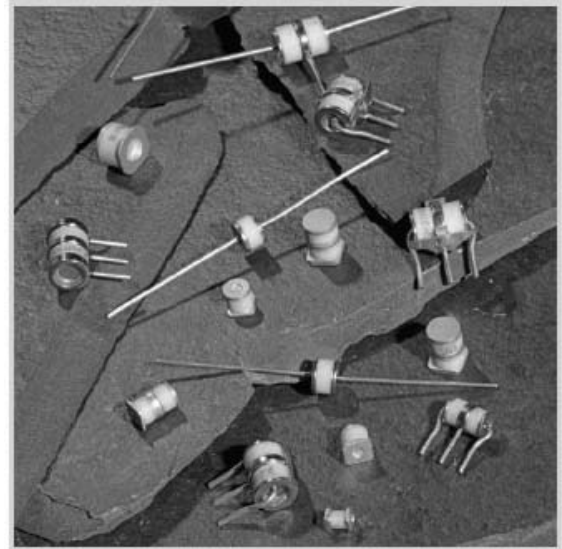
5



Electrical Rating

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DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20<math>\mu</math>s that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25\%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p> <p>The graph plots Current (%) on the y-axis (0 to 100) against Time on the x-axis. The waveform starts at 0, rises to a peak labeled 'Crest value' at 100%. The time to reach 100% is marked as 8 <math>\mu</math>sec. The time for the current to decay to 50% is marked as 20 <math>\mu</math>sec. The total duration of the pulse is labeled as 'Impulse Width'.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25\%$ from its initial measured DC breakdown voltage. IR > 108 ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal.please see above spec	
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## Feature

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- High insulation resistance.
- Low capacitance (<0.5pF).
- High holdover voltage.
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- Micro-Gap Design
- Size : 4.5\*3.2\*2.72mm(1812)



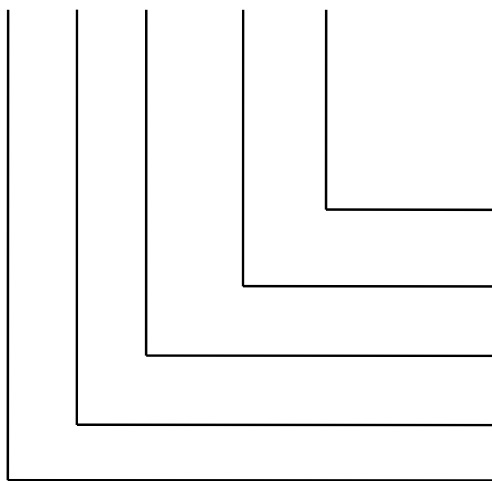
7

## Benefits

- Helps provide overvoltage fault protection against damage caused by high energy surges
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## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

**SW P C 090 M**

Tolerance of  $V_s$   
 M:  $\pm 20\%$  N:  $\pm 30\%$

DC Breakdown Voltage  
 090: 90V

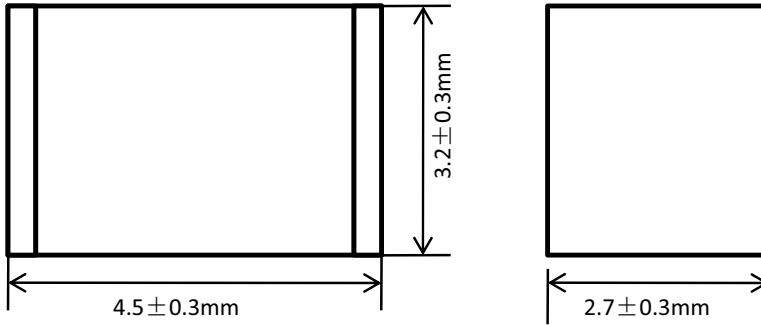
Dimension:  
 C:4.5\*3.2\*2.7mm

GDT Product

Semiwill Company

## Electrical Characteristic

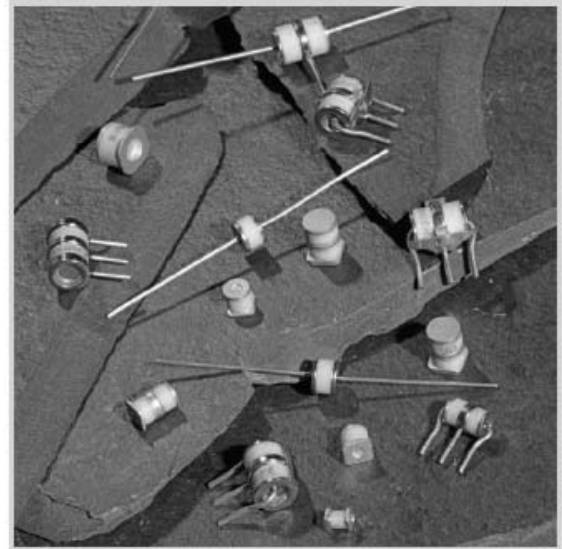
Part Number	DC Breakdown Voltage 100V/S	Tolerance of $V_s$	Insulation Resistance		Impulse Discharge Current 8/20 $\mu$ S	C 1MHz
	V		%	G $\Omega$		
SWPC071M	70	20	$\geq 1$	25V	2	$\leq 1$
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SWPC401N	400	30	$\geq 1$	100V	2	$\leq 1$
SWPC501N	500	30	$\geq 1$	250V	2	$\leq 1$
SWPC601N	600	30	$\geq 1$	250V	2	$\leq 1$



