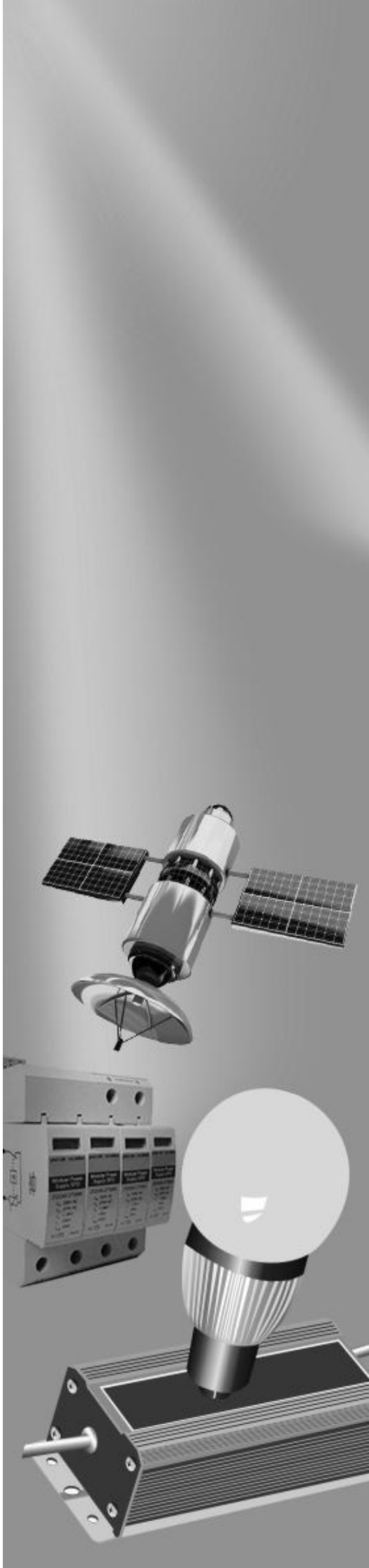
Innovative Service Around the Globe YAGEO

DATA SHEET

METAL OXIDE VARISTORS
POWER SUPPLY

20H series

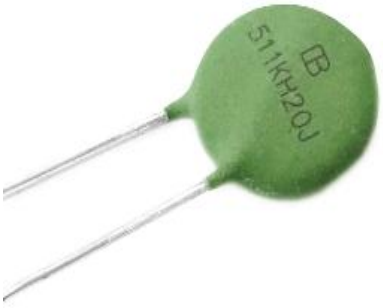
RoHS compliant & Halogen free



Product specification– May 21, 2026 V.7

Metal Oxide Varistor (MOV) Data Sheet

Features



- Wide operating voltage (V_{1mA}) range from 82V to 1200V
- Fast responding to transient over-voltage
- Large absorbing transient energy capability
- Low clamping ratio and no follow-on current
- Meets MSL level 1, per J-STD-020
- Operating Temperature：-40℃ ~ +140℃
- Storage Temperature：-40℃ ~ +140℃
- Safety certification: UL: E327997
  TUV: B0960480010
  CQC:17001172545
  CSA: 246579

Applications

- Transistor, diode, IC, thyristor or triac semiconductor protection
- Surge protection in consumer electronics
- Surge protection in industrial electronics
- Surge protection in electronic home appliances, gas and petroleum appliances
- Relay and electromagnetic valve surge absorption

