VAR Series

Transient / Surge Absorbers
Transient Voltage Surge Suppresors

Introduction:

Varen is a marketing manufacturing Brand name specializing in Metal Oxide Varistors (MOV). Our fully automated production lines ensure Varistors of high quality with the lowest tolerance level.

Varistors are voltage dependent, nonlinear devices which have an electrical behavior similar to back-to-back zener diodes. J-Type zinc oxide varistors are nonlinear resistors, consisting mainly of zinc oxide and several kinds of metal oxide additive. They are bilateral and symmetrical V-I characteristics curve and unparalleled large peak current capability are used for absorption of transient voltage, suppression of pulse noise and circuit voltage stabilization.

Features:

- Fast Response
- Excellent voltage ratio
- High stabilization for circuit voltage
- Unparalleled absorption for transient voltage characteristics
- Bilateral and symmetrical V-I characteristics curve

Applications:

- Surge protection in consumer electronics.
    - industrial electronics
    - telephones and telecommunications systems
    - automobile equipment
    - measuring and controller systems
    - electronic home appliances
    - gas and petroleum appliances
- Absorption of switching surge from various kind of relays and electro-magnetic valves.
- Electrostatic discharge and spike noise suppression.
- Protection of various kinds of transistors, diodes, ICs, thyristors, triac semiconductors, and etc.
- Automobile control systems such as transistorized ignition system and electronic fuel injection sytems and more.

Part Numbering System

J	05	K	011	XXXX

Varen Metal Oxyde Varistors Surge Absorbers
J

Element Diameter	
05	5mm
07	7mm
10	10mm
14	14mm
20	20mm

Tolerance	
K	±10%
or customer special requirement	

Max. Allowed Voltage ACrms	
011	11V
014	14V
017	17V
...	...
460	460V
485	485V
1000	1000V

Suffixes for Taping Only	
BTS	Tape Box Straight Lead
BTK	Tape Box Outer Crimped Lead
TRS	Tape & Reel Straight Lead
TRK	Tape & Reel Outer Crimped Lead
TTS	Bulk Straight Cut Lead at 5mm
TTS_	Bulk Straight Cut Lead at Custom Length
TTK	Bulk Outer Crimped Cut Lead at 5mm
TTK_	Bulk Outer Crimped Cut Lead at Custom Length
TTNK	Bulk Inner Crimped Cut Lead at 5mm
TTNK_	Bulk Inner Crimped Cut Lead at Custom Length

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Devices Ratings and Characteristics:

Model Number	Device Code	Maximum Allowable Voltage		Varistors Voltage (@1mA)			Clamping Voltage @ Test Current (@ 8/20μs)		Maximum Energy (@ 10/1000μs)	Maximum Peak Current (@ 8/20μs)	Rated Power	Typical Capacitance (@ 1KHz)	Related Standards Symbols
		AC (Vrms)	DC (V)	Vn (VDC)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	
J05K011	05D180K	11	14	18	16	20	40	1	0.4	100	0.01	1600	•
J05K014	05D220K	14	18	22	20	24	48	1	0.5	100	0.01	1500	•
J05K017	05D270K	17	22	27	24	30	60	1	0.6	100	0.01	1450	•
J05K020	05D330K	20	26	33	30	36	73	1	0.8	100	0.01	1400	•
J05K025	05D390K	25	31	39	35	43	86	1	0.9	100	0.01	700	•
J05K030	05D470K	30	38	47	42	52	104	1	1.1	100	0.01	650	•
J05K035	05D560K	35	45	56	50	62	123	1	1.3	100	0.01	600	•
J05K040	05D680K	40	56	68	61	75	150	1	1.6	100	0.01	580	•
J05K050	05D820K	50	65	82	74	90	145	5	2.5	400	0.10	310	□
J05K060	05D101K	60	85	100	90	110	175	5	3.0	400	0.10	290	□
J05K075	05D121K	75	100	120	108	132	210	5	4.0	400	0.10	270	□
J05K095	05D151K	95	125	150	135	165	260	5	4.8	400	0.10	240	□
J05K115	05D181K	115	150	180	162	198	315	5	5.9	400	0.10	140	□
J05K130	05D201K	130	170	200	180	220	355	5	6.5	400	0.10	120	◇
J05K140	05D221K	140	180	220	198	242	380	5	7.0	400	0.10	110	◇
J05K150	05D241K	150	200	240	216	264	415	5	8.0	400	0.10	110	◇
J05K175	05D271K	175	225	270	243	297	475	5	8.5	400	0.10	100	◇
J05K195	05D301K	195	250	300	270	330	505	5	9.0	400	0.10	100	◇
J05K215	05D331K	215	275	330	297	363	585	5	10.0	400	0.10	90	◇
J05K230	05D361K	230	300	360	324	396	620	5	10.0	400	0.10	80	◇
J05K250	05D391K	250	320	390	351	429	675	5	12.0	400	0.10	80	◇
J05K275	05D431K	275	350	430	387	473	745	5	13.0	400	0.10	70	◇
J05K300	05D471K	300	385	470	423	517	810	5	15.0	400	0.10	70	◇
J05K320	05D511K	320	410	510	459	561	878	5	16.0	400	0.10	65	◇
J05K350	05D561K	350	460	560	504	616	940	5	18.0	400	0.10	65	◇
J05K385	05D621K	395	510	620	558	682	1050	5	18.0	400	0.10	65	◇
J05K420	05D681K	420	560	680	612	748	1120	5	18.0	400	0.10	60	◇
J05K460	05D751K	460	615	750	675	825	1240	5	18.0	400	0.10	60	◇

Symbols	•	□			◇			
Approvals	c RU us	c RU us	VDE	CQC	c RU us	VDE	CQC	SP

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Devices Ratings and Characteristics:

Model Number	Device Code	780Maximum Al820lowable Voltage		Varistors Voltage (@1mA)			Clamping Voltage @ Test Current (@ 8/20μs)		Maximum Energy (@ 10/1000μs)	Maximum Peak Current (@ 8/20μs)	Rated Power	Typical Capacitance (@ 1KHz)	Standards Symbols
		AC (Vrms)	DC (V)	Vn (VDC)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	
J07K011	07D180K	11	14	18	16	20	36	2.5	0.9	250	0.02	3800	•
J07K014	07D220K	14	18	22	20	24	43	2.5	1.1	250	0.02	3600	•
J07K017	07D270K	17	22	27	24	30	53	2.5	1.4	250	0.02	3400	•
J07K020	07D330K	20	26	33	30	36	65	2.5	1.7	250	0.02	2900	•
J07K025	07D390K	25	31	39	35	43	77	2.5	2.1	250	0.02	1600	•
J07K030	07D470K	30	38	47	42	52	93	2.5	2.5	250	0.02	1550	•
J07K035	07D560K	35	45	56	50	62	110	2.5	3.1	250	0.02	1500	•
J07K040	07D680K	40	56	68	61	75	135	2.5	3.6	250	0.25	1200	•
J07K050	07D820K	50	65	82	74	901	135	10	5.5	1200	0.25	860	□
J07K060	07D101K	60	85	100	90	110	165	10	6.5	1200	0.25	750	□
J07K075	07D121K	75	100	120	108	132	200	10	7.8	1200	0.25	530	□
J07K095	07D151K	95	125	150	135	165	250	10	9.7	1200	0.25	410	□
J07K115	07D181K	115	150	180	162	198	300	10	11.7	1200	0.25	300	□
J07K130	07D201K	130	170	200	180	220	340	10	13	1200	0.25	250	◇
J07K140	07D221K	140	180	220	198	242	360	10	14	1200	0.25	250	◇
J07K150	07D241K	150	200	240	216	264	395	10	15	1200	0.25	240	◇
J07K175	07D271K	175	225	270	243	297	455	10	18	1200	0.25	220	◇
J07K195	07D301K	195	250	300	270	324	500	10	21	1200	0.25	190	◇
J07K215	07D331K	215	275	330	297	351	550	10	25	1200	0.25	180	◇
J07K230	07D361K	230	300	360	324	387	595	10	25	1200	0.25	170	◇
J07K250	07D391K	250	320	390	351	423	650	10	25	1200	0.25	160	◇
J07K275	07D431K	275	350	430	387	459	710	10	28	1200	0.25	150	◇
J07K300	07D471K	300	385	470	423	504	775	10	30	1200	0.25	130	◇
J07K320	07D511K	320	410	510	459	558	845	10	33	1200	0.25	120	◇
J07K350	07D561K	350	460	560	504	612	915	10	33	1200	0.25	120	◇
J07K385	07D621K	395	510	620	558	682	1020	10	35	1200	0.25	120	◇
J07K420	07D681K	420	560	680	612	748	1120	10	35	1200	0.25	110	◇
J07K460	07D751K	460	615	750	675	825	1235	10	38	1200	0.25	100	◇
J07K485	07D781K	485	640	780	702	858	1290	10	40	1200	0.25	90	◇
J0K7510	07D821K	510	670	820	738	902	1355	10	42	1200	0.25	90	◇

Symbols	•	□			◇			
Approvals	c RU us	c RU us	VDE	CQC	c RU us	VDE	CQC	CSA

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		AC (Vrms)	DC (V)	Vn (VDC)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	
J10K011	10D180K	11	14	18	16	20	36	5	2.1	500	0.05	16000	•
J10K014	10D220K	14	18	22	20	24	43	5	2.5	500	0.05	11000	•
J10K017	10D270K	17	22	27	24	30	53	5	3.0	500	0.05	8000	•
J10K020	10D330K	20	26	33	30	36	65	5	4.0	500	0.05	6300	•
J10K025	10D390K	25	31	39	35	43	77	5	4.6	500	0.05	5200	•
J10K030	10D470K	30	38	47	42	52	93	5	5.5	500	0.05	4600	•
J10K035	10D560K	35	45	56	50	62	110	5	7.0	500	0.05	3750	•
J10K040	10D680K	40	56	68	61	75	135	5	8.2	500	0.05	2800	•
J10K050	10D820K	50	65	82	74	90	135	25	12	2500	0.4	1920	□
J10K060	10D101K	60	85	100	90	110	165	25	15	2500	0.4	1800	□
J10K075	10D121K	75	100	120	108	132	200	25	18	2500	0.4	1500	□
J10K095	10D151K	95	125	150	135	165	250	25	22	2500	0.4	1200	□
J10K115	10D181K	115	150	180	162	198	300	25	27	2500	0.4	620	□
J10K130	10D201K	130	170	200	180	220	340	25	30	2500	0.4	570	◇
J10K140	10D221K	140	180	220	198	242	360	25	32	2500	0.4	560	◇
J10K150	10D241K	150	200	240	216	264	395	25	35	2500	0.4	550	◇
J10K175	10D271K	175	225	270	243	297	455	25	40	2500	0.4	530	◇
J10K195	10D301K	195	250	300	270	330	500	25	42	2500	0.4	500	◇
J10K215	10D331K	215	275	330	297	363	550	25	47	2500	0.4	450	◇
J10K230	10D361K	230	300	360	324	396	595	25	47	2500	0.4	450	◇
J10K250	10D391K	250	320	390	351	429	650	25	60	2500	0.4	430	◇
J10K275	10D431K	275	350	430	387	473	710	25	65	2500	0.4	400	◇
J10K300	10D471K	300	385	470	423	517	775	25	70	2500	0.4	300	◇
J10K320	10D511K	320	410	510	459	561	845	25	70	2500	0.4	260	◇
J10K350	10D561K	350	460	560	504	616	915	25	70	2500	0.4	200	◇
J10K395	10D621K	395	510	620	558	682	1020	25	70	2500	0.4	170	◇
J10K420	10D681K	420	560	680	612	748	1120	25	70	2500	0.4	160	◇
J10K460	10D751K	460	615	750	675	825	1235	25	75	2500	0.4	150	◇
J10K485	10D781K	485	640	780	702	858	1290	25	80	2500	0.4	150	◇
J10K510	10D821K	510	670	820	738	902	1355	25	85	2500	0.4	150	◇
J10K550	10D911K	550	745	910	819	1001	1500	25	93	2500	0.4	140	◇
J10K625	10D102K	625	825	1000	900	1100	1650	25	102	2500	0.4	140	◇
J10K680	10D112K	680	895	1100	990	1210	1815	25	115	2500	0.4	130	◇
J10K1000	10D182K	1000	1465	1800	1620	1980	2950	25	185	2500	0.4	75	•