Electrical Rating

Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20<math>\mu</math>s that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25%$ from its initial measured DC breakdown voltage. $IR > 108$ ohms (-20%, +30% for 70 – 90V).	
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## Feature

- RoHS compliant
- High insulation resistance.
- Low capacitance (<2pF).
- High holdover voltage.
- Accord with IEC61000-4-5 standard. Max Surge current capacity 1KA 8/20s.
- Micro-Gap Design
- Size : 5.0\*5.0\*4.5mm



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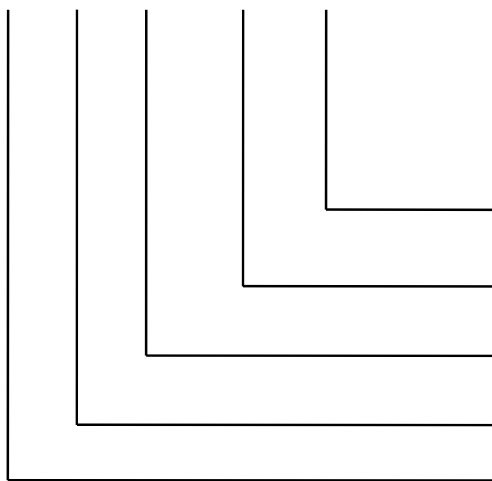
## Benefits

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- Suitable for sensitive equipment due to impulse sparkover response
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- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

**SW P T 090 M**



Tolerance of  $V_s$   
M:  $\pm 20\%$  N:  $\pm 30\%$

DC Breakdown Voltage  
090: 90V

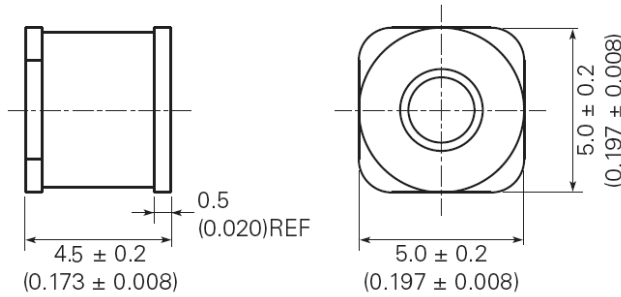
Dimension:  
T:5.0\*5.0\*4.5mm

GDT Product

Semiwill Company

### Electrical Characteristic

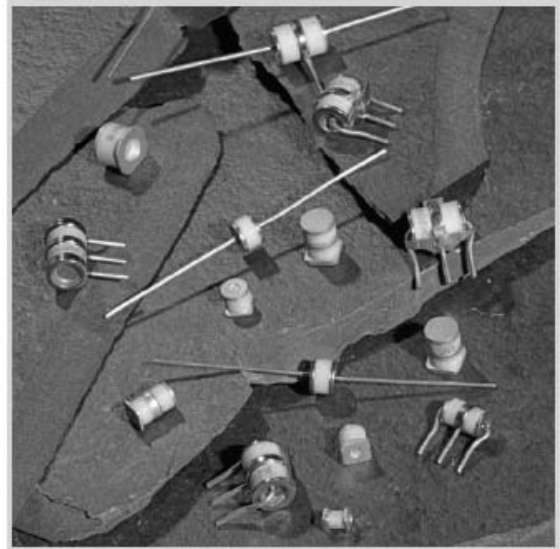
Part Number	DC Breakdown Voltage 100V/S	Tolerance of $V_s$	Insulation Resistance		Impulse Discharge Current 8/20 $\mu$ S	C 1MHz
	V		%	G $\Omega$		
SWPT071M	70	20	$\geq 1$	25V	5	$\leq 2$
SWPT091M	90	20	$\geq 1$	25V	5	$\leq 2$
SWPT151M	150	20	$\geq 1$	50V	5	$\leq 2$
SWPT201M	230	20	$\geq 1$	100V	5	$\leq 2$
SWPT301M	300	20	$\geq 1$	100V	5	$\leq 2$
SWPT401M	400	20	$\geq 1$	100V	5	$\leq 2$
SWPT501M	500	20	$\geq 1$	250V	5	$\leq 2$
SWPT601M	600	20	$\geq 1$	250V	5	$\leq 2$
SWPT071N	70	30	$\geq 1$	25V	5	$\leq 2$
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SWPT501N	500	30	$\geq 1$	250V	5	$\leq 2$
SWPT601N	600	30	$\geq 1$	250V	5	$\leq 2$



Electrical Rating

Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of <math>8/20\mu s</math> that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25\%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p> <p>The graph shows a current waveform starting at 0% and rising to a peak of 100% (labeled 'Crest value'). The time to reach 90% of the crest value is <math>8 \mu s</math>. The time to decay to 50% of the crest value is <math>20 \mu s</math>. The total duration of the pulse is labeled 'Impulse Width'.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25\%$ from its initial measured DC breakdown voltage. $IR > 108$ ohms ( $-20\%$ , $+30\%$ for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal. please see above spec	
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## Feature

- RoHS compliant
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/s.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance (<2pF).
- High holdover voltage.
- Large absorbing transient current capability.
- Micro-Gap Design
- Size : 5.0\*7.5mm



