



Product Selection Guide

Our Mission

World Products Inc. is customer focused,
progressive and capable of adapting
to ever-changing market conditions.

We are an environmentally and socially responsible
company providing high quality products
to meet our customer needs.

We endeavor to make it easy for our customers
to do business with us.

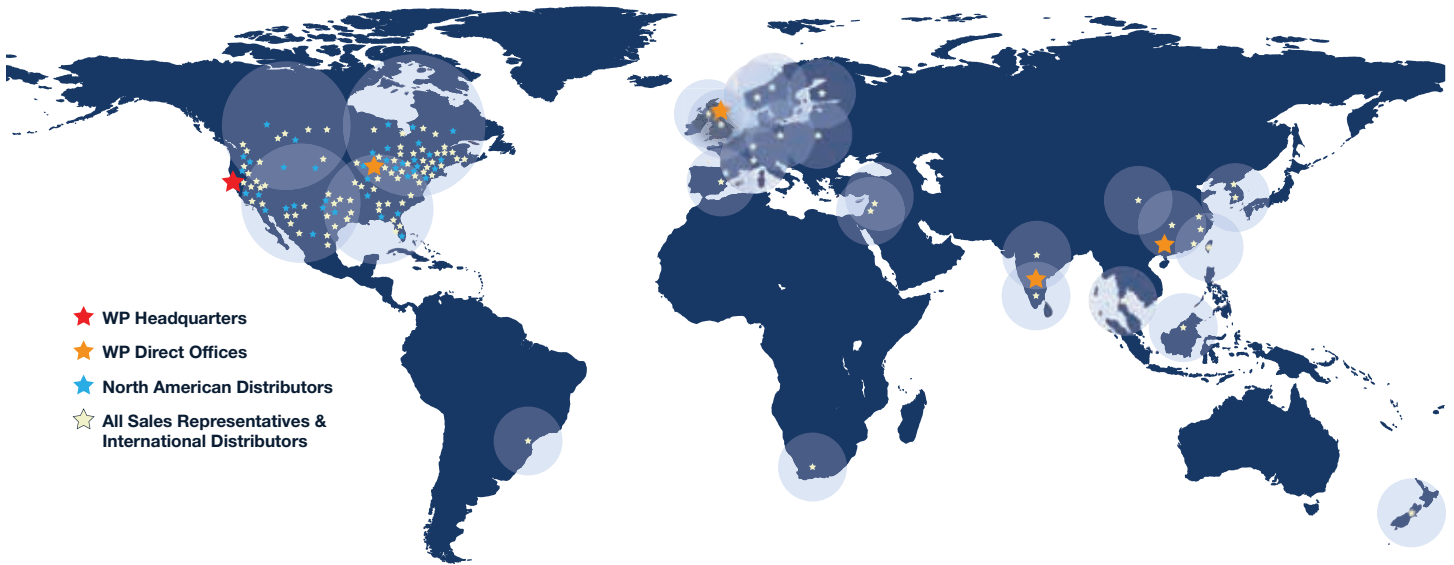
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Global Electronic Component Solutions



Since 1970 **WORLD PRODUCTS INC.** has provided its domestic and international customers with state-of-the-art, synergistic electronic product lines for the automotive, telecom, industrial, power supply, surge suppression, consumer and wireless industries. WPI utilizes a sales force that connects the globe, from our company headquarters in Sonoma, California, to a network of Direct Offices, representatives and distributors spanning five continents. All WPI representatives offer the same exceptional service and provide customers with the outstanding products and synergistic product lines that constitute the cornerstone of World Products' business.



WPI Overvoltage Protection Products



Thermally Protected Varistors

UL 1449/CUL 4th Edition Recognized and VDE Certified.

2 and 3 leaded configurations available in 14mm, 18mm, 20mm, 25mm (round and square types) and 34mm disk sizes and voltage values from 115 VAC - 750 VAC. Including diagnostic options. Industry standard footprint.



WPZ25S Thermally Protected Varistor

Alternative package option to meet limited competitor footprint.



EVTC Thermally Protected Varistor

Values from 150VAC to 680VAC, multiple diagnostic options, UL1449 and CUL 4th Edition Type 1 Component Assemblies recognized (Meets SCCR 200KA).



Metal Oxide Varistors EV Series

UL1449/CUL 4th Edition Recognized, VDE Annex Q Certified.

Environmental Varistor Series - 5mm-34mm disk diameter types. 11 VAC - 1100 VAC values available. Halogen-free epoxy, fire-retardant coating option, High Energy series types, unique 22mm series (25kA) and 34mm series (60kA) ultra-high current type, unique "pin-type" for discrete thermal fusing.



Metal Oxide Varistors

UL 1449/CUL 4th Edition Recognized and VDE Annex Q Certified.

5mm-60mm disk diameter types, 11VAC - 900 VAC values available.



WP-Surface Mount Metal Oxide Varistor

UL 1449/CUL 4th Edition Recognized.

Surface mount Metal Oxide Varistor Series, rated to 3500 amps.



Gas Discharge Tubes

UL Recognized and VDE Certified.

WPGT Series 2 and 3 element types (including SMD types) 70V-6000V (also fail safe types). 2 Electrode Extremely High Current Series (rated at up to 60kA). Symmetrical and Surface Mount Chip Series (4532 & 3216) sizes. AE Series: High Voltage/Extremely High Current (rated to 100kA) including screw types.



Spark Gap Protectors

UL Recognized.

Available in both through-hole and surface mount types. Fast responding, high current, low capacitance, zero leakage current, stable electrical characteristics, RoHS compliant and Halogen Free.



TVS Diodes

UL Recognized.

400 WATT - 30K WATT (leaded and SMD types), WLCE "low capacitance" types and WFC stacked TVS Diodes rated to 20kA.

EV Series Metal Oxide Varistors

Disk Diameter	Peak Current, 8/20µs Amps	AC RMS Voltages
5mm	125-800	11, 14, 17, 20, 25, 30, 35, 40, 50, 60, 75, 95, 120, 130, 140, 150, 180, 195, 210, 230, 250, 275, 300, 320, 360
7mm	250-1750	11, 14, 17, 20, 25, 30, 35, 40, 50, 60, 75, 95, 120, 130, 140, 150, 180, 195, 210, 230, 250, 275, 300, 320, 360, 420, 460, 485, 510
10mm	500-3500	11, 14, 17, 20, 25, 30, 35, 40, 50, 60, 75, 95, 120, 130, 140, 150, 180, 195, 210, 230, 250, 275, 300, 320, 360, 390, 420, 460, 485, 510, 550, 625, 680
14mm	1000-7500	11, 14, 17, 20, 25, 30, 35, 40, 50, 60, 75, 95, 120, 130, 140, 150, 180, 195, 210, 230, 250, 275, 300, 320, 360, 390, 420, 460, 485, 510, 550, 625, 680, 750, 1100
20mm	2000-13000	11, 14, 17, 20, 25, 30, 35, 40, 50, 60, 75, 95, 120, 130, 140, 150, 180, 195, 210, 230, 250, 275, 300, 320, 360, 390, 420, 460, 485, 510, 550, 625, 680, 750, 1100
22mm	6000-25000	14, 17, 20, 25, 30, 35, 40, 50, 60, 75, 95, 120, 130, 140, 150, 180, 195, 210, 230, 250, 275, 300, 320, 360, 390, 420, 460, 485, 510, 550, 575, 625, 680, 750, 850, 1000
34mm (Square Disk)	20000-60000	30, 35, 40, 50, 60, 75, 95, 120, 130, 140, 150, 180, 195, 210, 230, 250, 275, 300, 320, 360, 390, 420, 460, 485, 510, 550, 625, 680, 750, 850, 1000