Part Number Code

□□□ □ □ □□ □ — □ □ □

Varistor Voltage
180: 18V
101: 100V
102: 1000V

Tolerance
K: ±10%

Type
H: High temperture

Element Diameter
05~20

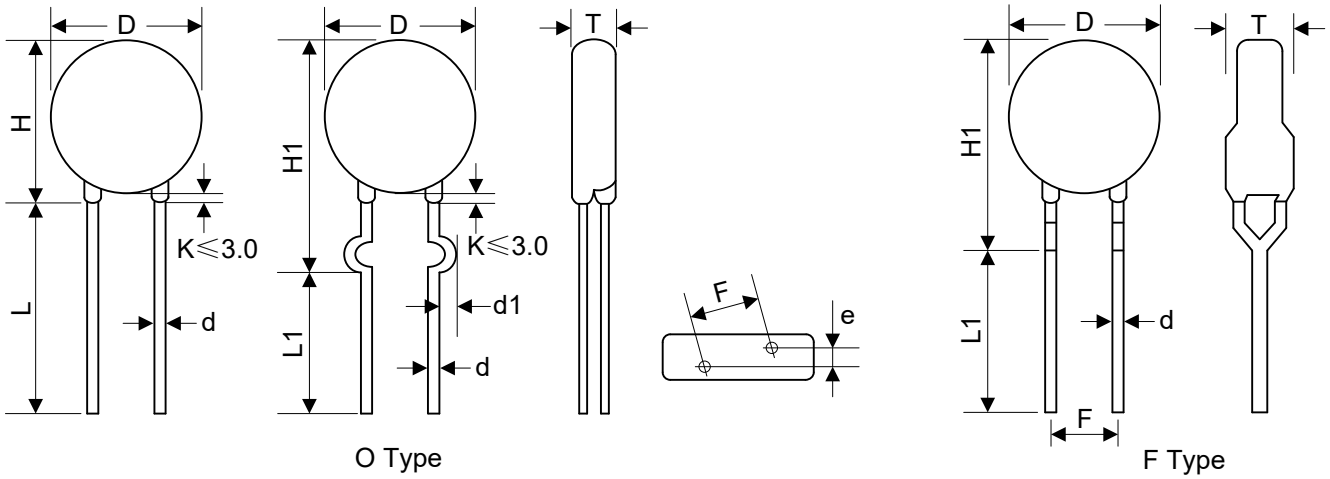
Surge Series
No suffix: Standard type
J: High Surge type

Lead Shape
No suffix: Straight leads
O: Outside crimped leads
F: Y kink leads

Pitch
No suffix: 10mm
P7.5: 7.5mm

Packaging
No suffix: Bulk
TB: Tape & Box
TR: Tape & Reel

Dimensions



O Type F Type

Table 1

Unit: mm

Symbol	Dimension
H	19.5~26.5
H1	24.0~30.0
L(min.)	20.0
L1(min.)	15.0
D	19.0~23.5
F	7.5±0.8/10.0±1.0
T	Table 2
e(±0.8)	Table 2
d(±0.05)	0.8/1.0
d1(±0.4)	1.4/1.6

Table 2

Unit: mm

Model	T	e	Model	T	e
820K	2.74~5.72	2.0	431K	3.69~7.27	3.2
101K	2.84~5.89	2.2	471K	3.85~7.49	3.4
121K	2.94~6.09	2.4	511K	3.99~7.71	3.6
151K	2.79~5.90	2.0	561K	4.15~7.98	3.8
181K	2.89~6.10	2.1	621K	4.35~8.31	4.1
201K	2.97~6.26	2.2	681K	4.55~8.64	4.4
221K	3.02~6.11	2.3	751K	4.75~9.03	4.5
241K	3.09~6.22	2.4	781K	4.85~9.19	4.6
271K	3.18~6.39	2.6	821K	4.98~9.41	4.8
301K	3.25~6.55	2.7	911K	5.28~9.67	5.0
331K	3.35~6.72	2.7	102K	5.57~10.14	5.3
361K	3.45~6.88	2.9	112K	5.91~10.66	5.6
391K	3.55~7.05	3.0	122K	6.15~11.19	5.9