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## Benefits

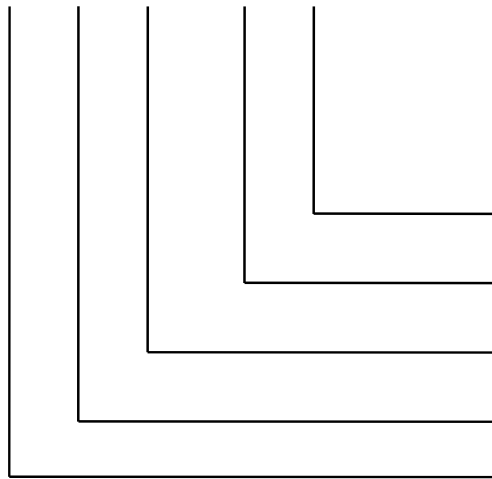
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## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

Part Number Code

**SW P 3D 090 L**



Discharge Class  
L: 5KA

DC Breakdown Voltage  
090: 90V

Dimension:  
3D: 5.0\*7.5mm

GDT Product  
Semiwill Company

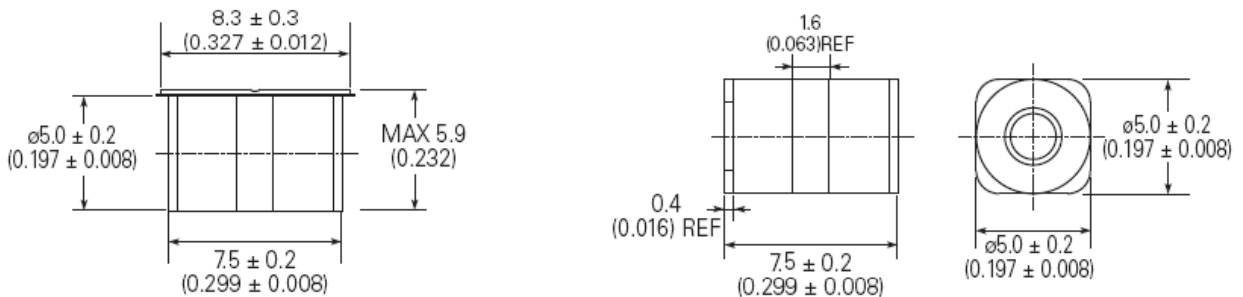
GAS DISCHARGE TUBES

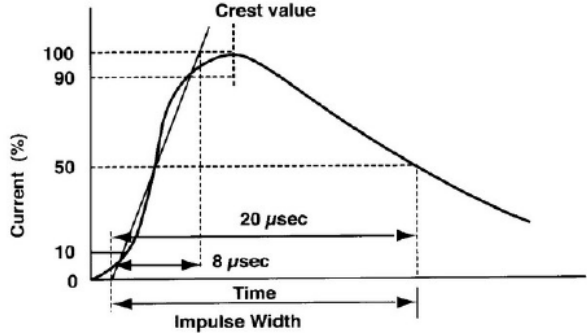
Electrical Characteristic

Part Number	DC Breakdown Voltage 100V/S	Tolerance of Vs	Impulse Spark-over Voltage 1KV/uS	Insulation Resistance		Impulse Discharge Current 8/20uS	Alternating Discharge Current 50HZ	C 1MHz
	V	%	V	GΩ	DC	KA	A	PF
SWP3D090L	90	25	≤750	≥1	25V	5	5	≤2
SWP3D230L	230	20	≤800	≥1	100V	5	5	≤2
SWP3D350L	350	20	≤800	≥1	100V	5	5	≤2
SWP3D420L	420	20	≤900	≥1	100V	5	5	≤2
SWP3D470L	470	20	≤1000	≥1	250V	5	5	≤2
SWP3D600L	600	20	≤1100	≥1	250V	5	5	≤2
SWP3D800L	800	20	≤1200	≥1	250V	5	5	≤2

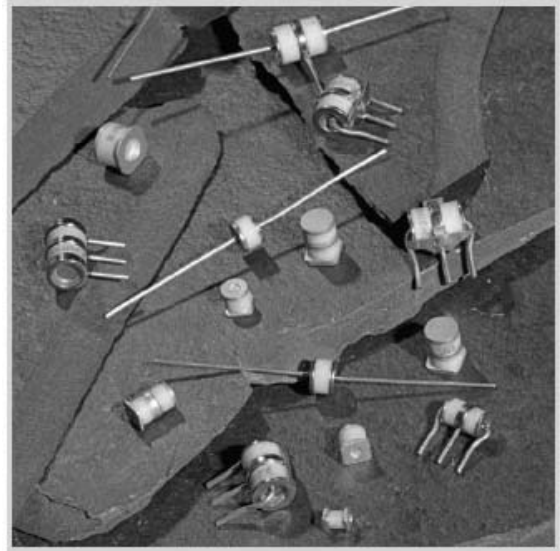
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Package Dimensions



Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20<math>\mu</math>s that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25\%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p> 	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25\%$ from its initial measured DC breakdown voltage. IR > 108 ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal. please see above spec	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency:1MHz	

Semiwill GDTs (Gas Discharge Tubes) are placed in front of, and in parallel with, sensitive telecom equipment such as power lines, communication lines, signal lines and data transmission lines to help protect them from damage caused by transient surge voltages that may result from lightning strikes and equipment switching operations. These devices do not influence the signal in normal operation. However, in the event of an overvoltage surge, such as a lightning strike, the GDT switches to a low impedance state and diverts the energy away from the sensitive equipment. Semiwill GDTs offer a high level of surge protection, a broad voltage range, low capacitance, and many form factors including new surface mount devices, which makes them suitable for applications such as MDF (Main Distribution Frame) modules, high data-rate telecom applications (e.g. ADSL, VDSL), and surge protection on power lines. Their low capacitance also results in less signal distortion.



