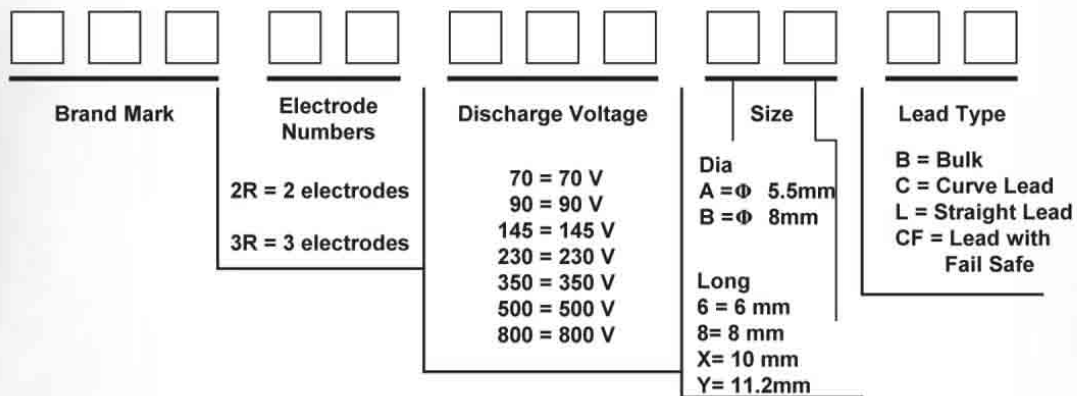


**Gas Discharge Tube**

## II. CERAMIC GAS DISCHARGE TUBE

How To Order





# Gas Discharge Tube

## 2N8S Standards Series

ACPA-2R Ø8mm ,6mm long



Model Name	DC Breakdown Voltage	Maximum Impulse Breakdown Voltage		Maximum Impulse Discharge Current (8/20 μs)		Nom. Alternating Discharge Current		Impulse Life (10/1000μs)	DC Holdover Voltage	Minimum Insulation Resistance	Maximum Capacitance
	(V)	(V)		(KA)		(A)		(100A)	(V)	(GΩ)	(pf)
	(100V/s)	100V/μs	1000V/μs	1 time	10 times	50Hz,1sec	Single 9cycles	times	< 150ms	Note1	1MHz
2R-70	70 ±20%	500	600	15	10	10	65	500	52	10	1.5
2R-90	90 ±20%	500	600						52	10	1.5
2R-120	120 ±15%	500	700						52	10	1.5
2R-130	130 ±15%	500	700						52	10	1.5
2R-145	145 ±15%	500	700						52	10	1.5
2R-180	180 ±15%	500	700						80	10	1.5
2R-230	230 ±15%	500	700						80	10	1.5
2R-250	250 ±15%	500	700						80	10	1.5
2R-300	300 ±15%	700	900						150	10	1.5
2R-350	350 ±15%	700	900						150	10	1.5
2R-400	400 ±15%	800	1000						150	10	1.5
2R-470	470 ±15%	900	1000	150	10	1.5					
2R-600	600 ±20%	1100	1400	10	5	10	65	300	150	10	1.5
2R-800	800 ±20%	1300	1700						150	10	1.5

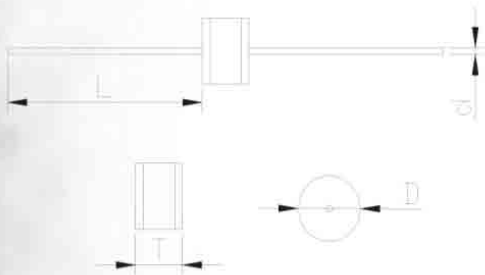
Note 1 : DC Breakdown Voltage

Measuring Voltage

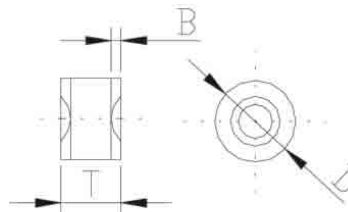
- 70-90 V
- 120-400 V
- 470-800 V

- 50 V
- 100 V
- 250 V

### L TYPE



### B TYPE



Unit: mm

Item	Dimensions	
	Spec.	Tolerance
D	8.0	±0.3
T	6.0	±0.3
B	1.1	±0.4
d	1.0	±0.05
	0.8	±0.05
L	28	Max.

