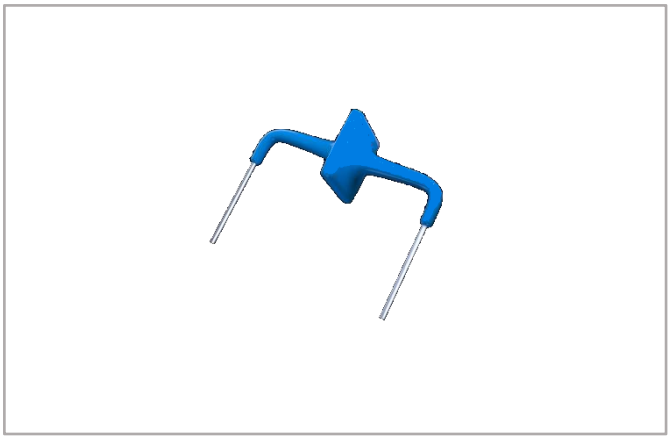


Description

The K3KA series of high power TVS diode is specially designed for meeting severe surge test environment of both AC and DC line protection applications. It features a very fast response and ultra low clamping characteristics over traditional metal oxide varistor (MOV) solutions. They can be connected in series and / or parallel to create a very high surge current protection solution.

Features

- Very low clamping voltage
- Ultra compact: less than one-tenth the size of traditional discrete solutions
- Sharp breakdown voltage
- Low slope resistance
- Bi-directional
- Symmetric in leads width for easier soldering during assembly.
- Halogen-free
- RoHS compliant
- ESD protection of data lines in accordance with IEC 61000-4-2, 30kV(Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC61000-4-4
- Glass passivated junction
- Pb-free E4 means 2nd level interconnect is Pb-free and the terminal finish material is Silver

Maximum Ratings and Thermal Characteristics

(T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Storage Temperature Range	T_{STG}	-55 to 125	℃
Operating Junction Temperature Range	T_J	-55 to 150	℃
Current Rating[1]	I_{PP}	3	kA

Notes:

1. Rated I_{PP} measured with 8/20μs pulse

Functional Diagram



Electrical Characteristics (T_A=25℃ unless otherwise noted)

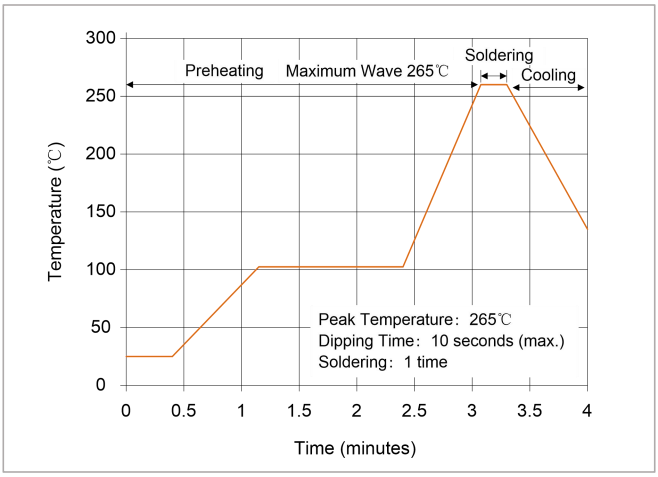
Part Number	Reverse Stand-Off Voltage		Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage@I_{PP}	Current Rating@8/20μs	Reverse Leakage@V_{DC}
	V_{AC}(V)	V_{DC}(V)	$V_{B\ Min.}$(V)	$V_{B\ Max.}$(V)	I_T(mA)	V_C(V)	I_{PP}(A)	I_R(μA)
K3KA-12CL	8.5	12	14.0	16.0	1	28	3000	5
K3KA-15CL	11	15	17.0	19.0	1	30	3000	5
K3KA-20CL	14	20	22.0	24.5	1	40	3000	5
K3KA-25CL	17	25	28.0	31.0	1	50	3000	5
K3KA-30CL	21	30	33.0	36.5	1	60	3000	5
K3KA-33CL	23	33	35.0	39.0	1	66	3000	5
K3KA-38CL	27	38	40.5	49.5	1	69	3000	5
K3KA-42CL	30	42	47.0	52.0	1	77	3000	5
K3KA-58CL	40	58	64.0	72.0	1	110	3000	5
K3KA-66CL	45	66	70.0	77.5	1	125	3000	5
K3KA-76CL	54	76	85.0	94.0	1	140	3000	5
K3KA-100CL	72	100	110.0	121.5	1	165	3000	5
K3KA-133CL	100	133	147.0	162.5	1	220	3000	5
K3KA-150CL	105	150	165.0	182.5	1	240	3000	5
K3KA-170CL	130	170	180.0	199.0	1	260	3000	5
K3KA-190CL	145	190	200.0	221.0	1	290	3000	5
K3KA-200CL	150	200	222.0	245.5	1	330	3000	5
K3KA-240CL	180	240	250.0	276.5	1	340	3000	5