## Feature

- RoHS compliant
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/s.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance (<1.5pF).
- High holdover voltage.
- Large absorbing transient current capability.
- Micro-Gap Design
- Size : 4.0\*4.2mm



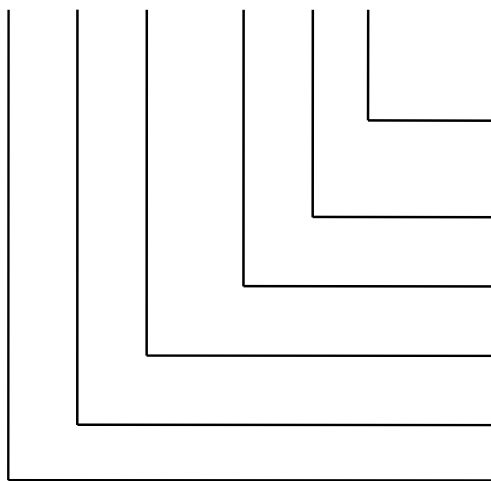
16

## Benefits

- Helps provide overvoltage fault protection against damage caused by high energy surges
- Suitable for sensitive equipment due to impulse sparkover response
- Suitable for high-frequency applications
- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

**SW P 4G 070 L A**

Lead Configuration

A=Axial Leads

N=Noleads



Discharge Class

L: 5KA

DC Breakdown Voltage

070: 70V

Dimension:

4G:φ4.0\*4.2mm

GDT Product

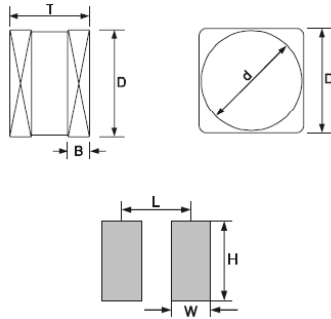
Semiwill Company

## Electrical Characteristic

Part Number	DC Breakdown Voltage 100V/S	Tolerance of Vs	Impulse Spark-over Voltage 1KV/uS	Insulation Resistance		Impulse Discharge Current 8/20uS	Alternating Discharge Current 50HZ	C 1MHz
	V	%	V	GQ	DC	KA	A	PF
SWP4G070L_	70	25	≤600	≥1	25V	5	5	≤1.5
SWP4G090L_	90	25	≤650	≥1	25V	5	5	≤1.5
SWP4G150L_	150	20	≤650	≥1	100V	5	5	≤1.5
SWP4G230L_	230	20	≤600	≥1	100V	5	5	≤1.5
SWP4G350L_	350	20	≤700	≥1	100V	5	5	≤1.5
SWP4G420L_	420	20	≤800	≥1	100V	5	5	≤1.5
SWP4G470L_	470	20	≤900	≥1	250V	5	5	≤1.5
SWP4G600L_	600	20	≤950	≥1	250V	5	5	≤1.5
SWP4G800L_	800	20	≤1200	≥1	250V	5	5	≤1.5
SWP4G1000L_	1000	20	≤1600	≥1	500V	5	5	≤1.5
SWP4G1200L_	1200	25	≤1800	≥1	500V	5	5	≤1.5
SWP4G1800L_	1800	20	≤2600	≥1	500V	5	5	≤1.5
SWP4G2000L_	2000	20	≤2800	≥1	500V	5	5	≤1.5
SWP4G2500L_	2500	20	≤3200	≥1	500V	5	5	≤1.5
SWP4G3000L_	3000	20	≤3700	≥1	500V	5	5	≤1.5

Package Dimensions

unit :mm



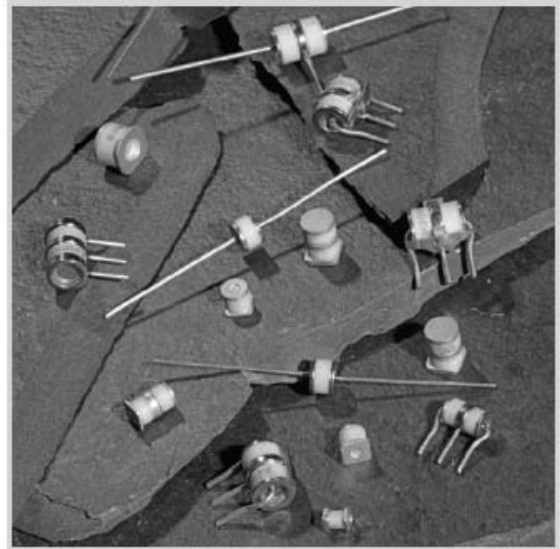
Recommended Pad Size

Items	Dimension	
	Spec.	Tolerance
D	4.0	±0.4
T	4.2	±0.5
B	0.4	±0.1
d	3.9	±0.1
L	3.5	-
H	5.0	-
W	0.65	-

Electrical Rating

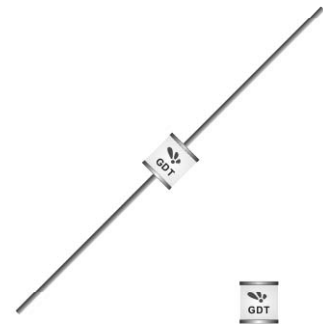
Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20<math>\mu</math>s that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25%$ from its initial measured DC breakdown voltage. $IR > 108$ ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal.please see above spec	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency:1MHz	