Symbols	•	□			◇			
Approvals	c UL us	c UL us	VDE	CQC	c UL us	VDE	CQC	SP

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Model Number	Device Code	Maximum Allowable Voltage		Varistors Voltage (@1mA)			Clamping Voltage @ Test Current (@ 8/20µs)		Maximum Energy (@ 10/1000µs)	Maximum Peak Current (@ 8/20µs)	Rated Power	Typical Capacitance (@ 1KHz)	Standards Symbols
		AC (Vrms)	DC (V)	Vn (VDC)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	
J14K011	14D180K	11	14	18	16	20	36	10	4	1000	0.1	25000	•
J14K014	14D220K	14	18	22	20	24	43	10	5	1000	0.1	20000	•
J14K017	14D270K	17	22	27	24	30	53	10	6	1000	0.1	16000	•
J14K020	14D330K	20	26	33	30	36	65	10	7.5	1000	0.1	12200	•
J14K025	14D390K	25	31	39	35	43	77	10	8.6	1000	0.1	7000	•
J14K030	14D470K	30	38	47	42	52	93	10	10	1000	0.1	6750	•
J14K035	14D560K	35	45	56	50	62	110	10	11	1000	0.1	6500	•
J14K040	14D680K	40	56	68	61	75	135	10	14	1000	0.1	5500	•
J14K050	14D820K	50	65	82	74	90	135	50	22	4500	0.6	4300	□
J14K060	14D101K	60	85	100	90	110	165	50	28	4500	0.6	3500	□
J14K075	14D121K	75	100	120	108	132	200	50	32	4500	0.6	2500	□
J14K095	14D151K	95	125	150	135	165	250	50	40	4500	0.6	2100	□
J14K115	14D181K	115	150	180	162	198	300	50	52	4500	0.6	1250	□
J14K130	14D201K	130	170	200	180	220	340	50	57	4500	0.6	1150	◇
J14K140	14D221K	140	180	220	198	242	360	50	60	4500	0.6	1100	◇
J14K150	14D241K	150	200	240	216	264	395	50	63	4500	0.6	1050	◇
J14K175	14D271K	175	225	270	243	297	455	50	70	4500	0.6	1000	◇
J14K195	14D301K	195	250	300	270	330	500	50	78	4500	0.6	900	◇
J14K215	14D331K	215	275	330	297	363	550	50	93	4500	0.6	850	◇
J14K230	14D361K	230	300	360	324	396	595	50	93	4500	0.6	800	◇
J14K250	14D391K	250	320	390	351	429	650	50	100	4500	0.6	800	◇
J14K275	14D431K	275	350	430	387	473	710	50	115	4500	0.6	650	◇
J14K300	14D471K	300	385	470	423	517	775	50	125	4500	0.6	550	◇
J14K320	14D511K	320	410	510	459	561	845	50	125	4500	0.6	450	◇
J14K350	14D561K	350	460	560	504	616	915	50	125	4500	0.6	400	◇
J14K395	14D621K	395	510	620	558	682	1020	50	125	4500	0.6	350	◇
J14K420	14D681K	420	560	680	612	748	1120	50	130	4500	0.6	350	◇
J14K460	14D751K	460	615	750	675	825	1235	50	143	4500	0.6	330	◇
J14K485	14D781K	485	640	780	702	858	1290	50	148	4500	0.6	330	◇
J14K510	14D821K	510	670	820	738	902	1355	50	157	4500	0.6	330	◇
J14K550	14D911K	550	745	910	819	1001	1500	50	175	4500	0.6	300	◇
J14K625	14D102K	625	825	1000	900	1100	1650	50	190	4500	0.6	300	◇
J14K680	14D112K	680	895	1100	990	1210	1815	50	213	4500	0.6	200	◇
J14K1000	14D182K	1000	1465	1800	1620	1980	2950	50	354	4500	0.6	150	•

Symbols	•	□			◇			
Approvals	c UL us	c UL us	VDE	CQC	c UL us	VDE	CQC	CSA

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		AC (Vrms)	DC (V)	Vn (VDC)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	
J20K011	20D180K	11	14	18	16	20	36	20	11	2000	0.2	40000	•
J20K014	20D220K	14	18	22	20	24	43	20	14	2000	0.2	30000	•
J20K017	20D270K	17	22	27	24	30	53	20	18	2000	0.2	24500	•
J20K020	20D330K	20	26	33	30	36	65	20	23	2000	0.2	20000	•
J20K025	20D390K	25	31	39	35	43	77	20	26	2000	0.2	13800	•
J20K030	20D470K	30	38	47	42	52	93	20	33	2000	0.2	13500	•
J20K035	20D560K	35	45	56	50	62	110	20	41	2000	0.2	12200	•
J20K040	20D680K	40	56	68	61	75	135	100	46	2000	0.2	11500	•
J20K050	20D820K	50	65	82	74	90	135	100	48	6500	1	8200	□
J20K060	20D101K	60	85	100	90	110	165	100	51	6500	1	8000	□
J20K075	20D121K	75	100	120	108	132	200	100	55	6500	1	5500	□
J20K095	20D151K	95	125	150	135	165	250	100	70	6500	1	4200	□
J20K115	20D181K	115	150	180	162	198	300	100	85	6500	1	2500	□
J20K130	20D201K	130	170	200	180	220	340	100	95	6500	1	2300	◇
J20K140	20D221K	140	180	220	198	242	360	100	100	6500	1	2200	◇
J20K150	20D241K	150	200	240	216	264	395	100	108	6500	1	2100	◇
J20K175	20D271K	175	225	270	243	297	455	100	127	6500	1	1800	◇
J20K195	20D301K	195	250	300	270	330	500	100	150	6500	1	1750	◇
J20K215	20D331K	215	275	330	297	363	550	100	163	6500	1	1700	◇
J20K230	20D361K	230	300	360	324	396	595	100	163	6500	1	1400	◇
J20K250	20D391K	250	320	390	351	429	650	100	180	6500	1	1350	◇
J20K275	20D431K	275	350	430	387	473	710	100	190	6500	1	1200	◇
J20K300	20D471K	300	385	470	423	517	775	100	220	6500	1	1050	◇
J20K320	20D511K	320	410	510	459	561	845	100	220	6500	1	850	◇
J20K350	20D561K	350	460	560	504	616	915	100	220	6500	1	570	◇
J20K395	20D621K	395	510	620	558	682	1020	100	220	6500	1	550	◇
J20K420	20D681K	420	560	680	612	748	1120	100	230	6500	1	530	◇
J20K460	20D751K	460	615	750	675	825	1235	100	255	6500	1	500	◇
J20K485	20D781K	485	640	780	702	858	1290	100	265	6500	1	500	◇
J20K510	20D821K	510	670	820	738	902	1355	100	282	6500	1	480	◇
J20K550	20D911K	550	745	910	819	1001	1500	100	310	6500	1	460	◇
J20K625	20D102K	625	825	1000	900	1100	1650	100	342	6500	1	460	◇
J20K680	20D112K	680	895	1100	990	1210	1815	100	383	6500	1	400	◇
J20K1000	20D182K	1000	1465	1800	1620	1980	2950	100	620	6500	1	300	•

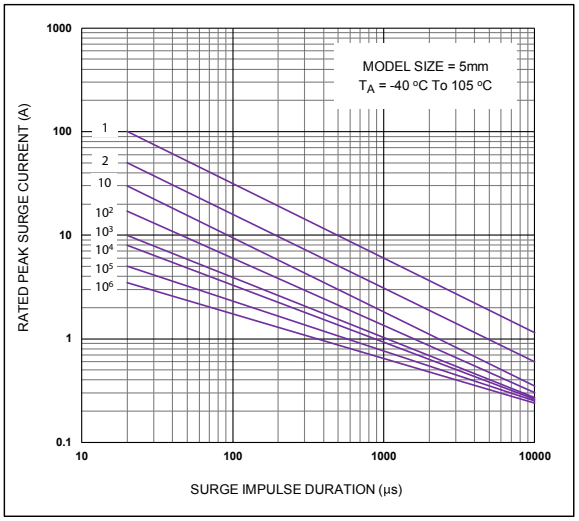
Symbols	•	□			◇			
Approvals	c UL us	c UL us	VDE	CQC	c UL us	VDE	CQC	SP

Reliability

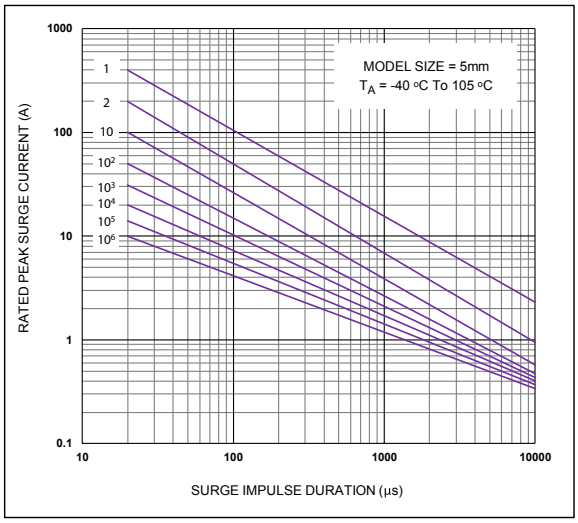
Characteristic	Standard	Test Conditions	Specifications
Robustness of terminations	IEC 600068-2-21 Test Ua1	F = 10N (d ≤ 0.8mm), F = 20 N (d = 1mm)	Δ V/V ≤ ±10% No visible damage
Solderability	IEC 60068-2-20 Test Ta (Method 1)	T = 235±5°C, d = 2±0.5s	Approximately ≥ 95%
Resistance to soldering heat	IEC 60068-2-20 Test Tb (Method A)	T = 260±5°C, d = 10±1s	Δ V/V ≤ ±10% No visible damage
Shock	IED 60068-2-27 Test Ea	Pulse shape: half-sine. a = 490 m/s2, d = 11ms. N = 6x3 shocks	Δ V/V ≤ ±10% No visible damage
Vibration	IEC 60068-2-6 Test Fc (Method B4)	Frequency range: 10 Hz to 55 Hz, a = 0.75 mm or 98 m/s2 (whichever is less), d = 3x2 h	Δ V/V ≤ ±10% No visible damage
Needle flame test	IEC 60695-11-5	Severity: Vertical 10 s	Duration of burning: 5 s max
Voltage under pulse condition	IEC 61051-2	At class current	As specified in specification
Voltage proof	IEC 61051-2	Metal balls method (4.8.1.2) 2500 V, 60 s	As specified in specification
Pulse current -8/20 µs	IEC 61051-2	8/20 µs, 10 times, I peak=0.25*Imax	Δ V/V ≤ ±10% No visible damage
Pulse current -10/1000 µs	IEC 61051-2	10/1000 µs, 10 times, Ipeak=0.0075*Imax	Δ V/V ≤ ±10% No visible damage
Combination Pulse	IEC 60950-1:2013 Annex Q	Additional test: 10 pulses (combination pulse 6KV/3KA), in one direction, 1 per min	Δ V/V ≤ ±10% No visible damage U ≤ 1.1 Uinitial Voltage proof: No breakdown of flashover
Rapid change of temperature	IEC 60068-2-14 Test Na	N = 5 cycles, d = 30 min, θA = -40±3°C, θB = 85±2°C	Δ V/V ≤ ±10% No visible damage
Climatic sequence	IEC 60068-2-2 (Test Ba) IEC 60068-2-30 (Test Db) IEC 60068-2-1 (Test Aa) IEC 60068-2-30 (Test Db)	Dry heat, Test Ba: 16±2h, T = 85±2°C Damp heat, Test Db first cycle: 24h, T = 55±2° Cold, test Aa: 2h, T = -40±3°C Damp heat, Test Ba remaining cycles: 5 cycle	Δ V/V ≤ ±10% No visible damage RISO ≥ 100MΩ Voltage proof: No breakdown or flashover
Edurance at upper category temperature	IEC 61051-1 (4.21)	T:max temperature as specified, Duration: 1000 h, Voltage: max. a.c. voltage	Δ V/V ≤ ±10% No visible damage R ≥ 1000 MΩ U ≤ 1.1 Uinitial
Damp heat (Steady state)	IEC 60068-2-78 Test Ca	T = 40±2°C, RH = 93 (+2/-3)%, 56d. 4 specimens: No voltage applied, Other 4 specimens: Applied voltage: 10% of the max. d.c. voltage	Δ V/V ≤ ±10% RISO ≥ 100MΩ
Maximum Peak Current	Specification Standard	Imax, 8/20 µs, 1 time $\frac{\text{V1mA at 85°C-V1mA at 25°C}}{\text{V1mA at 25°C}} \times \frac{1}{60} \times 100(\%/C)$	Δ V/V ≤ ±10% 0.05(%/°C)
Nominal Discharge Current Test	UL1449 4th	Nominal Discharge Current (In) 8/20 µs. 15 times	Δ V/V ≤ ±10% No visible damage
Varistor Voltage Temp. Coefficient	Specification Standard	V1mA at -40°C, 85°C, 25°C	Δ V/V ≤ ±10% No visible damage
High Temperature Storage	IEC60068-2-2	1000h, T = 85±2°C	Δ V/V ≤ ±10% No visible damage
Max. Energy	Specification Standard	10/1000 µs, 1 time. Max. Energy	Δ V/V ≤ ±10% No visible damage
Operating duty cycle test *	UL 1449	6kV/3 kA combination wave surges, phase angle of 90 (+0, -15) degrees, npositive polarity 8 times, negative polarity 7 times, interval of 60s.	Δ V/V ≤ ±10% No visible damage
Surge Immunity Test *	IEC 61000-4-5	4kV/2kA combination wave surges, phase angle of 90 (+0, -15) degrees, npositive polarity 20 times, negative polarity 20 times, interval of 60s.	Δ V/V ≤ ±10% No visible damage