# Gas Discharge Tube



## 2N8U High Surge Series

ACPA-2R Ø8mm ,6mm long

Model Name	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20 μs) (KA)		Nom. Alternating Discharge Current (A)		Impulse Life (10/1000μs) (100A) times	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
		100V/μs	100V/μs	1000V/μs	1 time	10 times	50Hz,1sec				
2R-70	70 ±20%	500	600	20	15	20	65	500	<150ms	Note1	1MHz
2R-90	90 ±20%	500	600						52	10	1.5
2R-120	120 ±15%	500	700						52	10	1.5
2R-130	130 ±15%	500	700						52	10	1.5
2R-145	145 ±15%	500	700						52	10	1.5
2R-180	180 ±15%	500	700						80	10	1.5
2R-230	230 ±15%	500	700						80	10	1.5
2R-250	250 ±15%	500	700						80	10	1.5
2R-300	300 ±15%	700	900						150	10	1.5
2R-350	350 ±15%	700	900						150	10	1.5
2R-400	400 ±15%	800	1000						150	10	1.5
2R-470	470 ±15%	900	1000						150	10	1.5

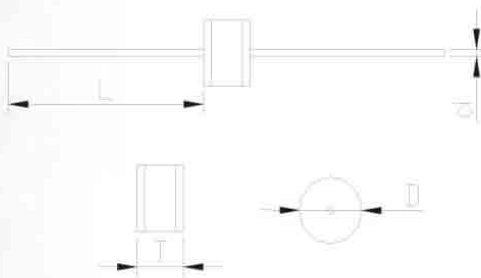
Note1 : DC Breakdown Voltage

- 70-90 V
- 120-400 V

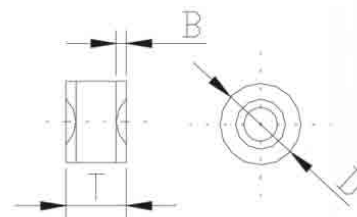
Measuring Voltage

- 50 V
- 100 V

### L TYPE



### B TYPE



Unit: mm

Item	Dimensions	
	Spec.	Tolerance
D	8.0	±0.3
T	6.0	±0.3
B	1.1	±0.4
d	1.0	±0.05
L	28	Max.

# Gas Discharge Tube

## 2L8H High Voltage Series

ACPA-2R Ø8mm ,8mm long



Model Name	DC Breakdown Voltage	Maximum Impulse Breakdown Voltage		Maximum Impulse Discharge Current (8/20 μs)		Nom. Alternating Discharge Current		Impulse Life	Minimum Insulation Resistance	Maximum Capacitance
	(V)	(V)		(KA)		(A)		(10/1000μs) (100A)	(GΩ)	(pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times	50Hz, 1sec	Single 9cycles	times	Note1	1MHz
2R-600	600 ±15%	1000	1100	10	5	10	65	500	10	1.5
2R-800	800 ±15%	1100	1200					500	10	1.5
2R-1000	1000 ±20%	1300	1400					300	10	1.5
2R-1400	1400 ±20%	2100	2200	2.5	2.5	2.5	5	10	10	1.5
2R-1600	1600 ±20%	2300	2400					10	10	1.5
2R-2000	2000 ±20%	2700	2800					10	10	1.5
2R-2500	2500 ±20%	3500	3600					10	10	1.5
2R-2700	2700 ±20%	3700	3800					300	10	1.5
2R-3000	3000 ±20%	4100	4200					10	10	1.5

