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Gas Discharge Tubes

CELEBRATING
FIFTY YEARS
OF EXCELLENCE

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General Characteristics

Features

- UL Recognition.
- CUL Recognition (specific types).
- VDE Certified Types.
- Compliance to MIL STD 202G, method 208H and 106.
- Can be used to meet the requirements of GR-1361 and ITU K.12.
- AQL based on MIL STD 1916
- RoHs Compliant and Halogen Free.

Temperature Rating

Storage -55°C to +150°C
Operate -55°C to +90°C

100% Inspection

- DC Breakdown, insulation resistance, physical dimensions, lead/weld strength and appearance.
- All other gas tube characteristics are checked using the appropriate sampling procedures.
- ISO 9001 Certified.
- Gas Tubes have no radioactive content.

RoHS Compliance

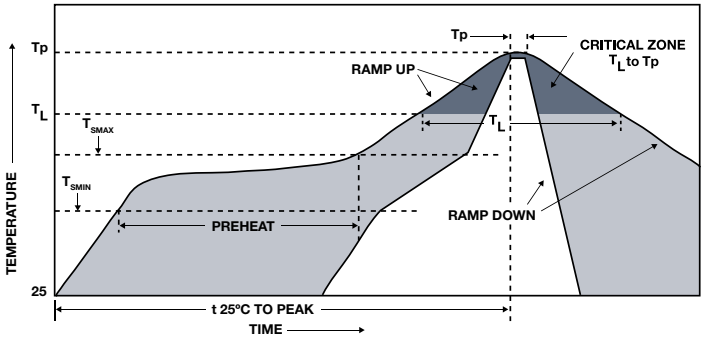
WPGT Series Gas Discharge Tubes purchased from World Products Inc. comply to a maximum concentration value of 0.1% by weight in homogeneous materials for lead (Pb), mercury, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) and of 0.01% weight in homogeneous materials for cadmium and are in compliance with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive). Fail safe types with date code of 10/05 or after comply to RoHS standards stated above.

Solderability

- All thru-hole types comply with MIL STD 202G, Method 208H.
- For surface mount types see below (J-STD-020C).

Lead-Free Reflow Profile Recommendation (IPC/JEDEC J-STD-020C	
Reflow Parameter	**Lead-Free Assembly**
Minimum preheat temperature (TsMIN)	150°C
Maximum preheat temperature (TsMAX)	200°C
Preheat Time	60-180 seconds
TsMAX to TL ramp-up rate	3°C/second maximum
Time above temperature TL (tL)	217°C 60-120 seconds
Peak Temperature (TP)	245°C ~260°C(recommended 250°C)
Time 25°C to TP	6 minute maximum
Time within 5° of Peak TP	10-20 seconds
Ramp-down rate	4°C/second maximum

IR/Convection Reflow Profile (IPC/JEDEC J-STD-020C)



Terms and Definitions

DC Breakdown Voltage	The voltage measured at a rise time of 100v/s.
Maximum Impulse Breakdown Voltage	The maximum breakdown voltage at rise times of 100v/us and 1000v/us for 99% of measured values.
Maximum Impulse Discharge Current	The maximum current applying a waveform of 8/20us that can be applied across the terminals of the gas tube without causing the gas tube to change more than -20%, +30% from its initial measured DC breakdown voltage. Dwell time between pulses is 3 minutes.
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 ±25% from its initial measured DC breakdown voltage. IR > 10^8 ohms (-20%, +30% for 70 – 90V).
Impulse Life	The minimum number of impulses of a specified waveform and peak current which a gas tube will conduct without causing the gas tube to change more than ±25% from its initial measured DC breakdown voltage. Dwell time between pulses is 1-2 minutes.
DC Holdover Voltage	The maximum DC voltage across the two terminals of the gas tube under which it may be expected to return to the high impedance state after the gas tube breakdown.
Insulation Resistance	The resistance of the gas tube shall be measured each terminal to each other terminal.

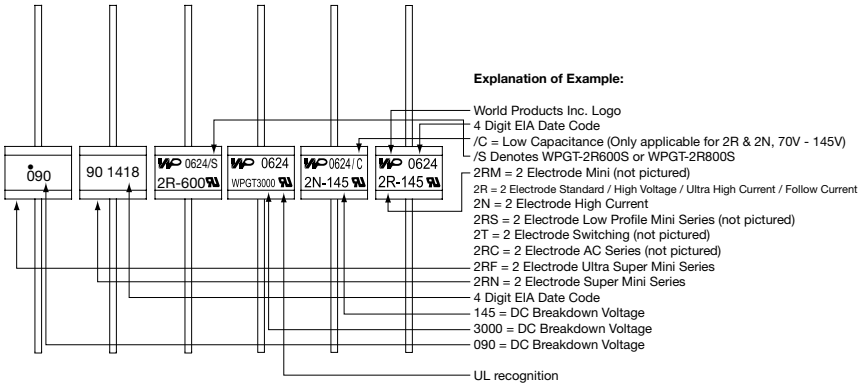
DC Breakdown Voltage	Measuring Voltage
70-150V	50V
151-400V	100V
401-1000V	250V
1001-2000V	500V
2001-6000V	1000V

Capacitance	The capacitance of a gas tube shall be measured each terminal to each other terminal. Test frequency: 1MHz In measurements involving 3-electrode gas tubes, the terminal not being tested shall be connected to a ground plane.

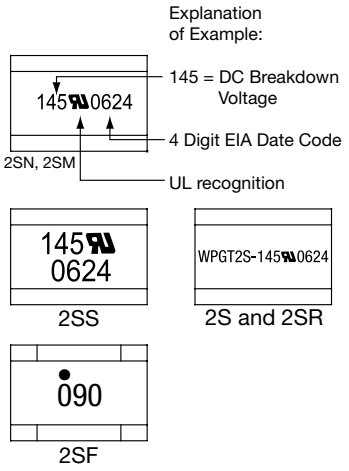
General Characteristics (continued)

Part Marking

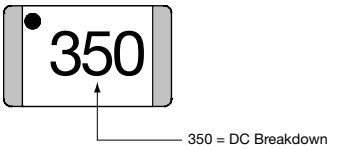
2 Electrode Series



2 Electrode Surface Mount Series

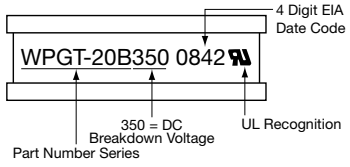


2 Electrode Surface Mount Chip 3216 and 4532 Series

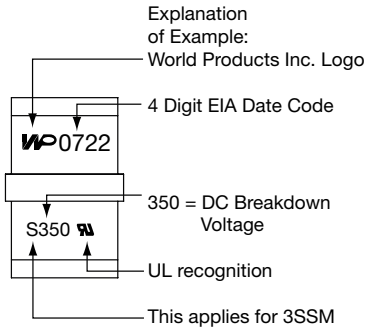


2 Electrode Extremely High Current

20B, 16D5, 16D5-A,18D7, 20D6, 25D10W, 30D12 Series

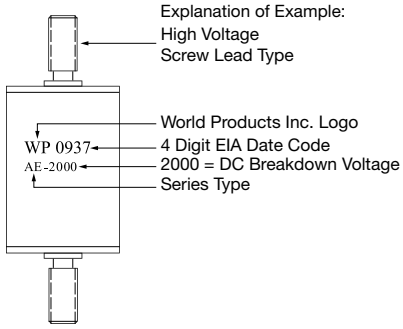


3 Electrode Surface Mount (3SM & 3SSM) Series

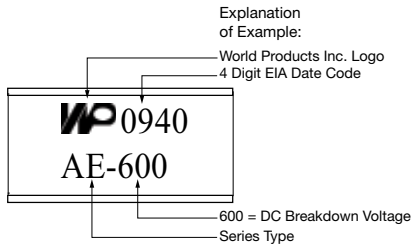


2 Electrode AE Series

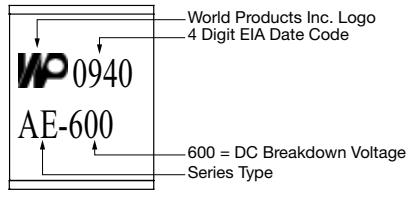
High Voltage Screw Lead Type AE and 25D21 Series



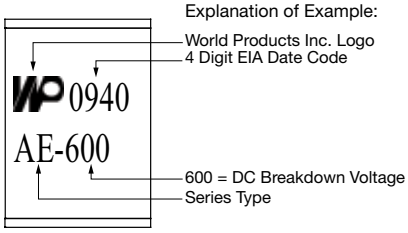
No Lead Standard Type AE Series



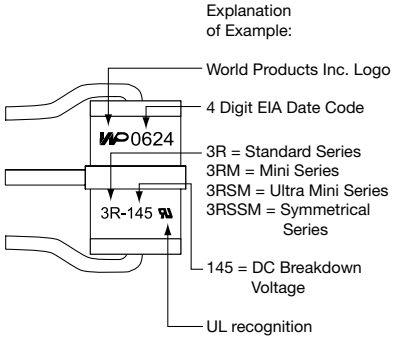
No Lead High Current Type AE Series



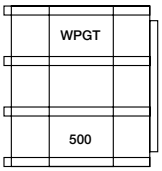
No Lead Ultra High and Extremely High Current Types AE, 12D5, 12D8,12D12, 12D17, 12D18 Series



3 Electrode Series



Arrays 8D4 (N3, N3A, N4, N4A, N5, N5A) Series



2 Electrode Series

Part Numbering System

Example part number:

WPGT	-	2R	800	B	8	L	C	TA
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)

(1) World Products Gas Discharge Tubes

(2) Series Code
2RS = 2 Electrode Low Profile Mini Series
2RN = 2 Electrode Super Mini Series
2RF = 2 Electrode Ultra Super Mini Series
2RM = 2 Electrode Mini Series
2R = 2 Electrode Standard Series/High Voltage Series
2R = 2 Electrode Follow Current Series
2N = 2 Electrode High Current Series
2R = 2 Electrode Ultra High Current Series
2T = 2 Electrode Switching Series
2RC = 2 Electrode AC Series
16D5* = 2 Electrode Extremely High Current Series
20B* = 2 Electrode Extremely High Current Series
12D5* = 2 Electrode Extremely High Energy Series
12D8* = 2 Electrode Extremely High Energy Series
12D12* = 2 Electrode Extremely High Energy Series
12D17* = 2 Electrode Extremely High Current Series
12D18* = 2 Electrode Extremely High Current Series
16D5* = 2 Electrode Extremely High Energy Series
16D5-A* = 2 Electrode Extremely High Energy Series
18D7* = 2 Electrode Extremely High Current Series
20D6* = 2 Electrode Extremely High Current Series
25D10W* = 2 Electrode Extremely High Current Series
25D21* = 2 Electrode Extremely High Current Series
30D12* = 2 Electrode Extremely High Current Series
AE = 2 Electrode Standard, High Current, Ultra High Current & Screw Lead Series)

(3) DC Breakdown Voltage
(Please reference specification to determine available voltage options for each series.)

70 = 70V	**350H** **	**2400** = 2400V
75 = 75V	**400** = 400V	**2500** = 2500V
90 = 90V	**420** = 420V	**2700** = 2700V
120 = 120V	**470** = 470V	**3000** = 3000V
130 = 130V	**600S** = 600V	**3300** = 3300V
145 = 145V	**700S** = 700V	**3500** = 3500V
150 = 150V	**800S** = 800V	**3600** = 3600V
180 = 180V	**900S** = 900V	**4000** = 4000V
230 = 230V	**600** = 600V	**4500** = 4500V
250 = 250V	**700** = 700V	**5000** = 5000V
280 = 280V	**800** = 800V	**6000** = 6000V
300 = 300V	**600XP***** = 600V	**6200** = 6200V
350 = 350V	**700XP***** = 700V	**6500** = 6500V
70H **	**800XP***** = 800V	**7500** = 7500V
75H **	**1000** = 1000V	
90H **	**1100** = 1100V	
120H **	**1200** = 1200V	
130H **	**1300** = 1300V	
145H **	**1400** = 1400V	
230H **	**1500** = 1500V	
250H **	**1600** = 1600V	
300H **	**2000** = 2000V	

(4) Diameter (“D” Dimension)
A = 5.5mm - 2RM Series Only
B = 8mm
D = 11.8mm for AE Series
E = 2.8mm
F = 3.5mm
G = 5.0mm

(5) Length (“T” Dimension)
3 = 3.5mm
4 = 4.0mm
5 = 4.2mm
6 = 6mm
8 = 8mm
10 = 10mm - High Voltage Series Only
12 = 12mm
17 = 17mm

(6) Lead Type
B = No Leads
Nil = No Leads for 20B Series
L = Axial lead (0.8mm lead diameter)
L1 = Axial lead (1.0mm lead diameter)
L2 = Axial lead (0.6mm lead diameter) - 2RN and 2RF series only
A1 = Radial lead (0.8mm & 0.6mm lead diameter)
B1 = Radial lead (1.0mm lead diameter)
C1 = Radial lead Clip-in style (1.0mm lead diameter)
D1 = Radial Lead Clip-in style (0.8mm lead diameter)

(7) Low Capacitance
(Only applicable for 2R & 2N, 70V – 145V)
C = Low capacitance of 0.8pF

(8) Taping Specifications
TA = Taped (Ammo Box)
TR = Tape & Reel

* See data sheets for part number suffix codes.
** For (2R) Ultra High Current Series only.
*** For (2R) Follow Current Series only.

2 Electrode Low Profile Mini Series (2RS)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)	Impulse Life (10/1000μs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	times	<150ms	*	1MHz
WPGT-2RS75	75 ± 20%	350	650	8	5	5	300	52	1	0.5
WPGT-2RS90	90 ± 20%	350	600				300	52	1	0.5
WPGT-2RS145	145 ± 20%	400	600				300	52	1	0.5
WPGT-2RS230	230 ± 20%	500	600				300	80	1	0.5
WPGT-2RS250	250 ± 20%	500	600				300	135	1	0.5
WPGT-2RS300	300 ± 20%	550	650				300	150	1	0.5
WPGT-2RS350	350 ± 20%	600	700				300	150	1	0.5
WPGT-2RS400	400 ± 20%	650	750				300	150	1	0.5
WPGT-2RS470	470 ± 20%	750	850				300	150	1	0.5
WPGT-2RS600	600 ± 20%	900	1000				300	150	1	0.5

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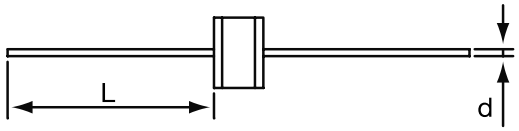
*DC Breakdown Voltage	DC Measuring Voltage
75-145V	50V
230-400V	100V
470-600V	250V

Dimensions

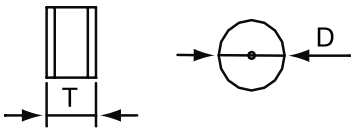
Unit: mm

Item	Dimensions
D	5.0 ± 0.2
T	4.2 ± 0.3
d	0.8 ± 0.05
L	20 Min.

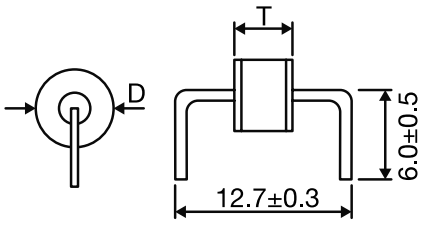
L Type



B Type



A1 Type (d) = 0.8mm



2 Electrode Super Mini Series (2RN)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)	Impulse Life (8/20μs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	times	<150ms	*	1MHz
WPGT-2RN75	75 ± 20%	400	700	5	3	3	300	52	1	0.5
WPGT-2RN90	90 ± 20%	400	700				300	52	1	0.5
WPGT-2RN145	145 ± 20%	400	700				300	52	1	0.5
WPGT-2RN230	230 ± 20%	600	700				300	80	1	0.5
WPGT-2RN250	250 ± 20%	600	700				300	80	1	0.5
WPGT-2RN300	300 ± 20%	600	750				300	150	1	0.5
WPGT-2RN350	350 ± 20%	650	800				300	150	1	0.5
WPGT-2RN400	400 ± 20%	700	850				300	150	1	0.5
WPGT-2RN470	470 ± 20%	800	900				300	150	1	0.5
WPGT-2RN600	600 ± 20%	900	1000				300	150	1	0.5

UL497B Recognized File #E135015

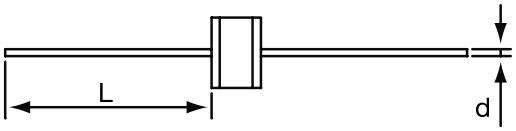
*DC Breakdown Voltage	DC Measuring Voltage
75-145V	50V
230-400V	100V
470-600V	250V

Dimensions

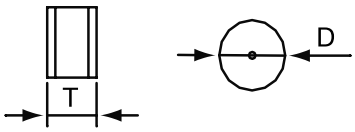
Unit: mm

Item	Dimensions
D	3.5 ± 0.2
T	4.0 ± 0.2
d	0.6 ± 0.05
L	20 Min.

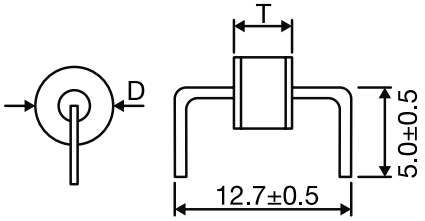
L2 Type



B Type



A1 Type (d) = 0.6mm



2 Electrode Ultra Super Mini Series (2RF)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)	Impulse Life (8/20μs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	times	<150ms	*	1MHz
WPGT-2RF90	90 ± 20%	500	600	2	1	1	300	50	1	0.5
WPGT-2RF120	120 ± 20%	500	600				300	80	1	0.5
WPGT-2RF150	150 ± 20%	500	600				300	80	1	0.5
WPGT-2RF200	200 ± 20%	600	700				300	150	1	0.5
WPGT-2RF230	230 ± 20%	600	700				300	150	1	0.5
WPGT-2RF250	250 ± 20%	600	700				300	150	1	0.5
WPGT-2RF350	350 ± 20%	600	800				300	150	1	0.5
WPGT-2RF400	400 ± 20%	700	800				300	150	1	0.5

UL497B Recognized File #E135015

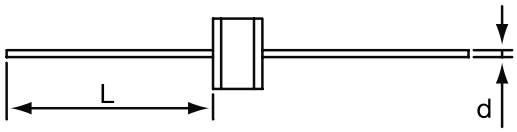
*DC Breakdown Voltage	DC Measuring Voltage
75-150V	50V
200-400V	100V

Dimensions

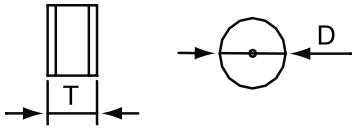
Unit: mm

Item	Dimensions
D	2.8 ± 0.2
T	3.5 ± 0.3
d	0.6 ± 0.05
L	20 Min.

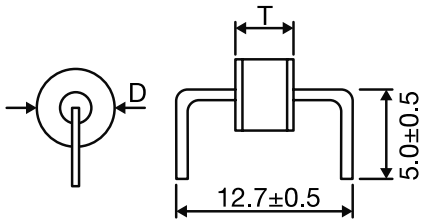
L2 Type



B Type



A1 Type (d) = 0.6mm



2 Electrode Mini Series (2RM)

Specifications

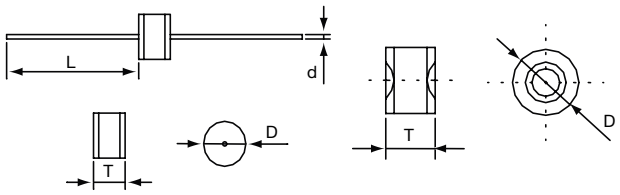
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (8/20µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2RM70	70 ± 20%	700	800	10	5	5	20	300	52	1	1
WPGT-2RM75	75 ± 20%	700	800	10	5	5	20	300	52	1	1
WPGT-2RM90	90 ± 20%	600	700	10	5	5	20	300	52	1	1
WPGT-2RM120	120 ± 15%	600	700	10	5	5	20	300	52	1	1
WPGT-2RM130	130 ± 15%	600	700	10	5	5	20	300	52	1	1
WPGT-2RM145	145 ± 15%	600	700	10	5	5	20	300	52	1	1
WPGT-2RM150	150 ± 15%	600	700	10	5	5	20	300	52	1	1
WPGT-2RM180	180 ± 15%	600	700	10	5	5	20	300	80	1	1
WPGT-2RM230	230 ± 15%	600	700	10	5	5	20	300	80	1	1
WPGT-2RM250	250 ± 15%	600	700	10	5	5	20	300	80	1	1
WPGT-2RM300	300 ± 15%	700	900	10	5	5	20	300	150	1	1
WPGT-2RM350	350 ± 15%	700	900	10	5	5	20	300	150	1	1
WPGT-2RM400	400 ± 15%	800	1000	10	5	5	20	300	150	1	1
WPGT-2RM470	470 ± 15%	1000	1200	10	5	5	20	300	150	1	1
WPGT-2RM600	600 ± 20%	1300	1500	5	2.5	2.5	5	300	150	1	1
WPGT-2RM800	800 ± 20%	1500	1700	5	2.5	2.5	5	300	150	1	1
WPGT-2RM1000	1000 ± 20%	1600	1800							1	1
WPGT-2RM1200	1200 ± 20%	1800	2000							1	1
WPGT-2RM1400	1400 ± 20%	2200	2400							1	1
WPGT-2RM1600	1600 ± 20%	2400	2600							1	1
WPGT-2RM2000	2000 ± 20%	2800	3000	3	1.5	2	4	300	150	1	1
WPGT-2RM2500	2500 ± 20%	3300	3500							1	1
WPGT-2RM3000	3000 ± 20%	3800	4000							1	1
WPGT-2RM3500	3500 ± 20%	4300	4500							1	1
WPGT-2RM3600	3600 ± 20%	4400	4600							1	1

NOTES:
- **UL497B Recognized, File #E135015 (through WPGT-2RM800).**
- **UL1449 and CUL 4th Edition Recognized, File# E321567 (WPGT-2RM1000 – WPGT-2RM3600).**
- **VDE Certified, File #40040434 for the following voltages: 75, 90, 150, 230, 250, 300, 350, 400, 470, and 600.**

*DC Breakdown Voltage	DC Measuring Voltage
70-150V	50V
180-400V	100V
470-1000V	250V
1200-2000V	500V
2500-3600V	1000V

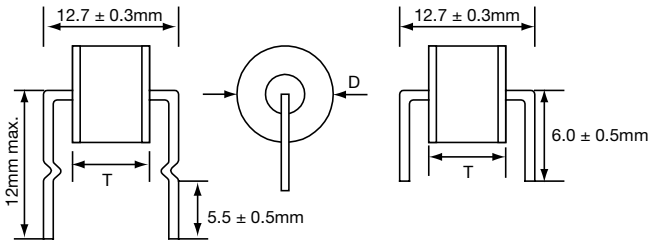
L TYPE (d) = 0.8mm
L1 TYPE (d) = 1.0mm

B TYPE



C1 TYPE (d) = 1.0mm
D1 TYPE (d) = 0.8mm

A1 TYPE (d) = 0.8mm
B1 TYPE (d) = 1.0mm



Dimensions

Unit: mm

Item	Dimensions
D	5.5 ± 0.3
T	6.0 ± 0.3
d	0.8 or 1.0 ± 0.05
L	24 Min.