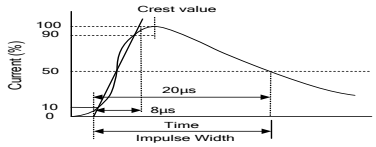
Electrical Characteristics

Part Number		Maximum Allowable Voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current		Maximum Energy (10/1000μs)		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V_{AC} (V)	V_{DC} (V)	V_{1mA} (V)	I_P (A)	V_C (V)	I (A) Standard	I (A) High Surge	(J) Standard	(J) High Surge	(W)	@1KHz (pf)
820KH20	820KH20J	50	65	82(74~90)	100	135	6500	10000	45	56	1.0	4900
101KH20	101KH20J	60	85	100(90~110)	100	165	6500	10000	50	70	1.0	4000
121KH20	121KH20J	75	100	120(108~132)	100	200	6500	10000	55	85	1.0	3300
151KH20	151KH20J	95	125	150(135~165)	100	250	6500	10000	70	106	1.0	2700
181KH20	181KH20J	115	150	180(162~198)	100	300	6500	10000	85	130	1.0	2200
201KH20	201KH20J	130	170	200(180~220)	100	340	6500	10000	95	140	1.0	2000
221KH20	221KH20J	140	180	220(198~242)	100	360	6500	10000	100	155	1.0	1800
241KH20	241KH20J	150	200	240(216~264)	100	395	6500	10000	108	168	1.0	1650
271KH20	271KH20J	175	225	270(243~297)	100	455	6500	10000	127	190	1.0	1500
301KH20	301KH20J	190	250	300(270~330)	100	500	6500	10000	136	210	1.0	1300
331KH20	331KH20J	210	275	330(297~363)	100	550	6500	10000	150	228	1.0	1200
361KH20	361KH20J	230	300	360(324~396)	100	595	6500	10000	163	255	1.0	1100
391KH20	391KH20J	250	320	390(351~429)	100	650	6500	10000	180	275	1.0	1000
431KH20	431KH20J	275	350	430(387~473)	100	710	6500	10000	190	305	1.0	930
471KH20	471KH20J	300	385	470(423~517)	100	775	6500	10000	204	350	1.0	850
511KH20	511KH20J	320	415	510(459~561)	100	845	6500	10000	210	360	1.0	780
561KH20	561KH20J	350	460	560(504~616)	100	925	6500	10000	215	380	1.0	710
621KH20	621KH20J	385	505	620(558~682)	100	1025	6500	10000	224	390	1.0	650
681KH20	681KH20J	420	560	680(612~748)	100	1120	6500	10000	230	400	1.0	600
751KH20	751KH20J	460	615	750(675~825)	100	1240	6500	10000	255	420	1.0	530
781KH20	781KH20J	485	640	780(702~858)	100	1290	6500	10000	265	440	1.0	510
821KH20	821KH20J	510	670	820(738~902)	100	1355	6500	10000	282	460	1.0	500
911KH20	911KH20J	550	745	910(819~1001)	100	1500	6500	10000	310	510	1.0	440
102KH20	102KH20J	625	825	1000(900~1100)	100	1650	6500	10000	342	565	1.0	400
112KH20	112KH20J	680	895	1100(990~1210)	100	1815	6500	10000	383	620	1.0	360
122KH20	122KH20J	750	990	1200(1080~1320)	100	1980	6500	10000	408	660	1.0	350

Notes: 1. Varistor voltage≥1200V, structure diagram is F type.

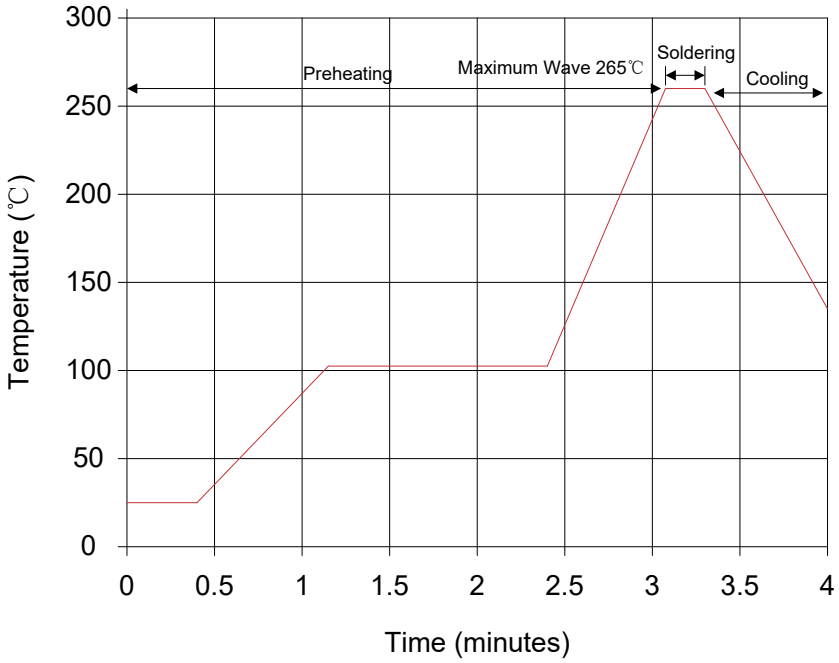
2. Leakage Current (@83% of V_{1mA})：IR≤20μA (820K~122K)

Electrical Ratings

Items	Test Condition/Description	Requirement
Varistor Voltage	The voltage between the two terminals with the specified measuring current 1mA.DC applied is called Vb.	To meet the Specified value
Maximum Allowable Voltage	The recommended maximum sine wave voltage (RMS) or the Maximum DC voltage can be applied continuously.	
Maximum Clamping Voltage	The maximum voltage between the two terminals with the specification standard impulse current. Applied waveform: 8/20μs 	
Rated Wattage	The maximum average power that can be applied within the specified ambient temperature.	
Energy	The maximum energy within the varistor voltage change of ±10% when one impulse of 10/1000μs or 2ms is applied.	
Withstanding Surge Current	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20μs) applied one time.	
Varistor Voltage Temp. Coefficient	$\left\lvert \frac{V_{1mA@140℃}-V_{1mA@25℃}}{V_{1mA@25℃}} \times \frac{1}{115} \times 100\%(\%/℃) \right\rvert$	≤0.05%/℃
	$\left\lvert \frac{V_{1mA@-40℃}-V_{1mA@25℃}}{V_{1mA@25℃}} \times \frac{1}{65} \times 100\%(\%/℃) \right\rvert$	
Surge Life	The change of Vb shall be measured after the impulse listed below which is applied 10,000 times continuously with the interval of ten seconds at room temperature. 20Φ series | 820K to 122K | 200A (8/20μs)	$\frac{\Delta Vb}{Vb} \leq \pm 10\%$