Max. Continuous Rated Voltage		Varistor Volts		Max. Continuous Rated Voltage		Varistor Volts	
AC RMS	DC Volts	Min.	Max.	AC RMS	DC Volts	Min.	Max.
11	14	16	20	210	275	297	363
14	18	20	24	230	300	324	396
17	22	24	30	250	320	351	429
20	26	30	36	275	350	387	473
25	31	35	43	300	385	423	517
30	38	42	52	320	415	459	561
35	45	50	62	360	460	504	616
40	56	61	75	390	505	558	682
50	65	74	90	420	560	612	748
60	85	90	110	460	620	675	825
75	100	108	132	485	640	702	858
95	125	135	165	510	675	738	902
120	150	162	198	550	745	819	1001
130	170	185	225	625	825	900	1100
140	180	198	242	680	895	990	1210
150	200	216	264	750	990	1080	1320
180	225	243	297	1100	1465	1620	1980
195	250	270	330				

Ordering Information (Example)

EV **20** **D** **130** **K** **-** **-J**
(1) (2) (3) (4) (5) (6) (7)

- EV = Environmental Varistor
(All parts are RoHS certified and Halogen free)
- Disk Diameter: 20 = 20mm
- D = Standard
- AC RMS Voltage Rating: 130 = 130VAC
- Tolerance: J=5%, K = 10%
- Lead option: Nil = Standard Lead
- Surge Type: Nil = Standard Series, J = High Energy Series, H = Ultra High Energy Series

- Flame Retardant Coating available.
- Bare (uncoated) Disk available.
- Multiple Leadforming and Lead Frames available.
- Pin Type available so that discrete thermal fuse can be implemented.
- For taped parts please reference catalog.

Note: Copper electrode option available for specific disk sizes. Please contact your WPI rep for more information.



VZ Series Metal Oxide Varistors

Disk Diameter	Peak Current, 8/20µs Amps	Nominal Varistor Voltages
5mm	100-800	18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680
7mm	250-1750	18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680
10mm	500-3500	18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 1000, 1100
14mm	1000-6500	18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 1000, 1100
18mm	8000-12000	82, 180, 200, 220, 240, 270, 330, 360, 390, 430, 470, 510, 560, 820
20mm	2000-15000	18, 22, 27, 33, 39, 47, 56, 68, 82, 100, 120, 150, 180, 200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 1000, 1100
25mm*	20000, 22000	200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 1000, 1100
32mm(KW) Wire Lead	25000	200, 220, 240, 270, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200, 1500
32mm	30000	200, 220, 240, 270, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200
34mm Single (Square Disk)	40000	200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200
34mm Dual (Square Disk)	40000	200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200
40mm	40000	200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200
53mm	70000	200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200
60mm	80000	200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200, 1400, 1600

*Available in both round and rectangular disk types.

Max. Continuous Rated Voltage		Nominal Varistor Voltage	P/N Code Varistor Voltage	Varistor Volts	
AC RMS	DC Volts			Min.	Max.
11	14	18	180	16.2	19.8
14	18	22	220	20	24
17	22	27	270	24	30
20	26	33	330	30	36
25	31	39	390	35	43
30	38	47	470	42	52
35	45	56	560	50	62
40	56	68	680	61.2	74.8
50	66	82	820	74	90
60	85	100	101	90	110
75	102	120	121	108	132
95	127	150	151	135	165
120	160	180	181	170	207
130	175	200	201	184	224
140	180	220	221	198	242
150	200	240	241	216	264
180	230	270	271	255	311
195	250	300	301	270	330
210	275	330	331	297	363
230	300	360	361	324	396
250	330	390	391	351	429
275	370	430	431	387	473
300	385	470	471	423	517
320	420	510	511	459	561
360	470	560	561	522	638
390	505	620	621	558	682
420	560	680	681	612	748
460	615	750	751	675	825
485	640	780	781	702	858
510	675	820	821	738	902
550	745	910	911	819	1001
575	765	950	951	855	1045
625	825	1000	102	900	1100
680	895	1100	112	957.6	1170.4
750	970	1200	122	1062	1300
880	1150	1500	152	1350	1650

Ordering Information (Example)

VZ **20** **E** **241** **K** **B** **S** - **N**
 (1) (2) (3) (4) (5) (6) (7)

- (1) Disk Diameter: 20 = 20mm
- (2) Energy Types: D = Standard Energy, E = High Energy, R = 25mm (Rectangular) and 34mm Types only.
- (3) Varistor Voltage, Example: 241 = 24 x 10¹ = 240(DC V)
- (4) Tolerance: J = 5%, K = 10%
- (5) Packaging: B = Bulk, for taped parts, please reference catalog
- (6) Lead Configuration (For Bulk Parts): S = Straight, O = Outward Crimp, I = Inward Crimp, L = Inline Crimp, N = Bulk parts for 320V without standard inline crimp
- (7) RoHS Compliance: Nil = Not compliant, -N = RoHS Compliant

- Phenolic Coating available.
- Bare uncoated disk available.



TVZ Series

Thermally Protected Varistors

Disk Diameter	Peak Current, 8/20µs Amps	Nominal Varistor Voltages
14mm 2 & 3 leaded	6000	180, 200, 220, 240, 270, 310, 330, 360, 390, 430, 470, 510, 560, 620, 680
18mm 2 & 3 leaded	9000	180, 200, 220, 240, 270, 310, 360, 390, 430, 470, 510, 560, 620, 680, 750, 820, 910, 950, 1000, 1200
20mm 2 & 3 leaded	10000	180, 200, 220, 240, 270, 310, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 950, 1000, 1100, 1200
25mm* 2 & 3 leaded	18000 and 22000	180, 200, 220, 240, 270, 300, 330, 360, 390, 430, 470, 510, 560, 620, 680, 750, 780, 820, 910, 1000, 1100, 1200
34mm (Square Disk) 2 & 3 leaded	40000	180, 200, 220, 240, 280, 320, 390, 430, 480, 510, 525, 560, 615, 670, 710, 745, 820, 850, 900, 970, 1050, 1080, 1200

*Available in both round and rectangular disk types.

Ordering Information (Example)

TVZ **14** **E** **B** **N** **241** **K** **B** **S**
 (1) (2) (3) (4) (5) (6) (7) (8)

- (1) Disk Diameter: 14 = 14mm
- (2) Types: D = 25mm (Round), E = 14mm, 18mm and 20mm, R = 25mm (Rectangular) and 34mm
- (3) Fuse Location: Blank = 3-Leaded, Fuse Located on Third Lead (only available for 25mm disk size) B = 2-leaded, No Monitor Lead, C = 3-leaded, Fuse Located on Second Lead
- (4) "N" denotes RoHS Compliant series
- (5) Varistor Voltage: 14, 18, 20, & 25mm: 241 = $24 \times 10^1 = 240$ (DC V), AC Voltage for 34mm: 151 = 150VAC
- (6) Tolerance: K = 10%
- (7) Packaging: B = Bulk, for taped parts, please reference catalog
- (8) Lead Configuration (For Bulk Parts): S = Straight, L = Inline crimp, N = Bulk parts for 320V without standard inline crimp

Max. Continuous Rated Voltage		Nominal Varistor Voltage	P/N Code Varistor Voltage (14, 18, 20, 25mm*)	Varistor Volts	
AC RMS	DC Volts			Min.	Max.
115	150	180	181	162	198
130	175	200	201	185	225
140	180	220	221	198	242
150	200	240	241	216	264
180	230	270	271	255	311
195	250	300	301	270	330
200	230	310	311	281	344
210	275	330	331	297	363
230	300	360	361	324	396
250	330	390	391	351	429
275	370	430	431	387	473
300	385	470	471	423	517
320	420	510	511	459	561
360	470	560	561	522	638
390	505	620	621	558	682
420	560	680	681	612	748
460	615	750	751	675	825
485	640	780	781	702	858
510	675	820	821	738	902
550	745	910	911	819	1001
575	785	950	951	856	1047
625	825	1000	102	900	1100
680	865	1100	112	962	1175
750	975	1200	122	1080	1320

*34mm: Please reference catalog.