2 Electrode Standard Series (2R)

Specifications

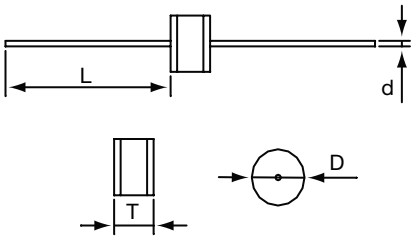
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000μs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2R70	70 ± 20%	500	600	15	10	10	65	500	52	10	1.5**
WPGT-2R75	75 ± 20%	500	600	15	10	10	65	500	52	10	1.5**
WPGT-2R90	90 ± 20%	500	600	15	10	10	65	500	52	10	1.5**
WPGT-2R120	120 ± 15%	500	700	15	10	10	65	500	52	10	1.5**
WPGT-2R130	130 ± 15%	500	700	15	10	10	65	500	52	10	1.5**
WPGT-2R145	145 ± 15%	500	700	15	10	10	65	500	52	10	1.5**
WPGT-2R180	180 ± 15%	500	700	15	10	10	65	500	80	10	1.5
WPGT-2R230	230 ± 15%	500	700	15	10	10	65	500	80	10	1.5
WPGT-2R250	250 ± 15%	500	700	15	10	10	65	500	80	10	1.5
WPGT-2R300	300 ± 15%	700	900	15	10	10	65	500	150	10	1.5
WPGT-2R350	350 ± 15%	700	900	15	10	10	65	500	150	10	1.5
WPGT-2R400	400 ± 15%	800	1000	15	10	10	65	500	150	10	1.5
WPGT-2R470	470 ± 15%	1000	1200	15	10	10	65	500	150	10	1.5
WPGT-2R600S	600 ± 20%	1100	1400	15	10	10	65	300	150	10	1.5
WPGT-2R700S	700 ± 20%	1200	1600	15	10	10	65	300	150	10	1.5
WPGT-2R800S	800 ± 20%	1300	1700	15	10	10	65	300	150	10	1.5
WPGT-2R900S	900 ± 20%	1400	1800	15	10	10	65	300	150	10	1.5

UL497B Recognized, File #E135015
VDE Certified File #40040434 for the following voltages:
75, 90, 145, 230, 250, 300, 350, 400, 470, 600, and 800.

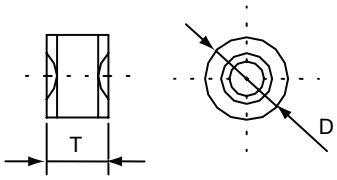
*DC Breakdown Voltage	DC Measuring Voltage
70-145V	50V
180-400V	100V
470-1000V	250V

**May be offered with 0.8pf capacitance rating.
See part numbering system for special coding.

L TYPE (d) = 0.8mm
L1 TYPE (d) = 1.0mm



B TYPE

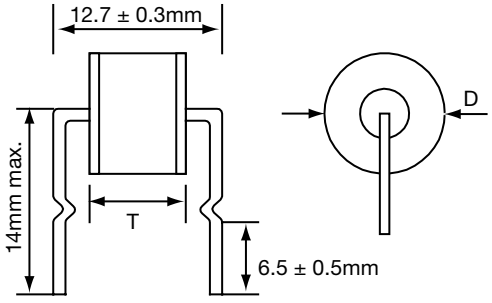


Dimensions

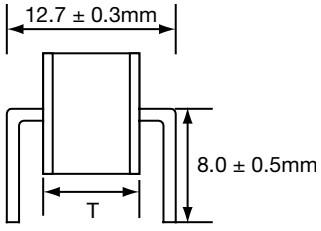
Unit: mm

Item	Dimensions
D	8.0 ± 0.3
T	6.0 ± 0.3
d	0.8 or 1.0 ± 0.05
L	24 Min.

C1 TYPE (d) = 1.0mm
D1 TYPE (d) = 0.8mm



A1 TYPE (d) = 0.8mm
B1 TYPE (d) = 1.0mm



2 Electrode High Voltage Series (2R)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (100A)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	*	1MHz
WPGT-2R600	600 ± 15%	1000	1100	10	5	10	65	500	10	1.5
WPGT-2R800	800 ± 15%	1100	1200	10	5	10	65	500	10	1.5
WPGT-2R1000	1000 ± 20%	1300	1400	10	5	10	65	300	10	1.0
WPGT-2R1400	1400 ± 20%	2100	2200	5	2.5	2.5	5	100	10	1.0
WPGT-2R1600	1600 ± 20%	2300	2400	5	2.5	2.5	5	100	10	1.0
WPGT-2R2000	2000 ± 20%	2700	2800	5	2.5	2.5	5	100	10	1.0
WPGT-2R2400	2400 ± 20%	3400	3500	5	2.5	2.5	5	100	10	1.0
WPGT-2R2500	2500 ± 20%	3500	3600	5	2.5	2.5	5	100	10	1.0
WPGT-2R2700	2340-2970	3600	3800	5	3***	2.5	5	300**	10	1.0
WPGT-2R3000	3000 ± 20%	4100	4200	5	3	2.5	5	300**	10	1.0
WPGT-2R3500	3500 ± 20%	4900	5000	5	3	2.5	5	100	10	1.0
WPGT-2R3600	3600 ± 20%	5000	5200	5	3	2.5	5	100	10	1.0
WPGT-2R4000	4000 ± 20%	5300	5500	5	3	2.5	5	100	10	1.0
WPGT-2R4500	4500 ± 20%	5800	6000	5	3	2.5	5	100	10	1.0
WPGT-2R5000	5000 ± 20%	6000	6400	5	3	2.5	5	100	10	1.0
WPGT-2R6000	6000 ± 20%	7000	7800	5	3	2.5	5	100	10	1.0

UL 1449 and CUL 4th Edition Recognized, File #E321567. Complies to VDE Gap requirements and MIL-STD-202, Method 106 (Moisture resistance.)
VDE Certified File #40040434 for the following voltages: 1000, 2000, 2400, 2500, 2700, 3000 and 3600.

*DC Breakdown Voltage	DC Measuring Voltage
600-1000V	250V
1400-2000V	500V
2400-6000V	1000V

**Measured with an 8/20µs waveform,100A.
***For WPGT-2R2700 rating is 3KA (10 times each polarity).
DC Breakdown voltage is measured at 5kV/s.

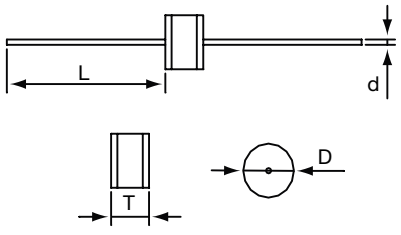
Dimensions

Unit: mm

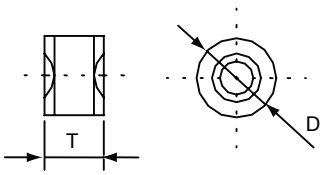
Item	Dimensions
D	8.0 ± 0.3
T*	8.0 +0.6, -0.1
d	0.8 or 1.0 ± 0.05
L	24 Min.

*T Dimension for WPGT-2R5000 and WPGT-2R6000 is 10 +0.6, -0.1.

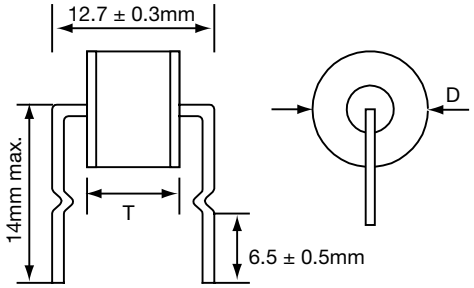
L TYPE (d) = 0.8mm
L1 TYPE (d) = 1.0mm



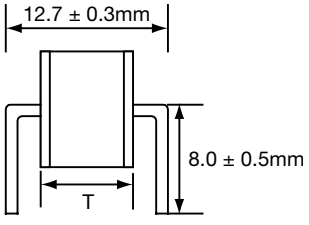
B TYPE



C1 TYPE (d) = 1.0mm
D1 TYPE (d) = 0.8mm



A1 TYPE (d) = 0.8mm
B1 TYPE (d) = 1.0mm



2 Electrode Follow Current (2R)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Response Time (ns)	Impulse Discharge Current (8/20 µs) (KA)		Maximum Flow On Current (A)	Maximum Continuous Operating Voltage (V)	Minimum Insulation Resistance (GΩ)
	100V/s	1.2/50 µs 6KV		Imax	In	at 50/60HZ	at 50/60HZ	Note 1
WPGT-2R600XP	600 ± 20%	1300	100	20	10	100	255	1
WPGT-2R700XP	700 ± 20%	1400	100	20	10	100	255	1
WPGT-2R800XP	800 ± 20%	1500	100	20	10	100	255	1

UL 1449 and CUL 4th Edition Recognized, File #E321567.

Note 1:

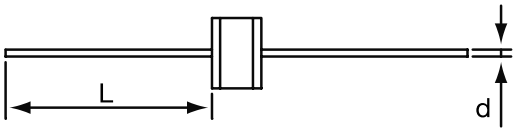
DC Breakdown Voltage	DC Measuring Voltage
600 - 800V	250V

Dimensions

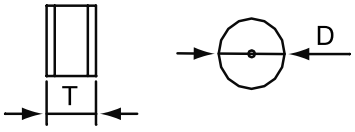
Unit: mm

Item	Dimensions
D	8.0 +3.0, -0.5
T	6.0 +3.0, -0.5
d	1.0±0.05
L	20 Min.

L1 Type



B Type



2 Electrode High Current Series (2N)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2N70	70 ± 20%	500	600	20**	15	20	65	500	52	10	1.5**
WPGT-2N75	75 ± 20%	500	600	20**	15	20	65	500	52	10	1.5**
WPGT-2N90	90 ± 20%	500	600	20**	15	20	65	500	52	10	1.5**
WPGT-2N120	120 ± 15%	500	700	20**	15	20	65	500	52	10	1.5**
WPGT-2N130	130 ± 15%	500	700	20**	15	20	65	500	52	10	1.5**
WPGT-2N145	145 ± 15%	500	700	20**	15	20	65	500	52	10	1.5**
WPGT-2N180	180 ± 15%	500	700	20**	15	20	65	500	80	10	1.5
WPGT-2N230	230 ± 15%	500	700	20**	15	20	65	500	80	10	1.5
WPGT-2N250	250 ± 15%	500	700	20**	15	20	65	500	135	10	1.5
WPGT-2N300	300 ± 15%	700	900	20**	15	20	65	500	150	10	1.5
WPGT-2N350	350 ± 15%	700	900	20**	15	20	65	500	150	10	1.5
WPGT-2N400	400 ± 15%	800	1000	20**	15	20	65	500	150	10	1.5
WPGT-2N470	470 ± 15%	1000	1200	20**	15	20	65	500	150	10	1.5
WPGT-2N600	600 ± 15%	1100	1300	20**	15	20	65	500	150	10	1.5

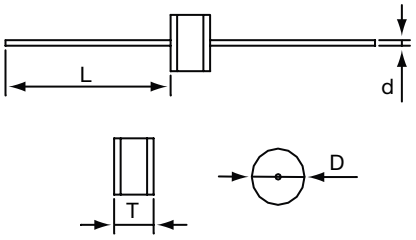
** For B type below (no lead) rating is 25KA.

UL497B Recognized, File #E135015
VDE Certified File #40040434 for the following voltages:
75, 90, 145, 230, 250, 300, 350, 400, 470, and 600.

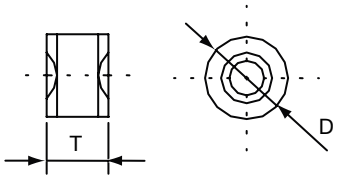
*DC Breakdown Voltage	DC Measuring Voltage
70-145V	50V
180-400V	100V
470V - 600V	250V

**May be offered with 0.8pf capacitance rating.
See part numbering system for special coding.

L TYPE (d) = 0.8mm
L1 TYPE (d) = 1.0mm



B TYPE

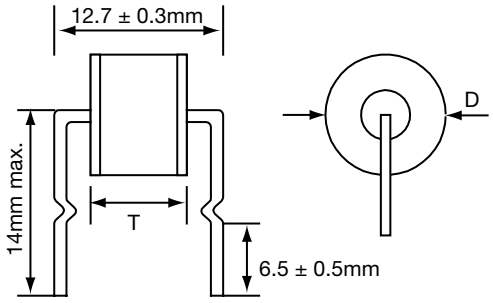


Dimensions

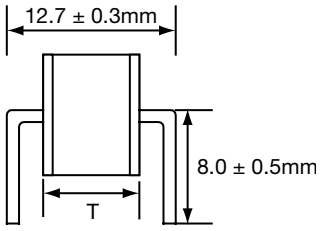
Unit: mm

Item	Dimensions
D	8.0 ± 0.3
T	6.0 ± 0.3
d	0.8 or 1.0 ± 0.05
L	24 Min.

C1 TYPE (d) = 1.0mm
D1 TYPE (d) = 0.8mm



A1 TYPE (d) = 0.8mm
B1 TYPE (d) = 1.0mm



2 Electrode Ultra High Current Series (2R)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2R70H	70 ± 20%	500	600	25	20	20	65	500	52	1	1.5
WPGT-2R75H	75 ± 20%	500	600	25	20	20	65	500	52	1	1.5
WPGT-2R90H	90 ± 20%	500	600	25	20	20	65	500	52	1	1.5
WPGT-2R120H	120 ± 20%	500	700	25	20	20	65	500	80	1	1.5
WPGT-2R130H	130 ± 20%	500	700	25	20	20	65	500	80	1	1.5
WPGT-2R145H	145 ± 20%	500	700	25	20	20	65	500	80	1	1.5
WPGT-2R230H	230 ± 20%	500	700	25	20	20	65	500	80	1	1.5
WPGT-2R250H	250 ± 20%	500	700	25	20	20	65	500	135	1	1.5
WPGT-2R300H	300 ± 20%	700	900	25	20	20	65	500	135	1	1.5
WPGT-2R350H	350 ± 20%	700	900	25	20	20	65	500	135	1	1.5

UL497B Recognized File #E135015

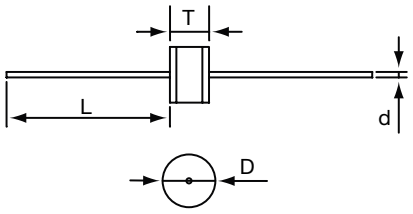
*DC Breakdown Voltage	DC Measuring Voltage
70-145V	50V
230-350V	100V

Dimensions

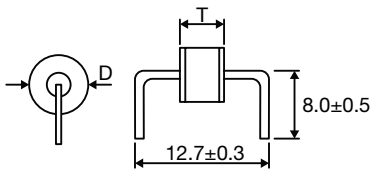
Unit: mm

Item	Dimensions
D	8.0 + 0.3, -0.5
T	6.0 + 0.3, -0.5
d	0.8 ± 0.05
L	20 Min.

L TYPE (d) = 0.8mm



A1 TYPE (d) = 0.8mm



2 Electrode Switching Series (2T)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Ignition Frequency (HZ)	Switching Operations (times)	Minimum Insulation Resistance (GΩ)	Operating Temperature °C	Maximum Capacitance 0.1Vrms 1MHZ (pf)
	100V/s			*		
WPGT-2T350	350 ± 10%	400	1 x 10^5	1	-45 ~ + 125	1
WPGT-2T400	400 ± 10%	400	1 x 10^5	1	-45 ~ + 125	1
WPGT-2T470	470 ± 10%	400	1 x 10^5	1	-45 ~ + 125	1
WPGT-2T600	600 ± 10%	400	1 x 10^5	1	-45 ~ + 125	1
WPGT-2T800	800 ± 10%	400	1 x 10^5	1	-45 ~ + 125	1
WPGT-2T1000	1000 ± 10%	400	1 x 10^5	1	-45 ~ + 125	1

UL497B Recognized, File #E135015 (With the exception of WPGT-2T800 and WPGT-2T1000.) **UL1449 and CUL 4th Edition recognized, File #E321567 for WPGT-2T800 and WPGT-2T1000.**

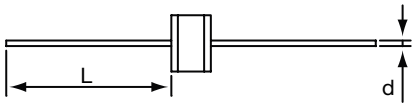
*DC Breakdown Voltage	DC Measuring Voltage
350-400V	100V
470-1000V	250V

Dimensions

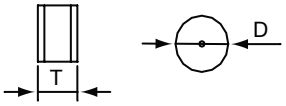
Unit: mm

Item	Dimensions
D	8.0 ± 0.3
T	6.0 ± 0.3
d	0.8 ± 0.05
L	25 Max.

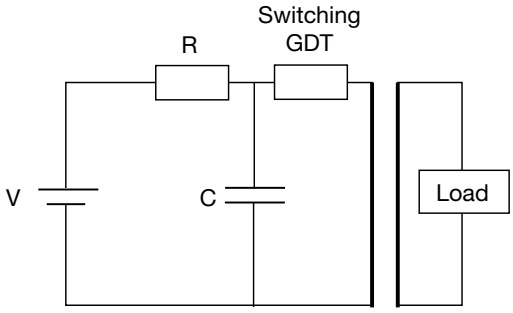
L Type (d) = 0.8mm



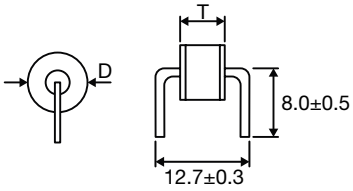
B Type



Basic Application Circuit



A1 TYPE (d) = 0.8mm



2 Electrode AC Series (2RC)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)		Max Follow Current Amps	Arc Voltage (ON state voltage) @1Amp Min	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	**	TYP	*	1MHz
WPGT-2RC280	280 ± 20%	500	550	10	5	5	65	200	~25	10	1.5
WPGT-2RC600	600 ± 20%	1100	1200	10	5	5	65	200	~25	10	1.5
WPGT-2RC1000	1000 ± 20%	1400	1500	10	5	---	---	200	~25	10	1.5
WPGT-2RC1100	1100 ± 20%	1600	1700	10	5	---	---	200	~25	10	1.5
WPGT-2RC1200	1200 ± 20%	1700	1800	10	5	---	---	200	~25	10	1.5
WPGT-2RC1300	1300 ± 20%	1800	1900	10	5	---	---	200	~25	10	1.5
WPGT-2RC1500	1500 ± 20%	1800	2000	10	5	---	---	200	~25	10	1.5
WPGT-2RC2000	2000 ± 20%	2500	2750	10	5	---	---	200	~25	10	1.5
WPGT-2RC2500	2500 ± 20%	3200	3500	10	5	---	---	200	~25	10	1.5
WPGT-2RC2700	2700 ± 20%	3600	4000	10	5	---	---	200	~25	10	1.5
WPGT-2RC3000	3000 ± 20%	4000	4200	10	5	---	---	200	~25	10	1.5
WPGT-2RC3300	3300 ± 20%	4600	4700	10	5	---	---	200	~25	10	1.5
WPGT-2RC4000	4000 ± 20%	5800	6000	10	5	---	---	200	~25	10	1.5
WPGT-2RC4500	4500 ± 20%	6150	6500	10	5	---	---	200	~25	10	1.5
WPGT-2RC5000	5000 ± 20%	7500	8000	10	5	---	---	200	~25	10	1.5
WPGT-2RC6200	6200 ± 20%	8100	9500	10	5	---	---	200	~25	10	1.5
WPGT-2RC6500	6500 ± 20%	9500	10000	10	5	---	---	200	~25	10	1.5
WPGT-2RC7500	7500 ± 20%	10000	10600	10	5	---	---	200	~25	10	1.5

UL 1449 and CUL 4th Edition Recognized, File #E321567.

