Varistors

Features

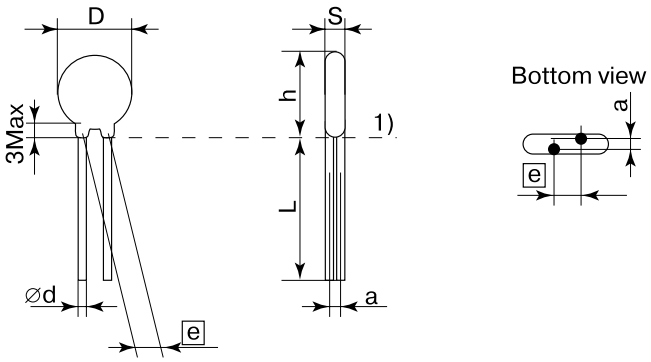
• Small size, large peak current and high energy Insulated coating with epoxy(yellow).
Element diameter with 5,7, 10, 14, 20 mm. With safety approval UL1449 (E191293)

Applications

• Transistor, diode, IC, thyristor or tnac semiconductor protection
• Surge protection in consumer eletronics
• Surge protection in industrial eletronics
• Surge protection in electronic home appliances, gas and petroleum appliances
• Electrostatic discharge and noise spike suppression
• Relay and electromagnetic valve surge absorption
• Surge protection in communication, measuring or controller electronics

Diemensions

Specification	Dmax	d(±0,02)	e(±1,0)	smax
05	7,5	06	50	60
07	90	06	50	60
10	13,5	08	75	80
14	17,0	08	75	80
20	23,5	1,0	10,0	12,0

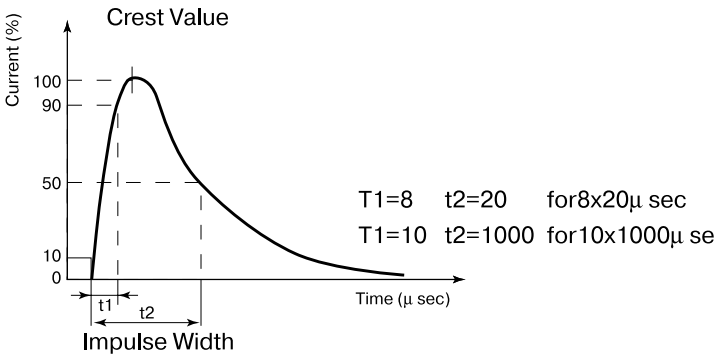


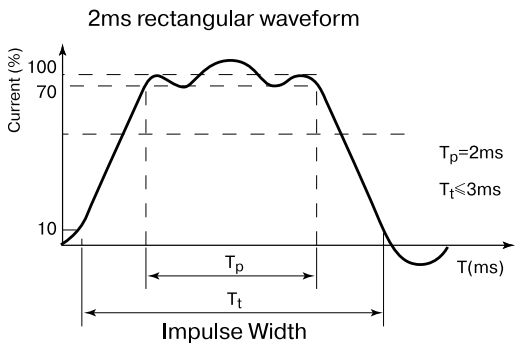
Characteristics (T_A=25°C)

Varistor Voltage (V)	Rated Voltage (V)		Clamping Voltage (V)		Energy (J/2ms)				
	ACrms	DC	05	07-20	05	07	10	14	20
18	11	14	40	36	0,4	0,9	2,2	4,3	12
22	14	18	48	43	0,5	1,1	2,6	5,3	14
27	17	22	60	53	0,7	1,3	3,2	6,5	17
33	20	26	73	65	0,8	1,6	4,0	7,9	21
39	25	31	86	77	0,9	1,9	4,7	9,4	25
47	30	38	104	93	1,1	2,3	5,6	11	30
56	35	45	123	110	1,3	2,7	6,7	13	26
68	40	56	150	135	1,6	3,3	8,2	16	44
82	50	65	145	135	2,5	5	10	20	40
100	60	85	175	165	3,0	6	12	25	50
120	75	100	210	200	3,5	7	14,5	30	60
150	95	125	260	250	4,5	9	18	37,5	75
180	115	150	312	300	5,4	10,8	21	45	90
200	130	170	355	340	6,0	12,5	25	50	100
220	140	180	380	360	6,5	13,5	27,5	55	110
240	150	200	415	395	7,5	15	30	60	120
270	175	225	475	455	8	17	35	70	135
300	195	250	525	505	8,8	18	39	78	150
330	210	270	570	545	9,5	20	42	80	160
360	230	300	620	595	11	23	45	90	180
390	250	320	675	650	12	25	50	100	195