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## Feature

- RoHS compliant
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/s.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance (<1.5pF).
- High holdover voltage.
- Large absorbing transient current capability.
- Micro-Gap Design
- Size : 5.5\*6mm



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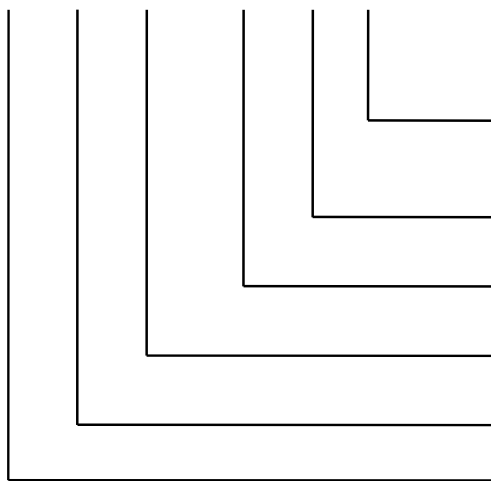
## Benefits

- Helps provide overvoltage fault protection against damage caused by high energy surges
- Suitable for sensitive equipment due to impulse sparkover response
- Suitable for high-frequency applications
- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

**SW P 5G 070 L A**



Lead Configuration

A=Axial Leads

N=Noleads



Discharge Class

L: 5KA

DC Breakdown Voltage

070: 70V

Dimension:

5G:φ5.5\*6mm

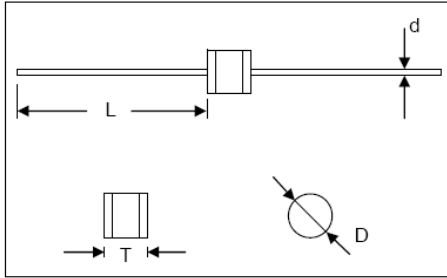
GDT Product

Semiwill Company

Electrical Characteristic

Part Number	DC Breakdown Voltage 100V/S	Tolerance of Vs	Impulse Spark-over Voltage 1KV/uS	Insulation Resistance		Impulse Discharge Current 8/20uS	Alternating Discharge Current 50HZ	C 1MHz
	V	%	V	GQ	DC	KA	A	PF
SWP5G070L_	70	25	≤600	≥1	25V	5	5	≤1.5
SWP5G090L_	90	25	≤650	≥1	25V	5	5	≤1.5
SWP5G150L_	150	20	≤650	≥1	100V	5	5	≤1.5
SWP5G230L_	230	20	≤600	≥1	100V	5	5	≤1.5
SWP5G350L_	350	20	≤700	≥1	100V	5	5	≤1.5
SWP5G420L_	420	20	≤800	≥1	100V	5	5	≤1.5
SWP5G470L_	470	20	≤900	≥1	250V	5	5	≤1.5
SWP5G600L_	600	20	≤950	≥1	250V	5	5	≤1.5
SWP5G800L_	800	20	≤1200	≥1	250V	5	5	≤1.5
SWP5G1000L_	1000	20	≤1600	≥1	500V	5	5	≤1.5
SWP5G1200L_	1200	25	≤1800	≥1	500V	5	5	≤1.5
SWP5G1800L_	1800	20	≤2600	≥1	500V	5	5	≤1.5
SWP5G2000L_	2000	20	≤2800	≥1	500V	5	5	≤1.5
SWP5G2500L_	2500	20	≤3200	≥1	500V	5	5	≤1.5
SWP5G3000L_	3000	20	≤3700	≥1	500V	5	5	≤1.5

## Package Dimensions

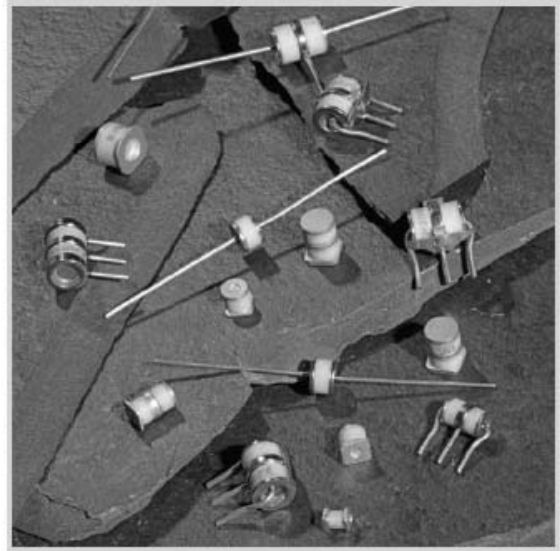


Items	Dimension	
	Spec.	Tolerance
D	5.5	+0.3, -0.5
T	6.0	+0.3, -0.5
d	0.8	$\pm 0.05$
L	30.0	Max.

