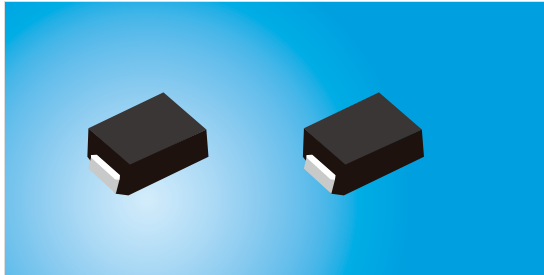


## KWPXXXXSD Series Thyristor Surge Suppressors



### Description

KWPXXXXSD Series Thyristor solid state protection thyristor  
Protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

KWPXXXXSD Series devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

### Features

Compared to surge suppression using other technologies, KWPXXXXSD Series devices offer absolute surge protection regardless of the surge current available and the rate of applied voltage (dv/dt). KWPXXXXSD Series devices:

- Cannot be damaged by voltage
- Eliminate hysteresis and heat dissipation typically found with clamping devices
- Eliminate voltage overshoot caused by fast-rising transients
- Are non-degenerative
- Will not fatigue
- Have low capacitance, making them ideal for high-speed transmission equipment
- Meets MSL level 1, per J-STD-020

### Electrical Parameters

Parameter	Definition
V <sub>DRM</sub>	<b>Peak Off-state Voltage</b> – maximum voltage that can be applied while maintaining off state
V <sub>S</sub>	<b>Switching Voltage</b> – maximum voltage prior to switching to on state
V <sub>T</sub>	<b>On-state Voltage</b> – maximum voltage measured at rated on-state current
I <sub>DRM</sub>	<b>Leakage Current</b> – maximum peak off-state current measured at V <sub>DRM</sub>
I <sub>S</sub>	<b>Switching Current</b> – maximum current required to switch to on state
I <sub>T</sub>	<b>On-state Current</b> – maximum rated continuous on-state current
I <sub>H</sub>	<b>Holding Current</b> – minimum current required to maintain on state
C <sub>O</sub>	<b>Off-state Capacitance</b> – typical capacitance measured in off state
V <sub>PP</sub>	<b>Peak Pulse Voltage</b> – maximum rated peak impulse voltage
I <sub>PP</sub>	<b>Peak Pulse Current</b> – maximum rated peak impulse current

## KWPXXXSD Series Thyristor Surge Suppressors

### Electrical Characteristics

Part Number	Marking	$V_{DRM}$ @ $I_{DRM}=5\mu A$	$V_S$ @100V/ $\mu s$	$I_H$	$I_S$	$I_T^{**}$	$V_T$ @ $I_T=2.2Amps$	Capacitance @1MHz 2V bias	
		V min	V max	mA min	mA max	A max	Vmax	pf min	pf max
KWP0080SD	P008D	6	25	50	800	2.2	4	50	150
KWP0640SD	P06D	58	77	50	800	2.2	4	100	160
KWP0720SD	P07D	65	88	50	800	2.2	4	100	150
KWP0900SD	P09D	75	98	50	800	2.2	4	95	140
KWP1100SD	P11D	90	130	50	800	2.2	4	75	115
KWP1300SD	P13D	120	160	50	800	2.2	4	65	100
KWP1500SD	P15D	140	180	50	800	2.2	4	60	90
KWP1800SD	P18D	170	220	50	800	2.2	4	50	90
KWP2300SD	P23D	190	260	50	800	2.2	4	50	80
KWP2600SD	P26D	220	300	50	800	2.2	4	50	75
KWP3100SD	P31D	275	350	50	800	2.2	4	45	70
KWP3500SD	P35D	320	400	50	800	2.2	4	45	65

#### Notes:

- Absolute maximum ratings measured at  $T_A=25^\circ C$  (unless otherwise noted).
- Devices are bi-directional.

\*\* Will meet 4.4A power cross requirement without fire hazard.

### Surge Ratings


Series	$I_{PP}$									$I_{TSM}$ 50/60 Hz	di/dt
	0.2X310 <sup>1</sup> 0.5X700 <sup>2</sup>	2X10 <sup>1</sup> 2X10 <sup>2</sup>	8X20 <sup>1</sup> 1.2X50 <sup>2</sup>	10X160 <sup>1</sup> 10X160 <sup>2</sup>	10X560 <sup>1</sup> 10X560 <sup>2</sup>	5X320 <sup>1</sup> 9X720 <sup>2</sup>	10X360 <sup>1</sup> 10X360 <sup>2</sup>	10X1000 <sup>1</sup> 10X1000 <sup>2</sup>	5X310 <sup>1</sup> 10X700 <sup>2</sup>		
	A min	A min	A min	A min	A min	A min	A min	A min	A min		
D	-	1000	800	-	-	-	-	200	-	50	1000