V1 and V2

- **Rated power**
  The maximum power that can be applied within the specified ambient temperature
- **Capacitance**
  The capacitance of varistor is the reference value measured between the varistor terminals at specified frequency
- **Withstanding surge current:**
  Withstanding surge current is the maximum peak current for the varistor with the specified standard impulse current (8x20μsec) applied one time or two times andcorresponding to a permissible variation of 10 % in the varistor voltage change
- **Maximum clamping voltage:**
  Maximum clamping voltage is the maximum voltage VP between two terminals with the specified standard impulse current I (8x20 μsec). The voltage value is an indication on the protective function of the varistor.
- **Energy**
  Maximum energy from one or a burst of pulses. It is the value within the varistor change of ± I0 % when one impulse of 10x1000 μsec is applied
  E = KXVmXImXT
  E = Energy
  K: constant = I,4
  Vm: Mx. clamping voltage at Im
  Im: Max. allowable single surge current of 10x1000 μsec
  T: Duration of surge current (I000 μsec)
- **Pulse lifetime rating**
  This is expressed as the maximum allowable number of impulse currents applied. 8x20 μsec impulse current (or I0XI000μsec) is applied at prescribed interval. This curve also provides for derating current as required with repetitive pulsing,

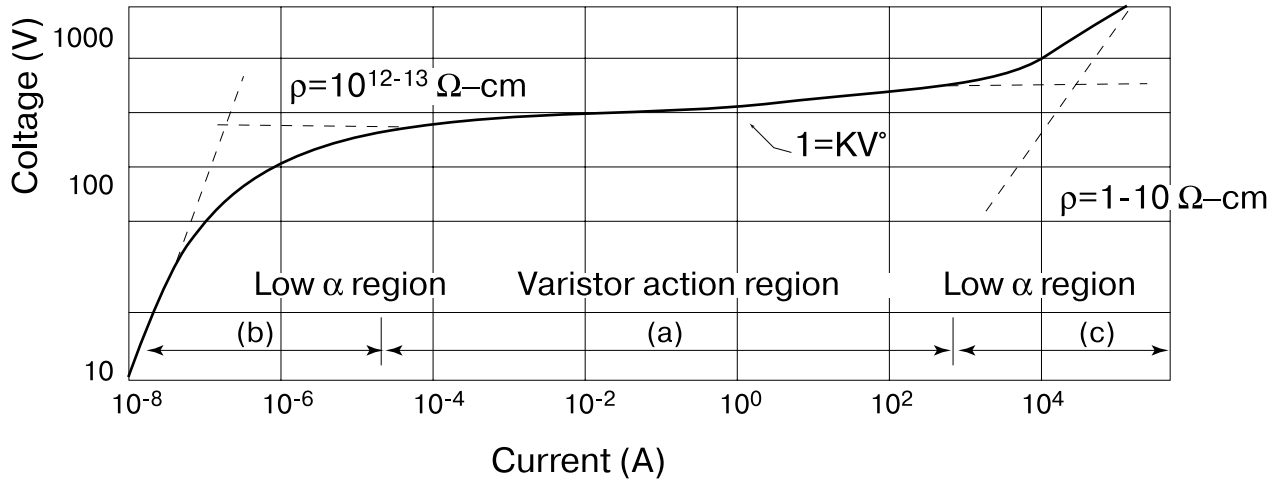




Definitions of technical terms

430	275	350	745	710	13,5	27,5	55	110	215
470	300	385	810	775	15	30	60	125	250
510	320	410	-	845	-	32	67	136	273
560	350	450	-	930	-	35	73	149	298
620	385	505	-	1205	-	-	67	136	273
680	420	560	-	1120	-	-	67	136	273
750	460	615	-	1240	-	-	70	150	300
820	510	670	-	1355	-	-	80	165	325
910	550	745	-	1500	-	-	90	180	360
1000	625	825	-	1650	-	-	100	200	400
1100	680	895	-	1815	-	-	110	220	440

Voltage-Current Characteristics:



- **Varistor Voltage (breakdown voltage):**
  The varistor voltage is the voltage across the varistor measured at a specified current Ic (0,1 mA or 1 mA) of specified duration.
- **Max. allowable Voltage and leakage current**
  The maximum operating voltage corresponds to the "rest" stage of the varistor. This "rest" voltage offers a low leakage current in order to limit the power consumption of the protective device and not to disturb the circuit to be protected. The leakage currents usually have values in the range of a few micro-amperes.
- **Non linear exponent(α):**
  The varistor voltage-current characteristic is defined by the equation:
  I = KVα where K is α constant dependent on geometry, and α is the non linear exponent.
  We usually take two points (V1, I1), (V2, I2) to estimate the value of α
  α = Logl1/I2 / Logl1/V2 in which I1, and I2 are the current value corresponding to the voltage value