Description

The 14D series provides an ideal circuit protection solution for DC voltage applications by offering higher surge ratings than ever before available in such small discs.
The maximum peak surge current rating can reach up to 6KA(8/20μs pulse) to protect against high peak surges,including indirect lightning strike interference,system switching transients and abnormal fast transients from the power source.

14DxxxK(J) Series

Features

>High surge current handling capability.
>High energy absorption capability.
>Wide operating voltages ranging from 10Vrms to 1000Vrms.
>Fast response time of less than 25ns,instantly clamping the transient over voltage.
>Low clamping voltages,providing better surge protection.
>Low capacitance values,providing digital switching circuitry protection.
>High insulation resistance,preventing electric arching to the adjacent devices or circuits.

Application

>Surge protection of consumer equipment
>Surge protection of communication,measuring and controller instrument
>Surge protection in electronic home appliances,gas and petroleum applicnces
>Relay and electromagnetic valve surge absorption
>Transistor,Diode,IC,Thyristor or Triac semiconductor protection

General Characteristics Definition

>Operating Temperature Range :-40°C ~ +85°C
>Storage Temperature Range :-40°C ~ +125°C
>Working SurfaceTemperature:+115°C
>Insulation Resistance:>100MΩ

Material

>Coating: Epoxy Resin
>Lead Wire: The Copper Wire
>Electrode: Silver Solder
>Disk: Zinc Oxide

Part Number Code

14 - D - XXX - K - J
① ② ③ ④ ⑤

①:Element diameter: 14=ϕ14.0 mm
②:Type:D: disk
③:Varistor Voltage:821K(820V)
④:Tolerance:K=±10%;L=±15%;M=±20%
⑤:Surge Series: no suffix=standard type;J=high surge type

Electrical Characteristics(@25°C Unless Otherwise Specified)

Part Number		Mximum Allowable Voltage		Varistor Voltage @1mA	Mximum Clamping Voltage		Withstanding Surge Current (8/20μs)		Maximum Energy (10/1000μs)		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V_{AC}(V)	V_{DC}(V)	(V)	V_C(V)	I_P(A)	I(A) Standard	I(A) High Surge	(J) Standard	(J) High Surge	(W)	@1KHz (pF)
14D180L	14D180LJ	10	14	18(15-21)	38	10	1000	2000	6.6	7.0	0.1	11100
14D220K	14D220KJ	14	18	22(20-24)	43	10	1000	2000	7.6	8.0	0.1	9100
14D270K	14D270KJ	17	22	27(24-30)	53	10	1000	2000	9.7	10.0	0.1	7400
14D330K	14D330KJ	20	26	33(30-36)	65	10	1000	2000	12.3	12.5	0.1	6100
14D390K	14D390KJ	25	31	39(35-43)	77	10	1000	2000	13.2	13.0	0.1	5100
14D470K	14D470KJ	30	38	47(42-52)	93	10	1000	2000	16.8	17.0	0.1	4300
14D560K	14D560KJ	35	45	56(50-62)	110	10	1000	2000	19.6	20.0	0.1	3600
14D680K	14D680KJ	40	56	68(61-75)	135	10	1000	2000	23.8	24.0	0.1	2900
14D820K	14D820KJ	50	65	82(74-90)	135	50	4500	6000	29.4	30.0	0.6	2400
14D101K	14D101KJ	60	85	100(90-110)	165	50	4500	6000	33.6	35.0	0.6	2000
14D121K	14D121KJ	75	100	120(108-132)	200	50	4500	6000	40.6	42.0	0.6	1700
14D151K	14D151KJ	95	125	150(135-165)	250	50	4500	6000	51.8	53.0	0.6	1300
14D181K	14D181KJ	115	150	180(162-198)	300	50	4500	6000	58.8	74.0	0.6	1100
14D201K	14D201KJ	130	170	200(185-225)	330	50	4500	6000	75.2	78.6	0.6	1000
14D221K	14D221KJ	140	180	220(198-242)	360	50	4500	6000	79.8	80.5	0.6	900
14D241K	14D241KJ	150	200	240(216-264)	395	50	4500	6000	82.6	86.0	0.6	830
14D271K	14D271KJ	175	225	270(243-297)	455	50	4500	6000	84.0	94.0	0.6	740
14D301K	14D301KJ	190	250	300(270-330)	505	50	4500	6000	103	105	0.6	670
14D331K	14D331KJ	210	275	330(297-363)	550	50	4500	6000	112	115	0.6	610
14D361K	14D361KJ	230	300	360(324-396)	595	50	4500	6000	123	130	0.6	560
14D391K	14D391KJ	250	320	390(351-429)	650	50	4500	6000	135	140	0.6	510
14D431K	14D431KJ	275	350	430(387-473)	710	50	4500	6000	145	155	0.6	460
14D471K	14D471KJ	300	385	470(423-517)	775	50	4500	6000	147	175	0.6	430
14D511K	14D511KJ	320	415	510(459-561)	845	50	4500	6000	148	180	0.6	390
14D561K	14D561KJ	350	460	560(504-616)	920	50	4500	6000	150	186	0.6	360
14D621K	14D621KJ	385	505	620(558-682)	1025	50	4500	6000	155	188	0.6	320
14D681K	14D681KJ	420	560	680(612-748)	1120	50	4500	6000	160	190	0.6	290
14D751K	14D751KJ	460	615	750(675-825)	1240	50	4500	6000	180	210	0.6	270
14D781K	14D781KJ	485	640	780(702-858)	1290	50	4500	6000	190	211	0.6	260
14D821K	14D821KJ	510	670	820(738-902)	1355	50	4500	6000	203	235	0.6	230
14D911K	14D911KJ	550	745	910(819-1001)	1500	50	4500	6000	208	255	0.6	220
14D102K	14D102KJ	625	825	1000(900-1100)	1650	50	4500	6000	212	280	0.6	200
14D112K	14D112KJ	680	895	1100(990-1210)	1815	50	4500	6000	217	310	0.6	180
14D152K	14D152KJ	900	1200	1500(1350-1650)	2475	50	4500	6000	266	420	0.6	130
14D182K	14D182KJ	1000	1465	1800(1620-1980)	2970	50	4500	6000	336	510	0.6	110