Note: Above are typical ratings, please reference catalog.

TVZ
THERMALLY PROTECTED VARISTORS
SINCERA BRAND



EVTC Series Thermally Protected Varistors

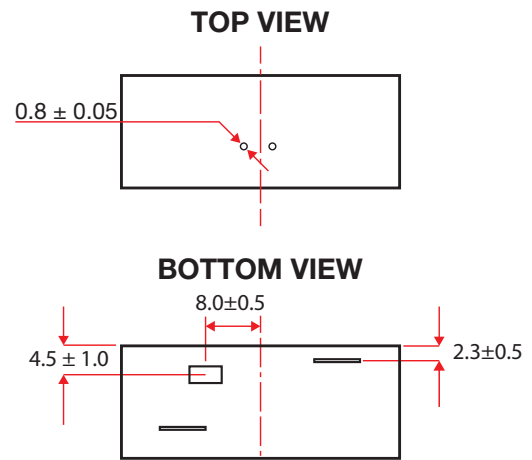
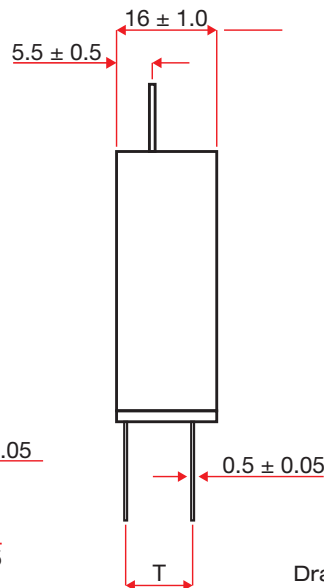
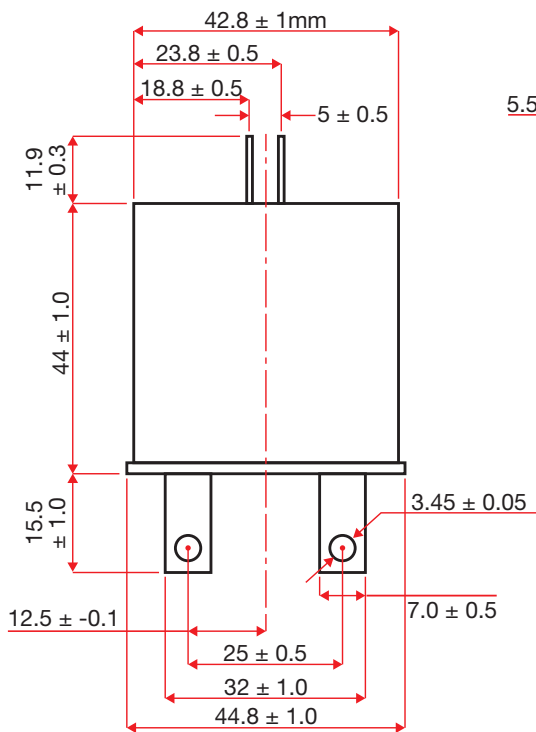
- High energy handling capability.
- Wide voltage range available: 150VAC – 680VAC.
- Industry standard footprint and wave solderable.
- UL1449 4th Edition and CUL Type 1 Component Assemblies recognized. File #E321567. (Meets SCCR 200KA rating).
- CE Certified
- 50KA, 8/20 μ s peak surge current rating.
- RoHS compliant.
- Exceeds industry standard operating and storage temperatures for this type of device. Rated at -40°C to +85° (operating) and -40°C to +125°C (storage).
- Equipped with normally open or closed micro-switch providing diagnostics (if other micro-switch options are required, please contact WPI).
- Patents: USA, Germany, China and Taiwan.
- 94V-0 Enclosure Rating.



Ordering Information
(Example)

EVTC	34	V	150	K	M	3.8	A
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

(1) Series: EVTC = EV Series Varistor TC Thermal Disconnect
 (2) Disk Size: 34 = 34mm
 (3) Type: V = High Current EV Varistor Series
 (4) AC RMS Voltage Rating: 150 = 150VAC
 (5) Tolerance: K = $\pm 10\%$
 (6) Micro Switch: 3 Lead Type (on top) = Nil, 2 Lead Type (on top) = M
 3 Lead Type (on bottom) = P
 (7) Micro Switch: (Special lead length ± 1 mm) 3.8 = 3.8mm
 (8) Tab Lead: (Special lead length ± 1 mm) A = 3.8 mm



Drawing for 2 lead with microswitch on top.



WPGT Series Gas Discharge Tubes

2 Electrode (with or without leads)			
Series	DC Voltage (V)	Max. Impulse (KA)	Max. Capacitance (pF)
Low Profile Mini (2RS)	75-600	8	0.5
Super Mini (2RN)	75-600	5	0.5
Ultra Super Mini (2RF)	90-400	3	0.5
Mini (2RM)	70-3600	3-10	1.0
Standard (2R)	70-900	15	1.5
High Voltage (2R)	600-6000	5-10	1.0-1.5
High Current (2N)	70-600	20	1.5
Ultra High Current (2R)	70-350	25	1.5
Switching (2T)	350-1000	N/A	1.0
AC Series (2RC)	280-7500	10	1.5
Extremely High Current (16D5)	150-800	40	N/A
Extremely High Current (20B)	150-1000	30-60	5
Extremely High Current (12D8)	90-800	40	N/A
Extremely High Current (12D12)	90-800	40	N/A
Extremely High Current (12D17)	90-800	60	N/A
Extremely High Current (12D18)	90-800	80	N/A
Extremely High Current (18D7)	600-800	60	N/A
Extremely High Current (20D6)	150-1000	60	5
Extremely High Current (25D10W)	500-800	120	N/A
Extremely High Current (25D21)	500-800	160	4
Extremely High Current (30D12)	500-800	160	10
Standard/HighCurrent/ Ultra High Current (AE)	230-4500	10-100	2-5

3 Electrode (with or without leads)			
Series	DC Voltage (V)	Max. Impulse (KA)	Max. Capacitance (pF)
Ultra Mini (3RSM)	75-600	20	2.0
Symmetrical (3RSSM)	230-600	10	2.0
Mini (3RM)	90-600	10-15	1.5
Standard (3R)	75-600	40	1.5

2 Electrode (Surface Mount)			
Series	DC Voltage (V)	Max. Impulse (KA)	Max. Capacitance (pF)
Ultra Super Mini (2SF)	90-400	3	0.5
Super Mini (2SN)	75-600	5	0.5
Mini (2SM)	75-600	5	0.5
Mini Square (2SS)	75-600	5	0.5
Standard Low Profile (2SR)	75-600	10	0.5
Standard (2S)	75-3000	5-8	0.8-1.0
Chip (3216)	120-600	0.5*	0.3
Chip (4532)	75-600	2*	0.5

3 Electrode (Surface Mount)			
Series	DC Voltage (V)	Max. Impulse (KA)	Max. Capacitance (pF)
Mini (3SM)	75-1100	10-20	2.0
Symmetrical (3SSM)	230-1100	10	2.0

*10 times

Ordering Information
(Example)

WPGDT - 2R 800 B 8 L C TA

(1) (2) (3) (4) (5) (6) (7)

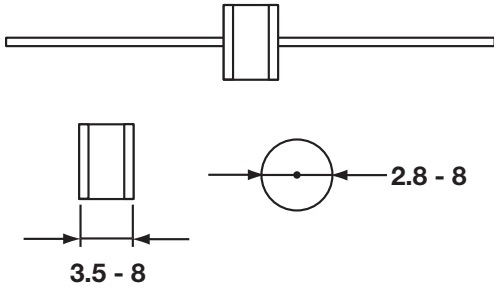
- (1) Series Code
- (2) DC Breakdown Voltage
- (3) Diameter: B = 8mm
- (4) Length "T" Dimension: 8 = 8mm
- (5) Lead Type: L = Axial 0.8mm lead diameter
- (6) Low Capacitance: C = Low Capacitance
- (7) Taping Specification: TA = Ammo Box

• Multiple configurations available please reference catalog.