Impulse Life Time Rating Curves

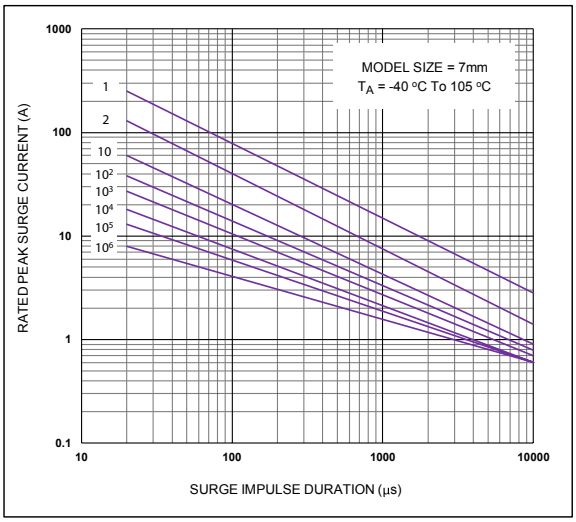
J05K011 to J05K040



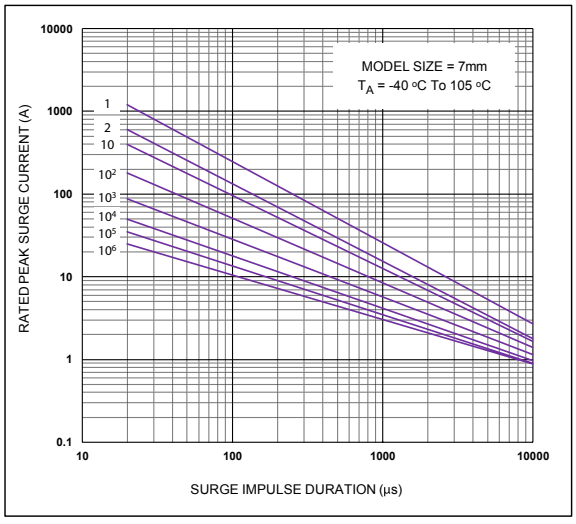
J05K050 to J05K460



J07K011 to J07K040

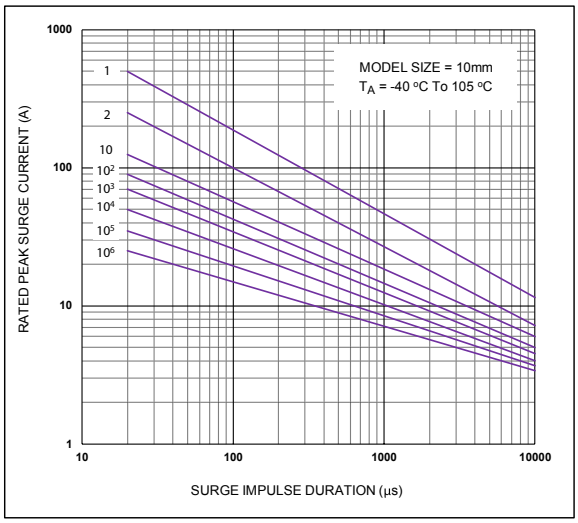


J07K050 to J07K510

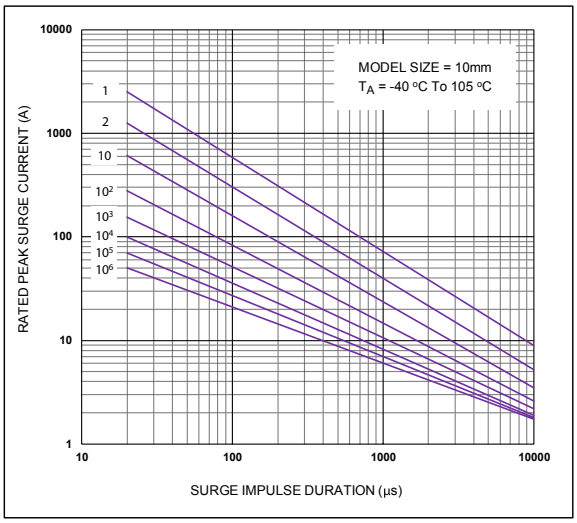


Impulse Life Time Rating Curves

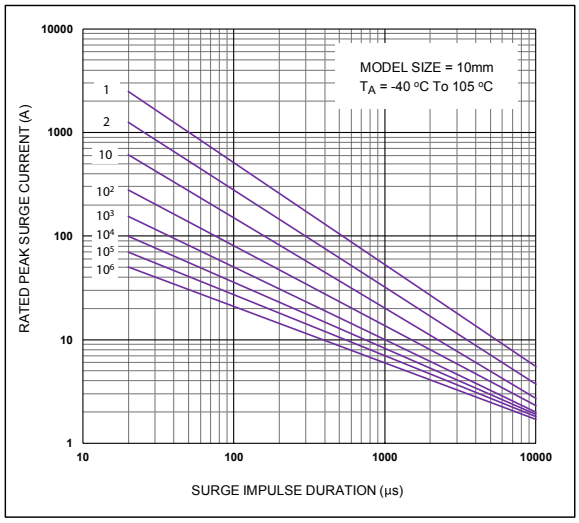
J10K011 to J10K040



J10K050 to J10K465



J10K485 to J10K1000



Impulse Life Time Rating Curves

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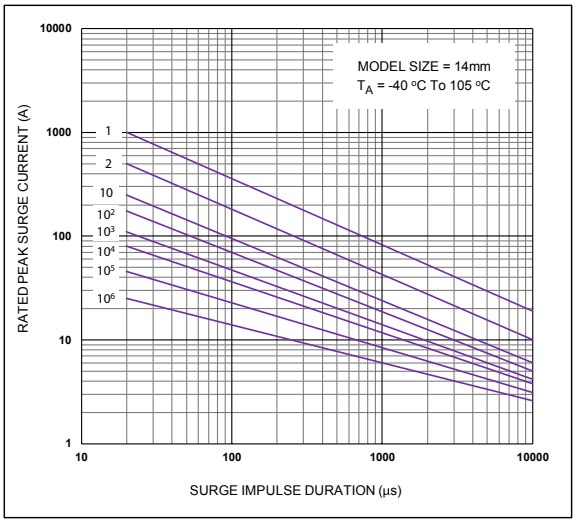
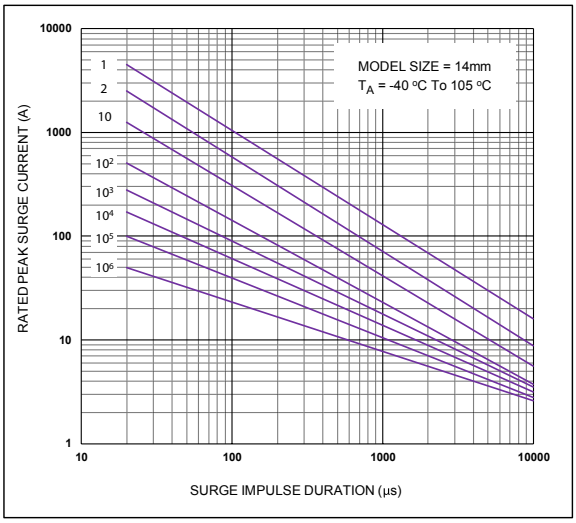
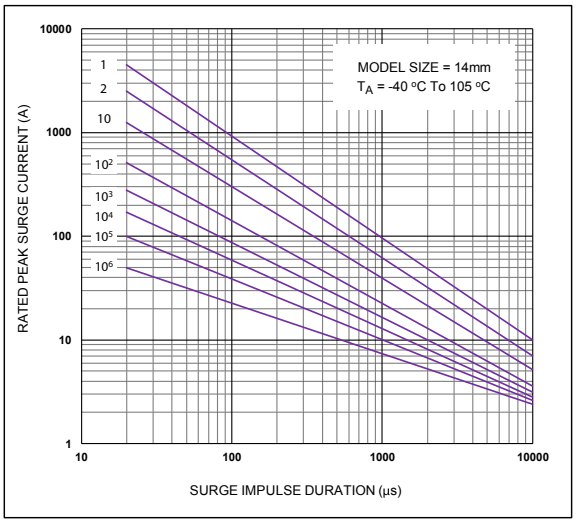


