

### Description

The K6KA 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
- Foldbak technology for superior clamping factor
- ESD protection of data lines in accordance with IEC61000-4-2, 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

( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating Storage Temperature Range	$T_{STG}$	-55 to 125	$^{\circ}\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to 150	$^{\circ}\text{C}$
Current Rating <sup>1</sup>	$I_{PP}$	6	kA

**Notes:**

1. Rated  $I_{PP}$  measured with 8/20 $\mu\text{s}$  pulse

### Functional Diagram



### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number	Reverse Stand-Off Voltage		Breakdown Voltage @ $I_T$		Test Current	Maximum Clamping Voltage @ $I_{PP}$	Current Rating @8/20 $\mu\text{s}$	Reverse Leakage @ $V_{DC}$
	$V_{AC}(V)$	$V_{DC}(V)$	$V_{B Min.}(V)$	$V_{B Max.}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
K6KA-12CL	8.5	12	14.0	16.0	1	28	6000	5
K6KA-15CL	11	15	17.0	19.0	1	30	6000	5
K6KA-20CL	14	20	22.0	24.5	1	40	6000	5
K6KA-25CL	17	25	28.0	31.0	1	50	6000	5
K6KA-30CL	21	30	33.0	36.5	1	60	6000	5
K6KA-33CL	23	33	35.0	39.0	1	66	6000	5
K6KA-38CL	27	38	40.5	49.5	1	69	6000	5
K6KA-42CL	30	42	47.0	52.0	1	77	6000	5
K6KA-58CL	40	58	64.0	72.0	1	110	6000	5
K6KA-66CL	45	66	70.0	77.5	1	125	6000	5
K6KA-76CL	54	76	85.0	94.0	1	140	6000	5
K6KA-100CL	72	100	110.0	121.5	1	165	6000	5
K6KA-133CL	100	133	147.0	162.5	1	220	6000	5
K6KA-150CL	105	150	165.0	182.5	1	240	6000	5
K6KA-170CL	130	170	180.0	199.0	1	260	6000	5
K6KA-190CL	145	190	200.0	221.0	1	290	6000	5
K6KA-200CL	150	200	222.0	245.5	1	330	6000	5
K6KA-240CL	180	240	250.0	276.5	1	340	6000	5

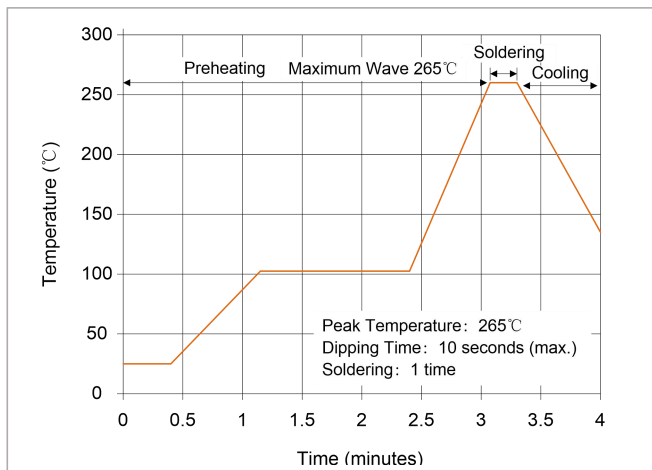
Part Number	Reverse Stand-Off Voltage		Breakdown Voltage @ $I_T$		Test Current	Maximum Clamping Voltage @ $I_{PP}$	Current Rating @8/20 $\mu$ s	Reverse Leakage @ $V_{DC}$
	$V_{AC}(V)$	$V_{DC}(V)$	$V_{B Min.}(V)$	$V_{B Max.}(V)$	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
KP6KA-275CL	210	275	300.0	331.5	1	435	6000	5
KP6KA-300CL	230	300	330.0	365.0	1	470	6000	5
KP6KA-380CL	275	380	401.0	443.5	1	520	6000	5
KP6KA-430CL	310	430	440.0	486.5	1	625	6000	5
KP6KA-460CL	330	460	500.0	552.5	1	770	6000	5
KP6KA-500CL	385	500	558.0	617.0	1	868	6000	5
KP6KA-650CL	460	650	680.0	751.5	1	900	6000	5

Notes: Using 8/20 $\mu$ s wave shape as defined in IEC61000-4-5.