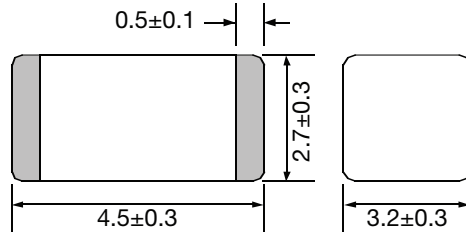
WPGT Series Gas Discharge Tubes

2RS, 2RN, 2RF, 2RM, 2R, 2N & 2T Series



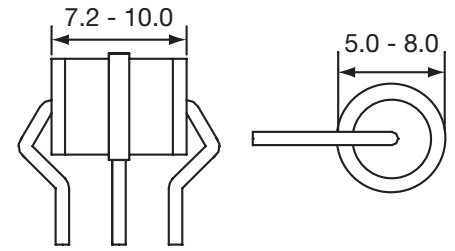
Note: Lead length, lead diameter and lead options, see catalog.

3216 & 4532 Series



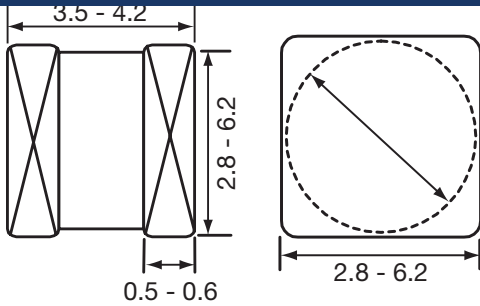
Note: Example of dimensions for 4532 Series.

3RSM, 3RSSM, 3RM & 3R Series



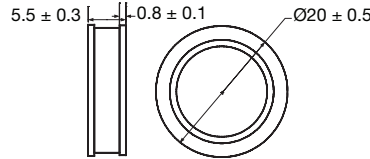
Note: 1) Lead length, lead diameter and lead options see catalog. 2) Failsafe types available.

2SF, 2SN, 2SR, 2SM, 2SS, & 2S
Surface Mount Series

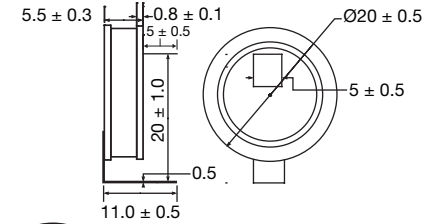


2B, 12D8, 12D12, 12D17, 12D18, 16D5, 18D7, 20D6, 25D10W, 25D21 and 30D12
Extremely High Current Series

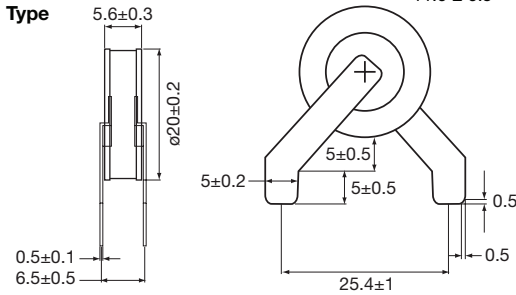
No Lead Type



Tab Type

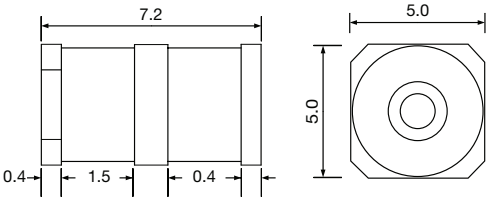


Radial Lead Type



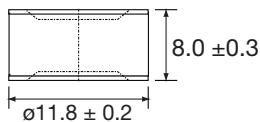
Note: Example of 20B shown here. Multiple lead frame, element sizes and configurations available, see catalog.

3SM & 3SSM Surface Mount Series

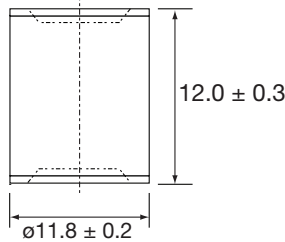


AE Series

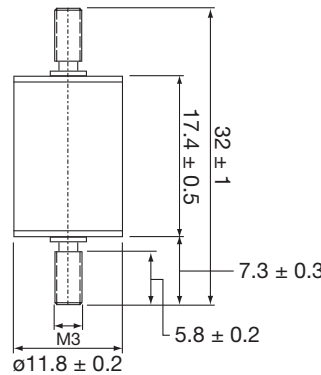
No Lead Standard Type
AE Series



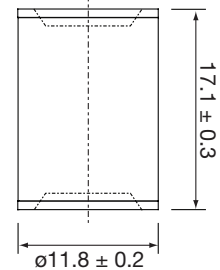
No Lead High Current Type
AE Series



High Voltage Screw Lead Type



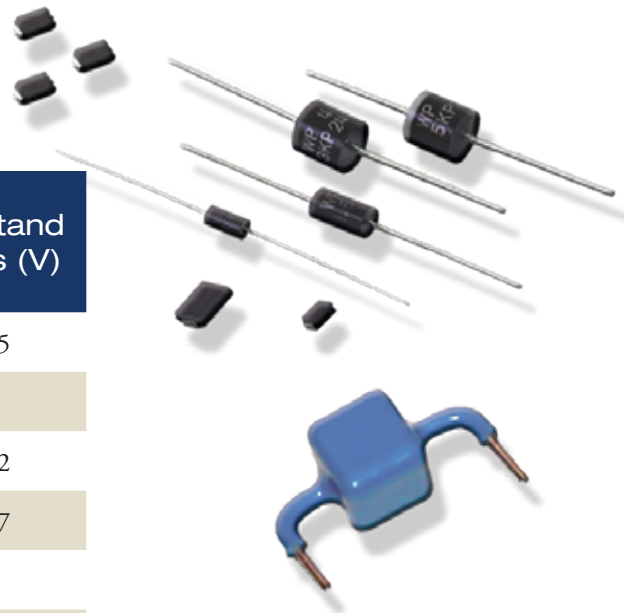
No Lead Ultra High Current Type
AE Series



Note: Example of Standard AE shown here. Other options available, see catalog.



TVS Diodes



Series	Rating (watts)	Package	Rated Stand Off Volts (V)
P4KE	400	Axial (DO-41)	5.5-495
SA	500	Axial (DO-15)	5-170
P6KE	600	Axial (DO-15)	5.5-512
1.5KE	1500	Axial (DO-201)	5.5-467
3KP	3000	Axial (P600/R6)	5-220
5KP	5000	Axial (P600/R6)	5-250
15KP	15000	Axial (P600/R6)	17-280
20KP	20000	Axial (P600/R6)	20-300
30KP	30000	Axial (P600/R6)	28-288
WLCE (Low Capacitance Series)	1500	Axial (DO-201)	6.5-28
WFC	500-20000 (amps)	with & without leads	12-1200
P4SMAJ	400	Surface Mount	5-440
P6SMBJ	600	Surface Mount	5-440
1.5SMCJ	1500	Surface Mount	5-440
3.0SMCJ	3000	Surface Mount	5-220
5.0SMCJ	5000	Surface Mount	11-170
6.6SMEJ	6600	Surface Mount	20-48
8SMEJ	8000	Surface Mount	10-48
PA4SMAJ	400	Surface Mount	5.8-495
PA6SMBJ	600	Surface Mount	5.8-495
1.5ASMCJ	1500	Surface Mount	5.8-495

Ordering Information
(Example)

P4KE	20	C	A	TR
(1)	(2)	(3)	(4)	(5)

- (1) Series: P4KE = P4KE
- (2) Voltage, Example 20 = 20V
Nominal Breakdown Voltage
For P4KE, P6KE, 1.5KE
Rated Standoff Voltage
For SA, 3KP, 5KP, 15KP
- (3) Polarity: Blank = Unidirectional,
C = Bidirectional
- (4) Tolerance: Blank = 10%, A = 5%
- (5) Packaging: Blank = Bulk, TR = Tape and Reel

AEC-Q101 qualified for specific types. Contact WPI sales for more information:
sales@worldproducts.com.