\*Measured with an 8/20s waveform, 100A

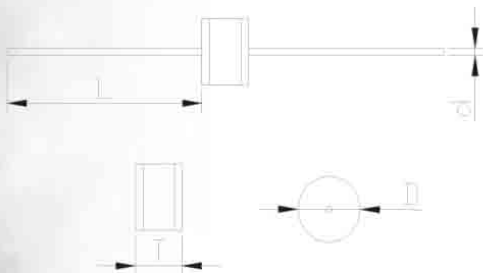
Note 1 : DC Breakdown Voltage

- 6000-1000V
- 6000-1000V
- 6000-1000V

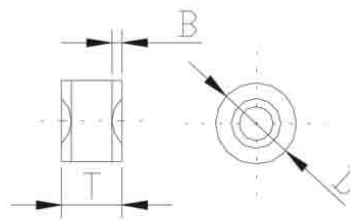
Measuring Voltage

- DC 250 V
- DC 250 V
- DC 250 V

### L TYPE



### B TYPE



Unit: mm

Item	Dimensions	
	Spec.	Tolerance
D	8.0	±0.3
T	8.0	+0.6, -0.1
B	1.1	±0.4
d	1.0	±0.05
	0.8	±0.05
L	28	Max.



## 3N8S Standard Series

ACPA-3R Ø8mm ,10mm long

Model Name	DC Breakdown Voltage	Maximum Impulse Breakdown Voltage		Maximum Impulse Discharge Current (8/20 μs)		Nom. Alternating Discharge Current		Impulse Life (10/1000μs) (400A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	(V)	(V)	(V)	(KA)	(A)	(A)	(A)				
	100V/s	100V/μs	1000V/μs	1 time	10 times	50Hz, 1sec	Single 9cycles	times	< 150ms	Note1	1MHz
3R-75	75±20%	600	700	20	10	10	130	300	52	10	2
3R-90	90±20%	600	700						52	10	2
3R-145	145±20%	500	700						52	10	2
3R-200	200±20%	500	700						80	10	2
3R-230	230±20%	600	700						80	10	2
3R-350	350±20%	700	900						150	10	2
3R-400	400±20%	800	1000						150	10	2
3R-420	420±20%	800	1000						150	10	2
3R-470	470±20%	800	1000						150	10	2
3R-600	600±20%	1200	1500						150	10	2

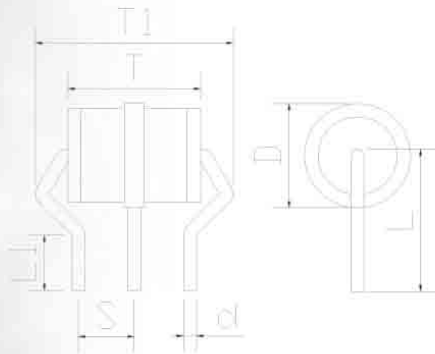
Note1 : DC Breakdown Voltage

- 70-90 V
- 145-400 V
- 470-600 V

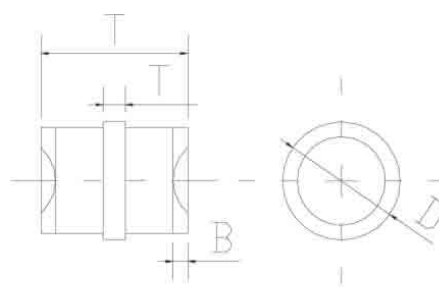
Measuring Voltage

- 50 V
- 100 V
- 250 V

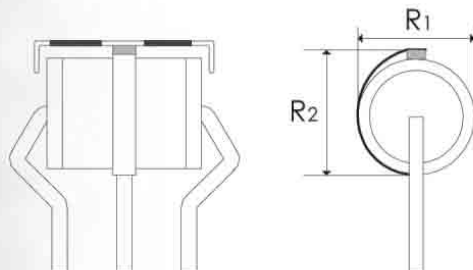
### C TYPE



### B TYPE



### CF TYPE



Unit: mm

Item	Dimensions	
	Spec.	Tolerance
D	8.0	±0.2
T	10.0	±0.3
T1	13.4	±0.4
T2	1.5	±0.2
B	1.4	±0.3
L	11.0	±0.5
L1	4.5	±1.5
R1	8.1	±0.3
R2	9.8	0.4
S	4.4	±0.3
d	1.0	±0.05