*DC Breakdown Voltage	DC Measuring Voltage
70-90V	50V
120-400V	100V
420-800V	250V
1000-2000V	500V
>2000V	1000V

**Follow current has to be limited by a suitable MOV in series.

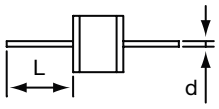
Dimensions

Unit: mm

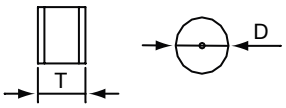
Item	Dimensions
D	8.0 + 0.3 - 0.5
T	6.0 ± 0.2
	8.0 ± 0.3***
d	0.8 ± 0.05
L	20 Min.

***Applicable for WPGT-2RC4000 through WPGT-2RC7500 types only.

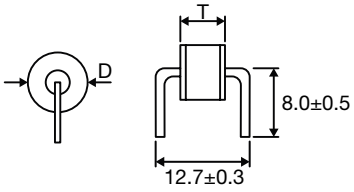
L Type



B Type



A1 TYPE (d) = 0.8mm



2 Electrode Extremely High Current Series (20B)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (300A)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	*	1MHz
WPGT-20B150	150 ± 20%	600	700	60	40	40	80	300	1	5
WPGT-20B230	230 ± 20%	600	700							
WPGT-20B300	300 ± 20%	600	700							
WPGT-20B350	350 ± 20%	700	800							
WPGT-20B400	400 ± 20%	750	850							
WPGT-20B420	420 ± 20%	750	850							
WPGT-20B470	470 ± 20%	800	900							
WPGT-20B600	600 ± 20%	900	1000							
WPGT-20B800	800 ± 20%	1100	1200							
WPGT-20B1000	1000 ± 20%	1400	1500	30	20	20	40			

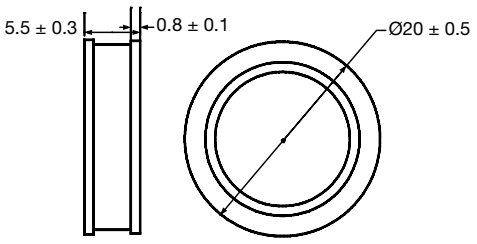
UL1449 and CUL 4th Edition Recognized File #E321567.

*DC Breakdown Voltage	DC Measuring Voltage
150-400V	100V
420-1000V	250V

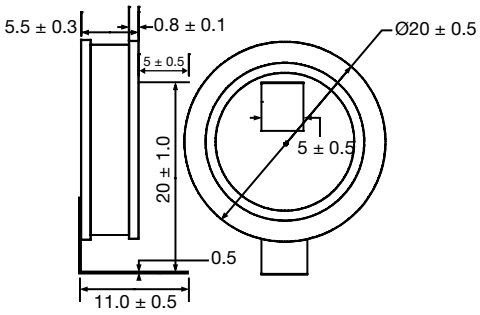
Dimensions

UNIT: mm

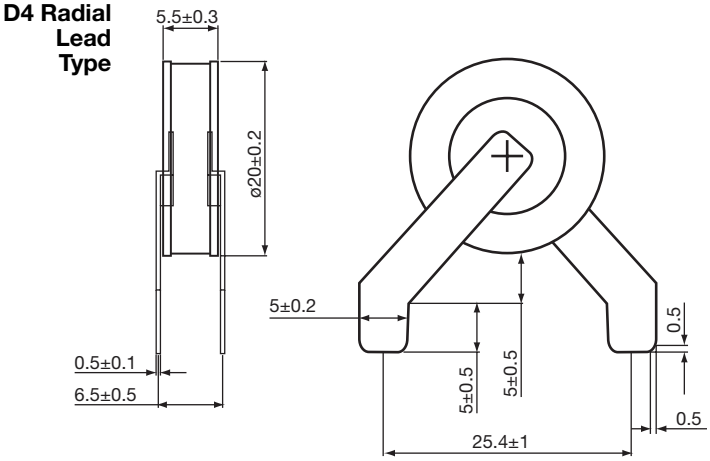
No Lead Type



D5 Tab Type



D4 Radial Lead Type



2 Electrode Extremely High Current Series (12D5)

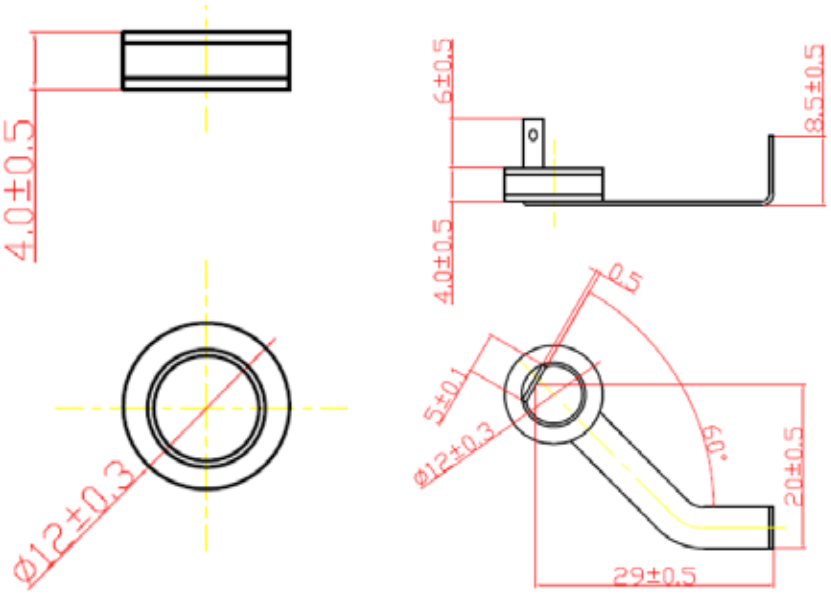
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (80/20µs) (KA)		Maximum Follow On Current (A)	Maximum Continuous Operating Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Insulation Resistance (ns)	Maximum Capacitance (pf)
	100V/s	1Kv/µs	1.2/50 µs 6V	Imax.	In	at 50/60Hz	at 50/60Hz	Note 2		1 MHZ
WPGT-12D5-90	90 ± 20%	700	1000	40	20	5	45	1	100	4
WPGT-12D5-230	230 ± 20%	700	1000	40	20	5	95	1	100	4
WPGT-12D5-300	300 ± 20%	800	1000	40	20	50	130	1	100	4
WPGT-12D5-350	350 ± 20%	800	1000	40	20	50	150	1	100	4
WPGT-12D5-470	470 ± 20%	1000	1500	40	20	100	220	1	100	4
WPGT-12D5-600	600 ± 20%	1200	1500	40	20	100	255	1	100	4

Note 2: **DC Breakdown Voltage** 800V **DC Measuring Voltage** 250V

Dimensions

UNIT: mm

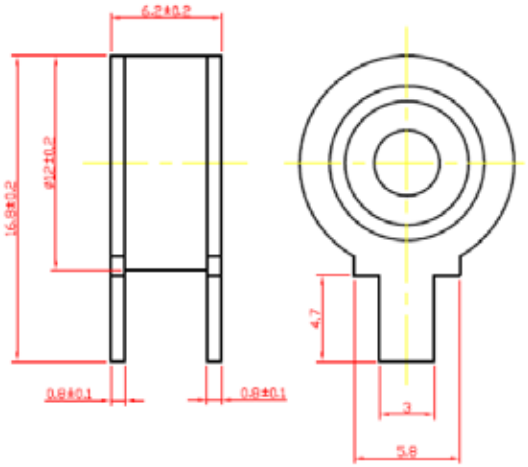


B K1

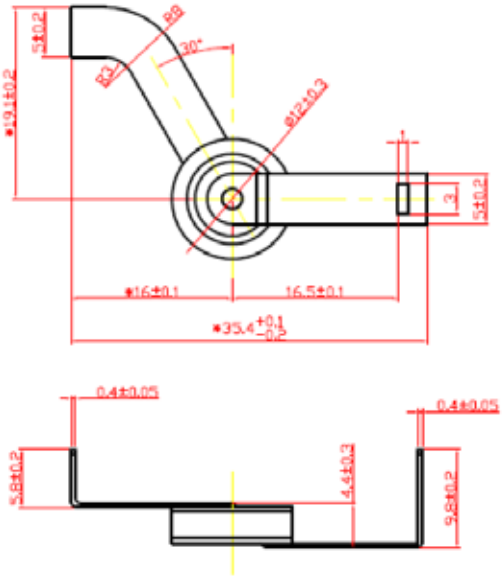
2 Electrode Extremely High Current Series (12D5)

Dimensions (continued)

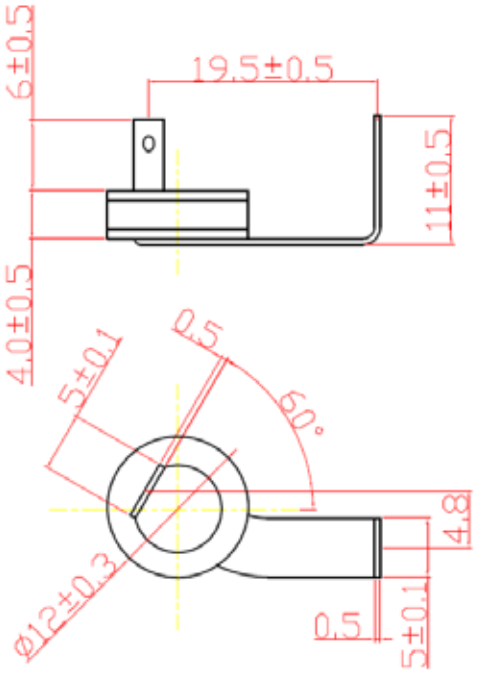
UNIT: mm



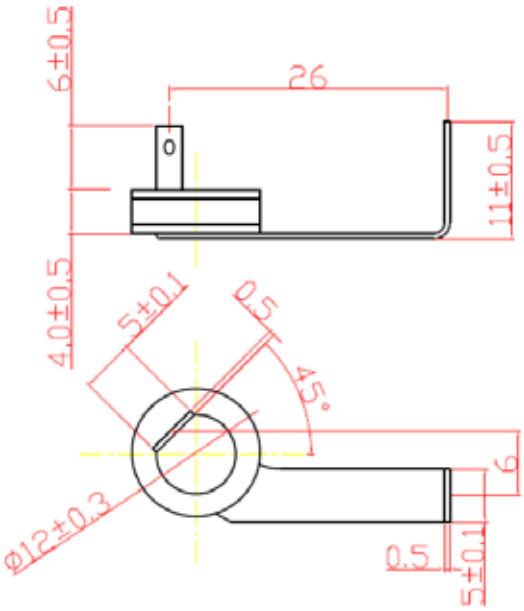
K2



K3



K4



K5

2 Electrode Extremely High Current Series (12D8)

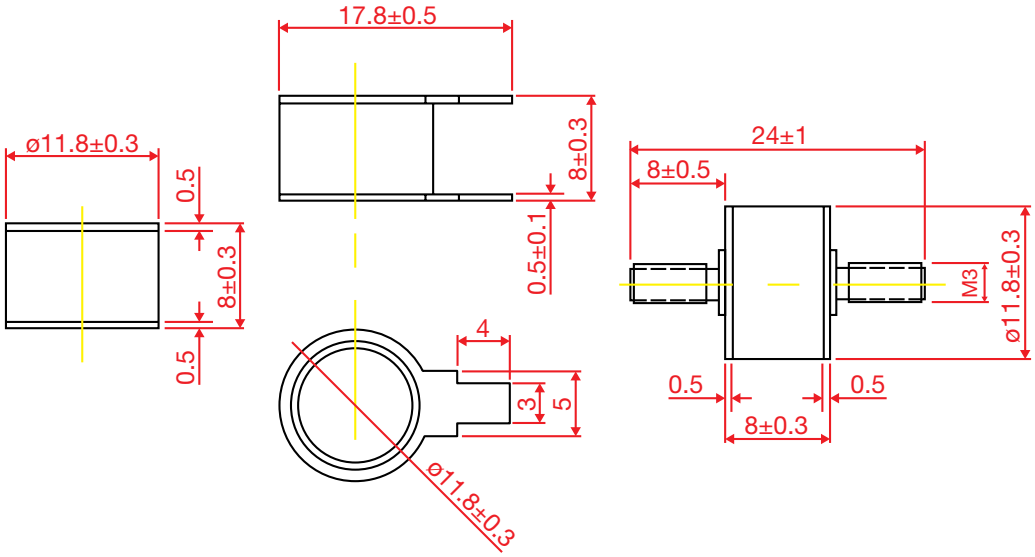
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000μs) (300A)	Maximum Impulse Breakdown Voltage (V)	Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60Hz (V)	Minimum Insulation Resistance ** (GΩ)	Breakdown Time (ns)
	100V/s	1Kv/μs	1 time	10 times	50Hz, 1 sec	Single 9 cycles	times	1.2/50μs 6KV				
WPGT-12D8-90	72 – 108	600	40	20	40	100	300	1100	#	#	>1	<100
WPGT-12D8-150	120 – 180	600	40	20	40	100	300	1100	#	52	>1	<100
*WPGT-12D8-230	184 – 276	700	40	20	40	100	300	1100	#	95	>1	<100
*WPGT-12D8-250	200 – 300	700	40	20	40	100	300	1100	#	95	>1	<100
*WPGT-12D8-300	240 – 360	800	40	20	40	100	300	1100	50	130	>1	<100
*WPGT-12D8-350	280 – 420	800	40	20	40	100	300	1100	50	150	>1	<100
*WPGT-12D8-420	336 – 504	800	40	20	40	100	300	1200	50	175	>1	<100
*WPGT-12D8-470	376 – 564	1000	40	20	40	100	300	1300	100	220	>1	<100
*WPGT-12D8-500	400 – 600	1000	40	20	40	100	300	1300	100	255	>1	<100
*WPGT-12D8-600	480 – 720	1200	40	20	40	100	300	1400	100	255	>1	<100
*WPGT-12D8-700	560 – 840	1300	40	20	40	100	300	1500	100	255	>1	<100
*WPGT-12D8-800	640 – 960	1400	40	20	40	100	300	1500	100	255	>1	<100

***UL1449 and CUL 4th Edition Recognized File #E321567.**
#PENDING

**DC Breakdown Voltage	DC Measuring Voltage
90-150V	50V
151-400V	100V
401-1000V	250V

Dimensions



B K2 M3

2 Electrode Extremely High Current Series (12D12)

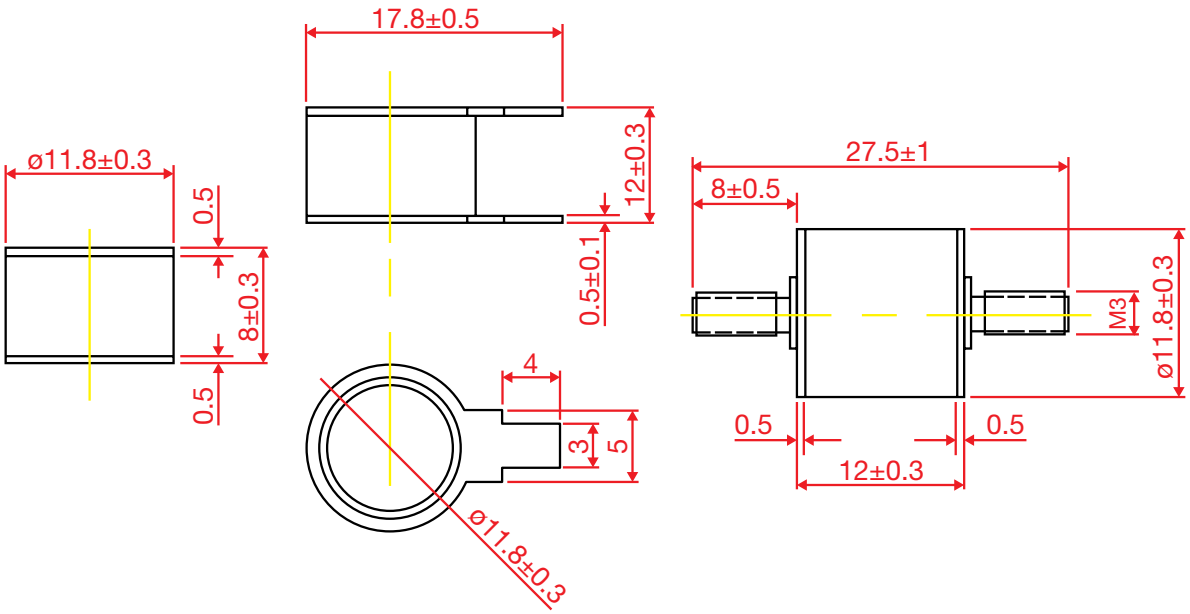
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000μs) (300A)	Maximum Impulse Breakdown Voltage (V)	Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60Hz (V)	Minimum Insulation Resistance** (GΩ)	Breakdown Time (ns)
	100V/s	1Kv/μs	1 time	10 times	50Hz, 1 sec	Single 9 cycles	times	1.2/50/μs 6KV				
WPGT-12D12-90	72 – 108	600	40	30	40	100	300	1100	#	#	>1	<100
WPGT-12D12-150	120 – 180	600	40	30	40	100	300	1100	#	52	>1	<100
*WPGT-12D12-230	184 – 276	700	40	30	40	100	300	1100	#	95	>1	<100
*WPGT-12D12-250	200 – 300	700	40	30	40	100	300	1100	#	95	>1	<100
*WPGT-12D12-300	240 – 360	800	40	30	40	100	300	1100	50	130	>1	<100
*WPGT-12D12-350	280 – 420	800	40	30	40	100	300	1100	50	150	>1	<100
*WPGT-12D12-420	336 – 504	800	40	30	40	100	300	1200	50	175	>1	<100
*WPGT-12D12-470	376 – 564	1000	40	30	40	100	300	1300	100	220	>1	<100
*WPGT-12D12-500	400 – 600	1000	40	30	40	100	300	1300	100	255	>1	<100
*WPGT-12D12-600	480 – 720	1200	40	30	40	100	300	1400	100	255	>1	<100
*WPGT-12D12-700	560 – 840	1300	40	30	40	100	300	1500	100	255	>1	<100
*WPGT-12D12-800	640 – 960	1400	40	30	40	100	300	1500	100	255	>1	<100

***UL1449 and CUL 4th Edition Recognized File #E321567.**
#PENDING

**DC Breakdown Voltage	DC Measuring Voltage
70-150V	50V
151-400V	100V
401-1000V	250V

Dimensions



2 Electrode Extremely High Current Series (12D17)

Specifications

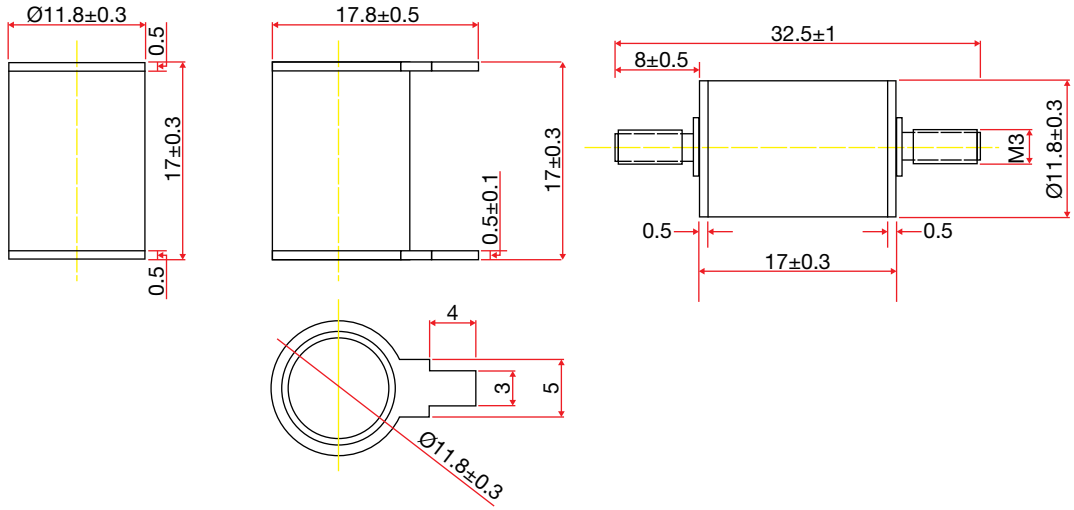
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current at 50Hz, 9 cycles (A)	Maximum Impulse Breakdown Voltage (V)	Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60 Hz (V)	Minimum Insulation Resistance (GΩ)	Breakdown Time (ns)
	100V/s	1KV/μs	1 time	10 times	1 time	1.2/50μs 6KV			**	
WPGT-12D17-90	72-108	600	60	40	100	1100	#	#	>1	<100
WPGT-12D17-150	120-180	600	60	40	100	1100	#	52	>1	<100
*WPGT-12D17-230	184-276	700	60	40	100	1100	#	95	>1	<100
*WPGT-12D17-250	200-300	700	60	40	100	1100	#	95	>1	<100
*WPGT-12D17-300	240-360	800	60	40	100	1100	50	130	>1	<100
*WPGT-12D17-350	280-420	800	60	40	100	1100	50	150	>1	<100
*WPGT-12D17-420	336-504	800	60	40	100	1200	50	175	>1	<100
*WPGT-12D17-470	376-564	1000	60	40	100	1300	100	220	>1	<100
*WPGT-12D17-500	400-600	1000	60	40	100	1300	100	255	>1	<100
*WPGT-12D17-600	480-720	1200	60	40	100	1400	100	255	>1	<100
*WPGT-12D17-700	560-840	1300	60	40	100	1500	100	255	>1	<100
*WPGT-12D17-800	640-960	1400	60	40	100	1500	100	255	>1	<100