Surface Mount Varistor Series

- 5mm, 7mm and 10mm (14mm and 20mm pending)
- Wide range of voltages: 11VAC – 680VAC
- CE certified
- UL/CUL recognition
- Metal Oxide Varistors (MOVs) are surface mounted components. Manufactured mainly from sintered zinc oxides and schematically equivalent to two back-to-back PN junctions, MOVs shunt surge currents by decreasing their resistance as transient voltage is applied.



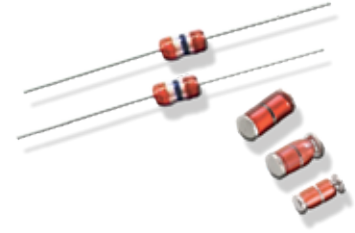
WPZ25S Thermally Protected Varistor Series

- Rated to 25KA
- Wide range of voltages: 17VAC – 750VAC
- Available with remote signal function micro-switch
- RoHS Compliant
- TVSS Products
- AC Panel Protection Modules
- AC Line Power Supplies
- Surge Protected Strip Connectors
- AC Power Meters
- Relocatable AC Power Taps
- UPS (Uninterruptible Power Supply)
- White Goods
- GFCI (Ground Fault Current Interrupter)
- Plug-in TVSS
- Inverters
- AC/DC Power Supplies



WPSPG Series Spark Gap Protectors

Series	Package	DC Spark-Over Voltage (V)	Surge Current (A)	Max. Capacitance (pF)
L	Axial	140-1500	>500	0.8
M	Axial	140-1500	>1000	0.8
H	Axial	140-700	3000	0.8
HX	Axial	1000-5000	3000	1.0
LLS	Surface Mount	140-300	300	0.8
LS	Surface Mount	140-1000	500	0.8
MS	Surface Mount	140-1000	1000	0.8
HS	Surface Mount	140-1000	3000	0.8
HSS	Surface Mount	140-1000	3000	0.8
HG	Surface Mount	1000-5000	3000	1.0



Thyristors



P/N Code / Voltage		Breakover Voltage	Current Rating (2/10mS)		
			C	D	E
058	58V	77	200A	300A	500A
065	65V	88	200A	300A	500A
075	75V	98	200A	300A	500A
090	90V	130	200A	300A	500A
120	120V	160	200A	300A	500A
140	140V	180	200A	300A	500A
160	160V	220	200A	300A	500A
190	190V	265	200A	300A	500A
220	220V	300	200A	300A	500A
275	275V	350	200A	300A	500A
320	320V	400	200A	300A	500A
360	360V	450	200A	300A	500A

Series	On-State Voltage Max.	Repetitive Peak Off-State Current Max.	Breakover Current Max.	Holding Current Min.
WPSCDS SMB/SMA	3.5V	5mA	800mA	150mA

Ordering Information
(Example)

WPSCDS 058 C

(1) (2) (3)

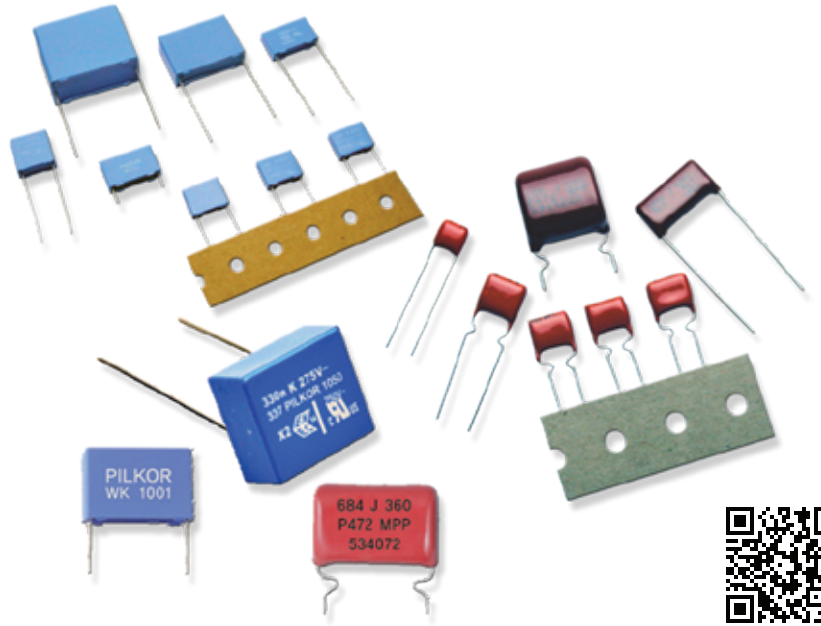
(1) Thyristor series
(2) Rated Repetitive Peak Off-State Voltage: Example 058 = 58V.
(3) Current Rating Code: C, D, E. Please see table for values





Metallized Film Capacitors

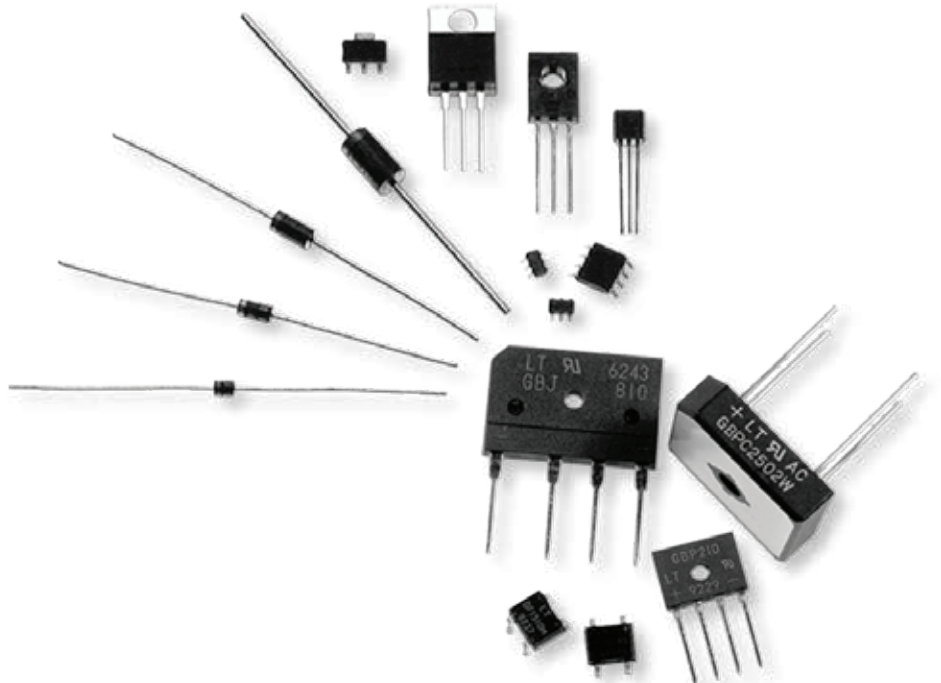
- EMI Suppression Capacitors
- EMI Suppression Capacitors with Series Impedance
- PCX2347 series (with series impedance) to meet 85°C, 85% RH requirements
- Noise Suppression & Spark Quenching
- PFC Input Capacitors
- AC Motor Running Capacitors
- Power Electric Capacitors
- Low DC Film Capacitors
- General Purpose Capacitors
- High Temperature Capacitors
- DC-Link Capacitors (Customized Designs)
- Power Electronic Capacitors (DC-Link Aluminum Case)
- IGBT Snubber Capacitors



Pilkor capacitors have applicable world-wide safety approval certifications.