J14K050 to J14K465

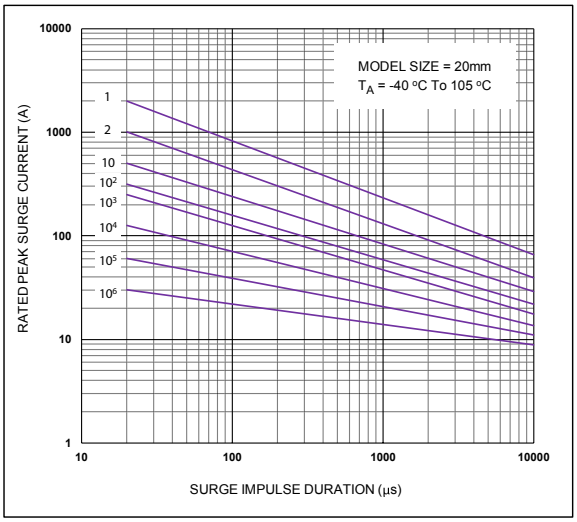


J14K485 to J14K1000

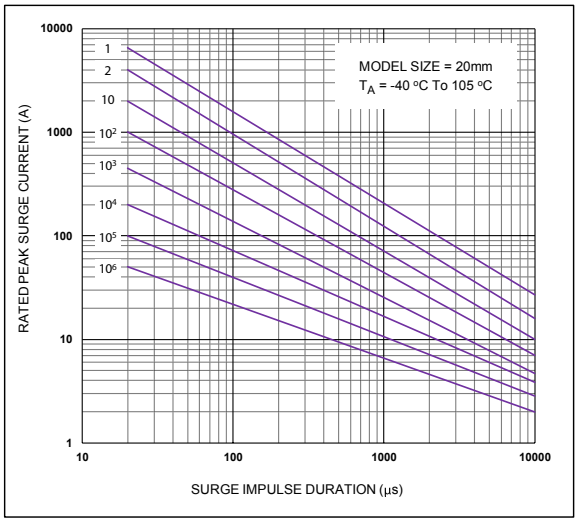


Impulse Life Time Rating Curves

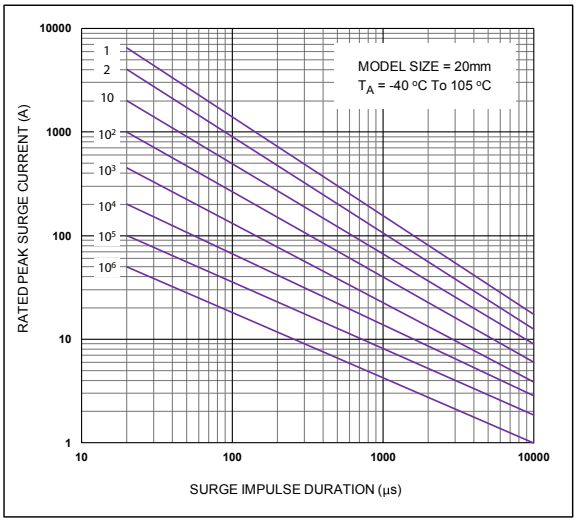
J20K011 to J20K040



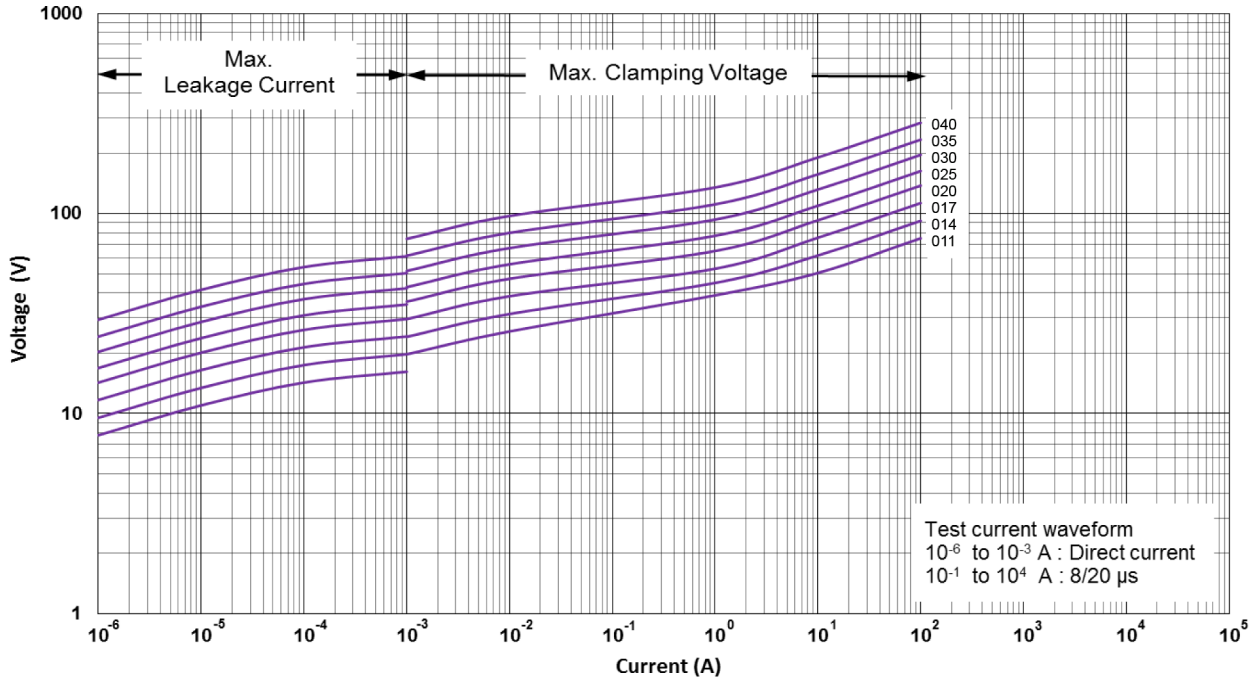
J20K050 to J20K465



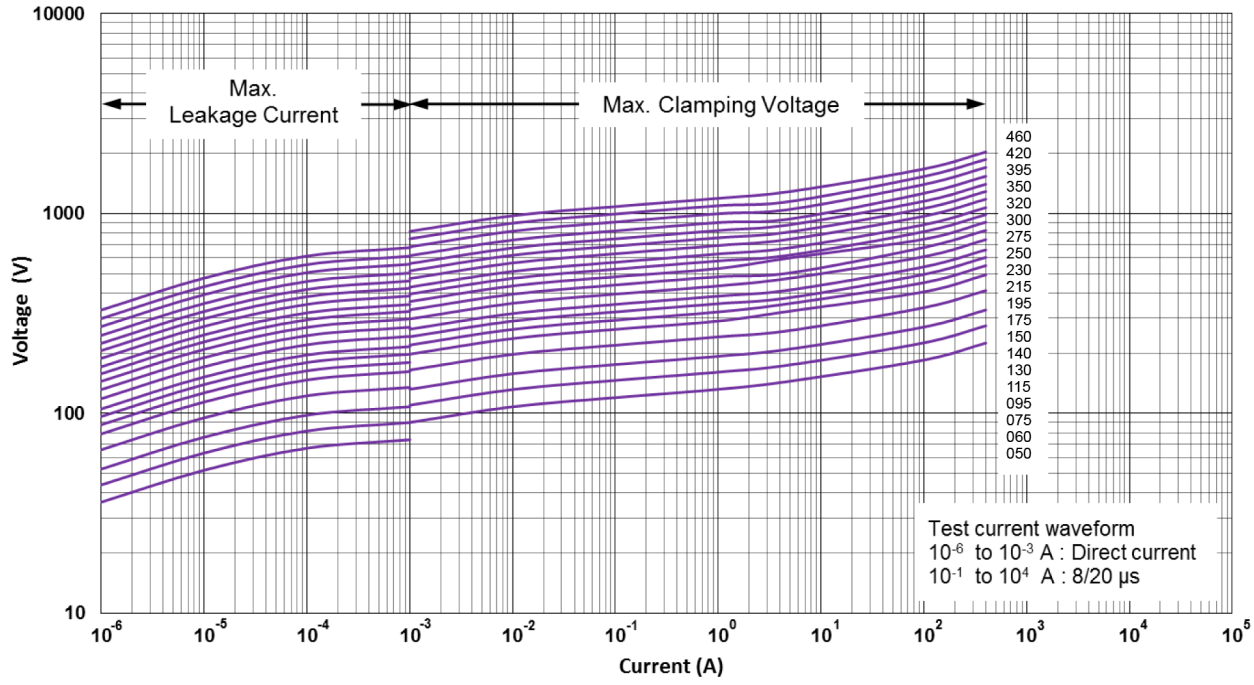
J20K485 to J20K1000



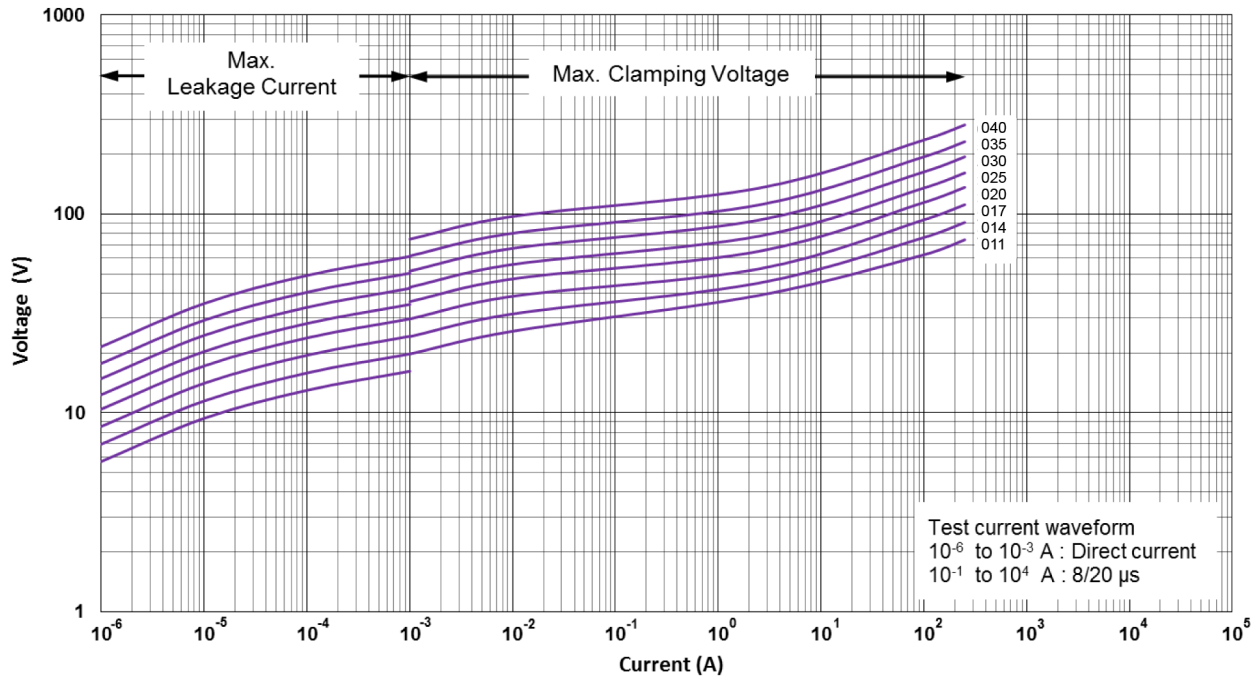
J05K011 TO J05K040 V-I Curves



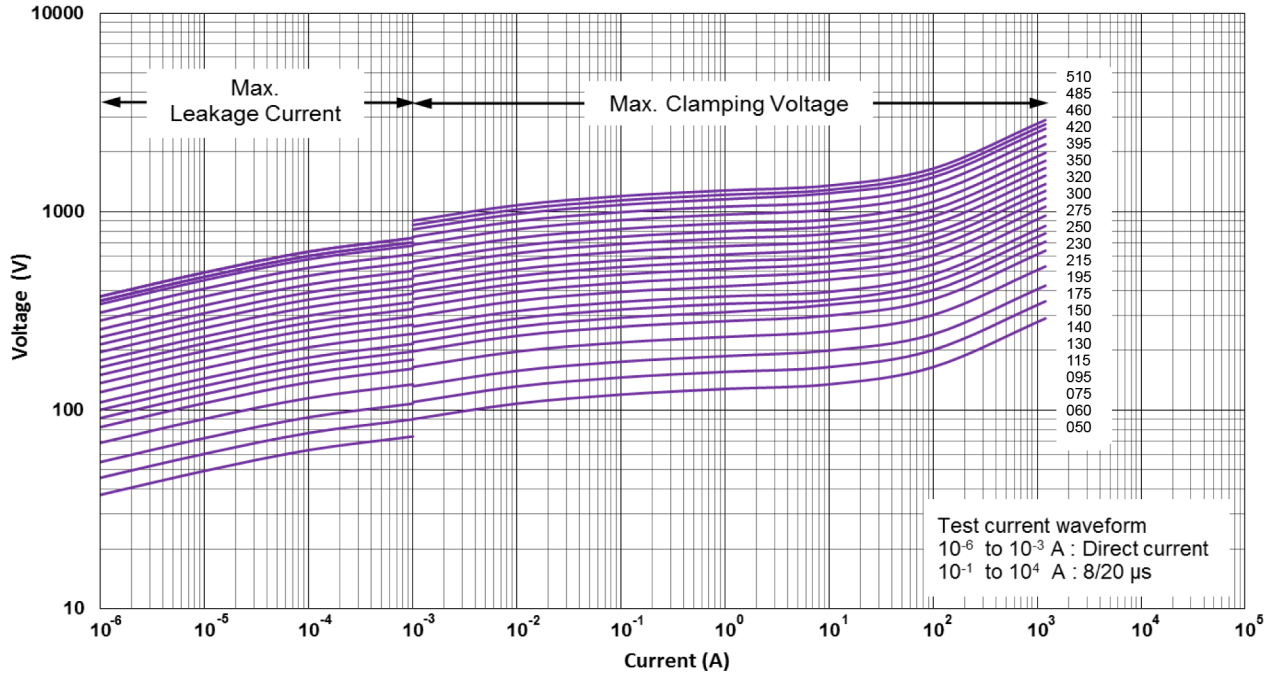
J05K050 TO J05K460 V-I Curves



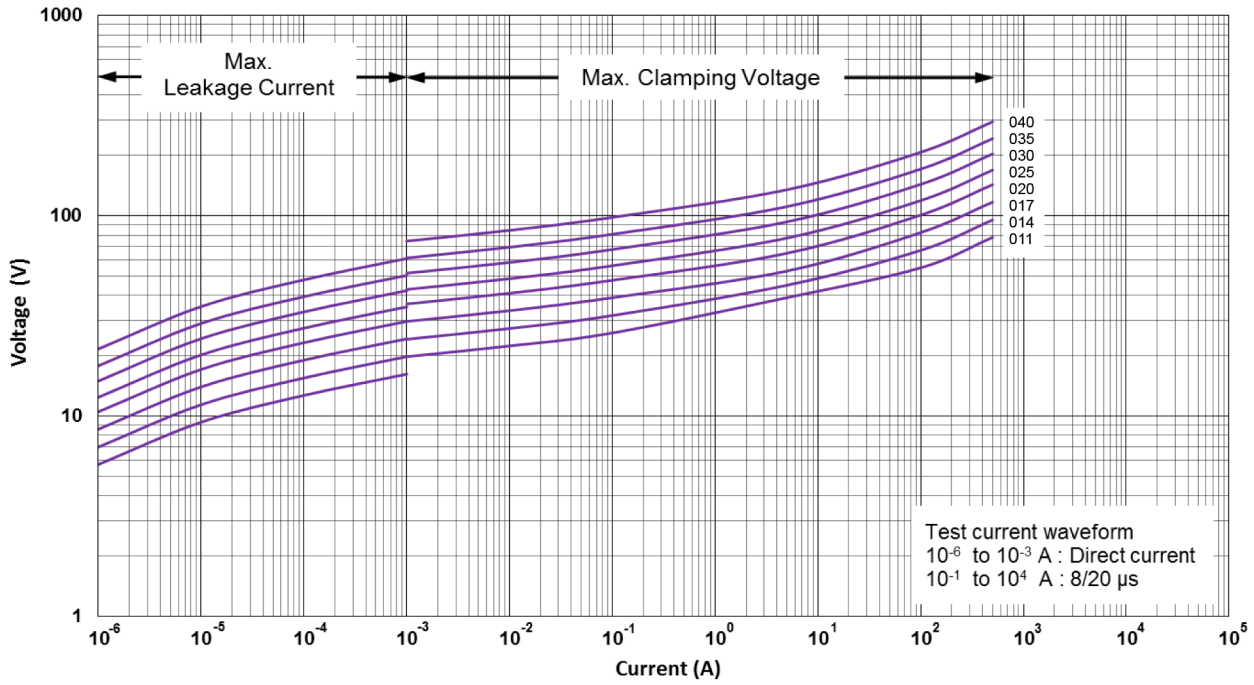
J07K011 TO J07K040 V-I Curves



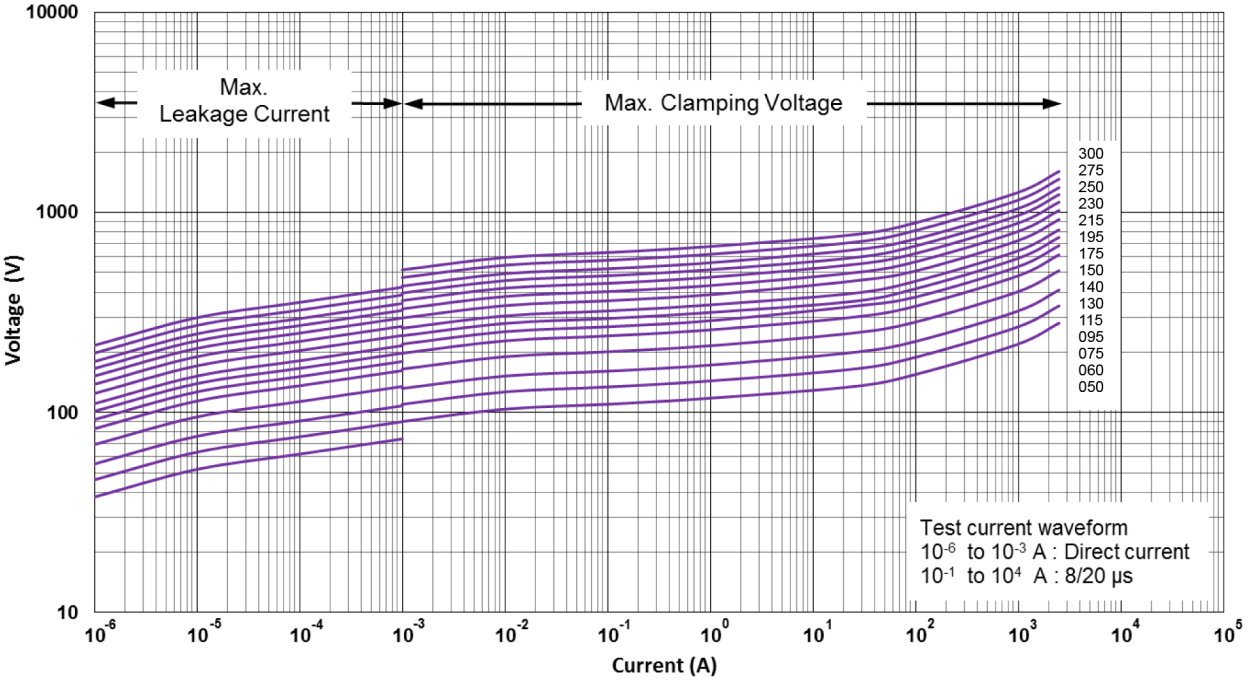
J07J050 TO J05K510 V-I Curves



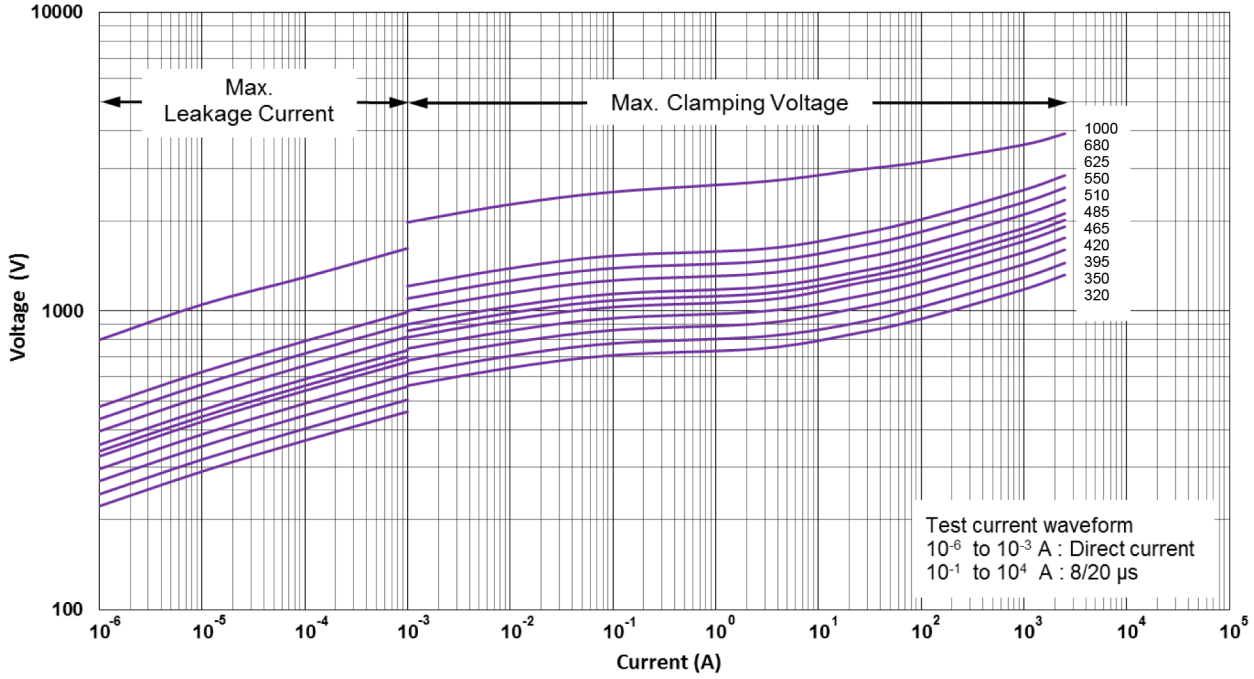
J10K011 TO J10K040 V-I Curves



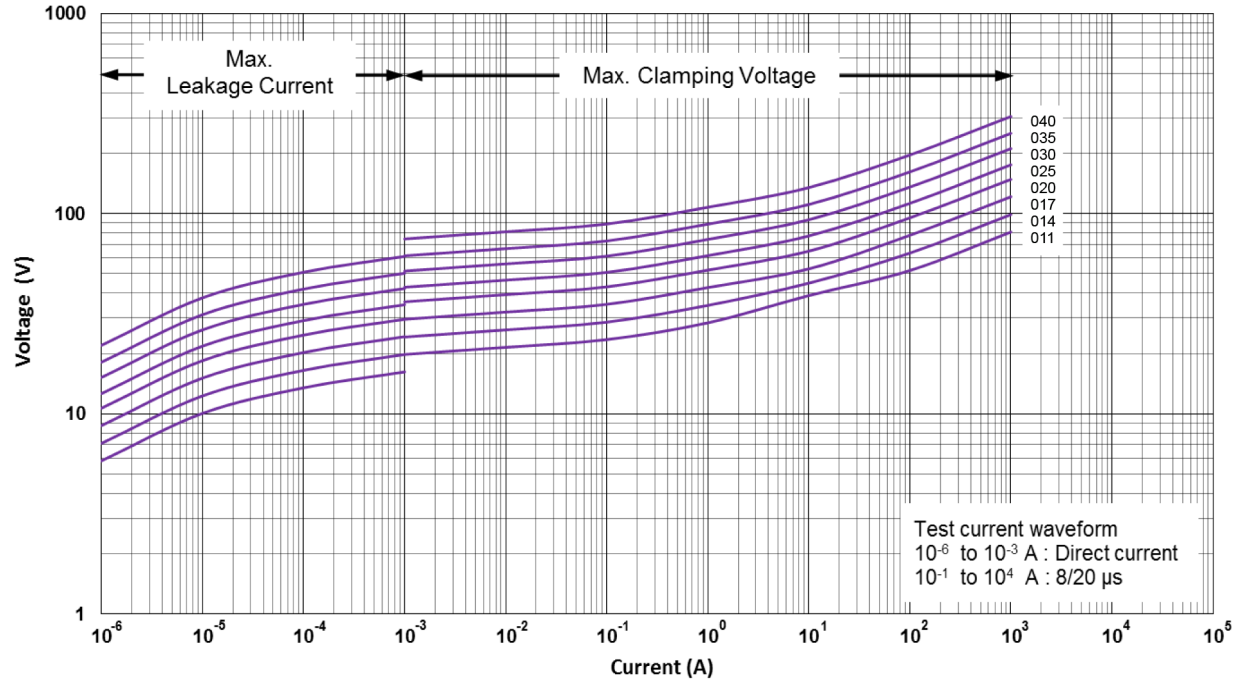
J10K050 TO J10K300 V-I Curves



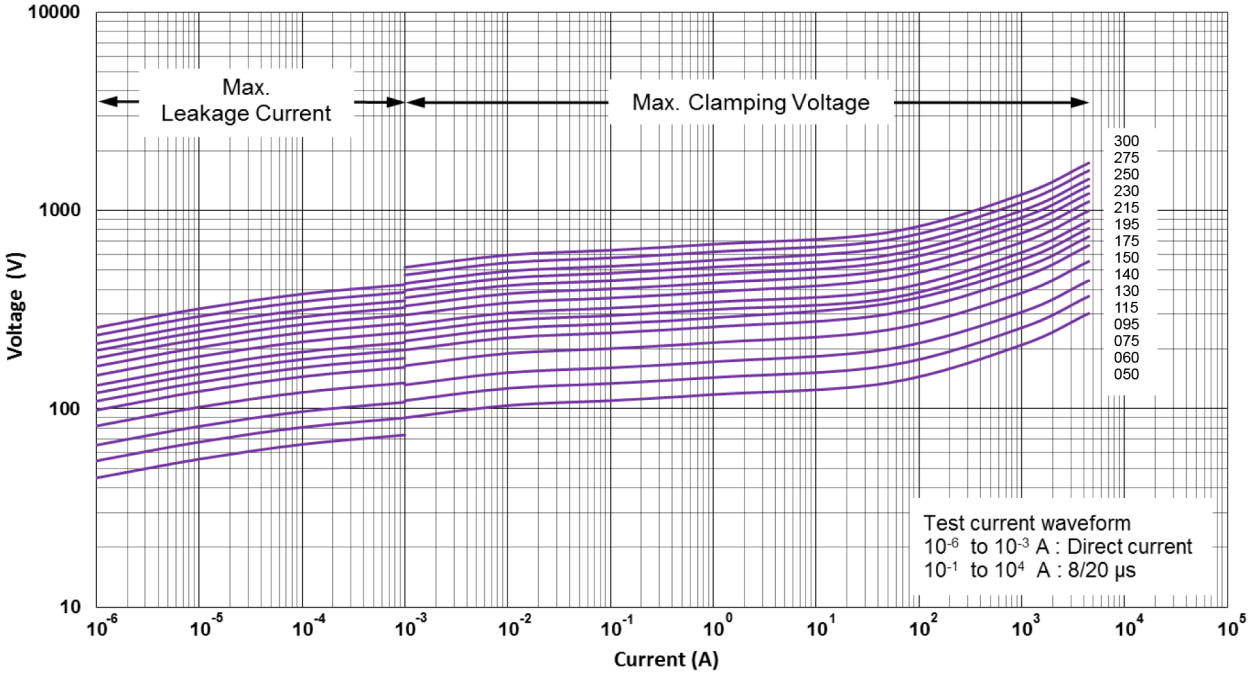
J10K320 TO J10K1000 V-I Curves



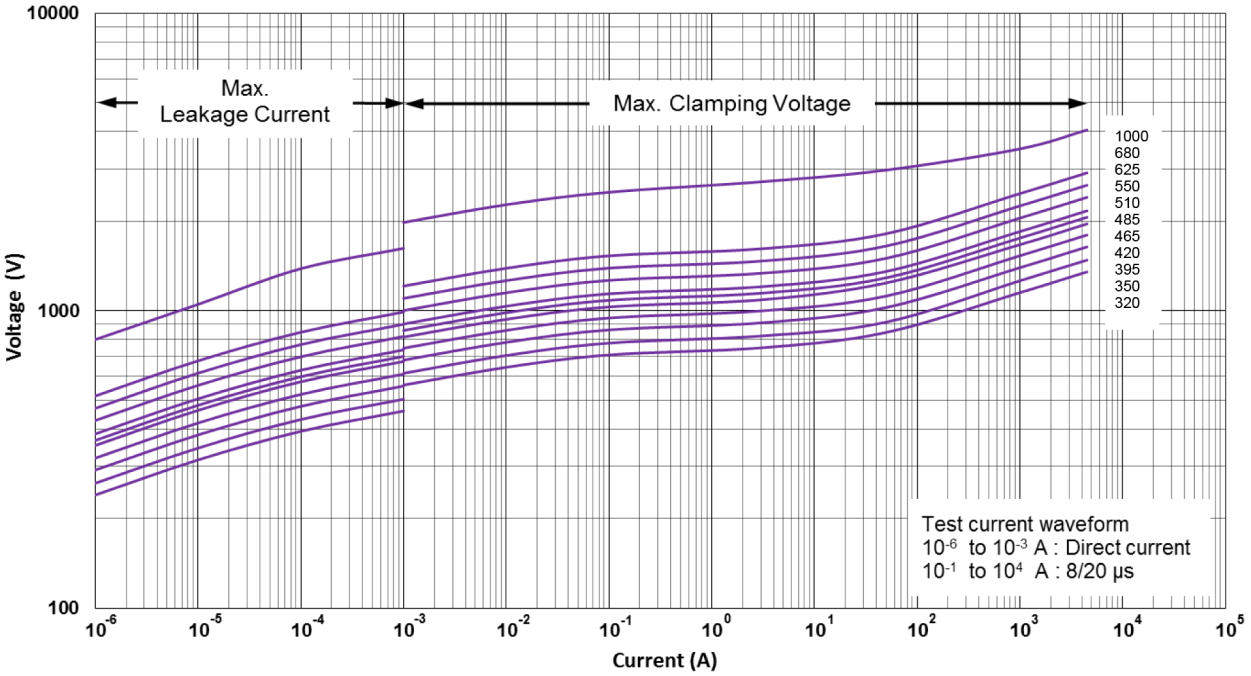
J14K011 TO 1J4K040 V-I Curves



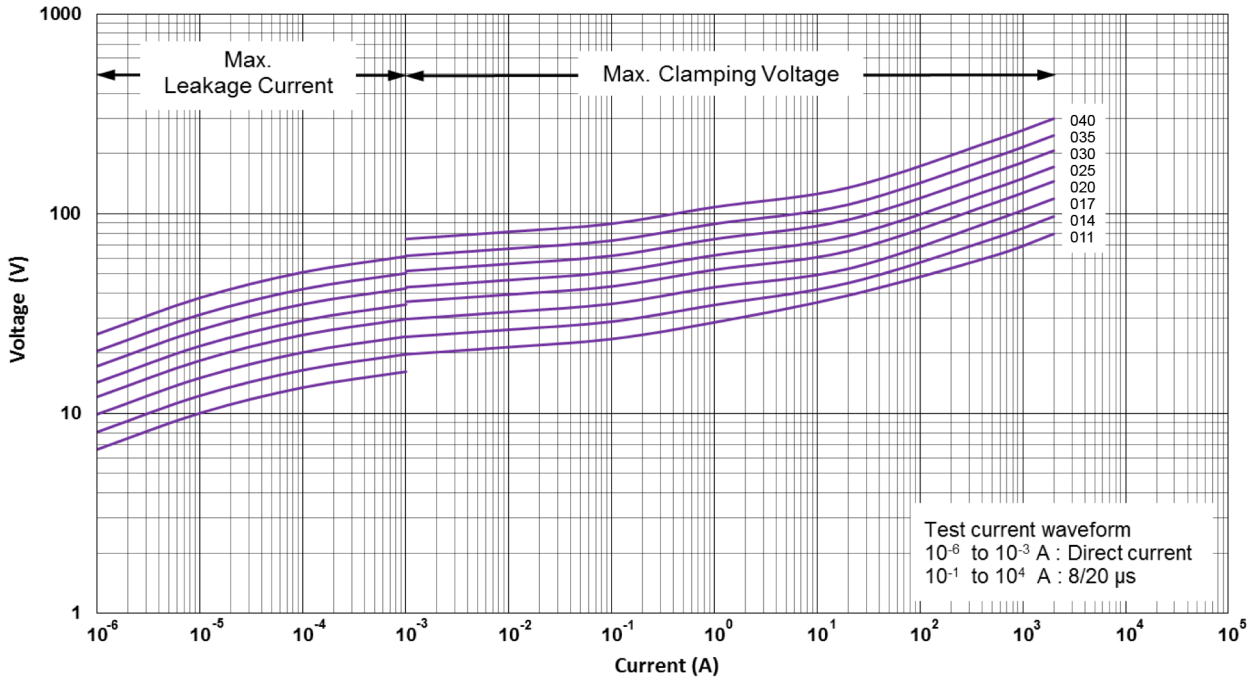
J14K050 TO J14K300 V-I Curves



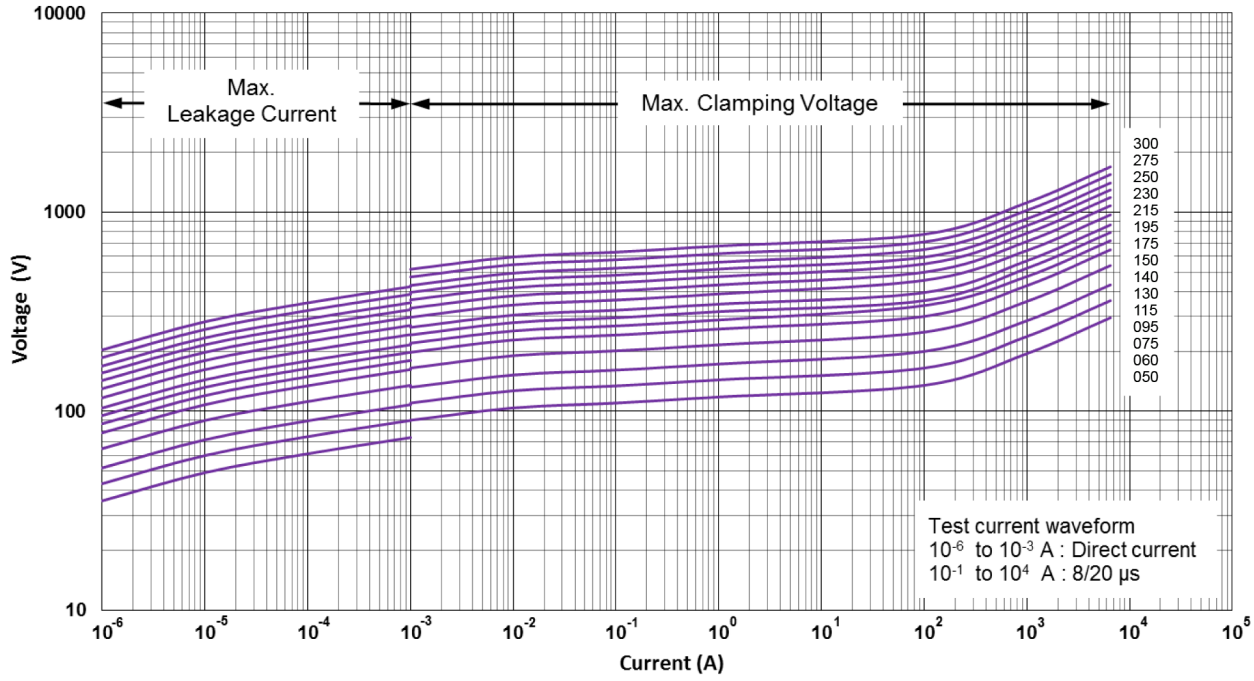
J14K320 TO J14K1000 V-I Curves