Soldering Recommendation

Lead-free Wave Soldering Recommendation



Item	Conditions
Peak Temperature	265℃
Dipping Time	10 seconds (max.)
Soldering	1 time

Recommendation Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360℃ (max.)
Soldering Time	3 seconds (max.)
Distance from Varistor	2mm (min.)

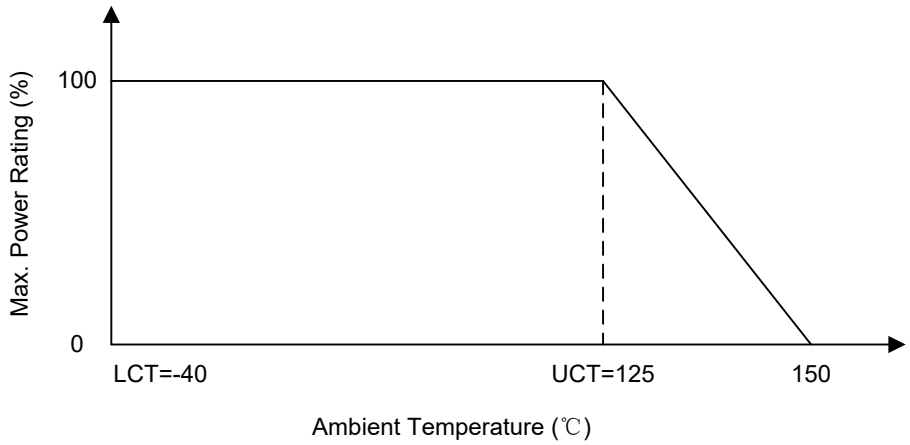
Mechanical Characteristics

Items	Test conditions / Methods	Specifications
Tensile Strength of Terminals	Gradually applying the force specified and keeping the unit fixed for 10±1 sec. Terminal diameter (mm) / Force (kg) 0.5＜d≤0.8 / 1.0 0.8＜d≤1.25 / 2.0 1.25＜d / 4.0	No visible damage $\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 5\%$
Bending Strength of Terminals	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction. Terminal diameter (mm) / Force (kg) 0.5＜d≤0.8 / 0.5 0.8＜d≤1.25 / 1.0 1.25＜d / 2.0	No visible damage $\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 5\%$
Vibration	Frequency range: 10~55 Hz Amplitude: 0.75mm or 98m/s^2 Direction: 3 mutually perpendicular directions, 2hrs each.	No visible damage $\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 5\%$
Solder ability	Solder Temp: 245±5℃ Dipping Time: 2±0.5 sec	At least 95% of terminal electrode is covered by new solder
Resistance to Soldering Heat	Solder Temp: 260±5℃ Dipping Time: 10±1 sec	No visible damage $\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 10\%$

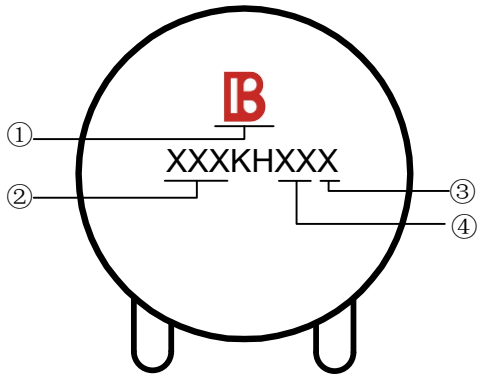
Reliability

Items	Test conditions / Methods	Specifications
High Temperature Storage	Ambient Temp: 140±2℃ Duration: 1000hrs	$\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 5\%$
Low Temperature Storage	Ambient Temp: -40±2℃ Duration: 1000hrs	$\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 5\%$
Humidity	Ambient Temp: 40±2℃, 90~95% R.H. Duration: 1000hrs	$\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 5\%$
Temperature Cycle	The conditions shown below shall be repeated 5 cycles Step / Temperature (℃) / Period (minutes) 1 / -40±3 / 30±3 2 / Room temperature / 15±3 3 / 140±3 / 30±3 4 / Room temperature / 15±3	No visible damage $\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 5\%$
High Temperature Load	Ambient Temp: 140±2℃ Duration: 1000hrs Load: Max. Allowable Voltage In AC eara.	$\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 10\%$
Damp Heat Load	Ambient Temp: 40±2℃, 90~95% R.H. Duration: 1000hrs Load: Max. Allowable Voltage	No visible damage $\lvert\Delta V_{1mA}/V_{1mA}\rvert \leq 10\%$
Voltage Proof	Metal balls method, 1000Vac 1 min.(820K~331K), 1500Vac 1 min.(361K~122K)	No visible damage