***UL1449 and CUL 4th Edition Recognized File #E321567.**

#PENDING

**DC Breakdown Voltage	DC Measuring Voltage
90-150V	50V
230-350V	100V
420-800V	250V

Dimensions



B K2 M3

2 Electrode Extremely High Current Series (12D18)

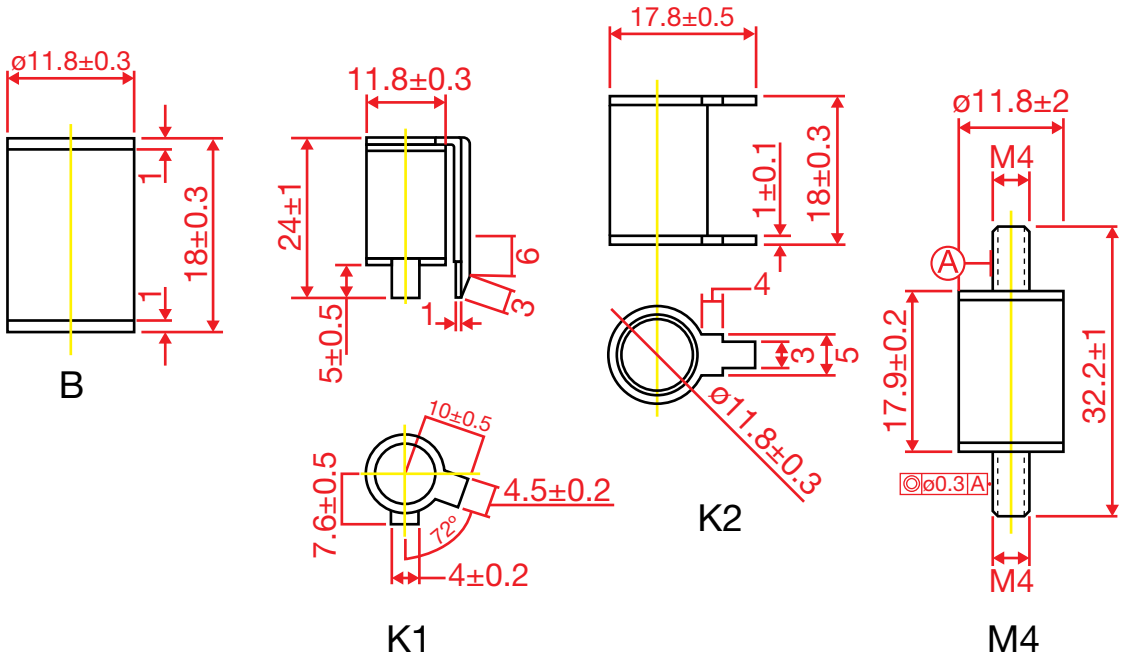
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20µs) (KA)		Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60 Hz (V)	Minimum Insulation Resistance (GΩ)	Breakdown Time (ns)
	100V/s	1KV/µs	1 time	10 times			**	
WPGT-12D18-90	72-108	600	80	40	#	#	>1	<100
WPGT-12D18-150	120-180	600	80	40	#	52	>1	<100
*WPGT-12D18-230	184-276	700	80	40	#	95	>1	<100
WPGT-12D18-250	200-300	700	80	40	#	95	>1	<100
*WPGT-12D18-300	240-360	800	80	40	50	130	>1	<100
*WPGT-12D18-350	280-420	800	80	40	50	150	>1	<100
*WPGT-12D18-420	336-504	800	80	40	50	175	>1	<100
*WPGT-12D18-470	376-564	1000	80	40	100	220	>1	<100
*WPGT-12D18-500	400-600	1000	80	40	100	255	>1	<100
*WPGT-12D18-600	480-720	1200	80	40	100	255	>1	<100
*WPGT-12D18-700	560-840	1300	80	40	100	255	>1	<100
*WPGT-12D18-800	640-960	1400	80	40	100	255	>1	<100

***UL1449 and CUL 4th Edition Recognized File #E321567 (except M4 option).**
#PENDING

**DC Breakdown Voltage	DC Measuring Voltage
90-150V	50V
230-350V	100V
420-800V	250V

Dimensions



2 Electrode Extremely High Current Series (16D5)

Specifications

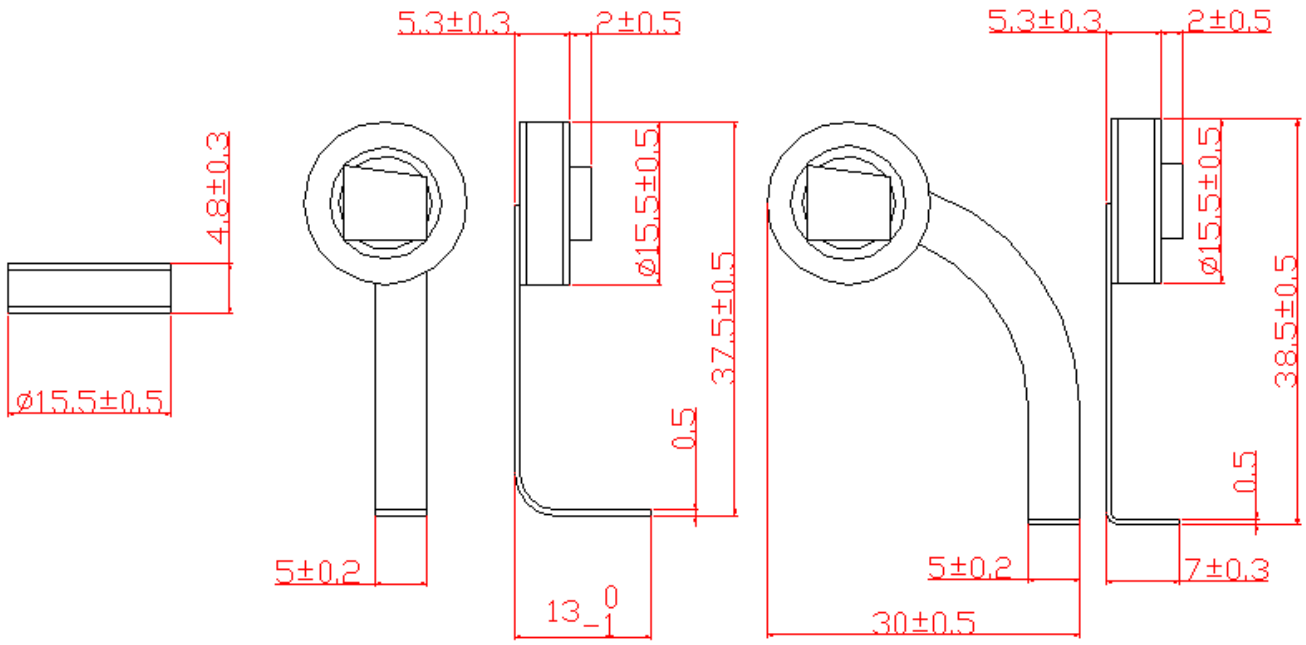
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20μs) (KA)		Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60 Hz (V)	Minimum Insulation Resistance (GΩ)	Breakdown Time (ns)
	100V/s	1.2/50μs 6KV	1 time	10 times			**	
WPGT-16D5-150	120-180	1100	40	20	#	52	1	<100
WPGT-16D5-230	184-276	1100	40	20	#	95	1	<100
WPGT-16D5-250	200-300	1100	40	20	#	95	1	<100
WPGT-16D5-300	240-360	1200	40	20	50	130	1	<100
WPGT-16D5-350	280-420	1200	40	20	50	150	1	<100
*WPGT-16D5-500	400-600	1300	40	20	100	255	1	100
*WPGT-16D5-600	480-720	1400	40	20	100	255	1	100
*WPGT-16D5-800	640-960	1500	40	20	100	255	1	100

***UL1449 and CUL 4th Edition Recognized File #E321567.**
#PENDING

****DC Breakdown Voltage**
150-350V

DC Measuring Voltage
100V

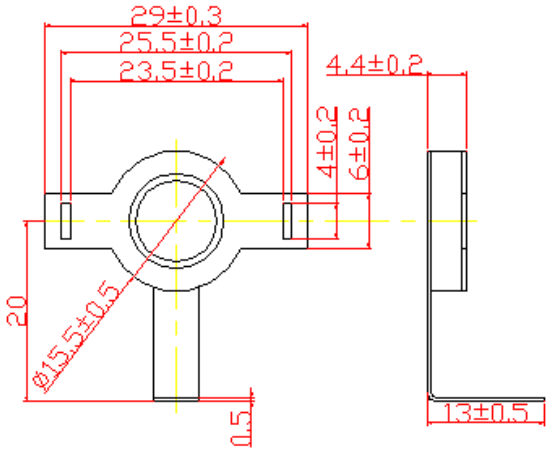
Dimensions



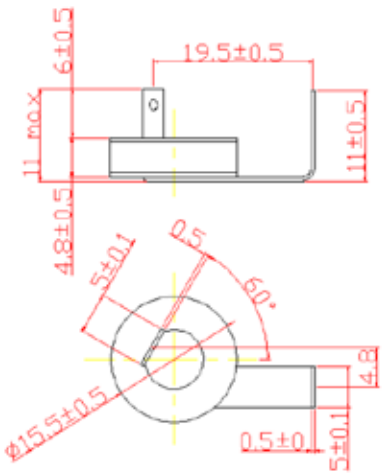
B K1 K2

2 Electrode Extremely High Current Series (16D5)

Dimensions (continued)



K3



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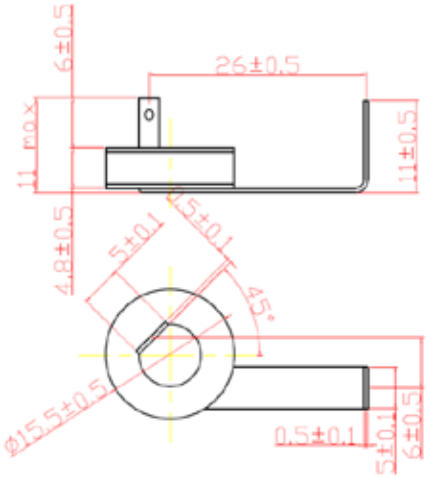
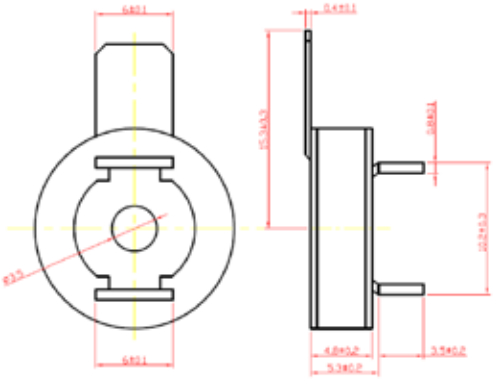
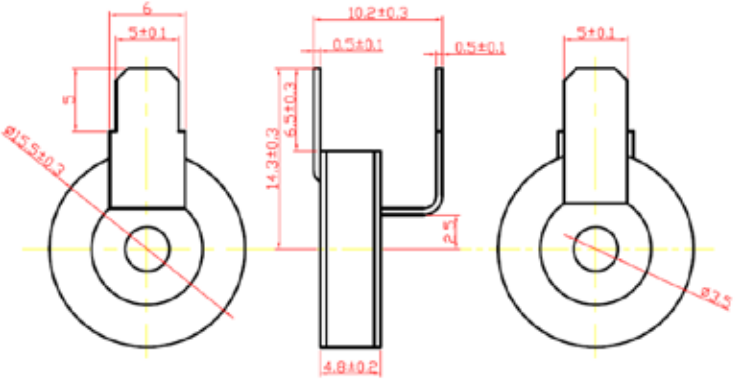


K5



K6



K7

2 Electrode Extremely High Current Series (16D5-A)

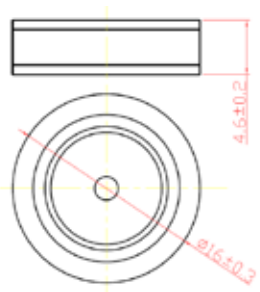
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20 µs) (KA)		Maximum Impulse Discharge Current (10/350 µs) (KA)	TOV 1200V 0.2S (A)	Follow On Current (A)	Max. Continuous Operating Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Breakdown Time (ns)
	100V/s	1.2/50µs 6KV	1 time	10 times	1 time		at 50/60Hz	at 50/60Hz	Note 2	
WPGT-16D5-A-500	400-600	1300	40	20	4	300	100	255	1	100
WPGT-16D5-A-600	480-720	1400	40	20	4	300	100	255	1	100
WPGT-16D5-A-800	640-960	1500	40	20	4	300	100	255	1	100

Note 1: UL1449 and CUL 4th Edition Recognized File #E321567.

Note 2: **DC Breakdown Voltage** 401 - 100V **DC Measuring Voltage** 250V

Dimensions



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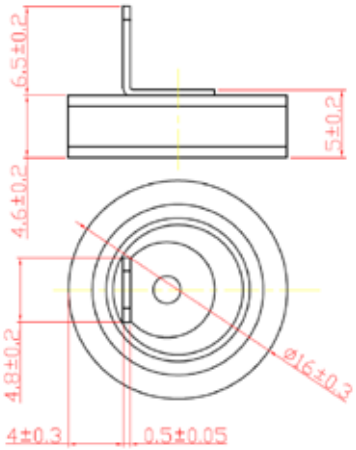

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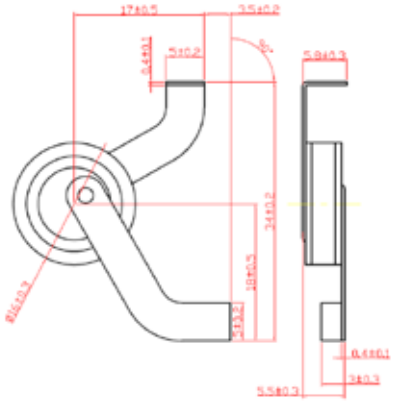
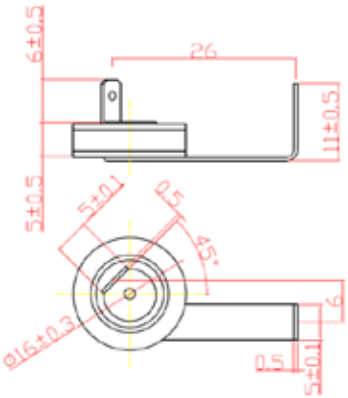
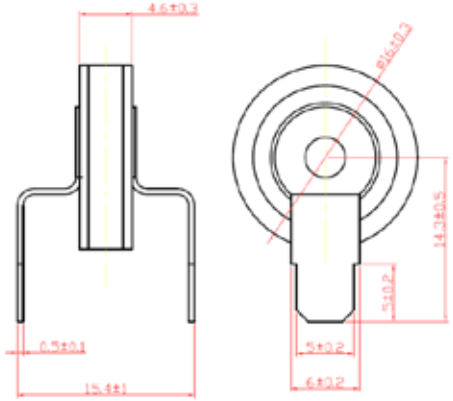


K9N



K5N



K71N

2 Electrode Extremely High Current Series (18D7)

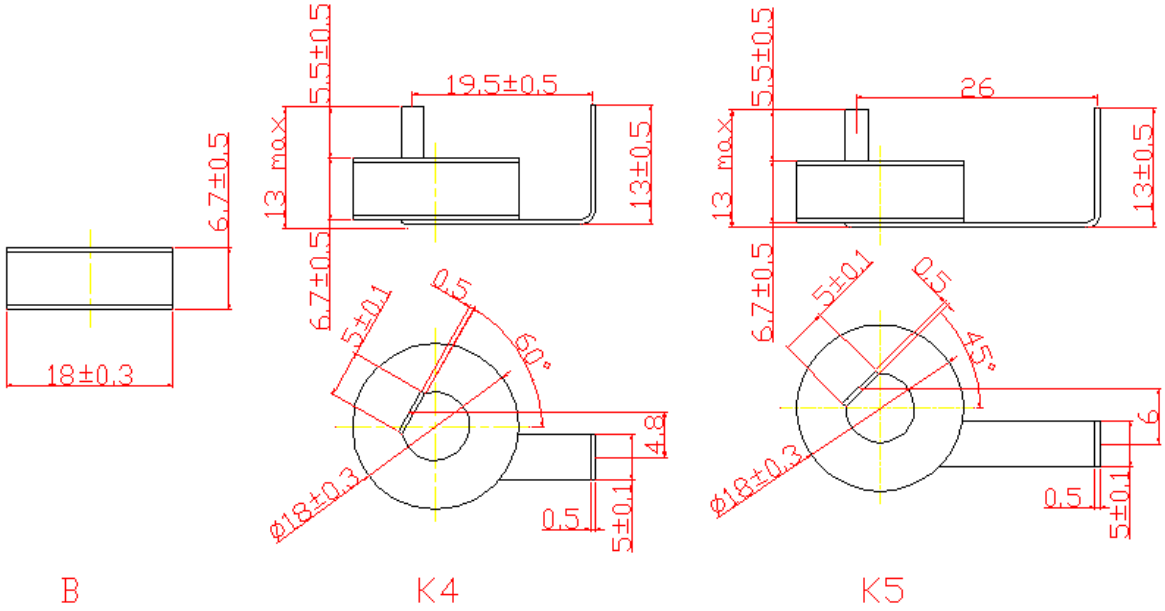
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20μs) (KA)		Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60 Hz (V)	Minimum Insulation Resistance (GΩ)	Breakdown Time (ns)
	100V/s	1.2/50μs 6KV	1 time	10 times			*	
WPGT-18D7-600	480-720	1300	60	40	100	255	1	100
WPGT-18D7-800	640-960	1500	60	40	100	255	1	100

***DC Breakdown Voltage**
600-800V

DC Measuring Voltage
250V

Dimensions



2 Electrode Extremely High Current Series (20D6)

Specifications

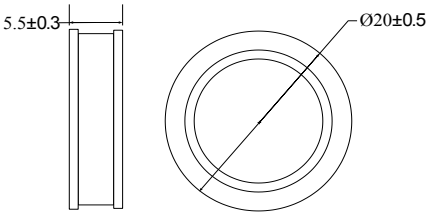
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20μs) (KA)		Normal Alternating Discharge Current (A)		Impulse Life 10/1000μs (300A)	Maxuimum Impulse Breakdown Voltage (V)	Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60Hz (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times	50Hz, 1 sec	Single 9 cycles	Times	1.2/50μs 6KV			**	1MHZ
*WPGT-20D6-150	150 ± 20%	600	700	60	40	40	80	300	1100	#	52	1	5
*WPGT-20D6-230	230 ± 20%	600	700	60	40	40	80	300	1100	#	95	1	5
*WPGT-20D6-300	300 ± 20%	600	700	60	40	40	80	300	1100	50	130	1	5
*WPGT-20D6-350	350 ± 20%	700	800	60	40	40	80	300	1100	50	150	1	5
*WPGT-20D6-400	400 ± 20%	750	850	60	40	40	80	300	1200	50	175	1	5
*WPGT-20D6-420	420 ± 20%	750	850	60	40	40	80	300	1200	50	175	1	5
*WPGT-20D6-470	470 ± 20%	800	900	60	40	40	80	300	1200	100	220	1	5
*WPGT-20D6-500	500 ± 20%	900	1000	60	40	40	80	300	1300	100	255	1	5
*WPGT-20D6-600	600 ± 20%	900	1000	60	40	40	80	300	1300	100	255	1	5
*WPGT-20D6-800	800 ± 20%	1100	1200	60	40	40	80	300	1400	100	255	1	5
WPGT-20D6-1000	1000 ± 20%	1300	1500	60	40	40	80	300	1500	100	255	1	5