## Wave Solder Profile

**Figure 1:**

Wave Soldering Temperature Profile



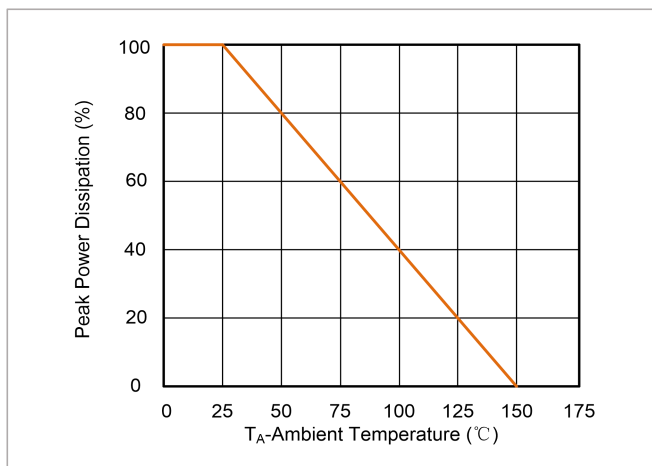
## Flow/Wave Soldering (Solder Dipping)

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

## Ratings and Characteristic Curves ( $T_A=25^\circ C$ unless otherwise noted)

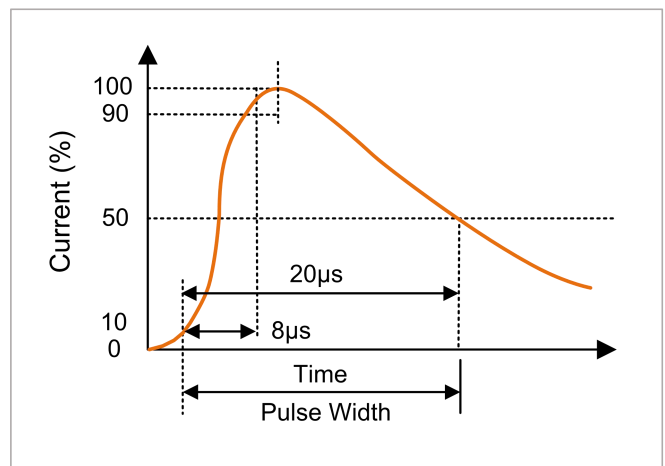
**Figure 2:**

Peak Pulse Power Rating Curve

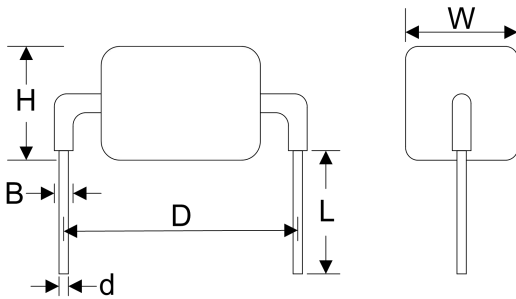


**Figure 3:**

Pulse Derating Curve



## Dimensions



Symbol	12CL~240CL	
	Millimeters	Inches
<b>D</b>	24.15±1.0	0.951±0.039
<b>B</b>	1.35min	0.053min
<b>H</b>	13.0max	0.512max
<b>L</b>	6.0±1.20	0.236±0.047
<b>d</b>	1.28±0.10	0.050±0.004
<b>W</b>	13.0max	0.512max

Symbol	275CL~650CL	
	Millimeters	Inches
<b>D</b>	24.15±1.0	0.951±0.039
<b>B</b>	1.35min	0.053min
<b>H</b>	14.3max	0.563max
<b>L</b>	6.0±1.20	0.236±0.047
<b>d</b>	1.28±0.10	0.050±0.004
<b>W</b>	14.1max	0.555max

## Packaging

Part number	Quantity	Packaging Option
K6KA-xxxCL	80pcs/Box	Tray Pack