Power Derating Curve

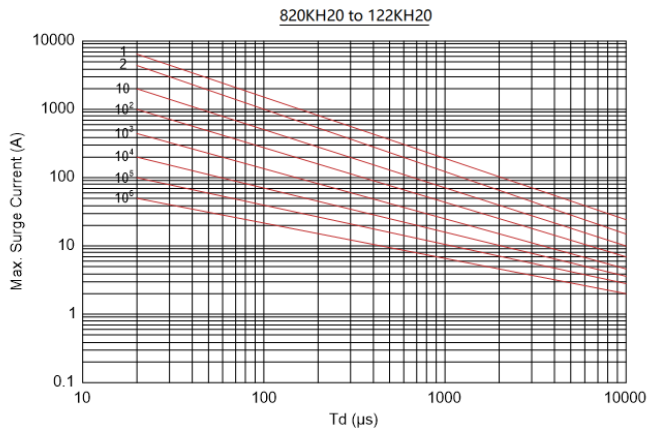


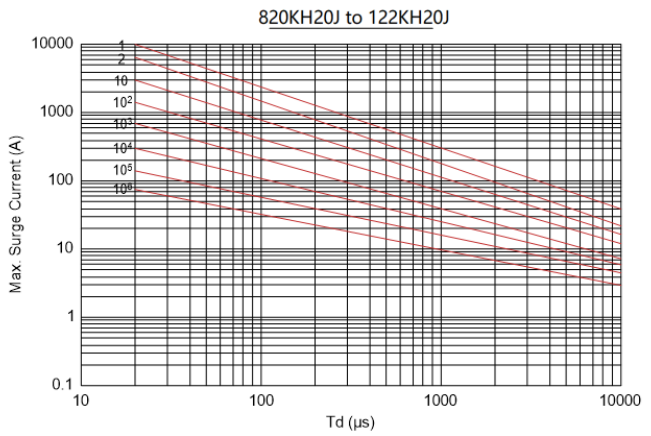
Marking Code



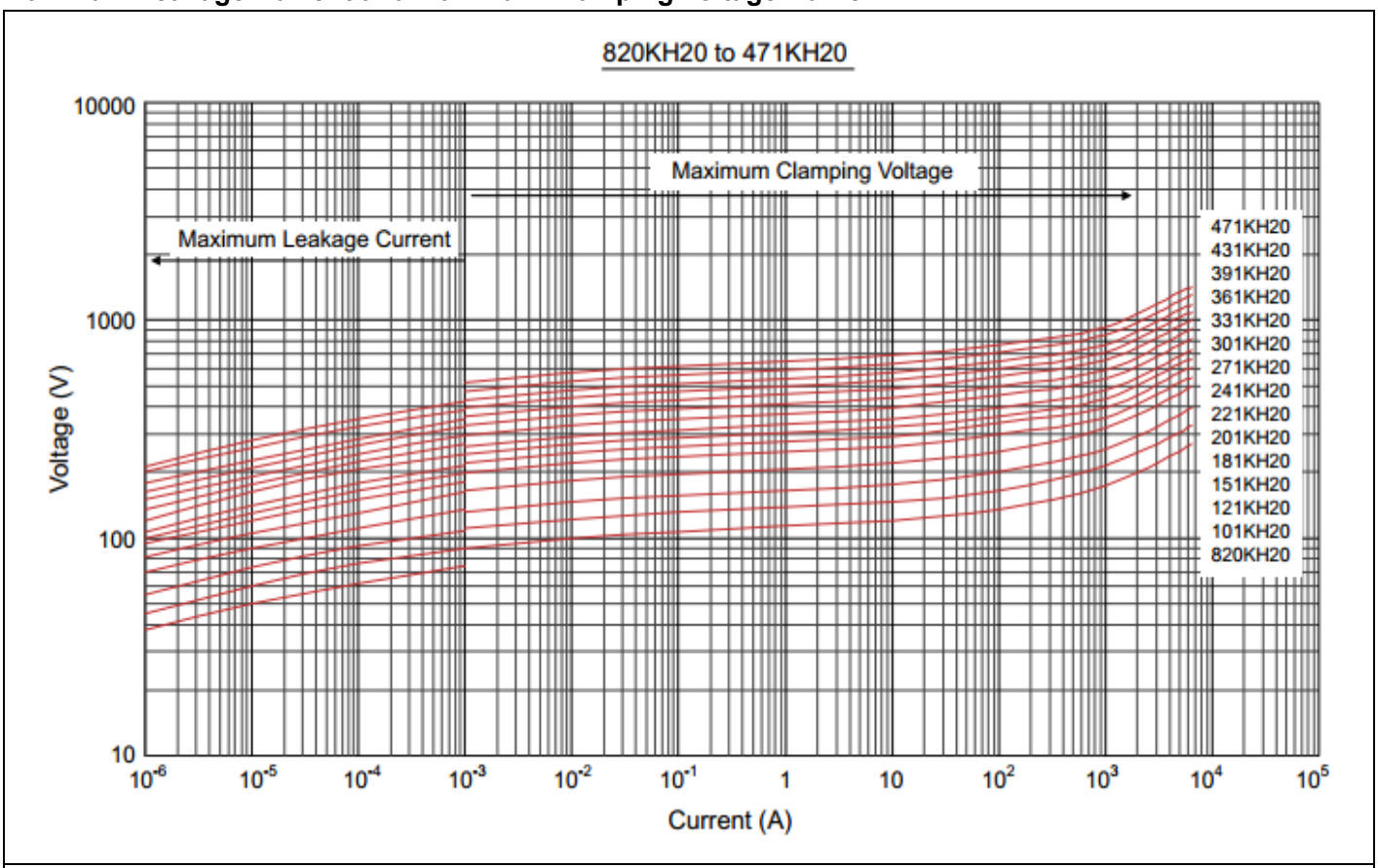
① Brightking Logo
② Varistor Voltage
③ “J” is High Surge Code, no “J” is Standard Surge
④ Varistor Size