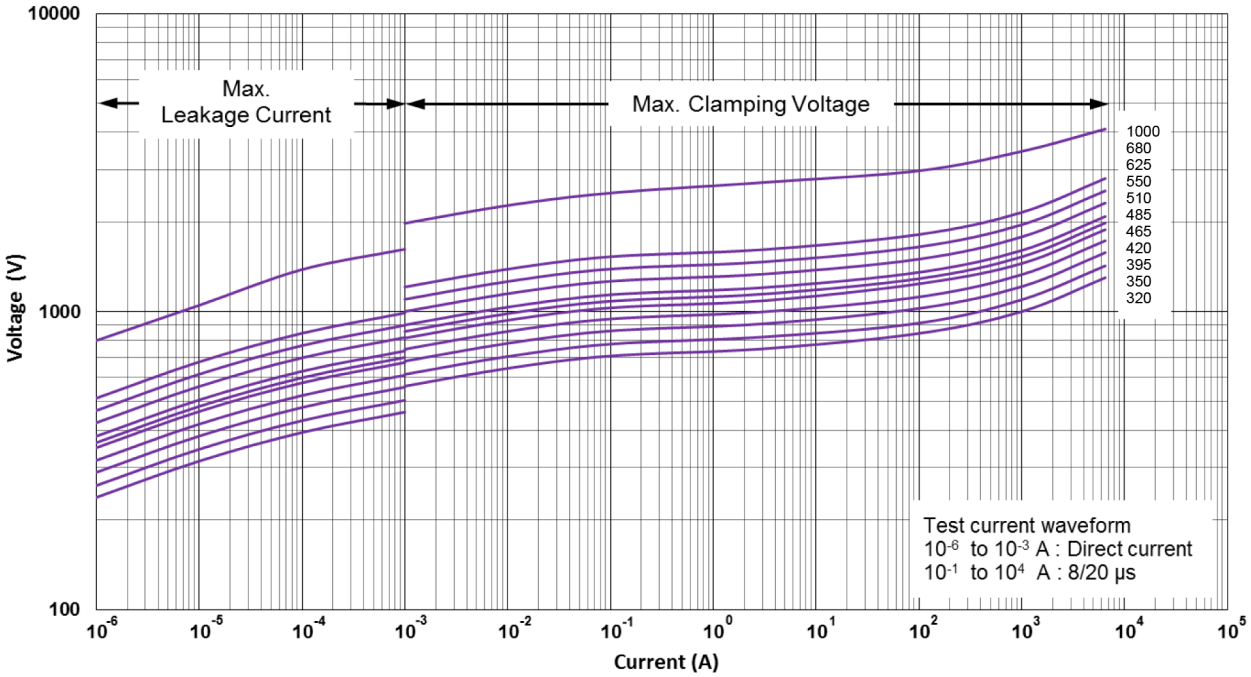
J20K011 TO J20K040 V-I Curves



J20K050 TO J20K300 V-I Curves

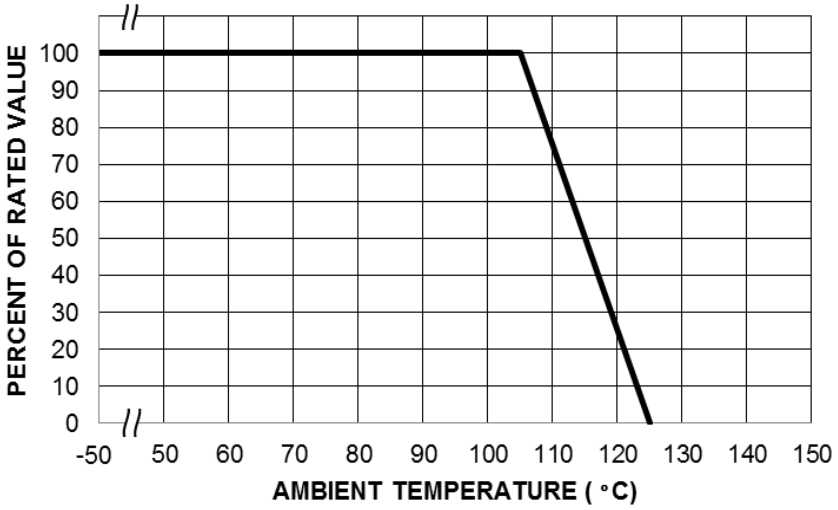


J20K320 TO J20K1000 V-I Curves

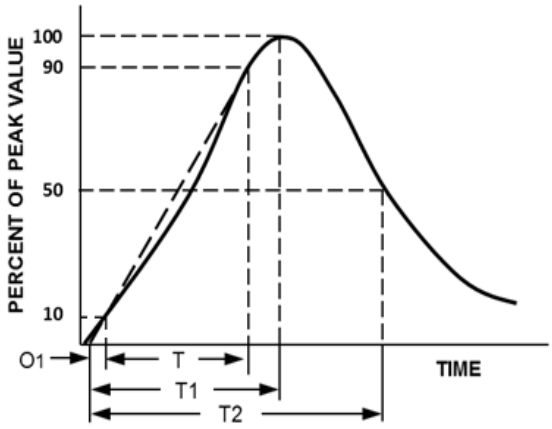


Power Derating Curve

Should transients occur in rapid succession, the average power dissipation is the energy (watt-seconds) per pulse times the number of pulses per second. The power so developed must be with the specifications on the Device Ratings and Specifications Table for the specific device. The operating values of a MOV need to be derated at high temperatures as shown above. Because varistors only dissipate a reatively small amount of average power they are not suitable for repetitive applications that involve substantial amounts of average power dissipation.



Surge Current Standard Waveform



O1 = Virtual Origin of Wave
T = Time from 10% to 90% of Peak
T1 = Rise Time = 1.25 x T
T2 = Decay Time
Example: For an 8/20 µs Current Waveform:
8µs = T1 = Rise Time
20µs = T2 = Decay Time

VAR Series

Transient / Surge Absorbers