- Bridge Rectifiers
- ESD Diodes & Diode Arrays
- Schottky Rectifiers
- Super-Fast & Ultra-Fast Recovery Rectifiers
- Small Signal Switching Diodes
- Zener Diodes
- TRIAC
- SCR
- MOSFET



LiteOn is a certified SONY Green Partner.





Ebusbar®

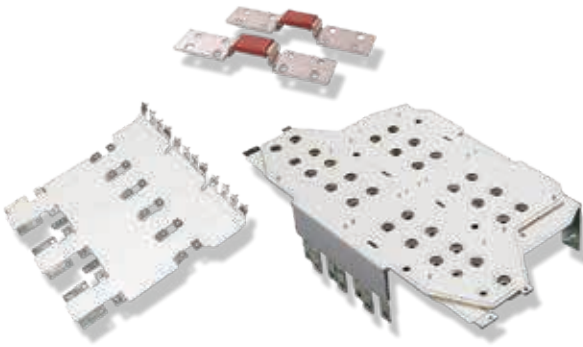
WORLD PRODUCTS INC.® is the Exclusive Agent in North America for Ebusbar® High Voltage High Current Relays



HV HC Relays



High Voltage Connectors



Laminated & Flexible Busbars



Power Distribution Units

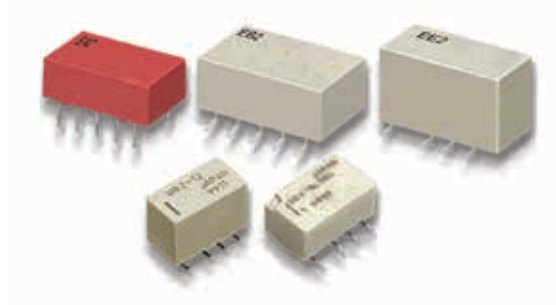


Charging Connectors



Miniature Signal Relays_z

- Compact & Lightweight for dense mounting
- Low Power Consumption
- Plastic-Sealed Package
- High Withstand Voltage
- Surface Mount Product Line-up



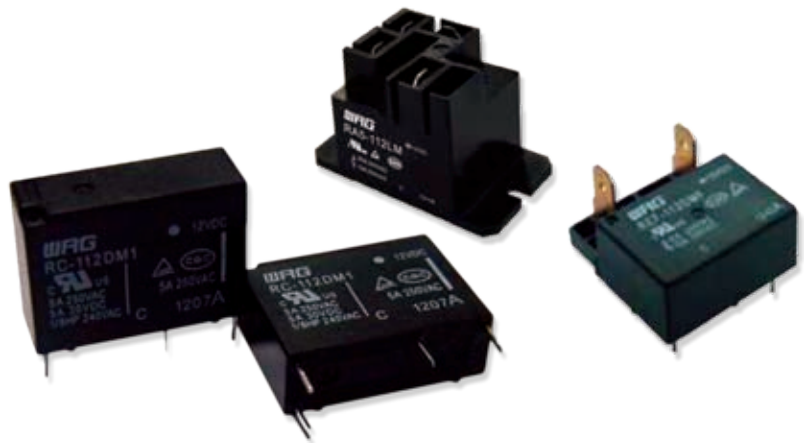
Miniature Power Relays (Automotive Grade)

- High Power Switching Capability
- Compact & Lightweight with Twin Relay Structure
- Flux Tight Housing
- Washable with Plastic-Sealed Package
- Semi-Custom Made Product Available
- Reflow Soldering Type Available



Industrial Relays

- Current Ratings 0.5A - 400A
- Contact Forms: 1A, 1B, 1C, 2C, 3C & 4C
- Industry Standard Footprints



On-Site Laboratories

World Products Inc. has a complete applications and component testing laboratory in Sonoma, CA for use by our customers. At our facility we can offer you technical assistance with circuit protection, international testing specifications and electromagnetic compatibility. Our expertise and equipment are available for customer projects and to find answers to your critical design considerations. World Products is an active IEEE contributing member, USA Delegate (IEEE Liaison) to IEC and UL Standard Technical Panel member.

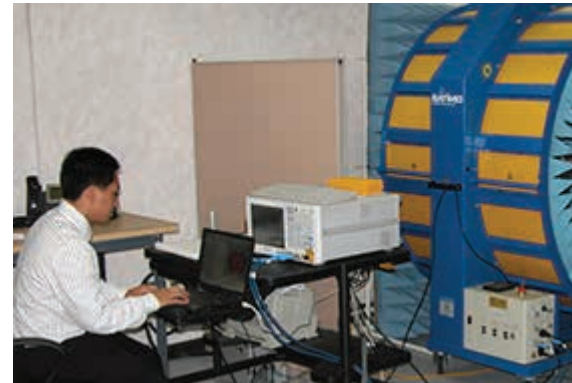
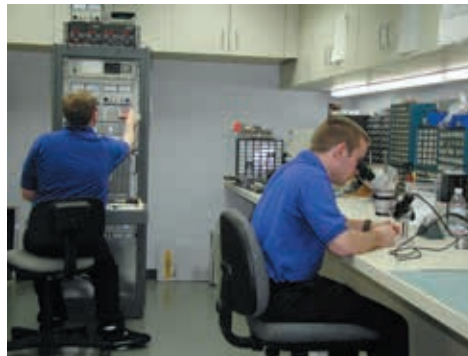
We are also able to characterize the performance of components under both normal operational and harsh environmental conditions. Surge testing waveforms can be saved with our TDS 3012B Digital Storage Oscilloscope and reports can be sent to customers via email.

Test Capabilities:

- DC Breakdown Voltage
- Leakage Current
- Clamping Voltage and Surge Current
- UL Testing:
 - (UL1449 4th Edition) Surge Test to 40kA
 - VPR Testing at 6kV/3kA with up to 600VAC applied
 - I(n) Nominal Discharge Current testing up to 40kA at 600VAC
 - (UL 60691) thermal ageing, dielectric and Insulation Resistance testing and functional temperature T(f)
- Dielectric and Insulation Resistance testing to 5kV
- Impedance Measurement
- Capacitance up to 1MHz
- Insulation Resistance up to 2000 Gohms
- Surge Combination C62.41 up to 20kV/10kA waveform
- IEC 61643-11
- HP Infinium 54825A DSO
- TDS 3012B

Antenna Research & Development Laboratory

- Onsite Antenna Engineering Laboratory with technically advanced RF/Microwave Test & Measurement equipment.
- 3D & 2D Near-field & far-field, superfast & fully automated Antenna radiation characterization systems.
- Experienced engineering staff that has designed Antennas for various applications ranging from military to consumer wireless.
- Precise Mechanical tools that aid in designing & manufacturing Antennas in various manufacturing technologies, such as, Ceramics, Stamped Metals, Plastics, LTCC, Flex PCB & more.
- Antennas & Antenna systems that operate in several frequency bands such as, GSM / GPRS / DCS / PCS / UMTS / WCDMA / CDMA / TDMA / AMPS / EDGE, WiFi, Bluetooth, WiMax, RFID, ISM Band, UWB can be designed & tested.
- Regulatory testing capability that ensures that the Antennas designed comply with safety & performance standards set by FCC, PTCRB & others.