***UL1449 and CUL 4th Edition Recognized File #E321567.**

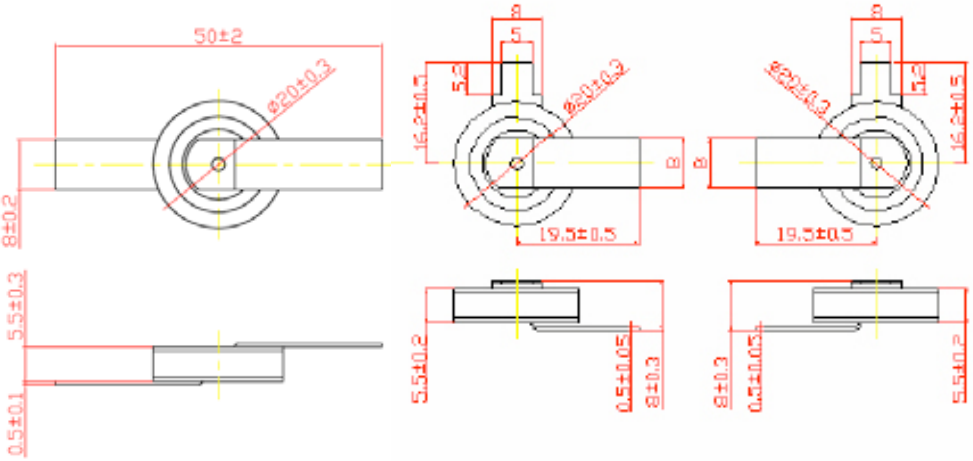
#=PENDING

**DC Breakdown Voltage	DC Measuring Voltage
150-400V	100V
420-1000V	250V

Dimensions



B



2 Electrode Extremely High Current Series (25D10W)

Specifications

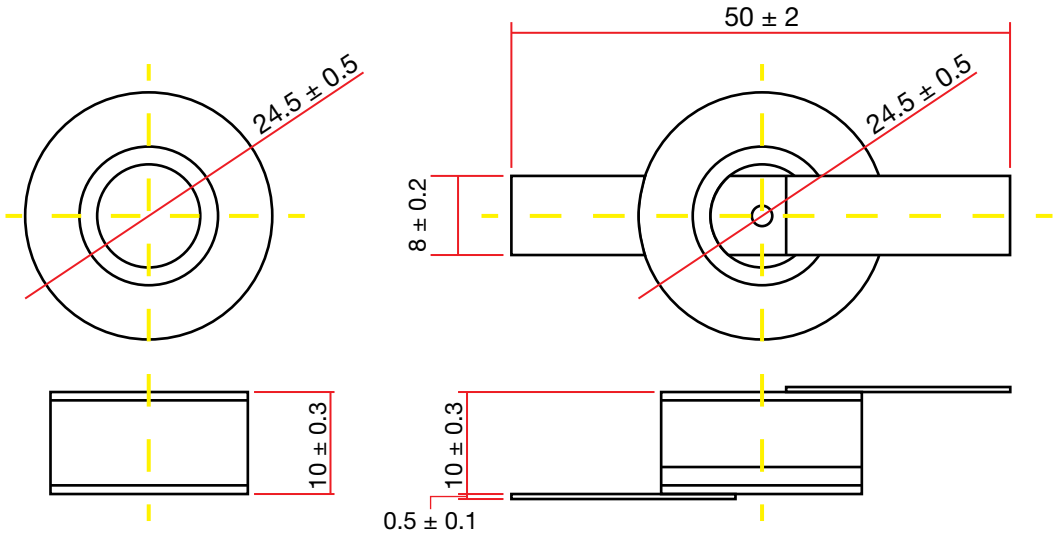
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20µs) (KA)		Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60 Hz (V)	Minimum Insulation Resistance (GΩ)	Breakdown Time (ns)
	100V/s	1.2/50µs 6KV	1 time	10 times	1 time		*	
WPGT-25D10W-500	400-600	1300	120	80	100	255	>1	<100
WPGT-25D10W-600	450-720	1400	120	80	100	255	>1	<100
WPGT-25D10W-800	640-960	1500	120	80	100	255	>1	<100

UL1449 and CUL 4th Edition Recognized File #E321567.

***DC Breakdown Voltage** 500-800V

DC Measuring Voltage 250V

Dimensions



BW K2W

2 Electrode Extremely High Current Series (25D21)

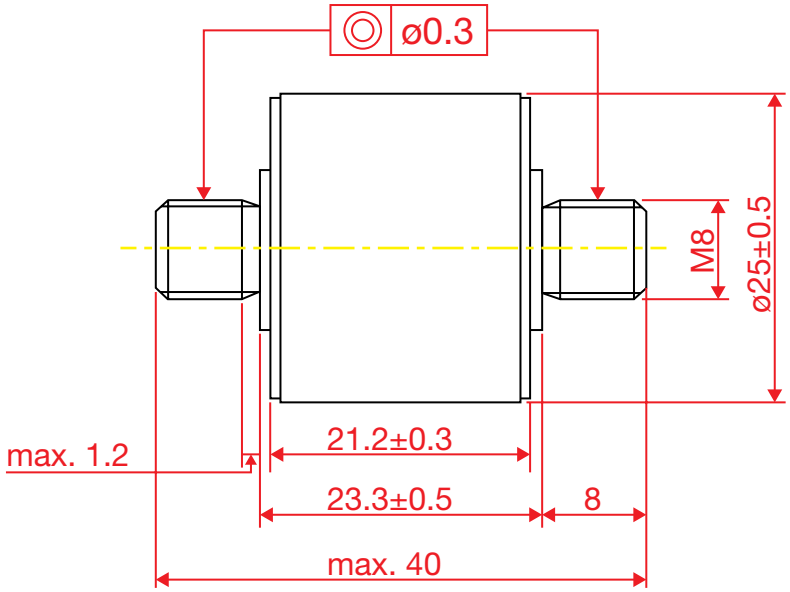
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20μs) (KA)		Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60Hz (V)	Minimum Insulation Resistance (GΩ)	Breakdown Time (ns)	Impulse Discharge Current (10/350μs) (KA)	Maximum Capacitance (pf)
	100V/s	1.2/50μs 6KV	1 time	10 times			*			1MHZ
WPGT-25D21-500M8	400-600	1300	160	80	100	260	1	<100	25	4
WPGT-25D21-600M8	480-720	1400	160	80	100	260	1	<100	25	4
WPGT-25D21-800M8	640-960	1500	160	80	100	260	1	<100	25	4

***DC Breakdown Voltage** 500-800V

DC Measuring Voltage 250V

Dimensions



2 Electrode Extremely High Current Series (30D12)

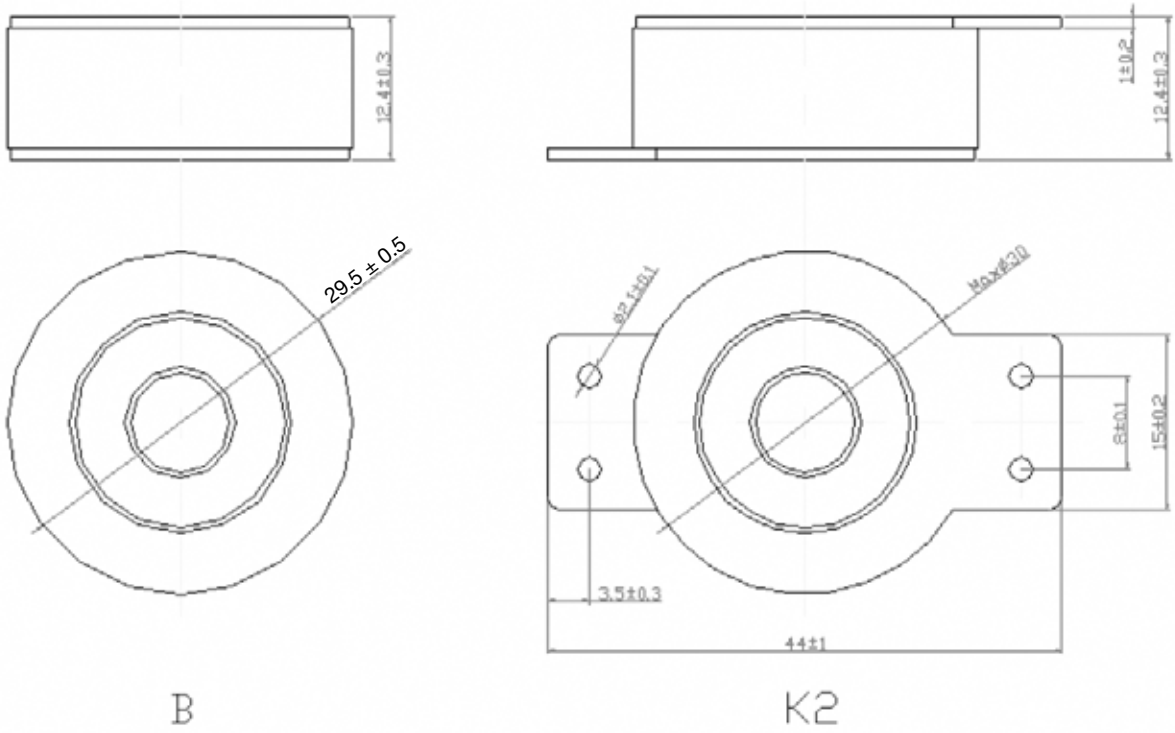
Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)	Maximum Impulse Discharge Current (8/20µs) (KA)		Follow Current at 50/60Hz (A)	Max Continuous Operating Voltage 50/60Hz (V)	Minimum Insulation Resistance (GΩ)	Breakdown Time (ns)	Impulse Discharge Current (10/350µs) (KA)	Impulse Discharge Current (10/350µs & 8/20µs) (KV)	Maximum Capacitance (pf)
	100V/s	1.2/50µs 6KV	1 time	10 times	1 Time		*				1MHZ
WPGT-30D12-500	400-600	1300	160	100	100	255	1	<100	40	6	10
WPGT-30D12-600	450-800	1400	160	100	100	255	1	<100	40	6	10
WPGT-30D12-800	640-940	1500	160	100	100	255	1	<100	40	6	10

UL1449 and CUL 4th Edition Recognized File #E321567.

*DC Breakdown Voltage	DC Measuring Voltage
500-800V	250V

Dimensions



B K2

2 Electrode AE (Standard, High Current, Ultra High Current & Screw Lead) Series

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (500A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
STANDARD											
WPGT-AE230D8	230 ± 20%	600	700	40	20	20	120	400	135	10	5
WPGT-AE250D8	250 ± 20%	600	700	40	20	20	120	400	135	10	5
WPGT-AE300D8	300 ± 20%	700	800	40	20	20	120	400	150	10	5
WPGT-AE350D8	350 ± 20%	800	900	40	20	20	120	400	150	10	5
WPGT-AE420D8	420 ± 20%	900	1000	40	20	20	120	400	150	10	5
WPGT-AE470D8	470 ± 20%	900	1100	40	20	20	120	400	150	10	5
WPGT-AE500D8	500 ± 20%	1000	1200	40	20	20	120	400	135	10	5
WPGT-AE600D8	600 ± 20%	1100	1300	40	20	20	120	400	150	10	5
WPGT-AE700D8	700 ± 20%	1200	1400	40	20	20	120	400	150	10	5
WPGT-AE800D8	800 ± 20%	1300	1500	40	20	20	120	400	150	10	5
HIGH CURRENT											
WPGT-AE230D12	230 ± 20%	600	700	60	40	40	200	400	135	10	5
WPGT-AE250D12	250 ± 20%	600	700	60	40	40	200	400	135	10	5
WPGT-AE300D12	300 ± 20%	700	800	60	40	40	200	400	150	10	5
WPGT-AE350D12	350 ± 20%	800	900	60	40	40	200	400	150	10	5
WPGT-AE420D12	420 ± 20%	900	1000	60	40	40	200	400	150	10	5
WPGT-AE470D12	470 ± 20%	900	1100	60	40	40	200	400	150	10	5
WPGT-AE500D12	500 ± 20%	1000	1200	60	40	40	200	400	150	10	5
WPGT-AE600D12	600 ± 20%	1100	1300	60	40	40	200	400	150	10	5
WPGT-AE700D12	700 ± 20%	1200	1400	60	40	40	200	400	150	10	5
WPGT-AE800D12	800 ± 20%	1300	1500	60	40	40	200	400	150	10	5
ULTRA HIGH CURRENT											
WPGT-AE230D17	230 ± 20%	600	700	100	60	60	300	400	135	10	5
WPGT-AE250D17	250 ± 20%	600	700	100	60	60	300	400	135	10	5
WPGT-AE300D17	300 ± 20%	700	800	100	60	60	300	400	150	10	5
WPGT-AE350D17	350 ± 20%	800	900	100	60	60	300	400	150	10	5
WPGT-AE420D17	420 ± 20%	900	1000	100	60	60	300	400	150	10	5
WPGT-AE470D17	470 ± 20%	900	1100	100	60	60	300	400	150	10	5
WPGT-AE500D17	500 ± 20%	1000	1200	100	60	60	300	400	150	10	5
WPGT-AE600D17	600 ± 20%	1100	1300	100	60	60	300	400	150	10	5
WPGT-AE700D17	700 ± 20%	1200	1400	100	60	60	300	400	150	10	5
WPGT-AE800D17	800 ± 20%	1300	1500	100	60	60	300	400	150	10	5
SCREW LEAD											
WPGT-AE600D17S	600 ± 20%	1100	1300	25	20	60	300	400	150	10	4
WPGT-AE1000D17	1000 ± 20%	1500	1700	25	20	20	120	400	150	10	2
WPGT-AE1200D17	1200 ± 20%	1800	2000	25	20	20	120	400	150	10	2
WPGT-AE1400D17	1400 ± 20%	2000	2200	25	20	20	120	400	150	10	2
WPGT-AE1600D17	1600 ± 20%	2300	2500	25	20	20	120	400	150	10	2
WPGT-AE2000D17	2000 ± 20%	2600	2700	25	20	20	120	400	150	10	2
WPGT-AE2200D17	2200 ± 20%	2700	2800	25	20	20	120	400	150	10	2
WPGT-AE4500D17	4500 ± 20%	6000	6500	10	5	20	120	400	150	10	2

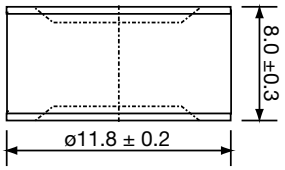
UL/CUL 1449 4th Edition Recognized, File #E321567
(Except WPGT-AE1000D17)

*DC Breakdown Voltage	DC Measuring Voltage
70-150V	50V
151-400V	100V
401-1000V	250V
1001-2000V	500V
2001-6000V	1000V

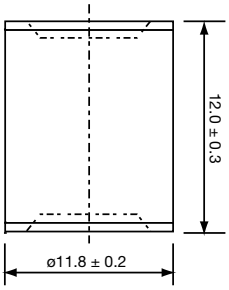
2 Electrode AE (Standard, High Current, Ultra High Current & Screw Lead) Series

Dimensions

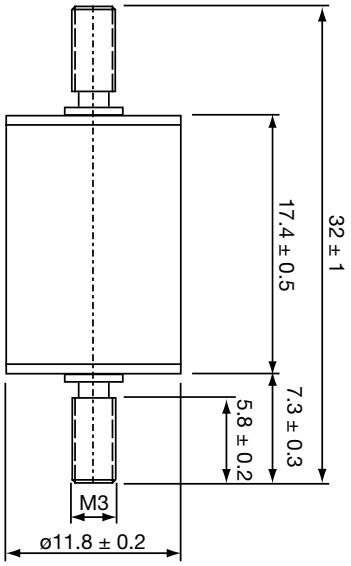
No Lead Standard Type AE Series



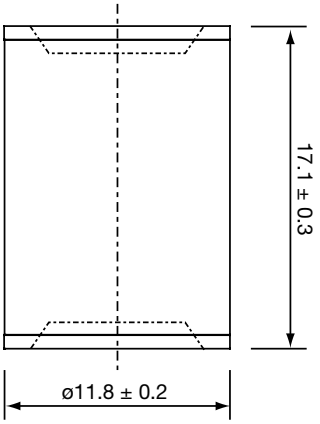
No Lead High Current Type AE Series



High Voltage Screw Lead Type



No Lead Ultra High Current Type AE Series



3 Electrode Series

Part Numbering System

Example part number:

WPGT	-	3R	200	C
(1)		(2)	(3)	(4)

(1) World Products Gas Discharge Tubes

(2) Series Code
3RSM = 3 Electrode Ultra Mini Series
3RSSM = 3 Electrode Symmetrical Series
3RM = 3 Electrode Mini Series
3R = 3 Electrode Standard Series

(3) DC Breakdown Voltage
(Please reference specification to determine available voltage options for each series.)
75 = 75V
90 = 90V
120 = 120V
145 = 145V
150 = 150V
200 = 200V
230 = 230V
250 = 250V
260 = 260V
300 = 300V
350 = 350V
400 = 400V
420 = 420V
470 = 470V
550 = 550V
600 = 600V

(4) Lead Type
B = No Leads
CF = (1.0mm lead diameter) with Fail Safe - 3R Series only
CF1 = (0.8mm lead diameter) with Fail Safe - 3R AND 3RM Series only.
C = Radial lead (1.0mm lead diameter) - 3R Series only
C2 = Radial lead (0.8mm lead diameter) - 3R Series only
C3 = Radial lead with 3.8mm ± 0.5mm lead pitch (0.8mm lead diameter) 3RM, 3RSM and 3RSSM Series only
CF3 = Radial lead with 3.8mm ± 0.5mm lead pitch (0.8mm lead diameter) with Fail Safe - 3RSM and 3RSSM Series only
C4 = Radial lead with 4.0mm ± 0.5mm lead pitch (0.8mm lead diameter) 3RSM and 3RSSM Series only
CF4 = Radial lead with 4.0mm ± 0.5mm lead pitch (0.8mm lead diameter) with Fail Safe - 3RSM and 3RSSM Series only
G = Axial lead (1.0mm lead diameter) - 3R Series only
G1 = Axial lead (0.8mm lead diameter) - 3R and 3RM Series only
G1F = Axial lead (0.8mm lead diameter) with Fail Safe - 3RSM and 3RSSM Series only
H = Radial lead with 4.4mm ± 0.3mm lead pitch (0.8mm lead diameter) 3RM, 3RSM and 3RSSM Series only
HF = Radial lead with 4.4mm ± 0.5mm lead pitch (0.8mm lead diameter) with Fail Safe - 3RSM and 3RSSM Series only

3 Electrode Ultra Mini Series (3RSM)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (200A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s NOTE 1	100V/µs NOTE 2	1000V/µs NOTE 2	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-3RSM75	75 ± 20%	400	600	20	10	5	30	300	52	1	2.0
WPGT-3RSM90	90 ± 20%	250	550	20	10	10	30	300	52	1	2.0
WPGT-3RSM120	120 ± 20%	350	550	20	10	5	30	300	80	1	2.0
WPGT-3RSM150	150 ± 20%	400	500	20	10	10	60	300	80	1	2.0
WPGT-3RSM200	200 ± 20%	500	600	20	10	10	60	300	135	1	2.0
WPGT-3RSM230	230 ± 20%	550	650	20	10	10	60	300	135	1	2.0
WPGT-3RSM250	250 ± 20%	550	650	20	10	10	60	300	135	1	2.0
WPGT-3RSM300	300 ± 20%	600	700	20	10	10	60	300	135	1	2.0
WPGT-3RSM350	350 ± 20%	650	750	20	10	10	60	300	135	1	2.0
WPGT-3RSM400	400 ± 20%	700	800	20	10	10	60	300	135	1	2.0
WPGT-3RSM420	420 ± 20%	700	800	20	10	10	60	300	135	1	2.0
WPGT-3RSM470	470 ± 20%	800	900	20	10	10	60	300	135	1	2.0
WPGT-3RSM600	600 ± 20%	900	1000	20	10	5	60	300	135	1	2.0

UL 497B Recognized, File #E135015.

*DC Breakdown Voltage	DC Measuring Voltage
70 - 150V	50V
200 - 400V	100V
420 - 600V	250V

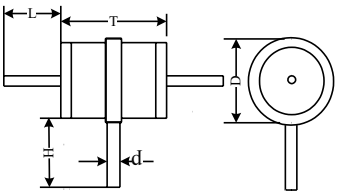
NOTE 1: DC Breakdown Voltage @ 100V/s for L1/L2 to ground.

NOTE 2: Impulse Breakdown Voltage (typical) @ 100V/µs and 1000V/µs for L1/L2 to ground.

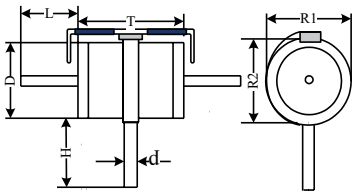
3 Electrode Ultra Mini Series (3RSM)

Dimensions in mm.

G1 TYPE

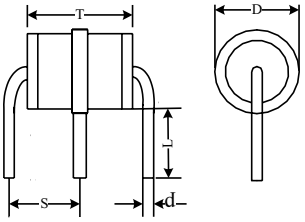


G1F TYPE

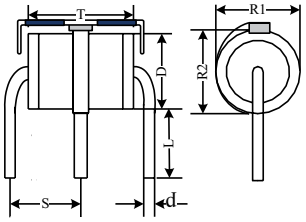


Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
d	0.8	± 0.05
L	15.8	± 0.5
H	9.4	± 0.5
R1	5.8	Max.
R2	7.0	Max.