Electrical Ratings

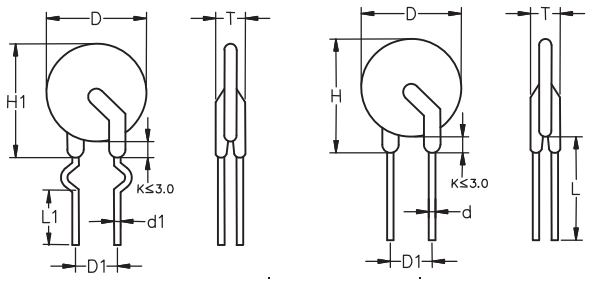
Items	Test condition/Description
Varistor Voltage	The voltage across the varistor measured at 1mA DC,can be called Vb
Maximum Allowable Voltage	Maximum continuous sine wave(RMS) or DC voltage which may be applied
Maximum Clamping Voltage	Peak voltage across the varistor with a specified peak impulse current of 8/20μs waveform
Rated Power	The maximum average power that can be applied within the specified ambient temperature
Withstanding Surge Current	The maximum current within the varistor voltage change of less than ±10% when one impulse current(8/20μs)applied
Energy	The max.energy absorbed with a varistor voltage change of less than ± 10% when one impulse (10/1000μs) is applied
Varistor Voltage Temperature Coefficient	$\left\lvert \frac{Vb_{@85°C} - Vb_{@25°C}}{Vb_{@25°C}} \times \frac{1}{60} \times 100\%(\%/°C) \right\rvert$ ≤0.05%/°C $\left\lvert \frac{Vb_{@-40°C} - Vb_{@25°C}}{Vb_{@25°C}} \times \frac{1}{65} \times 100\%(\%/°C) \right\rvert$ ≤0.05%/°C
Surge Life	The max.current with a varistor voltage change of less than ±10% when 10,000 times impulse current (8/20μs) are applied at intervals of 20 seconds at room temperature 14D Series: 180L to 680K — 75A(8/20μs); 820K to 182K — 150A(8/20μs)

Reliability

Items	Test condition/Methods	Specifications
High Temperature Storage	Ambient Temp:125±2°C Duration:1000 hrs	$\lvert \Delta V_{1mA}/V_{1mA} \rvert \leq 5\%$
Low Temperature Storage	Ambient Temp:-40±2°C Duration:1000 hrs	$\lvert \Delta V_{1mA}/V_{1mA} \rvert \leq 5\%$
Humidity	Ambient Temp:40±2°C,90~95% R.H. Duration:1000 hrs	$\lvert \Delta V_{1mA}/V_{1mA} \rvert \leq 5\%$
Temperature Cycle	The conditions shown below shall be repeated 5 cycles Step 1: -40±3, 30±3; Step 2: Room temperature, 15±3; Step 3: 125±3, 30±3; Step 4: Room temperature, 15±3	No visible damage $\lvert \Delta V_{1mA}/V_{1mA} \rvert \leq 5\%$
High Temperature Load	Ambient Temp:85±2°C ,Duration:1000 hrs Load:Max.Allowable Voltage in AC eara	$\lvert \Delta V_{1mA}/V_{1mA} \rvert \leq 10\%$
Damp Heat Load	Ambient Temp:40±2°C ,90~95% R.H. Duration:1000 hrs Load:Max.Allowable Voltage	No visible damage $\lvert \Delta V_{1mA}/V_{1mA} \rvert \leq 10\%$
Voltage Proof	Metal balls method,2500Vac 1min	No visible damage

Package Dimensions(Unit:mm)

Table 1



Symbol	Dimensions
H(max)	20.0
H1(max)	21.0
L(min)	20.0
L1(min)	15.0
D(max)	17.0
D1(±0.8)	7.5
T(max)	Table 2
d(±0.05)	0.8
d1(±0.4)	1.4

Table 2

Tmax(mm)							
14D180L	4.0	14D101K	4.3	14D331K	4.8	14D751K	6.5
14D220K	4.0	14D121K	4.5	14D361K	5.0	14D781K	6.8
14D270K	4.0	14D151K	4.8	14D391K	5.1	14D821K	7.2
14D330K	4.2	14D181K	4.1	14D431K	5.3	14D911K	7.6
14D390K	4.5	14D201K	4.1	14D471K	5.6	14D102K	7.8
14D470K	4.5	14D221K	4.2	14D511K	5.8	14D112K	9.9
14D560K	4.1	14D241K	4.3	14D561K	6.2	14D152K	11.0
14D680K	4.1	14D271K	4.5	14D621K	6.4	14D182K	12.5
14D820K	4.1	14D301K	4.7	14D681K	6.4		

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