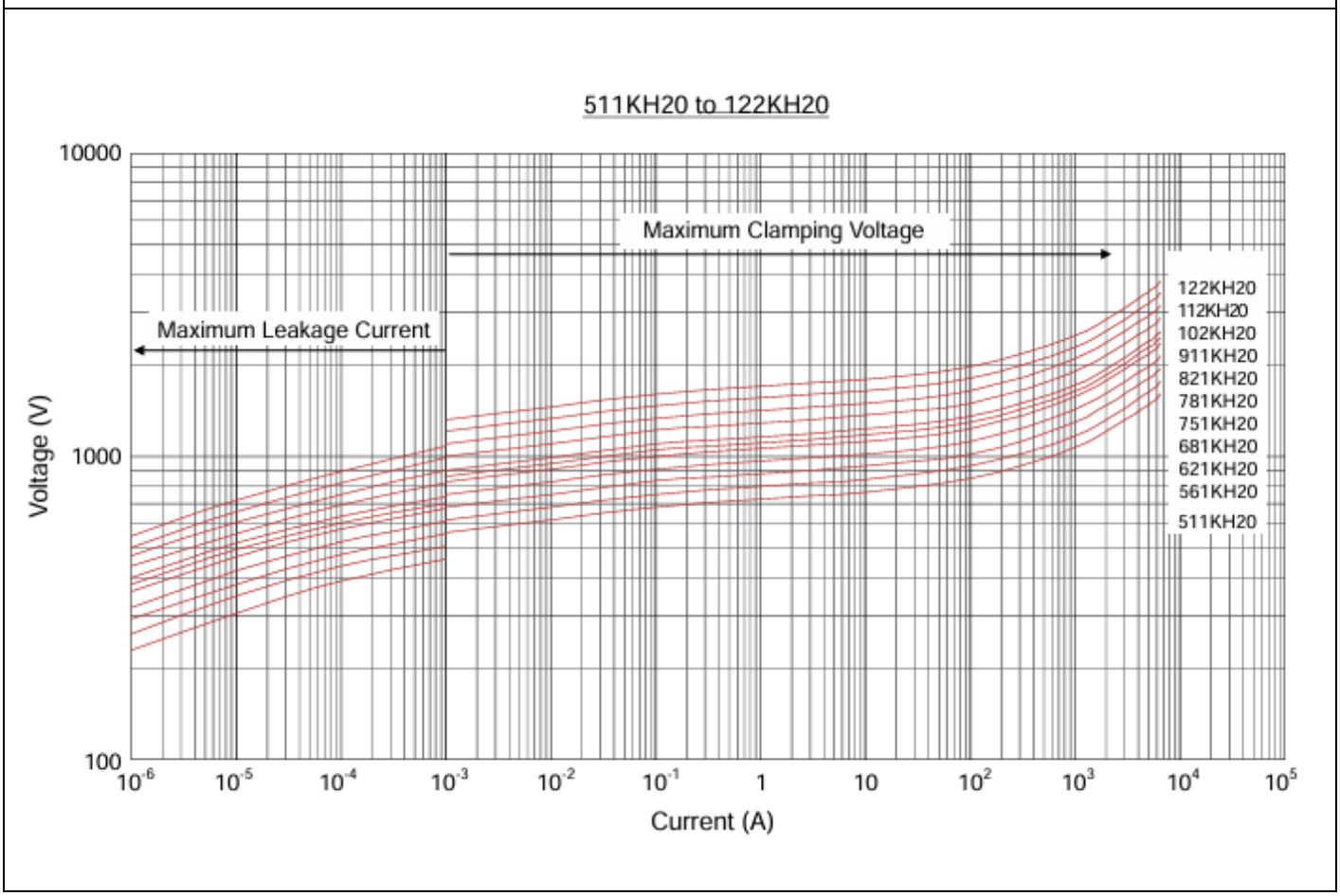
Maximum Surge Current Derating Curve



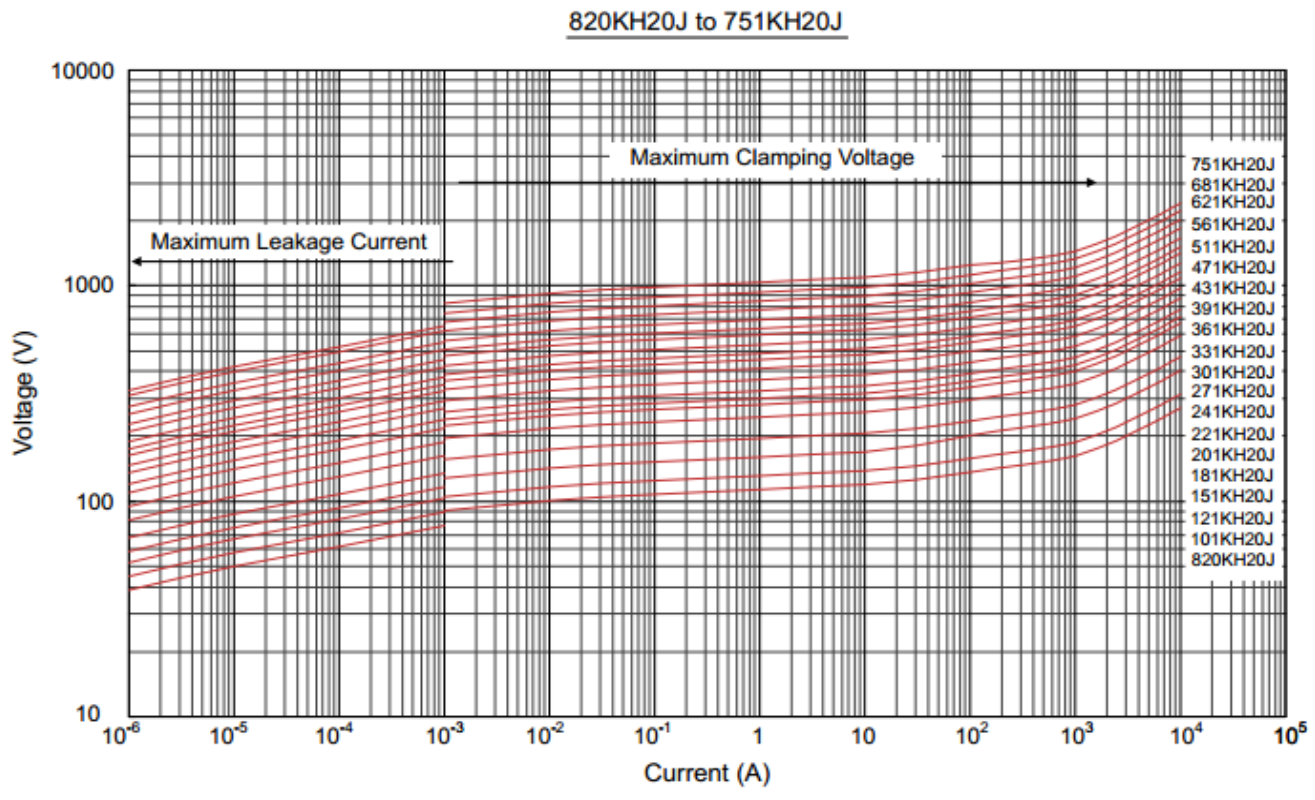


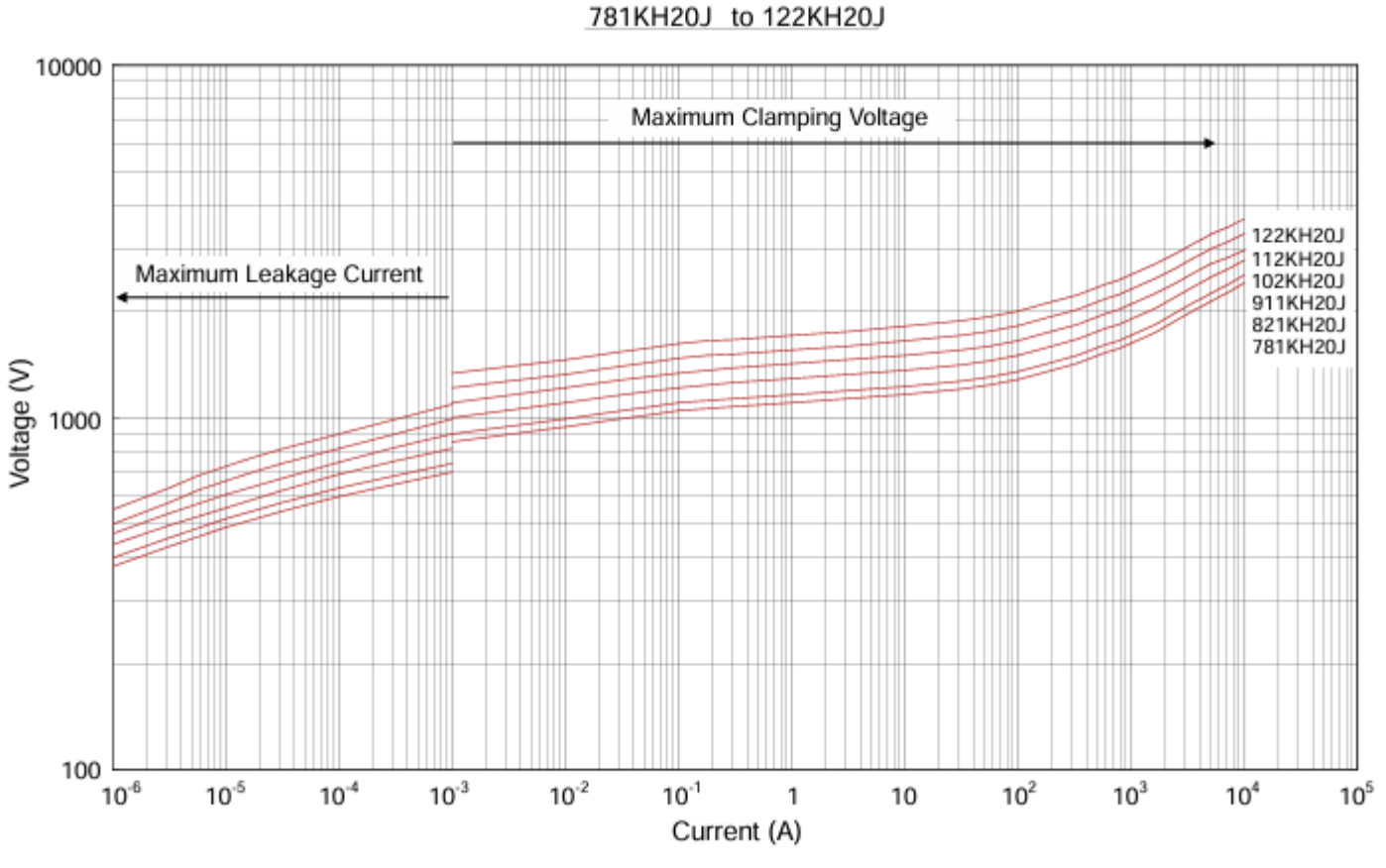
Maximum Leakage Current and Maximum Clamping Voltage Curve



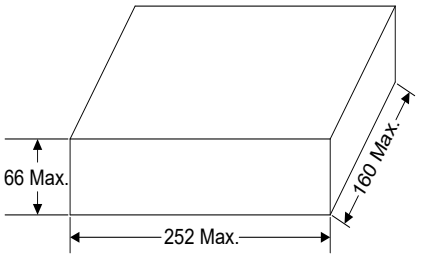


Maximum Leakage Current and Maximum Clamping Voltage Curve





Quantity

Packaging Dimensions (Unit: mm)	Quantity
Bulk 	400pcs/ box (820K~301K)
	300pcs/ box (331K~471K)
	200pcs/ box (511K~681K)
	100pcs/ box (751K~122K)

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