H TYPE(S) = 4.4 ± 0.5mm

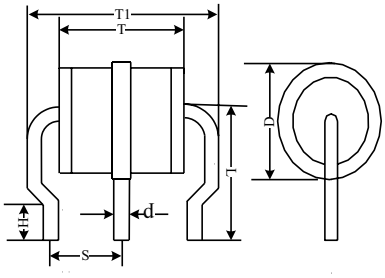


HF TYPE

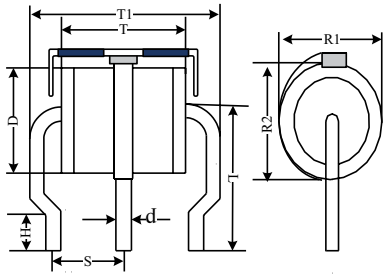


Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
S	4.4	± 0.5
d	0.8	± 0.05
L	4.5	Min.
R1	5.8	Max.
R2	7.0	Max.

C3 TYPE(S) = 3.8 ± 0.5mm

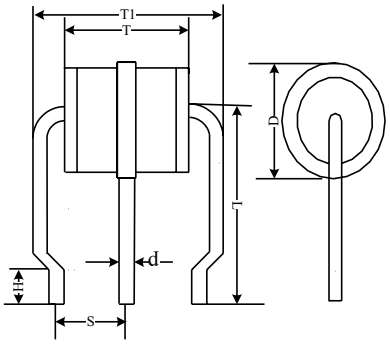


CF3 TYPE

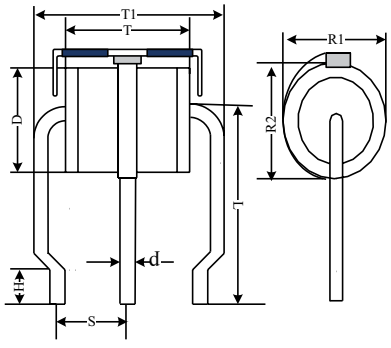


Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
T1	12.0	Max.
L	12.0	Max.
S	3.8	± 0.5
d	0.8	± 0.05
H	4.5	Min.
R1	5.8	Max.
R2	7.0	Max.

C4 TYPE(S) = 4.0 ± 0.5



CF4 TYPE



Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
T1	11.0	± 1.0
L	12.0	± 2.0
S	4.0	± 0.5
d	0.8	± 0.05
H	3.0	± 0.8
R1	5.8	Max.
R2	7.0	Max.

3 Electrode Symmetrical Series (3RSSM)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (200A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s NOTE 1	100V/µs NOTE 2	1000V/µs NOTE 2	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-3RSSM230	230 ± 20%	600	700	10	5	5	20	300	135	1	2.0
WPGT-3RSSM250	250 ± 20%	600	700	10	5	5	20	300	135	1	2.0
WPGT-3RSSM300	300 ± 20%	650	750	10	5	5	20	300	135	1	2.0
WPGT-3RSSM350	350 ± 20%	650	750	10	5	5	20	300	135	1	2.0
WPGT-3RSSM400	400 ± 20%	700	800	10	5	5	20	300	135	1	2.0
WPGT-3RSSM420	420 ± 20%	700	800	10	5	5	20	300	135	1	2.0
WPGT-3RSSM470	470 ± 20%	800	900	10	5	5	20	300	135	1	2.0
WPGT-3RSSM600	600 ± 20%	900	1000	10	5	5	20	300	135	1	2.0

UL 497B Recognized, File #E135015.

*DC Breakdown Voltage	DC Measuring Voltage
230 - 400V	100V
420 - 600V	250V

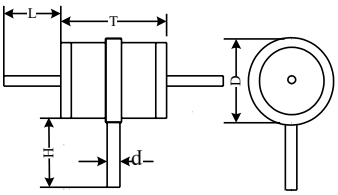
NOTE 1: DC Breakdown Voltage @ 100V/s for L1/L2 to ground and L1 to L2.

NOTE 2: Impulse Breakdown Voltage @ 100V/µs and 1000V/µs for L1/L2 to ground.

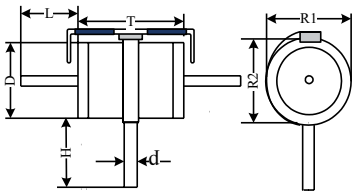
3 Electrode Symmetrical Series (3RSSM)

Dimensions in mm.

G1 TYPE

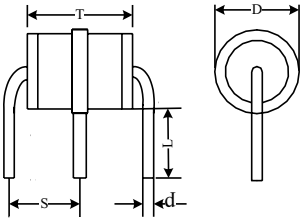


G1F TYPE

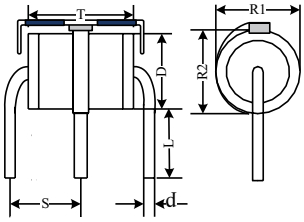


Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
d	0.8	± 0.05
L	15.8	± 0.5
H	9.4	± 0.5
R1	5.8	Max.
R2	7.0	Max.

H TYPE(S) = 4.4 ± 0.5mm

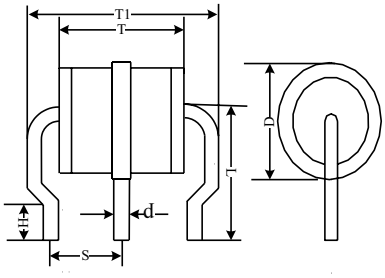


HF TYPE

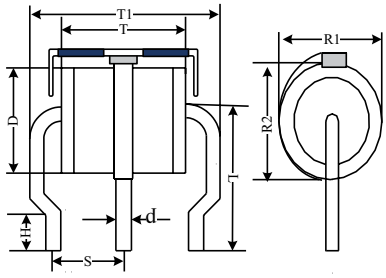


Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
S	4.4	± 0.05
d	0.8	± 0.5
L	4.5	Min.
R1	5.8	Max.
R2	7.0	Max.

C3 TYPE(S) = 3.8 ± 0.5mm

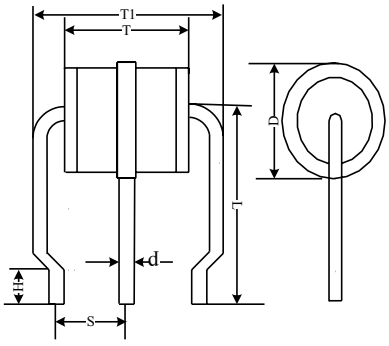


CF3 TYPE

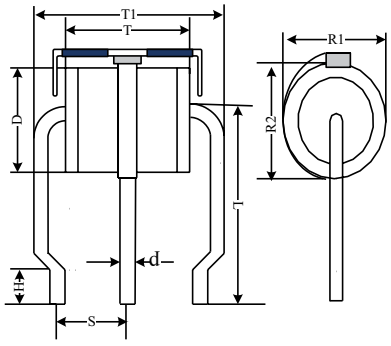


Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
T1	12.0	Max.
L	12.0	Max.
S	3.8	± 0.5
d	0.8	± 0.05
H	4.5	Min.
R1	5.8	Max.
R2	7.0	Max.

C4 TYPE(S) = 4.0 ± 0.5



CF4 TYPE



Item	Dimensions	
	Spec.	Tolerance
D	5.0	± 0.1
T	7.2	± 0.3
T1	11.0	± 1.0
L	12.0	± 2.0
S	4.0	± 0.5
d	0.8	± 0.05
H	3.0	± 0.8
R1	5.8	Max.
R2	7.0	Max.

3 Electrode Mini Series (3RM)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (200A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s NOTE 1	100V/µs NOTE 2	1000V/µs NOTE 2	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-3RM90	90 ± 20%	500	600	15	10	10	60	300	52	10	1.5
WPGT-3RM145	145 ± 20%	500	600	15	10	10	60	300	52	10	1.5
WPGT-3RM200	200 ± 20%	550	650	15	10	10	60	300	135	10	1.5
WPGT-3RM230	230 ± 20%	600	700	15	10	10	60	300	135	10	1.5
WPGT-3RM250	250 ± 20%	600	700	15	10	10	60	300	135	10	1.5
WPGT-3RM350	350 ± 20%	650	750	15	10	10	60	300	150	10	1.5
WPGT-3RM400	400 ± 20%	700	800	15	10	10	60	300	150	10	1.5
WPGT-3RM420	420 ± 20%	700	800	15	10	10	60	300	150	10	1.5
WPGT-3RM470	470 ± 20%	800	900	15	10	10	60	300	150	10	1.5
WPGT-3RM600	600 ± 20%	900	1000	10	5	5	30	300	150	10	1.5

UL497B Recognized, File #E135015

*DC Breakdown Voltage	DC Measuring Voltage
90-145V	50V
200-400V	100V
420-600V	250V

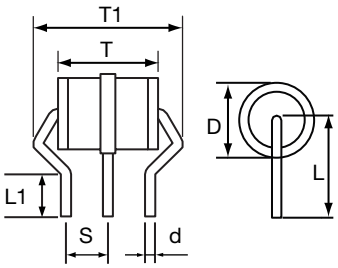
NOTE 1: DC Breakdown Voltage @ 100V/s for L1/L2 to ground.
NOTE 2: Impulse Breakdown Voltage @ 100V/µs and 1000V/µs for L1/L2 to ground.

Dimensions

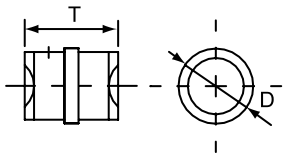
Unit: mm

Item	Dimensions (mm)
D	6.0 +0.2, -0.5
T	8.5 ± 0.5
T1	11.5 +0.8, -0.5
L	7.0 ± 0.5
S	3.8 ± 0.5 or 4.4 ± 0.5
d	0.8 ± 0.05
L1	2.5 ± 0.5
R1	6.3 ± 0.3
R2	7.6 ± 0.4

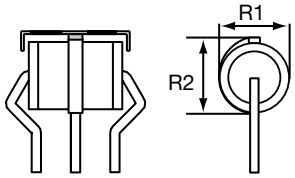
C3 TYPE (S) = 3.8 ± 0.5mm
H TYPE (S) = 4.4 ± 0.5mm



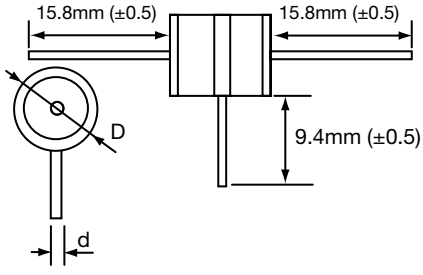
B TYPE



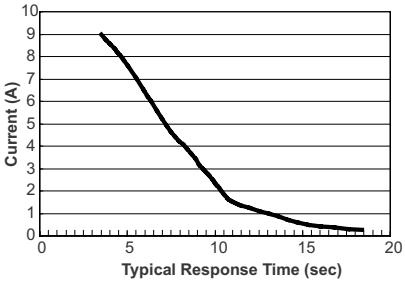
CF1 TYPE



G1 TYPE (d) = 0.8mm



Failsafe Current - Time Curve



3 Electrode Standard Series (3R)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (400A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s NOTE 1	100V/µs NOTE 2	1000V/µs NOTE 2	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-3R75	75 ± 20%	500	600	40	20	20	130	300	52	10	1.5
WPGT-3R90	90 ± 20%	500	600	40	20	20	130	300	52	10	1.5
WPGT-3R145	145 ± 20%	500	600	40	20	20	130	300	52	10	1.5
WPGT-3R200	200 ± 20%	500	650	40	20	20	130	300	135	10	1.5
WPGT-3R230	230 ± 20%	600	650	40	20	20	130	300	135	10	1.5
WPGT-3R250	250 ± 20%	600	700	40	20	20	130	300	135	10	1.5
WPGT-3R260	260 ± 20%	600	700	40	20	20	130	300	135	10	1.5
WPGT-3R300	300 ± 20%	700	800	40	20	20	130	300	135	10	1.5
WPGT-3R350	350 ± 20%	700	850	40	20	20	130	300	150	10	1.5
WPGT-3R400	400 ± 20%	800	900	40	20	20	130	300	150	10	1.5
WPGT-3R470	470 ± 20%	900	1000	40	20	20	130	300	150	10	1.5
WPGT-3R550	550 ± 20%	950	1050	40	20	20	130	300	150	10	1.5
WPGT-3R600	600 ± 20%	1000	1100	40	20	20	130	300	150	10	1.5

NOTE: Above updated specifications as of 01.30.13 (Rev. 13.3) apply for date code 1306 and newer.

UL497B Recognized, File #E135015

*DC Breakdown Voltage	DC Measuring Voltage
70-145V	50V
200-400V	100V
470-600V	250V

NOTE 1: DC Breakdown Voltage @ 100V/s for L1/L2 to ground.

NOTE 2: Impulse Breakdown Voltage @ 100V/µs and 1000V/µs for L1/L2 to ground.

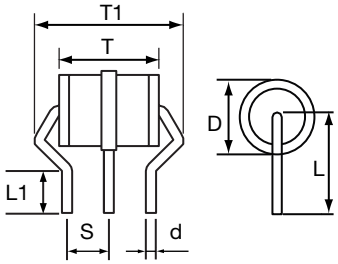
Dimensions

Unit: mm

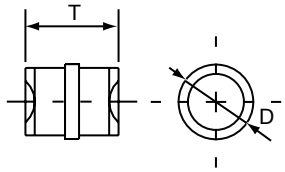
Item	Dimensions (mm)
D	8.0 ± 0.2
T	10.0 ± 0.5
T1	13.4 ± 0.4
L	11.0 ± 0.5

Item	Dimensions (mm)
L1	4.5 +1.5/-0
R1	8.1 ± 0.3
R2	9.8 ± 0.4
S	4.4 ± 0.5
d	1.0 ± 0.05

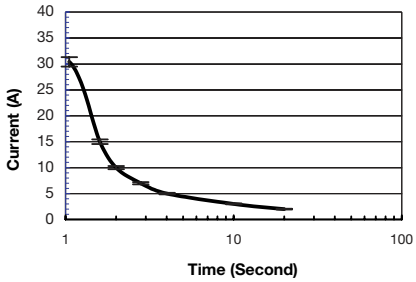
C TYPE (d) = 1.0mm
C2 TYPE (d) = 0.8mm



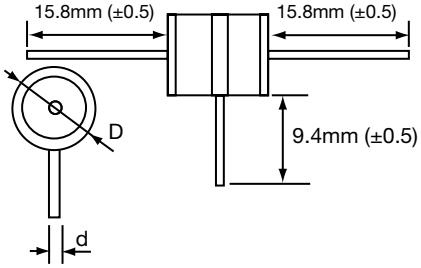
B TYPE



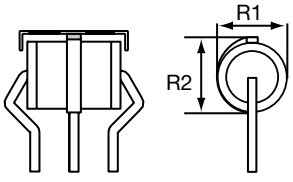
Failsafe Current - Time Curve



G TYPE (d) = 1.0mm
G1 TYPE (d) = 0.8mm



CF TYPE (d) = 1.0mm
CF1 TYPE (d) = 0.8mm



2 & 3 Electrode Surface Mount Series

Part Numbering System

Example part number:

WPGT	-	**3SSM**	**230**	**D**	**TR**
(1)		(2)	(3)	(4)	(5)

(1) World Products Gas Discharge Tubes
(WP Prefix is used for 3216 and 4532 types.)

(2) Series Code
2SM = 2 Electrode Surface Mount Mini Series
2S = 2 Electrode Surface Mount Standard Series
2SS = 2 Electrode Surface Mount Mini Square Series
2SR = 2 Electrode Surface Mount Standard Low Profile Series
2SN = 2 Electrode Surface Mount Super Mini Series
2SF = 2 Electrode Surface Mount Ultra Super Mini Series
3216* = 2 Electrode Surface Mount Chip Series
4532* = 2 Electrode Surface Mount Chip Series
3SM = 3 Electrode Surface Mount Mini Series
3SSM = 3 Electrode Surface Mount Symmetrical Series

(3) DC Breakdown Voltage
(Please reference specification to determine available voltage options for each series.)
70 = 70V
75 = 75V
90 = 90V
120 = 120V
145 = 145V
150 = 150V
200 = 200V
230 = 230V
250 = 250V
300 = 300V
350 = 350V
400 = 400V
420 = 420V
470 = 470V
500 = 500V
600 = 600V
800 = 800V
1100 = 1100V
1200 = 1200V
1800 = 1800V
2000 = 2000V
2500 = 2500V
2700 = 2700V
3000 = 3000V

(4) **D** = Special DC Voltage Breakdown - 3SSM Series Only

(5) Taping Specifications
TR = Tape & Reel

*** 3216 and 4532 only available on tape and reel "TR" suffix.**

2 Electrode Surface Mount Ultra Super Mini Series (2SF)

Specifications

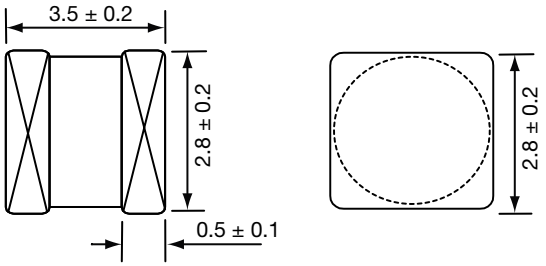
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20μs) (KA)		Alternating Discharge Current (A)	Impulse Life (8/20μs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/μs	1000V/μs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	times	<150ms	*	1MHz
WPGT-2SF90	90 ± 20%	500	600	2	1	1	300	50	1	0.5
WPGT-2SF120	120 ± 20%	500	600				300	80	1	0.5
WPGT-2SF150	150 ± 20%	500	600				300	80	1	0.5
WPGT-2SF200	200 ± 20%	600	700				300	150	1	0.5
WPGT-2SF230	230 ± 20%	600	700				300	150	1	0.5
WPGT-2SF250	250 ± 20%	600	700				300	150	1	0.5
WPGT-2SF350	350 ± 20%	600	800				300	150	1	0.5
WPGT-2SF400	400 ± 20%	700	800				300	150	1	0.5

UL497B Recognized File #E135015

*DC Breakdown Voltage	DC Measuring Voltage
90-150V	50V
200-400V	100V

Dimensions

Unit: mm



2 Electrode Surface Mount Super Mini Series (2SN)

Specifications

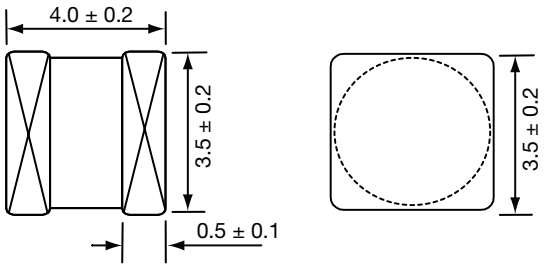
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)	Impulse Life (8/20µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	times	<150ms	*	1MHz
WPGT-2SN75	75 ± 20%	400	700	5	3	3	300	52	1	0.5
WPGT-2SN90	90 ± 20%	400	700				300	52	1	0.5
WPGT-2SN145	145 ± 20%	400	700				300	52	1	0.5
WPGT-2SN230	230 ± 20%	600	700				300	80	1	0.5
WPGT-2SN250	250 ± 20%	600	700				300	80	1	0.5
WPGT-2SN300	300 ± 20%	600	750				300	150	1	0.5
WPGT-2SN350	350 ± 20%	650	800				300	150	1	0.5
WPGT-2SN400	400 ± 20%	700	850				300	150	1	0.5
WPGT-2SN470	470 ± 20%	800	900				300	150	1	0.5
WPGT-2SN600	600 ± 20%	900	1000				300	150	1	0.5

UL497B Recognized File #E135015

*DC Breakdown Voltage	DC Measuring Voltage
75-145V	50V
230-400V	100V
470-600V	250V

Dimensions

Unit: mm



2 Electrode Surface Mount Mini Series (2SM)

Specifications

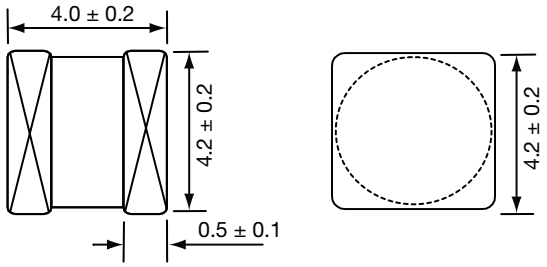
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2SM75	75 ± 20%	700	800	5	3	3	6	300	52	1	0.5
WPGT-2SM90	90 ± 20%	700	800	5	3	3	6	300	52	1	0.5
WPGT-2SM145	145 ± 20%	700	800	5	3	3	6	300	52	1	0.5
WPGT-2SM230	230 ± 20%	600	700	5	3	3	6	300	135	1	0.5
WPGT-2SM250	250 ± 20%	600	700	5	3	3	6	300	135	1	0.5
WPGT-2SM300	300 ± 20%	600	700	5	3	3	6	300	135	1	0.5
WPGT-2SM350	350 ± 20%	650	800	5	3	3	6	300	135	1	0.5
WPGT-2SM400	400 ± 20%	700	800	5	3	3	6	300	135	1	0.5
WPGT-2SM470	470 ± 20%	700	800	5	3	3	6	300	135	1	0.5
WPGT-2SM600	600 ± 20%	900	1000	5	3	3	6	300	135	1	0.5

UL497B Recognized, File #E135015

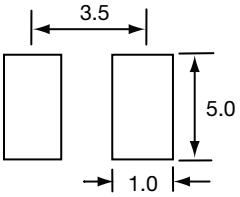
*DC Breakdown Voltage	DC Measuring Voltage
75-145V	50V
230-400V	100V
470-600V	250V

Dimensions

Unit: mm



Recommended Pad Size



2 Electrode Surface Mount Mini Square Series (2SS)

Specifications

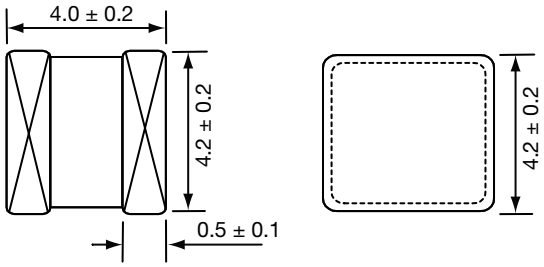
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2SS75	75 ± 20%	700	800	5	3	3	6	300	52	1	0.5
WPGT-2SS90	90 ± 20%	700	800	5	3	3	6	300	52	1	0.5
WPGT-2SS145	145 ± 20%	700	800	5	3	3	6	300	52	1	0.5
WPGT-2SS230	230 ± 20%	600	700	5	3	3	6	300	135	1	0.5
WPGT-2SS250	250 ± 20%	600	700	5	3	3	6	300	135	1	0.5
WPGT-2SS300	300 ± 20%	600	700	5	3	3	6	300	135	1	0.5
WPGT-2SS350	350 ± 20%	650	800	5	3	3	6	300	135	1	0.5
WPGT-2SS400	400 ± 20%	700	800	5	3	3	6	300	135	1	0.5
WPGT-2SS470	470 ± 20%	700	800	5	3	3	6	300	135	1	0.5
WPGT-2SS600	600 ± 20%	900	1000	5	3	3	6	300	135	1	0.5

UL 497B Regognition, File #E135015

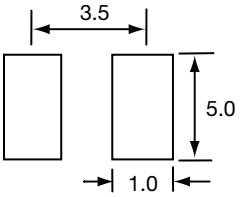
*DC Breakdown Voltage	DC Measuring Voltage
75-145V	50V
230-400V	100V
470-600V	250V

Dimensions

Unit: mm



Recommended Pad Size



Note: This product has a square ceramic body.