Part Number	Reverse Stand-Off Voltage		Breakdown Voltage @I_T		Test Current	Maximum Clamping Voltage@I_{PP}	Current Rating@8/20μs	Reverse Leakage@V_{DC}
	V_{AC}(V)	V_{DC}(V)	$V_{B\ Min.}$(V)	$V_{B\ Max.}$(V)	I_T(mA)	V_C(V)	I_{PP}(A)	I_R(μA)
K3KA-275CL	210	275	300.0	331.5	1	435	3000	5
K3KA-300CL	230	300	330.0	365.0	1	470	3000	5
K3KA-380CL	275	380	401.0	443.5	1	520	3000	5
K3KA-430CL	310	430	440.0	486.5	1	625	3000	5
K3KA-460CL	330	460	500.0	552.5	1	770	3000	5
K3KA-500CL	385	500	558.0	617.0	1	868	3000	5
K3KA-650CL	460	650	680.0	751.5	1	900	3000	5
K3KA-1100CL	770	1100	1200.0	1326.5	1	2000	3000	5
K3KA-1200CL	849	1200	1300.0	1502.0	1	2180	3000	5

Notes: Using 8/20μs wave shape as defined in IEC 61000-4-5.

Wave Solder Profile

Figure 1:
Wave Soldering Temperature Profile



Flow/Wave Soldering (Solder Dipping)

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

Ratings and Characteristic Curves (T_A=25℃ unless otherwise noted)

Figure 2:
Peak Pulse Power Rating Curve

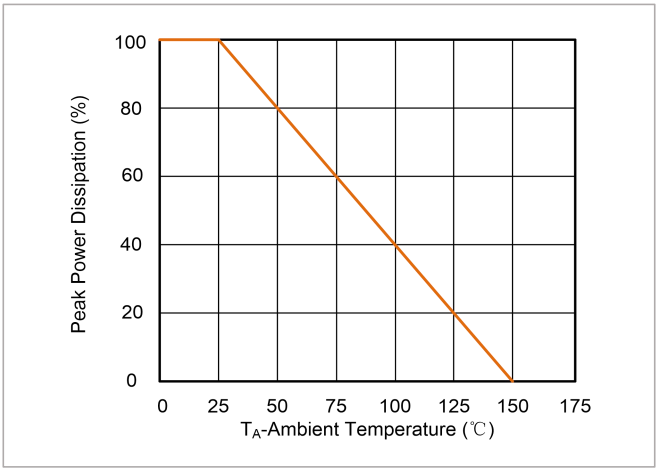
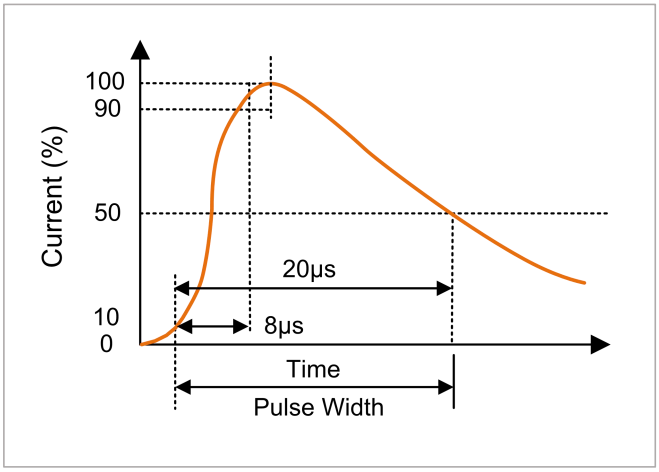
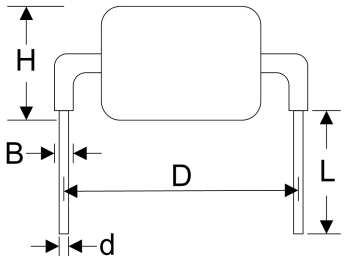
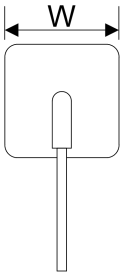


Figure 3:
Pulse Derating Curve



Dimensions





Symbol	12CL~380CL	
	Millimeters	Inches
D	24.15±1.0	0.951±0.039
B	1.35min	0.053min
H	13.0max	0.512max
L	6.0±1.20	0.236±0.047
d	1.28±0.10	0.050±0.004
W	13.0max	0.512max

Symbol	430CL~650CL	
	Millimeters	Inches
D	24.15±1.0	0.951±0.039
B	1.35min	0.053min
H	14.3max	0.563max
L	6.0±1.20	0.236±0.047
d	1.28±0.10	0.050±0.004
W	14.1max	0.555max

Symbol	1100CL~1200CL	
	Millimeters	Inches
D	27.0±1.0	1.063±0.039
B	1.35min	0.053min
H	14.3max	0.563max
L	6.0±1.20	0.236±0.047
d	1.28±0.10	0.050±0.004
W	14.1max	0.555max

Packaging

Part number	Quantity	Packaging Option
K3KA-xxxCL	80pcs/Box	Tray Pack