## Electrical Rating

Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20<math>\mu s</math> that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25\%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25\%$ from its initial measured DC breakdown voltage. IR > 108 ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal. please see above spec	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency: 1MHz	

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## Feature

- RoHS compliant
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/s.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance (<1.5pF).
- High holdover voltage.
- Large absorbing transient current capability.
- Micro-Gap Design
- Size : 6.0\*4.2mm



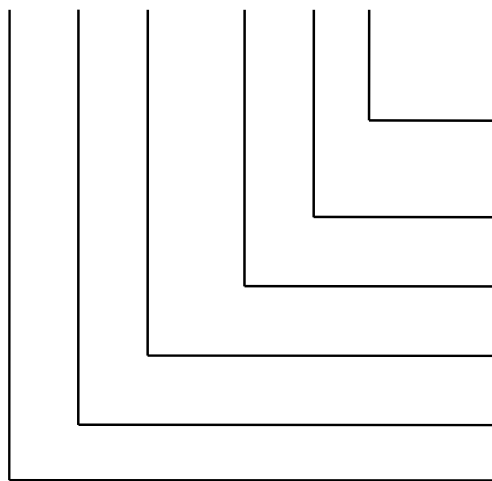
22

## Benefits

- Helps provide overvoltage fault protection against damage caused by high energy surges
- Suitable for sensitive equipment due to impulse sparkover response
- Suitable for high-frequency applications
- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

**SW P 6G 070 L A**

Lead Configuration

A=Axial Leads

N=Noleads



Discharge Class

L: 5KA

DC Breakdown Voltage

070: 70V

Dimension:

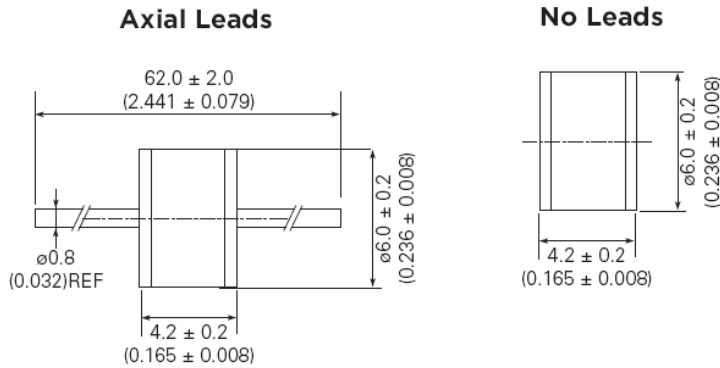
6G:φ6.0\*4.2mm

GDT Product

Semiwill Company

## Electrical Characteristic

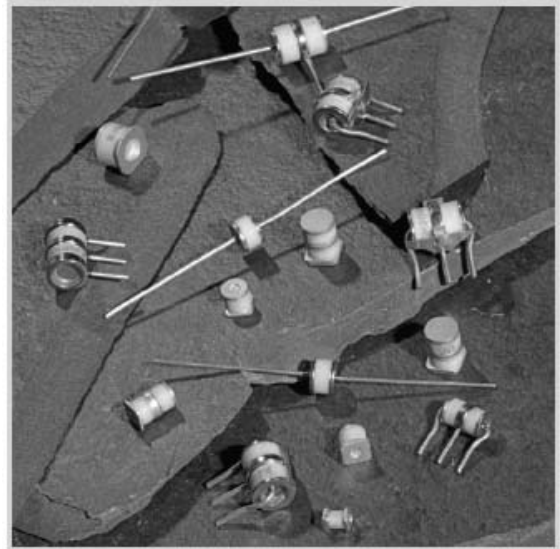
Part Number	DC Breakdown Voltage 100V/S	Tolerance of Vs	Impulse Spark-over Voltage 1KV/uS	Insulation Resistance		Impulse Discharge Current 8/20uS	Alternating Discharge Current 50HZ	C 1MHz
	V	%	V	GΩ	DC	KA	A	PF
SWP6G070L_	70	25	≤600	≥1	25V	5	5	≤1.5
SWP6G090L_	90	25	≤650	≥1	25V	5	5	≤1.5
SWP6G150L_	150	20	≤650	≥1	100V	5	5	≤1.5
SWP6G230L_	230	20	≤600	≥1	100V	5	5	≤1.5
SWP6G350L_	350	20	≤700	≥1	100V	5	5	≤1.5
SWP6G420L_	420	20	≤800	≥1	100V	5	5	≤1.5
SWP6G470L_	470	20	≤900	≥1	250V	5	5	≤1.5
SWP6G600L_	600	20	≤950	≥1	250V	5	5	≤1.5
SWP6G800L_	800	20	≤1200	≥1	250V	5	5	≤1.5
SWP6G1000L_	1000	20	≤1600	≥1	500V	5	5	≤1.5
SWP6G1200L_	1200	25	≤1800	≥1	500V	5	5	≤1.5
SWP6G1800L_	1800	20	≤2600	≥1	500V	5	5	≤1.5
SWP6G2000L_	2000	20	≤2800	≥1	500V	5	5	≤1.5
SWP6G2500L_	2500	20	≤3200	≥1	500V	5	5	≤1.5
SWP6G3000L_	3000	20	≤3700	≥1	500V	5	5	≤1.5



Electrical Rating

Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of <math>8/20\mu s</math> that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25\%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25\%$ from its initial measured DC breakdown voltage. $IR > 108$ ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal. please see above spec	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency: 1MHz	

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## Feature

- RoHS compliant
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/s.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance (<2pF).
- High holdover voltage.
- Large absorbing transient current capability.
- Micro-Gap Design
- Size : 8\*6mm



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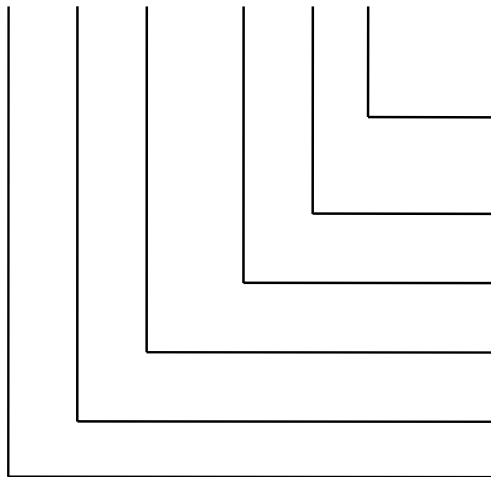
## Benefits