2 Electrode Surface Mount Standard Low Profile Series (2SR)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2SR75	75 ± 20%	600	700	10	5	5	15	300	52	1	0.5
WPGT-2SR90	90 ± 20%	600	700	10	5	5	15	300	52	1	0.5
WPGT-2SR145	145 ± 20%	500	700	10	5	5	15	300	52	1	0.5
WPGT-2SR230	230 ± 20%	500	600	10	5	5	15	300	80	1	0.5
WPGT-2SR250	250 ± 20%	500	600	10	5	5	15	300	135	1	0.5
WPGT-2SR300	300 ± 20%	550	650	10	5	5	15	300	150	1	0.5
WPGT-2SR350	350 ± 20%	600	700	10	5	5	15	300	150	1	0.5
WPGT-2SR400	400 ± 20%	650	750	10	5	5	15	300	150	1	0.5
WPGT-2SR470	470 ± 20%	750	850	10	5	5	15	300	150	1	0.5
WPGT-2SR600	600 ± 20%	900	1000	10	5	5	15	300	150	1	0.5

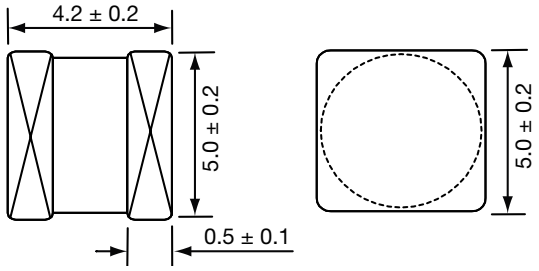
UL497B Recognized File #E135015

NOTE: If 15% tolerance (DC Breakdown Voltage) is required, it may be provided upon request.

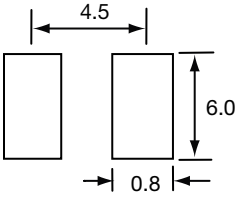
*DC Breakdown Voltage	DC Measuring Voltage
75-145V	50V
230-400V	100V
470-600V	250V

Dimensions

Unit: mm



Recommended Pad Size



2 Electrode Surface Mount Standard Series (2S)

Specifications

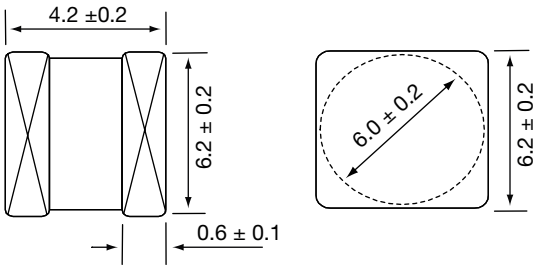
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (100A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-2S75	75 ± 20%	600	700	8	5	5	15	500	52	1	1
WPGT-2S90	90 ± 20%	600	700	8	5	5	15	500	52	1	1
WPGT-2S145	145 ± 20%	500	700	8	5	5	15	500	52	1	1
WPGT-2S230	230 ± 20%	450	550	8	5	5	15	500	135	1	1
WPGT-2S250	250 ± 20%	450	550	8	5	5	15	500	135	1	1
WPGT-2S300	300 ± 20%	500	600	8	5	5	15	500	135	1	1
WPGT-2S350	350 ± 20%	500	600	8	5	5	15	500	135	1	1
WPGT-2S400	400 ± 20%	600	700	8	5	5	15	500	135	1	1
WPGT-2S470	470 ± 20%	700	800	8	5	5	15	500	135	1	1
WPGT-2S600	600 ± 20%	800	900	8	5	5	15	500	135	1	1
WPGT-2S800	800 ± 20%	1000	1100	8	5	5	15	300*	150	1	0.8
WPGT-2S1000	1000 ± 20%	1500	1600	5	3	3	10	300*	150	1	0.8
WPGT-2S1200	1200 ± 20%	1700	1800	5	3	3	10	300*	150	1	1
WPGT-2S1800	1800 ± 20%	2500	2600	5	3	3	10	300*	150	1	1
WPGT-2S2000	2000 ± 20%	2700	2800	5	3	3	10	300*	150	1	1
WPGT-2S2500	2500 ± 20%	3100	3200	5	3	3	10	300*	150	1	1
WPGT-2S2700	2700 ± 20%	3300	3400	5	3	3	10	300*	150	1	1
WPGT-2S3000	3000 ± 20%	3600	3700	5	3	3	10	300*	150	1	1

*** = 8/20µs applies**
UL497B Recognized, File #E135015 (WPGT-2S75 through WPGT-2S600)
UL1449 and CUL 4th Edition Recognized, File #E321567 (WPGT-2S1200 through WPGT-2S3000)
VDE Certified File #40040434 for the following voltages: 75, 90, 145, 230, 250, 300, 350, 400, 470, and 600.

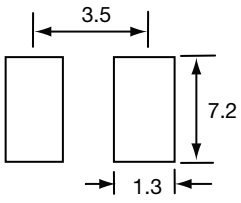
*DC Breakdown Voltage	DC Measuring Voltage
75-145V	50V
230-400V	100V
470-1000V	250V
1200-2000V	550V
2500-3000V	1000V

Dimensions

Unit: mm



Recommended Pad Size



2 Electrode Surface Mount Chip Series (3216)

Specifications

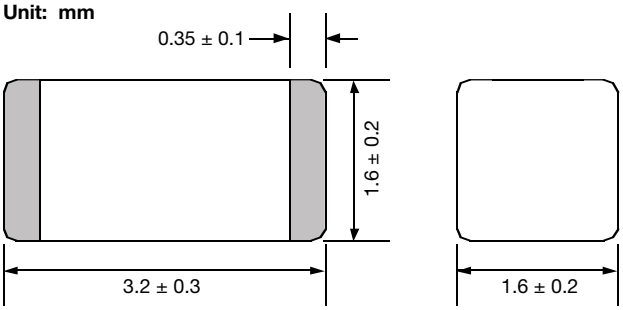
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20us) (KA)	Alternating Discharge Current (A)		Impulse Life (8/20us)50A	Minimum Insulation Resistance (1MΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	10 times (5 times each polarity)	50Hz, 1 sec	10 times	times	*	1MHz 1V
WP-3216-120	84 - 156	500	650	0.5	0.5		300	100 min	0.3 max
WP-3216-150**	105 - 195	500	650						
WP-3216-200**	140 - 260	600	700						
WP-3216-230	161 - 299	650	750						
WP-3216-300	210 - 390	700	800						
WP-3216-350	245 - 455	750	850						
WP-3216-400**	280 - 520	800	900						
WP-3216-420**	294 - 546	850	950						
WP-3216-470	329 - 611	900	1000						
WP-3216-500**	350 - 650	900	1000						
WP-3216-600**	420 - 780	1000	1100						

Note: **UL1449 and C-UL 4th Edition recognized. File #E321567. All other values are pending.

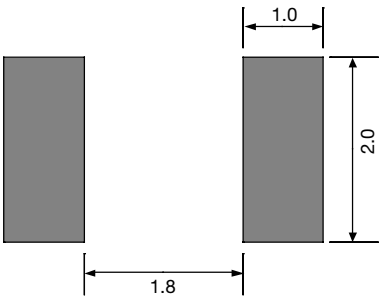
*DC Breakdown Voltage	DC Measuring Voltage
120 - 150V	50V
200 - 400V	100V
420-600V	250V

Dimensions

Unit: mm



Recommended Pad Size



2 Electrode Surface Mount Chip Series (4532)

Specifications

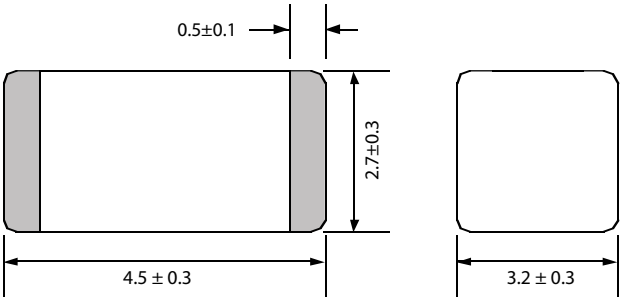
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20us) (KA)	Alternating Discharge Current (A)		Impulse withstanding voltage capacity (KV)		Impulse Life (8/20us) 100A	Minimum Insulation Resistance (1GΩ)	Maximum Capacitance (pf)
	100V/s	100V/µs	1000V/µs	10 times (5 times each polarity)	50Hz, 1 sec	10 times	10/700us R=25Ω	10 times (5 times each polarity)	times	*	1MHz 1V
WP-4532-75	55 - 95	500	650	2	2		6		300	1	0.5 max.
WP-4532-90	63 - 117	500	650								
WP-4532-120	84 - 156	500	650								
WP-4532-150	105 - 195	500	650								
WP-4532-200	140 - 260	600	700								
WP-4532-230	161 - 299	650	750								
WP-4532-300	210 - 390	700	800								
WP-4532-350	245 - 455	750	850								
WP-4532-400	280 - 520	800	900								
WP-4532-420	294 - 546	850	950				4				
WP-4532-470	329 - 611	900	1000								
WP-4532-500	350 - 650	900	1000								
WP-4532-600	420 - 780	1000	1100								

UL497B Recognized, File #E135015

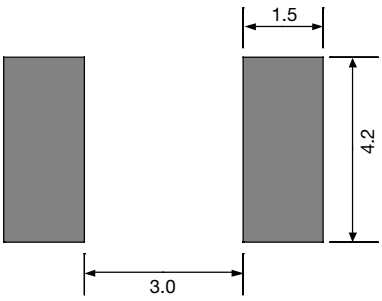
*DC Breakdown Voltage	DC Measuring Voltage
75 - 150V	50V
200 - 400V	100V
420-600V	250V

Dimensions

Unit: mm



Recommended Pad Size



3 Electrode Surface Mount Mini Series (3SM)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (200A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s NOTE 1	100V/µs NOTE 2	1000V/µs NOTE 2	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-3SM75	75 ± 20%	300	550	10	5	5	30	300	52	1	2
WPGT-3SM90	90 ± 20%	300	550	15	10	10	60	300	52	1	2
WPGT-3SM120	120 ± 20%	350	550	15	10	10	60	300	52	1	2
WPGT-3SM150	150 ± 20%	400	500	15	10	10	60	300	52	1	2
WPGT-3SM200	200 ± 20%	500	600	15	10	10	60	300	135	1	2
WPGT-3SM230	230 ± 20%	550	650	15	10	10	60	300	135	1	2
WPGT-3SM250	250 ± 20%	550	650	15	10	10	60	300	135	1	2
WPGT-3SM300	250 ± 20%	600	700	20	10	10	60	300	150	1	2
WPGT-3SM350	350 ± 20%	650	750	20	10	10	60	300	150	1	2
WPGT-3SM400	400 ± 20%	700	800	20	10	10	60	300	150	1	2
WPGT-3SM420	420 ± 20%	700	800	10	5	5	30	300	150	1	2
WPGT-3SM470	470 ± 20%	800	900	10	5	5	30	300	150	1	2
WPGT-3SM600	600 ± 20%	900	1000	10	5	5	30	300	150	1	2
WPGT-3SM800	800 ± 20%	1150	1400	10	5	5	30	300	150	1	2
WPGT-3SM1100	1100 ± 20%	1450	1750	10	5	5	30	300	150	1	2

UL 497B Recognized, File #E135015 (WPGT-3SM75 through WPGT-3SM600).
UL 1449 and CUL 4th Edition Recognition, File #E321567 (WPGT-3SM800 and WPGT-3SM1100)

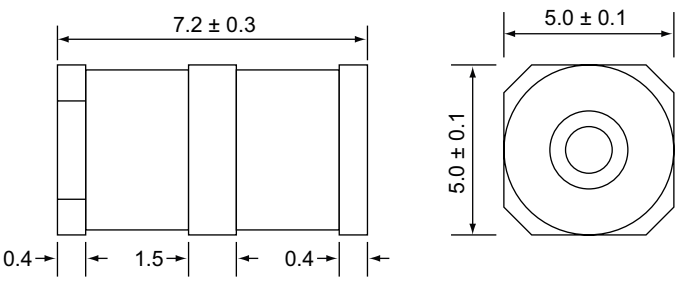
*DC Breakdown Voltage	DC Measuring Voltage
75 - 150V	50V
200 - 400V	100V
420 - 800V	250V
1100V	500V

NOTE 1: DC Breakdown Voltage @ 100V/s for L1/L2 to ground.

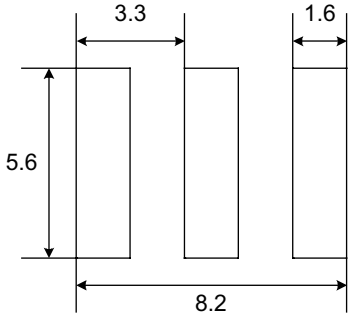
NOTE 2: Impulse Breakdown Voltage @ 100V/µs and 1000V/µs for L1/L2 to ground.

Dimensions

Unit: mm



Recommended Pad Size



Note: Max coplanarity is 0.2mm. If tighter requirements are needed please contact World Products Inc.

3 Electrode Surface Mount Symmetrical Series (3SSM)

Specifications

Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Discharge Current (8/20µs) (KA)		Alternating Discharge Current (A)		Impulse Life (10/1000µs) (200A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	100V/s NOTE 1	100V/µs NOTE 2	1000V/µs NOTE 2	1 time	10 times (5 times each polarity)	50Hz, 1 sec	Single 9 cycles	times	<150ms	*	1MHz
WPGT-3SSM230	230 ± 20%	550	650	10	5	5	20	300	135	1	2.0
WPGT-3SSM250	250 ± 20%	600	700	10	5	5	20	300	135	1	2.0
WPGT-3SSM300	300 ± 20%	650	750	10	5	5	20	300	135	1	2.0
WPGT-3SSM350	350 ± 20%	650	750	10	5	5	20	300	135	1	2.0
WPGT-3SSM400	400 ± 20%	700	850	10	5	5	20	300	135	1	2.0
WPGT-3SSM420	420 ± 20%	700	850	10	5	5	20	300	135	1	2.0
WPGT-3SSM470	470 ± 20%	800	950	10	5	5	20	300	135	1	2.0
WPGT-3SSM600	600 ± 20%	900	1100	10	5	5	20	300	135	1	2.0
WPGT-3SSM800	800 ± 20%	1150	1400	10	5	5	20	300	135	1	2.0
WPGT-3SSM1100	1100 ± 20%	1450	1750	10	5	5	20	300	135	1	2.0

UL 497B Recognized, File #E135015 (WPGT-3SSM230 through WPGT-3SSM600).
UL 1449 and CUL 4th Edition Recognized, File #E321567 (WPGT-3SSM800 and WPGT-3SSM1100).

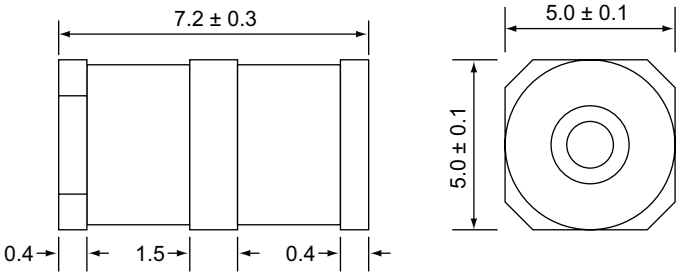
*DC Breakdown Voltage	DC Measuring Voltage
230 - 400V	100V
420 - 800V	250V
1100V	500V

NOTE 1: DC Breakdown voltage @ 100V/s for L1/L2 to ground and L1 to L2.

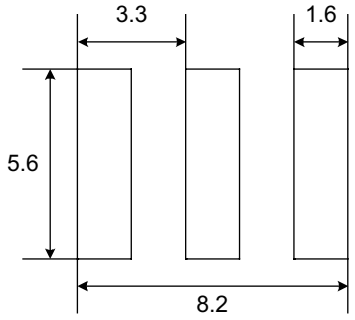
NOTE 2: Impulse Breakdown voltage @ 100V/µs and 1000V/µs for L1/L2 to ground.

Dimensions

Unit: mm



Recommended Pad Size



Note: Max coplanarity is <0.1mm.

Array Series (8D4) N3 & N3A

Specifications

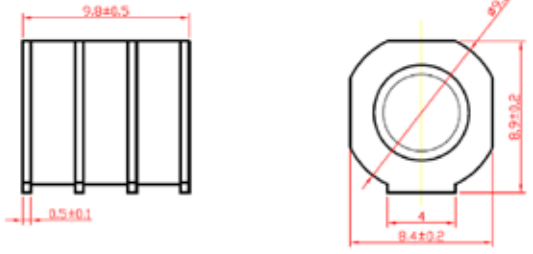
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Breakdown Voltage (V)	Impulse Discharge Current (8/20 µs) (KA)	Impulse Discharge Current (10/350 µs) (KA)
	100V/s	100V/µs	1000V/µs	1.2/50µs 6KV	± 5 times	± 5 times
WPGT-8D4-500N3	350 - 650	1100	1400	1600	20	4
WPGT-8D4-700N3	490 - 910	1400	1600	1800	20	4
WPGT-8D4-850N3	595 - 1105	1600	1800	2000	20	4

Base Part Number	Normal Alternating Discharge Current (A)	DC Operating Voltage (Vdc)	Impulse Life (8/20µs) (A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	50Hz, 1 sec		± 300 times	<150ms	at 100Vdc	1MHZ
WPGT-8D4-500N3	10	36 ± 20%	100	135	10	1
WPGT-8D4-700N3	10	36 ± 20%	100	135	10	1
WPGT-8D4-850N3	10	36 ± 20%	100	135	10	1

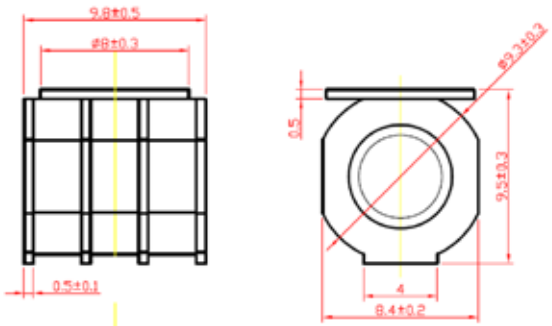
Note 1: UL 1449 and CUL 4th Edition, File #E321567.
Note 2: Operate: -40°C ~ +90°C.