Surge Generator

Our Surge Generator, located in Sonoma, CA, meets the levels and requirements in accordance with the following national and international standards:

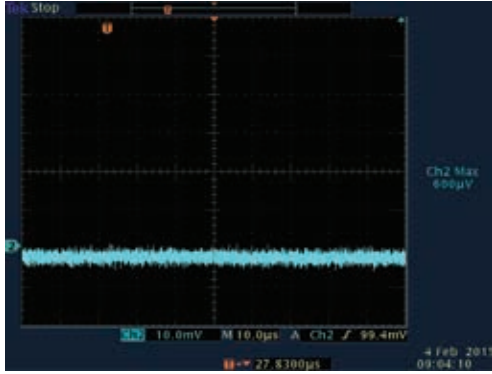
- IEC 61000 4-5 – Combination Waveform
- UL 1449 4th Edition
- IEEE/ANSI 62.41 Categories B and C
- IEC 61643-11

Features:

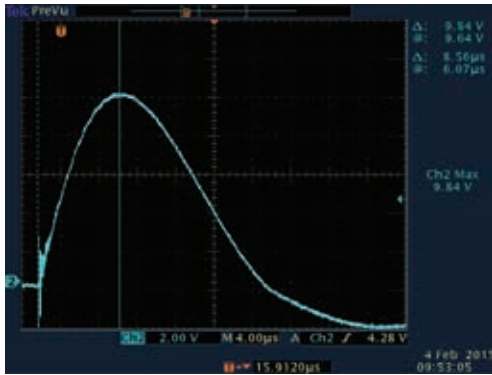
- I(n) sequence up to 40,000 amps 8/20 μ s at 600VAC and VPR at 6kV/3kA- 600VAC in accordance with UL 1449 4th Edition.
- Applies the surge with respect to the AC sinewave from 0 to 360 degrees.
- Includes a back filter that protects the input 220VAC from surges going upstream and damaging other equipment.
- Programmable to surge as many times as needed with selectable time duration between surges.
- Test data can be measured, stored and queried at any time. Test reports can also be provided.



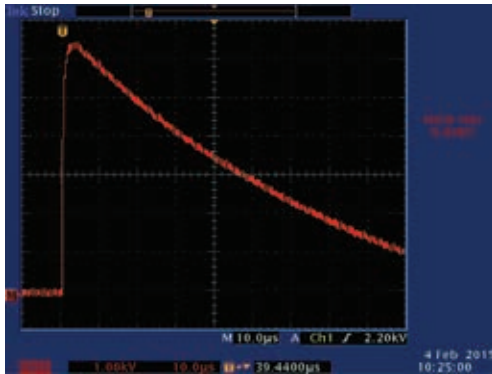
Test Reports



Short Circuit Current Noise



Short Circuit Current Peak



Open Circuit Peak

WPI Surge Generator – Screen Capture

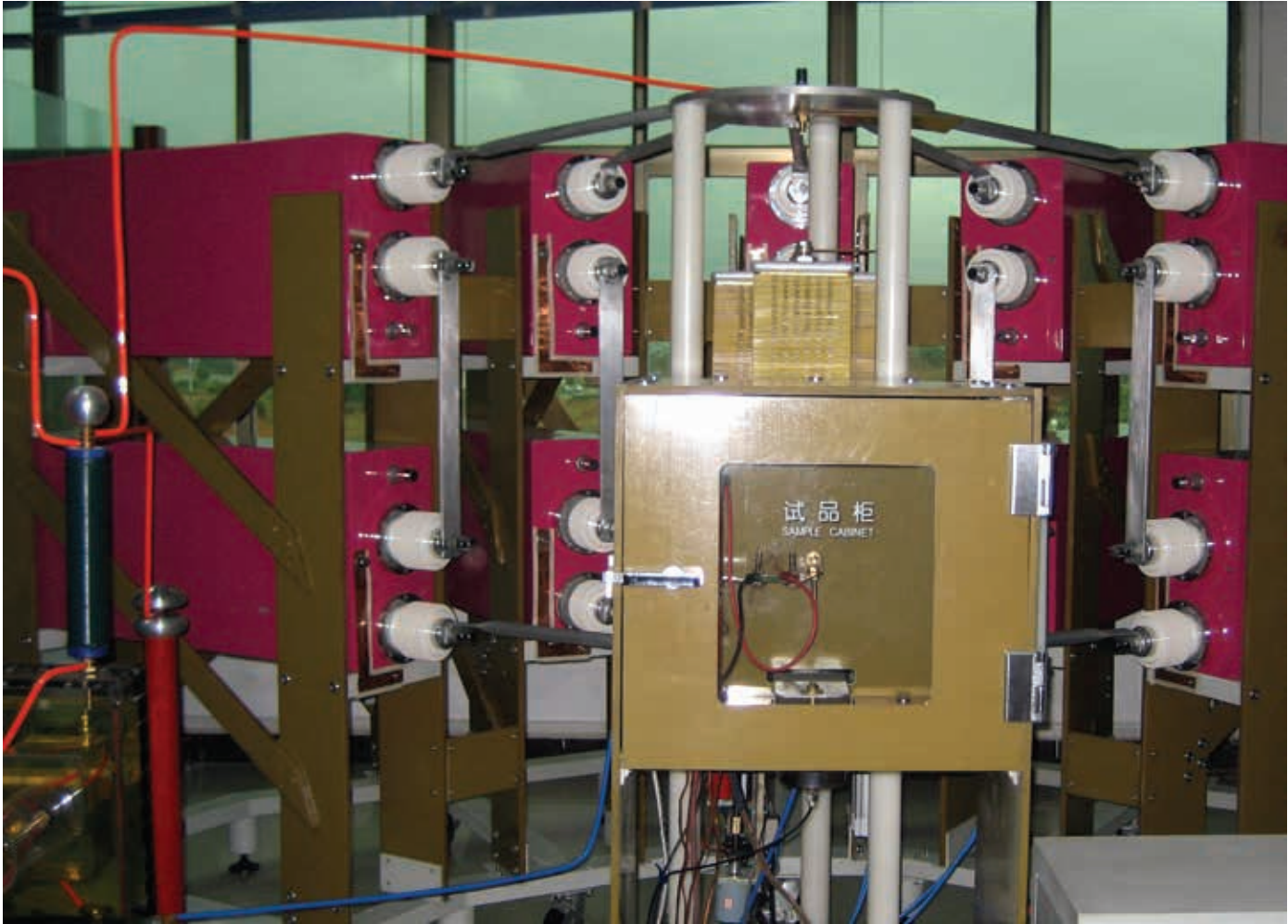
Industry Recognition



Leonard Drewes, WPI Engineering Manager, industry titles:

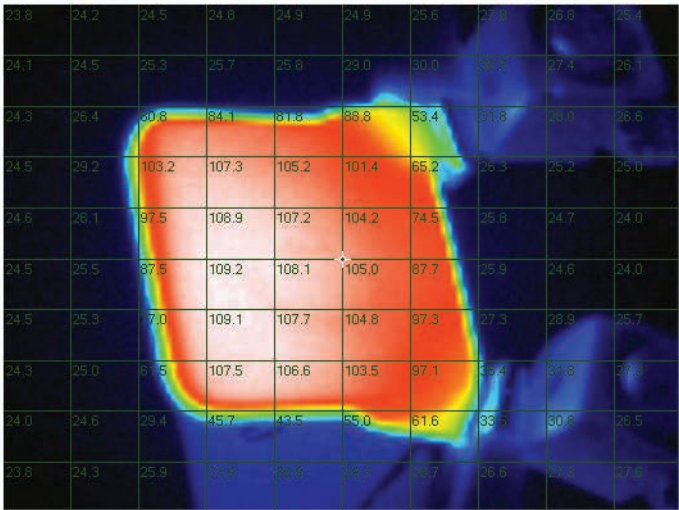
- IEEE Liaison to IEC
- Convener of IEC 37B MT2
- Member of IEC 37B MT1
- Member IEC 37A/37B TAG Committee
- UL 1449 Standards Technical Panel Member
- Member IEEE Power and Energy Society