- Helps provide overvoltage fault protection against damage caused by high energy surges
- Suitable for sensitive equipment due to impulse sparkover response
- Suitable for high-frequency applications
- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

Part Number Code

**SW P 8G 070 L A**

Lead Configuration

A=Axial Leads

N=Noleads



Discharge Class

L: 5KA M:10KA H:20KA

DC Breakdown Voltage

070: 70V

Dimension:

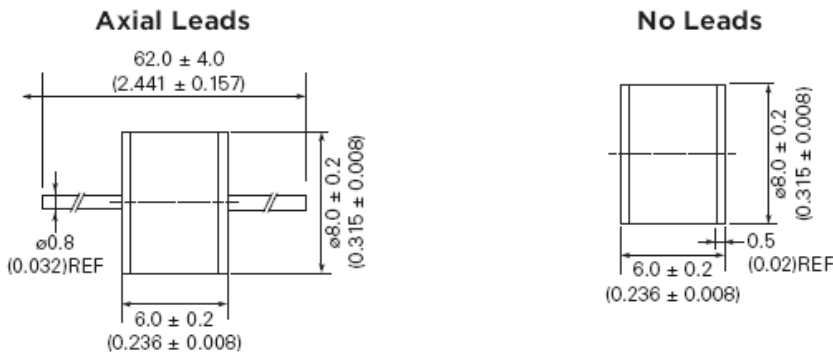
8G:φ8\*6mm

GDT Product

Semiwill Company

## Electrical Characteristic

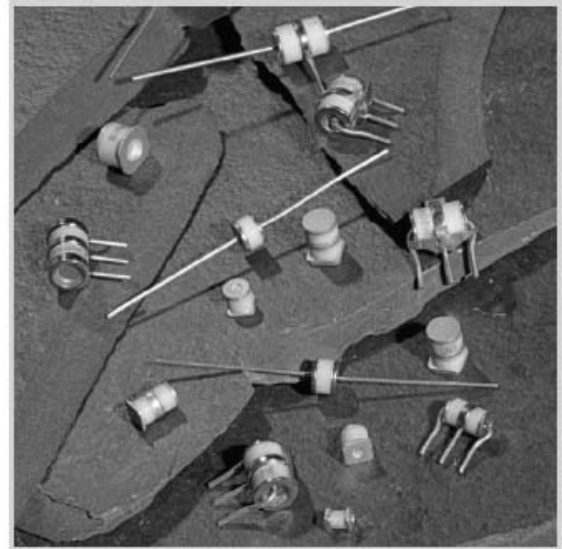
Part Number	DC Breakdown Voltage 100V/S	Tolerance of Vs	Impulse Spark-over Voltage 1KV/uS	Insulation Resistance		Impulse Discharge Current 8/20uS	Alternating Discharge Current 50HZ	C 1MHz
	V	%	V	GΩ	DC	KA	A	PF
SWP8G070L_	70	25	≤600	≥1	25V	5	5	≤2
SWP8G090L_	90	25	≤650	≥1	25V	5	5	≤2
SWP8G230L_	230	20	≤600	≥1	100V	5	5	≤2
SWP8G350L_	350	20	≤700	≥1	100V	5	5	≤2
SWP8G420L_	420	20	≤800	≥1	100V	5	5	≤2
SWP8G470L_	470	20	≤900	≥1	250V	5	5	≤2
SWP8G600L_	600	20	≤950	≥1	250V	5	5	≤2
SWP8G800L_	800	20	≤1200	≥1	250V	5	5	≤2
SWP8G070M_	70	25	≤700	≥1	25V	10	10	≤2
SWP8G090M_	90	25	≤700	≥1	25V	10	10	≤2
SWP8G230M_	230	20	≤800	≥1	100V	10	10	≤2
SWP8G350M_	350	20	≤800	≥1	100V	10	10	≤2
SWP8G420M_	420	20	≤800	≥1	100V	10	10	≤2
SWP8G470M_	470	20	≤900	≥1	250V	10	10	≤2
SWP8G600M_	600	20	≤1200	≥1	250V	10	10	≤2
SWP8G070H_	70	25	≤700	≥1	25V	20	20	≤2
SWP8G090H_	90	25	≤700	≥1	25V	20	20	≤2
SWP8G230H_	230	20	≤800	≥1	100V	20	20	≤2
SWP8G350H_	350	20	≤800	≥1	100V	20	20	≤2
SWP8G420H_	420	20	≤800	≥1	100V	20	20	≤2
SWP8G470H_	470	20	≤900	≥1	250V	20	20	≤2
SWP8G600H_	600	20	≤1200	≥1	250V	20	20	≤2



Electrical Rating

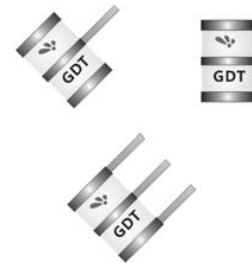
Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of 8/20<math>\mu s</math> that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25%$ from its initial measured DC breakdown voltage. $IR > 108$ ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal. please see above spec	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency: 1MHz	