# Gas Discharge Tube

## SMD SERIES



ACPA-2S Ø6mm ,4.2mm long

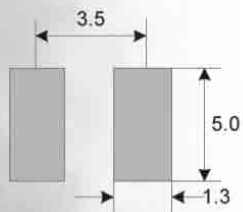
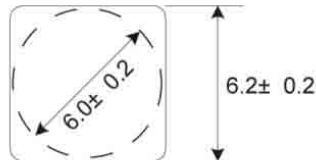
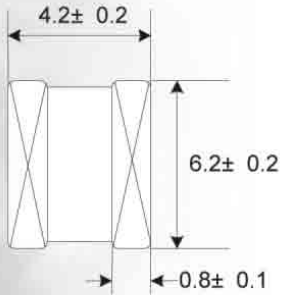
Model Name	DC Breakdown Voltage	Maximum Impulse Breakdown Voltage		Maximum Impulse Discharge Current (8/20 μs)		Nom. Alternating Discharge Current		Impulse Life (10/1000μs)	DC Holdover Voltage	Minimum Insulation Resistance	Maximum Capacitance
	(V)	(V)	(V)	(KA)	(KA)	(A)	(A)	(100A)	(V)	(GΩ)	(pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times	50Hz, 1sec	Single 9cycles	times	< 150ms	Note1	1MHz
2R-70	70 ±20%	600	700	10	5	5	15	500	52	1	1
2R-90	90 ±20%	600	700						52	1	1
2R-145	145 ±20%	500	700						52	1	1
2R-230	230 ±20%	450	550						135	1	1
2R-250	250 ±20%	450	550						135	1	1
2R-300	300 ±20%	500	600						135	1	1
2R-350	350 ±20%	500	600						135	1	1
2R-400	400 ±20%	600	700						135	1	1
2R-470	470 ±20%	700	800						135	1	1