Transient Voltage Surge Suppresors

Product Dimensions

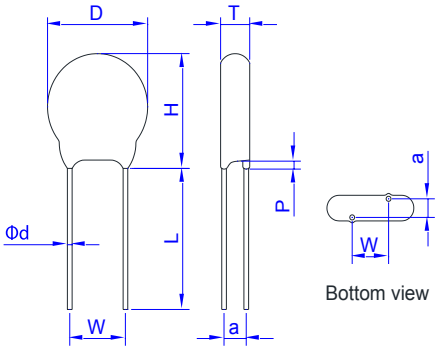


Fig 1. Straight Lead

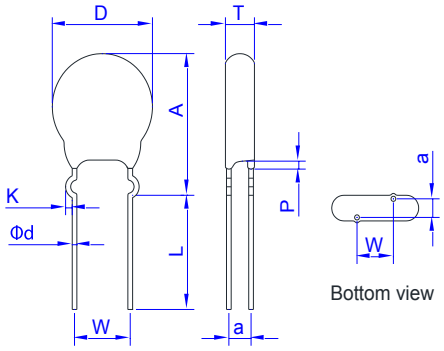


Fig 2. Outside Kink Lead

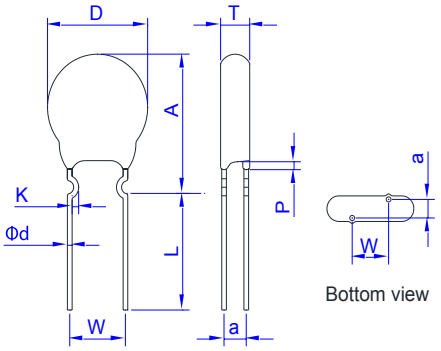


Fig 3. Inside Kink Lead

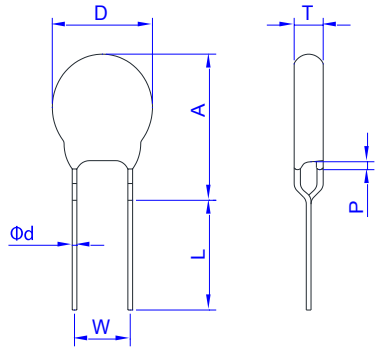


Fig 4. In Line Kink Lead

Dimension Table

Units: mm

Symbol \ Model Size		J05K		J07K		J10K		J14K		J20K	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
D		5.5	7.5	7.5	9.0	10.5	14.0	13.5	17.5	19.5	25.0
H		-	10.0	-	12.0	-	17.0	-	20.5	-	28.0
Φd		0.55	0.65	0.55	0.65	0.75	0.85	0.75	0.85	0.95	1.05
P (max.)		3.0									
L (min.)		25.0									
K (Kink Lead)		0.8	1.6	0.8	1.6	1.0	1.8	1.0	1.8	1.0	1.8
A (max.)	180K-271K	-	13.0	-	15.0	-	19.5	-	22.5	-	30.0
	>271K	-	13.0	-	15.0	-	20.5	-	23.5	-	31.0
T		See T max. Table									

* Short Cut Lead type TTXX the lead length (L) can be 3.0~15mm (except J20K dia < 10mm).
** a value see T max. table

Varen

RoHS Compliant Pb-Free

VAR Series

Transient / Surge Absorbers

Transient Voltage Surge Suppresors

T max. Table