Surge Generator - Located in Our Factory

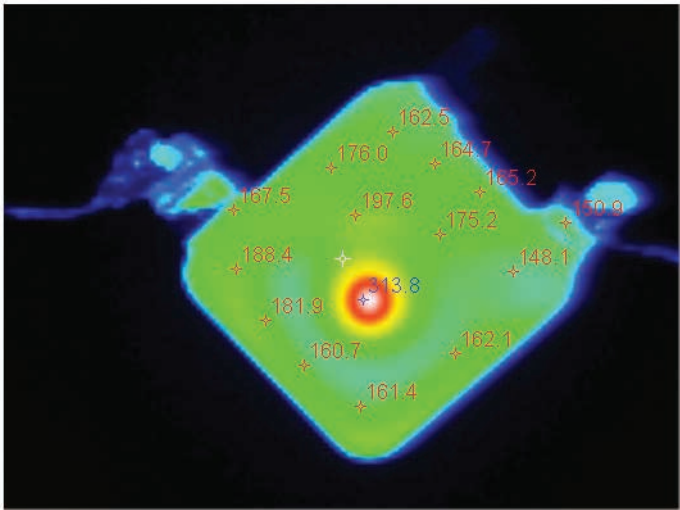


8/20ms : 200,000 Amps, 10/350ms : 30,000 Amps

Heat Transfer Characteristics



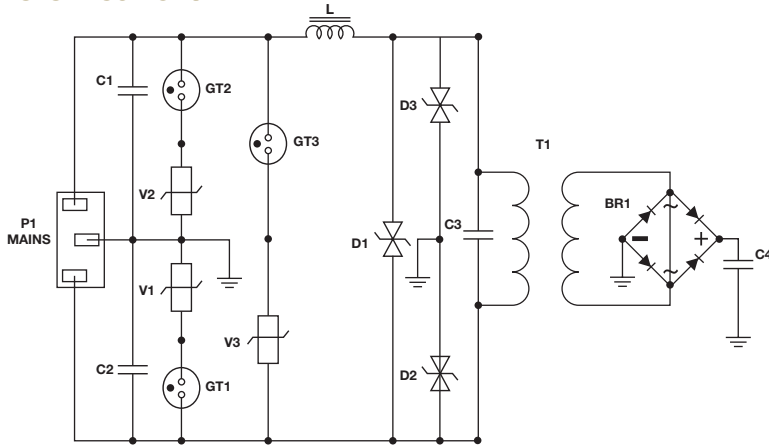
(EV Series 34mm)



(EV Series 34mm)

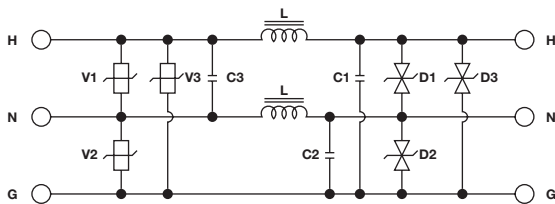
Circuit Examples

AC Mains Protection with potentially large follow current.

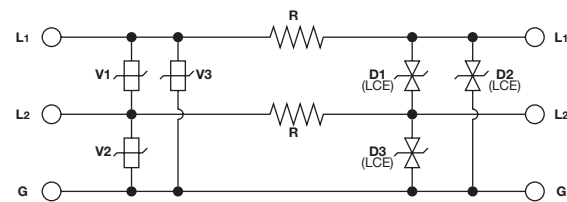


When a Surge is introduced at the A-C input, Gas Tubes turn on slowly (1µsec) which can produce a large “leading edge” remnant downstream. TVS Diodes D1, D2, and D3 will suppress the remnant. Varistors V1, V2 and V3 prevent follow current from Gas Tubes.

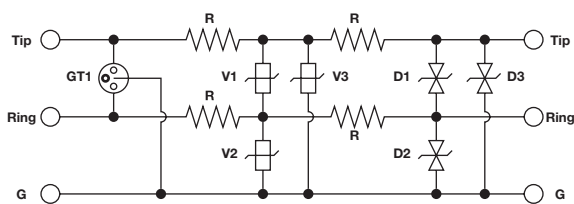
AC Line Protection



Data Line Protection



Telecom Circuit Protection



KEY TO ABBREVIATIONS

C1, C2 = Safety Caps

V1, V2, V3 = MOV

GT1, GT2, GT3 = Gas Tubes

D1, D2, D3 = TVS Diodes

C3 = X Safety Cap

BR1 = Bridge Rectifier

C4 = Filter Cap

T1 = Step Down Transformer

LCE = Low Capacitance Series

TVS Diode

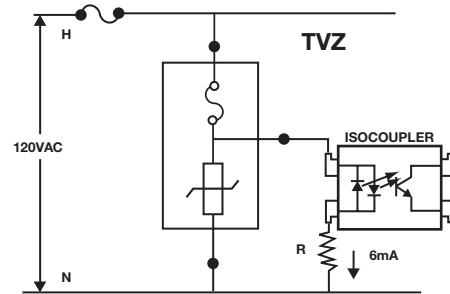
R = Resistor

L = Inductor

TVZ = Thermally Protected Varistor

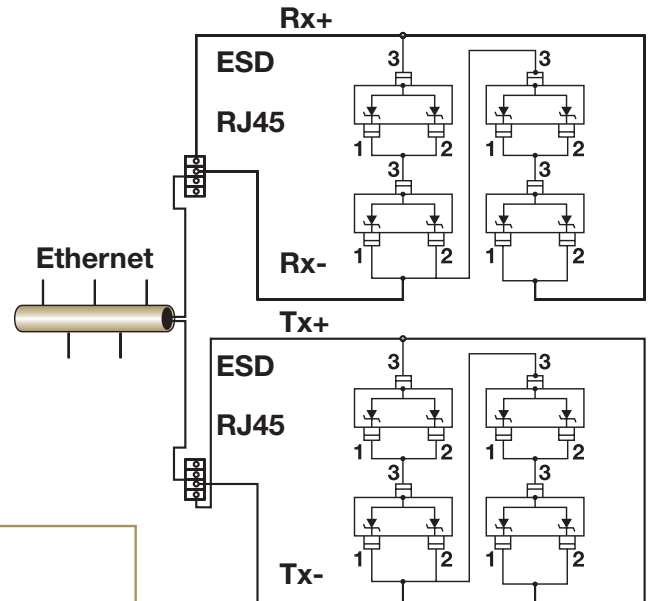
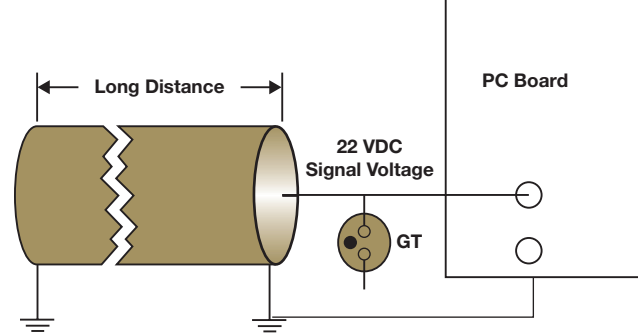
ESD = ESD Array

AC Line Protection with Thermally Protected MOV



Thermally protected varistors are surge protective component assemblies. The configuration can be either a two or three leaded component. One lead of this component is connected to a thermal link, which may open when the varistor is subjected to prolonged overvoltage conditions in both AC and DC applications, thereby preventing failure mode of the varistor. This component (in the three leaded configuration) further provides for diagnostic capabilities in the customers circuit.

Gas Tube in Cable Protection



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