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## Feature

- RoHS compliant
- Provide ultra-fast response to surge voltage from slow-rising surge of 100V/s to rapid-rising surge of 1KV/s.
- Stable breakdown voltage.
- High insulation resistance.
- Low capacitance (<2pF).
- High holdover voltage.
- Large absorbing transient current capability.
- Micro-Gap Design



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## Benefits

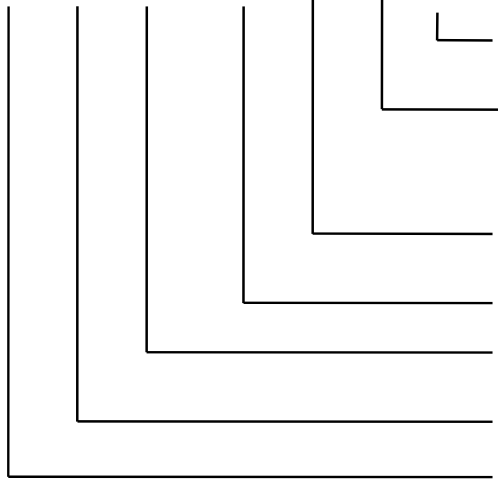
- Helps provide overvoltage fault protection against damage caused by high energy surges
- Suitable for sensitive equipment due to impulse sparkover response
- Suitable for high-frequency applications
- Highly reliable performance

## Applications

- Broadband equipment.
- ADSL equipment.
- XDSL equipment.
- Satellite and CATV equipment.
- General telecom equipment.

Part Number Code

**SW P 3R 070 L A 10**



Dimension:  
10:φ7.5\*10mm 13:φ8\*13.4mm

Lead Configuration  
A=Axial Leads  
N=No leads  
S=Single lead

Discharge Class  
L: 5KA M:10KA

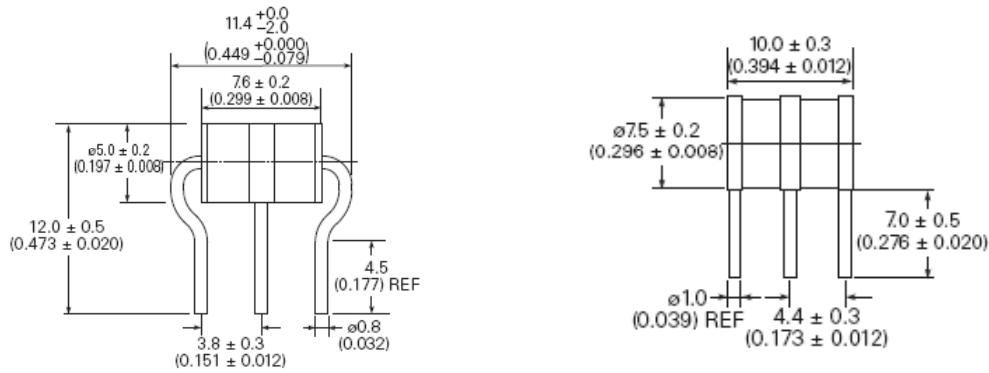
DC Breakdown Voltage  
070: 70V  
3R:3 Electrodes

GDT Product  
Semiwill Company

Electrical Characteristic

Part Number	DC Breakdown Voltage 100V/S	Tolerance of Vs	Impulse Spark-over Voltage 1KV/uS	Insulation Resistance		Impulse Discharge Current 8/20uS	Alternating Discharge Current 50HZ	C 1MHz
	V	%	V	GΩ	DC	KA	A	PF
SWP3R070L_	70	25	≤600	≥1	25V	5	5	≤2
SWP3R090L_	90	25	≤650	≥1	25V	5	5	≤2
SWP3R230L_	230	20	≤600	≥1	100V	5	5	≤2
SWP3R350L_	350	20	≤700	≥1	100V	5	5	≤2
SWP3R420L_	420	20	≤800	≥1	100V	5	5	≤2
SWP3R470L_	470	20	≤900	≥1	250V	5	5	≤2
SWP3R600L_	600	20	≤950	≥1	250V	5	5	≤2
SWP3R800L_	800	20	≤1200	≥1	250V	5	5	≤2
SWP3R070M_	70	25	≤700	≥1	25V	10	10	≤2
SWP3R090M_	90	25	≤700	≥1	25V	10	10	≤2
SWP3R230M_	230	20	≤800	≥1	100V	10	10	≤2
SWP3R350M_	350	20	≤800	≥1	100V	10	10	≤2
SWP3R420M_	420	20	≤800	≥1	100V	10	10	≤2
SWP3R470M_	470	20	≤900	≥1	250V	10	10	≤2
SWP3R600M_	600	20	≤1200	≥1	250V	10	10	≤2

Package Dimensions



Electrical Rating

Item	Test Condition/Description	Requirement
DC Spark-over Voltage	The voltage is measured with a low rate of rise $dv/dt=100V/s$	To meet the specified value
Impulse Spark-over Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv/dt=1000V/us$	
Nominal Impulse Discharge Current	<p>The maximum current applying a waveform of <math>8/20\mu s</math> that can be applied across the terminals of the gas tube without causing the more than <math>\pm 25\%</math> from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.</p>	
Alternating Discharge Current	Rated RMS value of AC current at 50Hz, 1 sec. 10 times. Intervals: 3min. DC breakdown voltage may not change more than $\pm 25\%$ from its initial measured DC breakdown voltage. $IR > 108$ ohms (-20%, +30% for 70 – 90V).	
Insulation Resistance	The resistance of gas tube shall be measured each terminal each other terminal. please see above spec	
Capacitance	The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency: 1MHz	