Note 1 : DC Breakdown Voltage

- 70-90V
- 145-400V
- 470-600V

Measuring Voltage

- 50 V
- 100 V
- 250 V



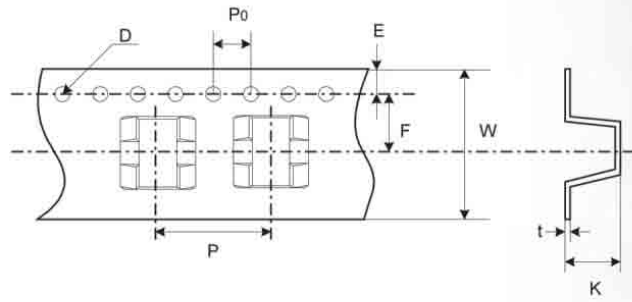
Recommended Pad Size

## Packing

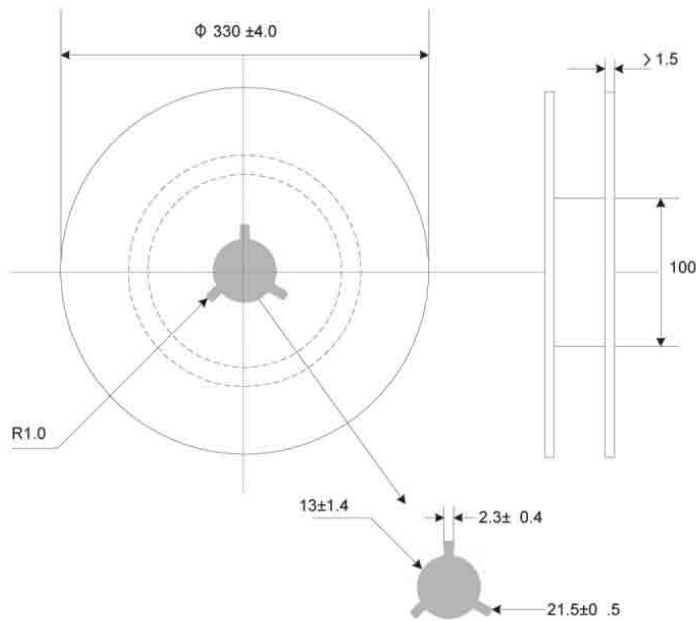
### Carrier Tape

unit :mm

Item	Spec
P	12.0±0.1
P	4.0±0.1
W	16.0±0.3
F	7.5±0.1
E	1.75±0.1
D	φ 1.55±0.05
K	6.4±0.1
t	0.4±0.05



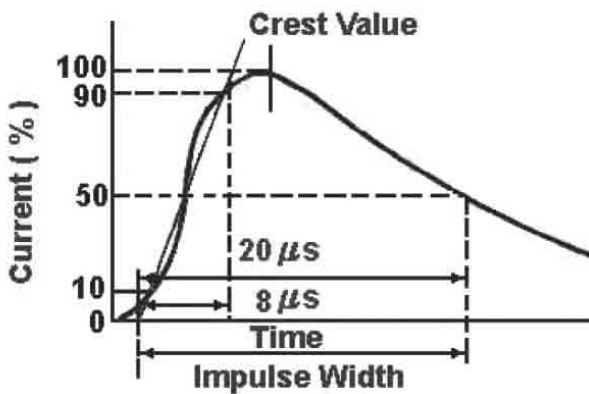
### Reel



Quantity: 900pcs per reel(13")

# Gas Discharge Tube

## ELECTRICAL RATING

Item	Test Condition / Description	Requirement										
DC Breakdown Voltage	The voltage is measured with a low rate of rise $dv / dt \approx 100 \text{ v/s}$											
Maximum Impulse Breakdown Voltage	The maximum impulse breakdown voltage is measured with a rise time of $dv / dt \approx 100 \text{ v/}\mu\text{s}$ and $dv / dt \approx 1000 \text{ v/}\mu\text{s}$											
Maximum Impulse Discharge Current	<p>The maximum current within gas tube voltage change of <math>\pm 25\%</math> when one impulse is applied. Applied waveform : <math>8/20 \mu\text{sec}</math></p> 											
Alternating Discharge Current	<p>Rated rms value of ac current at 50 Hz , 1sec. 10 times , Intervals: 3 min Requirements of: DC breakdown voltage limit after discharge, <math>\pm 25\%</math> <math>IR &gt; 10^8</math> ( -20%,+30% for 70 – 90 V )</p>	To meet the specified value										
DC Holdover Voltage	The maximum DC voltage across the two terminals of gas tube under which it may be expected to return to the high impedance state after the gas tube breakdown.											
Insulation Resistance	<p>The resistance of gas tube shall be measured each terminal to each other terminal. Applied voltage:</p> <table border="0" style="margin-left: 40px;"> <tr> <td>70-150 V</td> <td>50 V</td> </tr> <tr> <td>151- 400 V</td> <td>100 V</td> </tr> <tr> <td>470-1000 V</td> <td>250 V</td> </tr> <tr> <td>1001-2000 V</td> <td>500 V</td> </tr> <tr> <td>2001-3000 V</td> <td>1000 V</td> </tr> </table>	70-150 V	50 V	151- 400 V	100 V	470-1000 V	250 V	1001-2000 V	500 V	2001-3000 V	1000 V	
70-150 V	50 V											
151- 400 V	100 V											
470-1000 V	250 V											
1001-2000 V	500 V											
2001-3000 V	1000 V											
Capacitance	<p>The capacitance of gas tube shall be measured each terminal to each other terminal. Test frequency : 1 MHZ In measurements involving 3-electrode gas tubes ,the terminal not being tested shall be connected to a ground plane.</p>											