Model	J05K	J07K	J10K	J14K	J20K	a (±1.0)	Model	J05K	J07K	J10K	J14K	J20K	a (±1.0)
011	3.3	3.56	3.9	4.0	4.3	1.5	195	3.9	4.1	4.3	4.4	4.7	1.9
014	3.6	3.8	4.2	4.3	4.6	1.6	215	4.0	4.2	4.5	4.6	4.9	2.0
017	3.8	4.0	4.4	4.5	4.8	1.7	230	4.1	4.3	4.7	4.8	5.1	1.7
020	3.3	3.5	3.9	4.0	4.3	1.6	250	4.2	4.4	4.8	4.9	5.2	1.8
025	3.5	3.7	4.1	4.2	4.5	1.8	275	4.4	4.6	5.0	5.1	5.4	1.9
030	3.7	3.9	4.3	4.4	4.7	1.9	300	4.6	4.8	5.2	5.3	5.6	2.0
035	4.0	4.2	4.6	4.7	5.0	2.0	320	4.8	5.0	5.3	5.4	5.7	2.2
040	4.3	4.5	4.9	5.0	5.3	2.2	350	5.0	5.2	5.5	5.6	5.9	2.3
050	3.3	3.5	3.9	4.0	4.3	1.5	395	5.3	5.5	5.7	5.8	6.1	2.5
060	3.6	3.8	4.2	4.3	4.6	1.5	420	5.4	5.6	5.8	5.9	6.2	2.7
075	3.8	4.0	4.4	4.5	4.8	1.6	460	5.6	5.8	6.0	6.1	6.4	2.9
095	4.1	4.3	4.7	4.8	5.1	1.8	485	-	6.0	6.3	6.4	6.7	3.0
115	3.2	3.4	3.8	3.9	4.2	1.5	510	-	6.3	6.5	6.6	6.9	3.1
130	3.3	3.5	3.9	4.0	4.3	1.5	550	-	-	6.6	6.7	7.0	3.5
140	3.4	3.6	4.0	4.1	4.4	1.6	625	-	-	7.0	7.1	7.4	3.8
150	3.5	3.7	4.1	4.2	4.5	1.7	680	-	-	7.4	7.5	7.9	4.1
175	3.7	3.9	4.2	4.3	4.6	1.8	1000	-	-	11.3	11.5	11.9	6.0

Tape and Reel Specifications

Radial devices on tape are supplied with straight leads or inline kink leads.