Dimensions

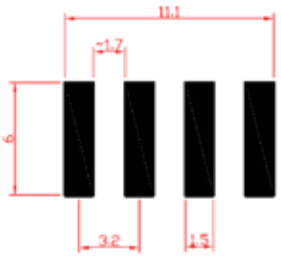
Unit: mm



N3



N3A



Array Series (8D4) N4 & N4A

Specifications

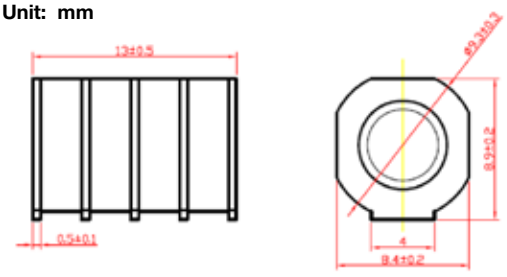
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Breakdown Voltage (V)	Impulse Discharge Current (8/20 µs) (KA)	Impulse Discharge Current (10/350 µs) (KA)
	100V/s	100V/µs	1000V/µs	1.2/50µs 6KV	± 5 times	± 5 times
WPGT-8D4-600N4	420 - 780	1600	1800	1900	20	4
WPGT-8D4-1000N4	700 - 1300	1700	1900	2100	20	4
WPGT-8D4-1200N4	840 - 1560	1800	2000	2200	20	4

Base Part Number	Normal Alternating Discharge Current (A)	DC Operating Voltage (Vdc)	Impulse Life (8/20µs) (A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	50Hz, 1 sec		± 300 times	<150ms	at 100Vdc	1MHZ
WPGT-8D4-600N4	10	48 ± 20%	100	135	10	1
WPGT-8D4-1000N4	10	48 ± 20%	100	135	10	1
WPGT-8D4-1200N4	10	48 ± 20%	100	135	10	1

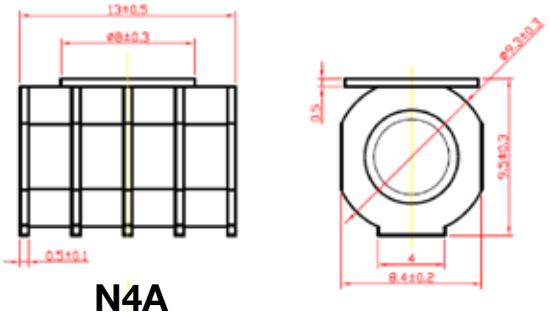
Note 1: UL 1449 and CUL 4th Edition, File #E321567.
Note 2: Operate: -40°C ~ +90°C.

Dimensions

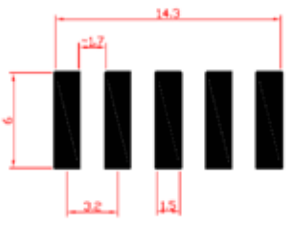
Unit: mm



N4



N4A



Array Series (8D4) N5 & N5A

Specifications

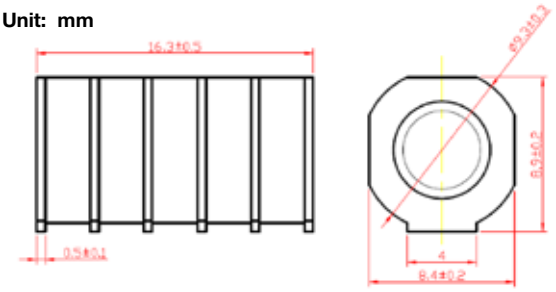
Base Part Number	DC Breakdown Voltage (V)	Maximum Impulse Breakdown Voltage (V)		Maximum Impulse Breakdown Voltage (V)	Impulse Discharge Current (8/20 µs) (KA)	Impulse Discharge Current (10/350 µs) (KA)
	100V/s	100V/µs	1000V/µs	1.2/50µs 6KV	± 5 times	± 5 times
WPGT-8D4-800N5	560 - 1040	1600	1800	2000	20	4
WPGT-8D4-1200N5	840 - 1560	1800	2000	2200	20	4
WPGT-8D4-1400N5	980 - 1820	1900	2100	2300	20	4

Base Part Number	Normal Alternating Discharge Current (A)	DC Operating Voltage (Vdc)	Impulse Life (8/20µs) (A)	DC Holdover Voltage (V)	Minimum Insulation Resistance (GΩ)	Maximum Capacitance (pf)
	50Hz, 1 sec		± 300 times	<150ms	at 100Vdc	1MHZ
WPGT-8D4-800N5	10	62 ± 20%	100	135	10	1
WPGT-8D4-1200N5	10	62 ± 20%	100	135	10	1
WPGT-8D4-1400N5	10	62 ± 20%	100	135	10	1

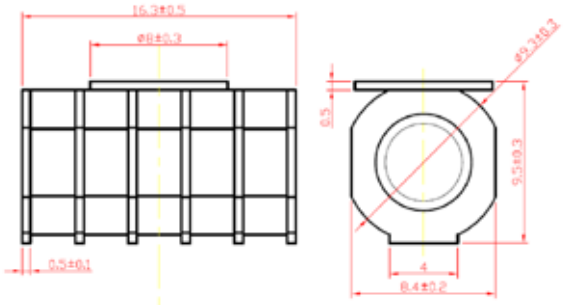
Note 1: UL 1449 and CUL 4th Edition, File #E321567.
Note 2: Operate: -40°C ~ +90°C.

Dimensions

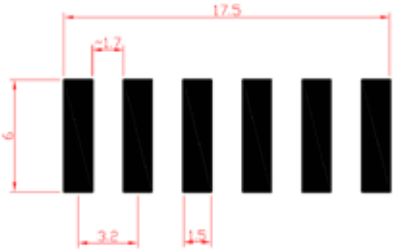
Unit: mm



N5



N5A



Packaging

Standard Bulk Packaging

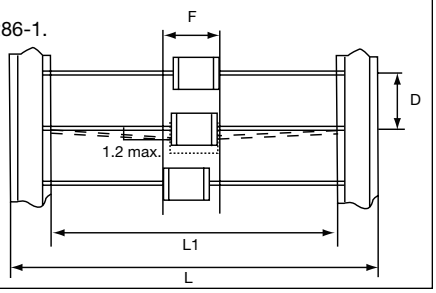
Axial, Radial Lead & Array	Axial or Radial Lead (2RF and 2RN)	Surface Mount	20B ONLY
100 pieces per plastic tray 500 pieces per inner box 10 inner boxes per carton 5000 pieces per full carton	100 pieces per plastic tray 800 pieces per inner box 10 inner boxes per carton 8000 pieces per full carton	100 pieces per plastic tray 500 pieces per inner box 10 inner boxes per carton 5000 pieces per full carton	40 pieces per plastic tray 200 pieces per inner box 10 inner boxes per carton 2000 pieces per full carton

2RM, 2R, 2N, 2T, 2RC Axial Lead Taping

Unit: mm

Complies to EIA-296-E and EN60286-1.

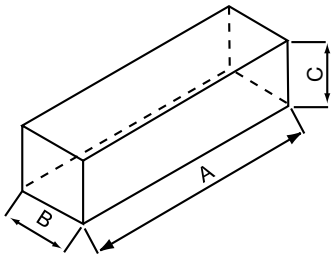
Item	Dimensions
L1	52.2 ± 2.0
L	64.0 ± 3.0
D	10 ± 0.5
F	Length + 1.4 Max.



2RM, 2R, 2N, 2T, 2RC Axial Lead Ammo Box

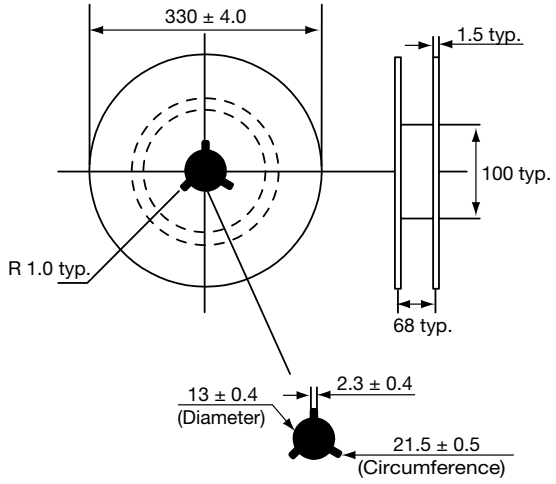
Unit: mm
Quantity: 500 pieces

Item	Dimensions
A	255 Max.
B	75 ± 5.0
C	68 ± 5.0



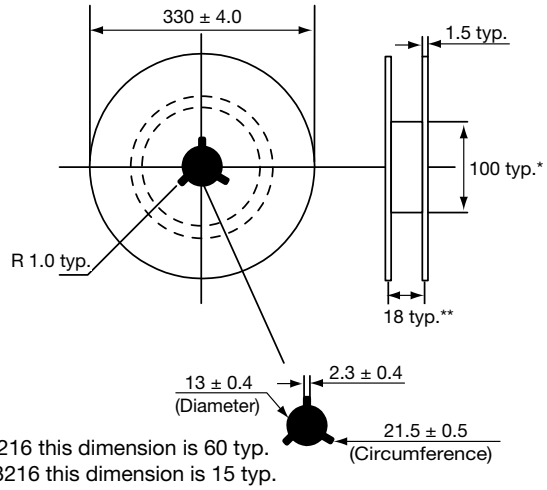
2RM, 2R, 2RS, 2RN, 2RF, 2N, 2T, 2RC Axial Lead Reel

Unit: mm
Quantity: 500 pieces



2S, 2SM, 2SS, 2SN, 2SF, 3SM, 3SSM, 3216 & 4532 SMD Reel

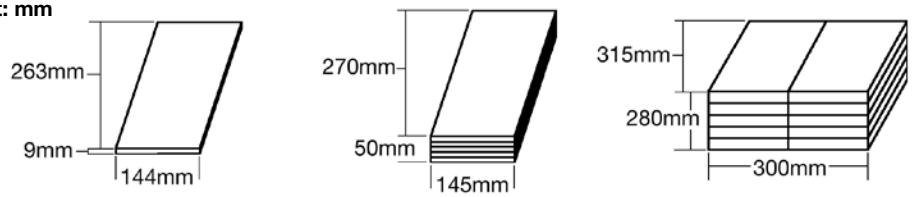
Unit: mm
Quantity: See SMD Taping



* for 3216 this dimension is 60 typ.
** for 3216 this dimension is 15 typ.

20B and AE Standard Bulk Packaging

Unit: mm



20B=	40 Pieces per Plastic Tray	200 Pieces per Inner Box	2000 Pieces per Full Carton
AE= (Standard & High Current Series)	60 Pieces per Plastice Tray	180 Pieces per Inner Box	1800 Pieces per Full Carton
(Ultra High Current & Screw Lead Series)	35 Pieces per Plastice Tray	105 Pieces per Inner Box	1050 Pieces per Full Carton

NOTE: For Series Types:

12D8	18D7
12D12	20D6
12D17	25D10W
12D18	25D21
16D5	30D12

Please consult World Products Inc.

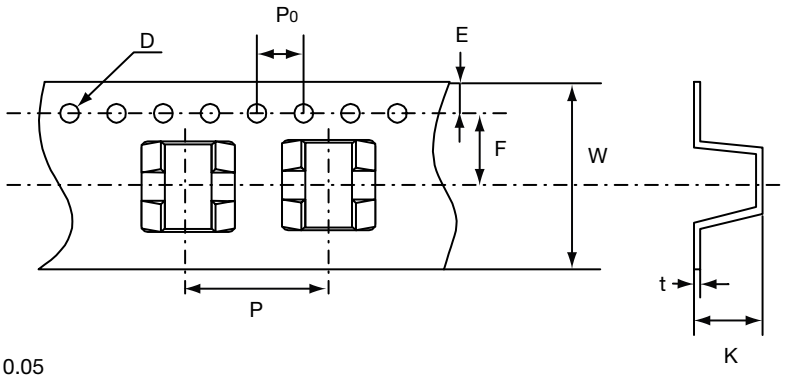
Packaging (continued)

2S and 2SR SMD Taping

Unit: mm
Quantity: 800 pieces per reel (13") - [Beginning March 2007]
3 reels per inner box
5 inner boxes per carton
12,000 pieces per full carton - [Beginning March 2007]

Item	Dimensions
P	12.0 ± 0.1
P_0	4.0 ± 0.1
W	16.0 ± 0.3
F	7.5 ± 0.1

Item	Dimensions
E	1.75 ± 0.1
D	1.55 ± 0.1
K*	6.4 ± 0.1
t*	0.4 ± 0.05



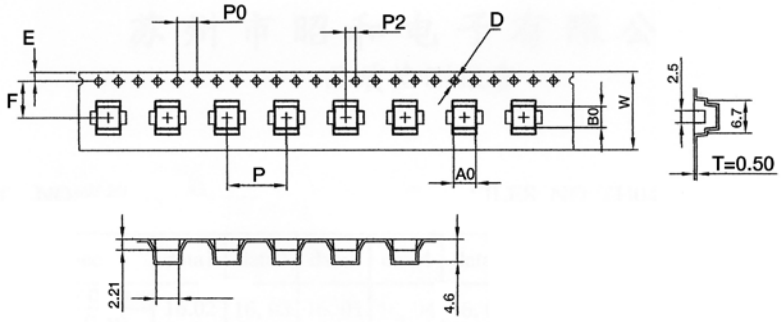
*For 2SR: "K" dimension is 5.4 ± 0.1 and "t" dimension is 0.5 ± 0.05

2SM and 2SS SMD Taping

Unit: mm
Quantity: 900 pieces per reel (13")
3 reels per inner box
5 inner boxes per carton
13,500 pieces per full carton

Item	Dimensions
P	12.0 ± 0.1
P_0	4.0 ± 0.1
W	16.0 ± 0.3
F	7.5 ± 0.1
B_0	4.3 ± 0.1

Item	Dimensions
E	1.75 ± 0.1
D	1.5 ± 0.1
t	0.5 typ
A_0	4.5 ± 0.1
K_0	4.6 ± 0.1
K_1	0 ± 0.1
D_1	0 ± 0.1
P_2	2 ± 0.1

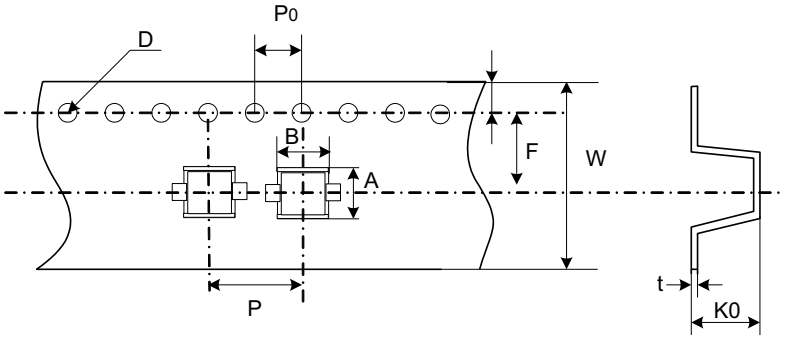


2SN and 2SF Taping

Unit: mm
Quantity: 2000 pieces per reel (13")
3 reels per inner box
5 inner boxes per carton
30,000 pieces per full carton

Item	Dimensions
P	8.0 ± 0.1
P0	4.0 ± 0.1
A	3.9 ± 0.3
B*	4.3 ± 0.1

Item	Dimensions
D	1.55 ± 0.05
W	16.0 ± 0.3
K0	3.9 ± 0.1
t	0.4 ± 0.05



*For 2SF this dimension is 3.2mm ± 0.1mm.

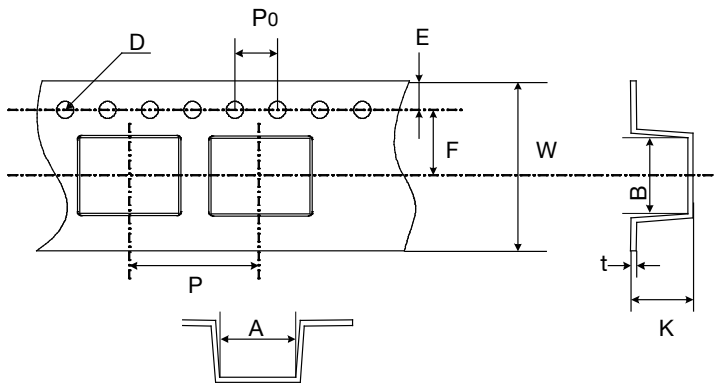
Packaging (continued)

3SM & 3SSM SMD Taping

Unit: mm
Quantity: 900 pieces per reel (13")
3 reels per inner box
5 inner boxes per carton
13,500 pieces per full carton

Item	Dimensions
P	12.0 ± 0.1
P_0	4.0 ± 0.1
W	16.0 ± 0.3
F	7.5 ± 0.1
B	5.4 ± 0.1

Item	Dimensions
E	1.75 ± 0.1
D	1.55 ± 0.05
K	5.5 ± 0.1
t	0.5 ± 0.05
A	7.28 ± 0.1

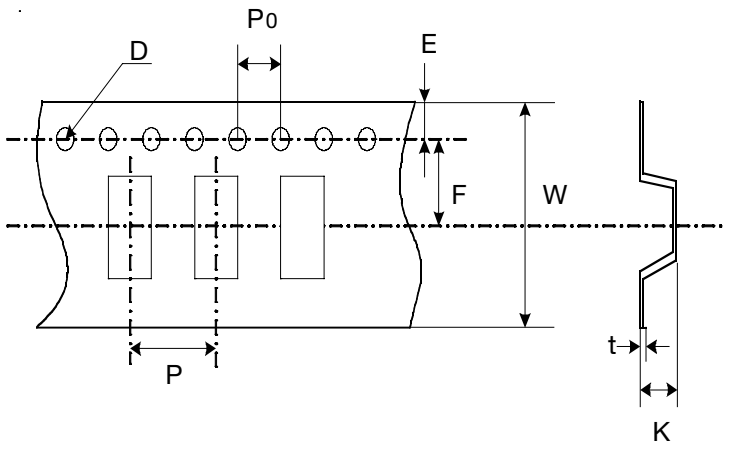


3216 and 4532 Taping

Unit: mm
Quantity: 3,000 pieces per reel (13") - 3216 size
2,500 pieces per reel (13") - 4532 size
3 reels per inner box - 3216 and 4532 size
5 inner boxes per carton - 3216 and 4532 size
45,000 pieces per full carton - 3216 size
37,500 pieces per full carton - 4532 size

Item	Dimensions
P	8.0 ± 0.1
P_0	4.0 ± 0.1
W	12.0 ± 0.3
F	5.45 ± 0.1
E	1.75 ± 0.1

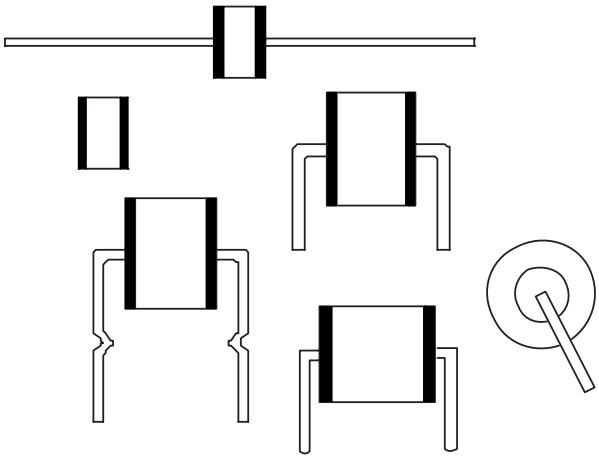
Item	Dimensions
D	1.55 ± 0.05
K*	3.0 ± 0.1
t	0.3 ± 0.05



For specifications regarding packaging for Array Series, please consult WPI.

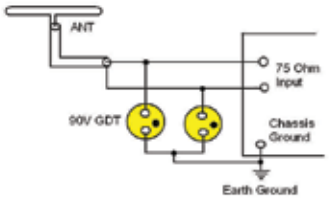
* for 3216 this dimension is 1.8 ± 0.1.

Gas Discharge Tubes

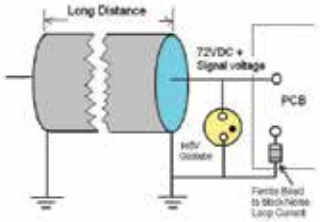


Gas Discharge Tube are are designed to limit voltage surges on balanced or unbalanced communications circuits and on DC to 420 Hz power circuits. Although telephone circuits are a major application for gas tube surge arrestors, this guide will also provide useful information for other surge applications such as AC circuits.

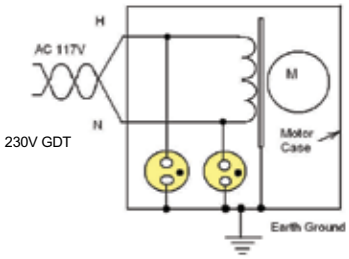
Gas Tube in Antenna Protection



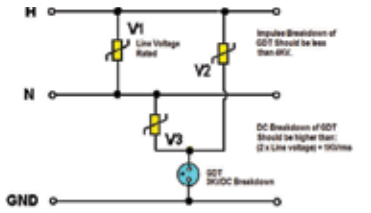
GDT In Cable Protection



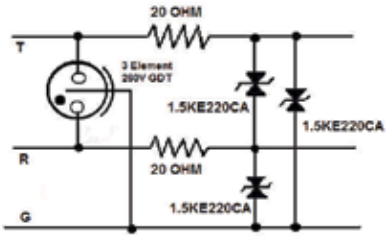
Motor(two wire System) Protection from Lightning



Gas Tube Application In AC Line Isolation



GDT & TVSD Telephone Line Protection



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