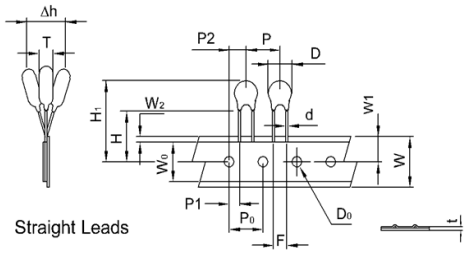


Figure: A

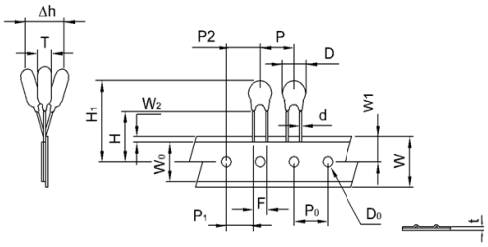


Figure: B

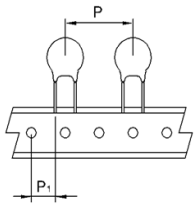


Figure: C

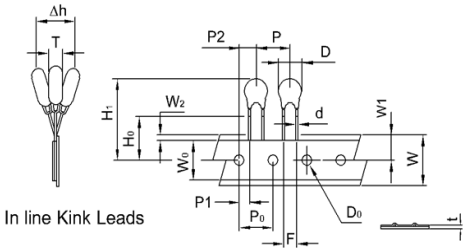


Figure: D

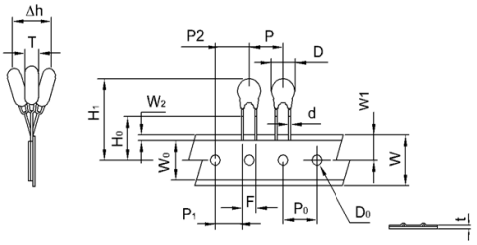


Figure: E

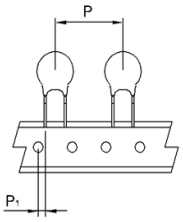


Figure: F

Symbol	Description	Model					
		J05K	J07K	J10K	J10K	J14K	J14K
P	Pitch of Component	12±1.0	12.7±1.0	12.7±1.0	15.0±1.0	25.4±1.0	30.0±1.0
P_0	Feed Hole Pitch	12.7±0.2	12.7±0.2	12.7±0.2	15.0±0.2	12.7±0.2	15.0±0.2
P_1	Feed Hole Center to Pitch	3.85±0.7	3.85±0.7	3.85±0.7	3.75±0.7	8.95±0.7	3.75±0.7
P_2	Hole Center to Component Center	6.35±0.7	6.35±0.7	6.35±0.7	7.5±0.7	12.7±0.7	7.5±0.7
F	Lead to Lead Distance	5.0±0.8	5.0±0.8	7.5±0.8	7.5±0.8	7.5±0.8	7.5±0.8
Δh	Component Alignment	2.0 Max	2.0 Max	2.0 Max	2.0 Max	2.0 Max	2.0 Max
W	Tape Width	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0
		18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5
W_0	Hold Down Tape Width	5.0 Min	5.0 Min	5.0 Min	5.0 Min	5.0 Min	5.0 Min
W_1	Holde Position	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75
		9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5
W_2	Hold Down Tape Position	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max
H	Height from Tape Center to Component Base	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0
		18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0
H_0	Seating Plane Height	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5
H_1	Component Height	29.0 Max	32.0 Max	36.0 Max	36.0 Max	40.0 Max	40.0 Max
D_0	Feed Hole Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2
L	Length Clipped Lead	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max
Figure		A, D	A, D	B, E	A, D	C	F

Tape and Reel Specifications

Radial devices on tape are supplied with inside kink leads or outside kink leads.

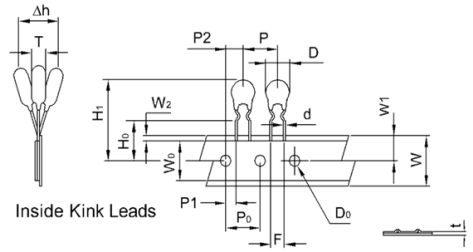


Figure: A

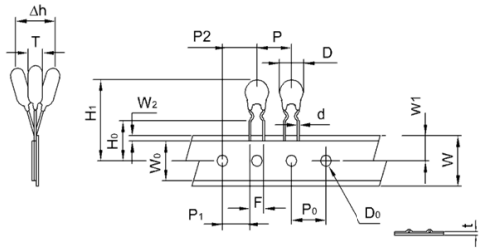


Figure: B

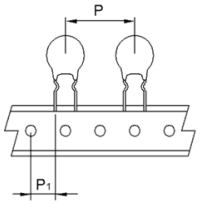


Figure: C

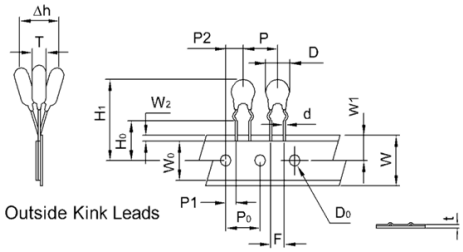


Figure: D

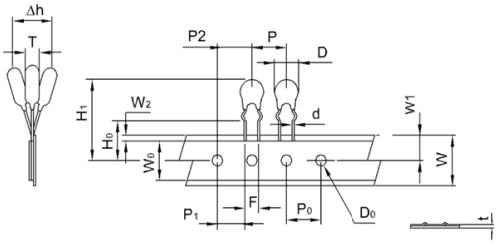


Figure: E

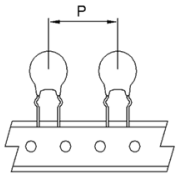


Figure: F

Symbol	Description	Model					
		J05K	J07K	J10K	J10K	J14K	J14K
P	Pitch of Component	12±1.0	12.7±1.0	12.7±1.0	15.0±1.0	25.4±1.0	30.0±1.0
P_0	Feed Hole Pitch	12.7±0.2	12.7±0.2	12.7±0.2	15.0±0.2	12.7±0.2	15.0±0.2
P_1	Feed Hole Center to Pitch	3.85±0.7	3.85±0.7	3.85±0.7	3.75±0.7	8.95±0.7	3.75±0.7
P_2	Hole Center to Component Center	6.35±0.7	6.35±0.7	6.35±0.7	7.5±0.7	12.7±0.7	7.5±0.7
F	Lead to Lead Distance	5.0±0.8	5.0±0.8	7.5±0.8	7.5±0.8	7.5±0.8	7.5±0.8
Δh	Component Alignment	2.0 Max	2.0 Max	2.0 Max	2.0 Max	2.0 Max	2.0 Max
W	Tape Width	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0
		18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5
W_0	Hold Down Tape Width	5.0 Min	5.0 Min	5.0 Min	5.0 Min	5.0 Min	5.0 Min
W_1	Holde Position	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75
		9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5
W_2	Hold Down Tape Position	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max
H	Height from Tape Center to Component Base	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0
		18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0
H_0	Seating Plane Height	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5
H_1	Component Height	29.0 Max	32.0 Max	36.0 Max	36.0 Max	40.0 Max	40.0 Max
D_0	Feed Hole Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2
L	Length Clipped Lead	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max
Figure		A, D	A, D	B, E	A, D	C	F

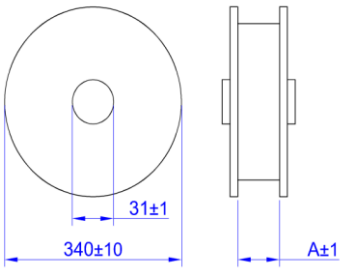
Packing Information

Bulk Packing

Series	Straight Lead Type Quantity (pcs/bag)	Cut Lead Type Quantity (pcs/bag)	Kink Type Quantity (pcs/bag)
J05K	1000	1000	1000
J07K	1000	1000	1000
J10K	500	500	500
J14K	500	500	500
J20K	250	250	250

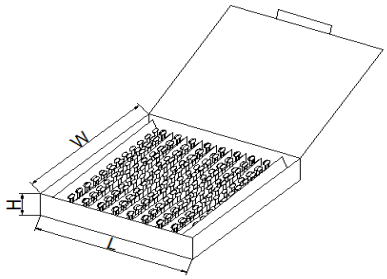
Tape & Reel Product Packing

Series	Quantity (pcs/reel)	A (mm)
J05K(011~250)	2000	43
J05K(275~460)	1500	
J07K(011~250)	2000	
J07K(275~510)	1500	
J10K(011~395)	1000	
J10K(420~680)	800	
J14K(011~250)	800	56
J14K(275~-395)	700	
J14K(420~680)	600	



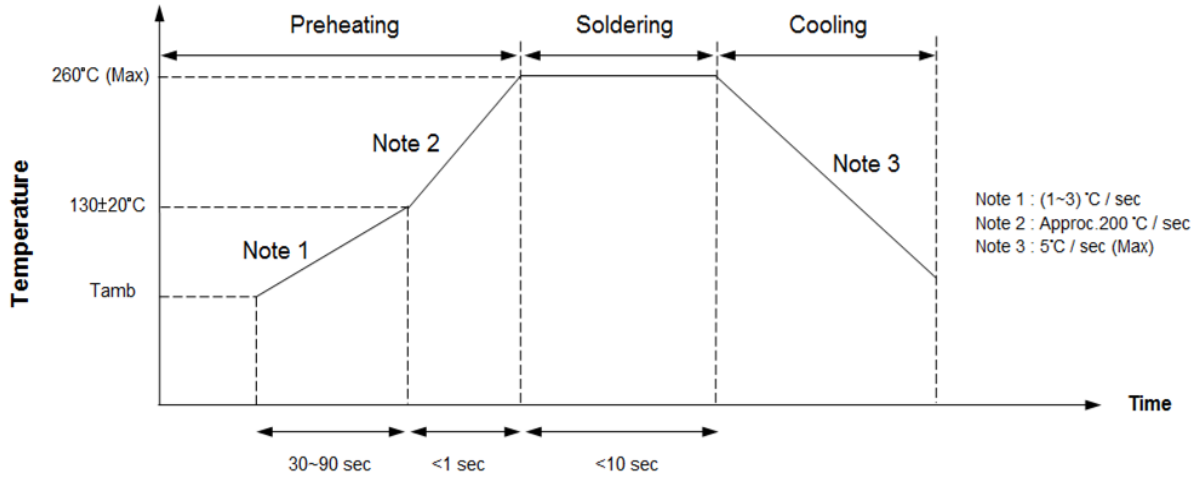
Tape & Reel Product Packing

Series	Quantity (pcs/reel)
J05K(011~395)	1000
J05K(420~460)	800
J07K(011~395)	1000
J07K(420~510)	800
J10K(011~395)	1000
J10K(420~680)	800
J14K(011~395)	500
J14K(420~680)	400



Series	L ± 5	W ± 5	H ± 5
J05K~J07K	340	245	45
J10K~J14K	340	245	50

Solder Recommendation



Recommendation Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of soldering Iron-tip	360°C (Max)
Soldering Time	3 sec (Max)
Distance from Varistor	2mm (Min)

RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS Directive 2002/95/EC

Storage Conditions of Products

(I) Storage Conditions:

1. Storage Temperature: -10°C~+40°C
2. Relative Humidity: ≤75%RH
3. Keep away from corrosive atmosphere and sunlight
4. Solvent Resistance: MIL-STD-202, Method 215F
5. Moisture Sensitivity: Level 1, J-STD-020

(II) Period of Storage: 1 year