#### Notes:

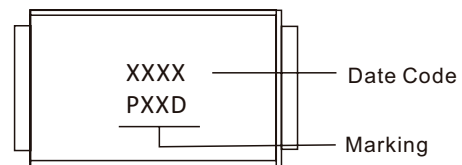
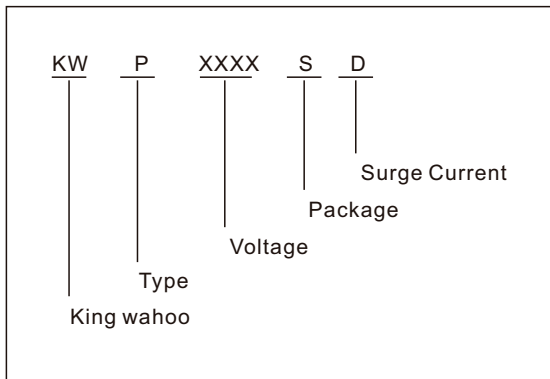
1. Current waveform in  $\mu s$
  2. Voltage waveform in  $\mu s$
- Peak pulse current rating ( $I_{PP}$ ) is repetitive and guaranteed for the life of the product.
  - $I_{PP}$  ratings applicable over temperature range of  $-40^\circ C$  to  $+85^\circ C$
  - The device must initially be in thermal equilibrium with  $-40^\circ C < T_J < +150^\circ C$

# KWPXXXSD Series Thyristor Surge Suppressors

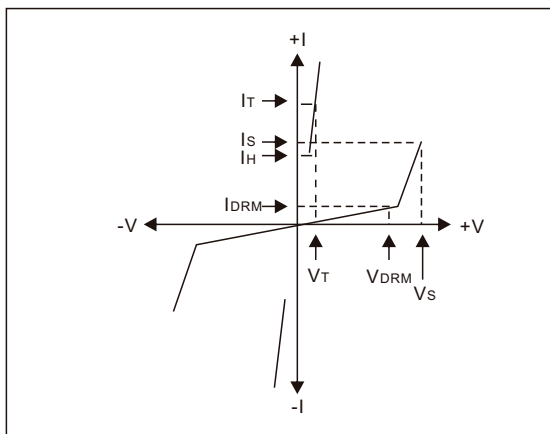
## Packaging Options

Package KWPXXXSD Series	Symbol	Parameter	Value	Unit
	T <sub>J</sub>	Operating Junction Temperature	-40 to +150	°C
	T <sub>S</sub>	Storage Temperature Range	-65 to +150	°C
	R <sub>θJA</sub>	Junction to Ambient on printed circuit	90	°C/W

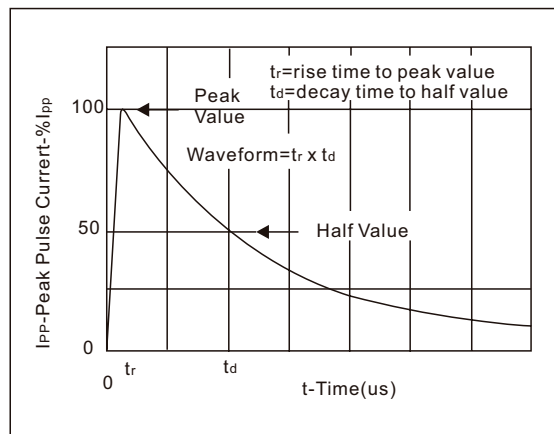
## Part Number Code and Marking



## V-I Characteristics

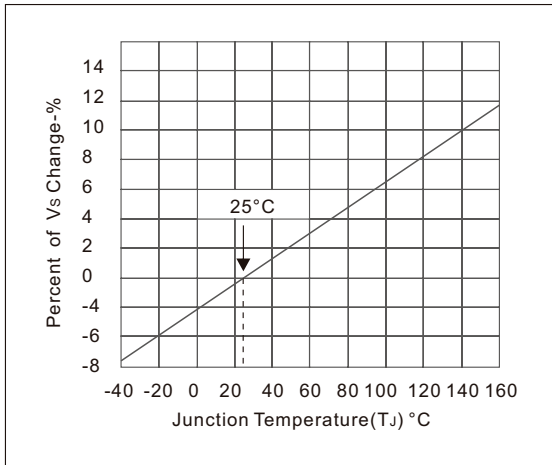


## tr X td Pulse Waveform

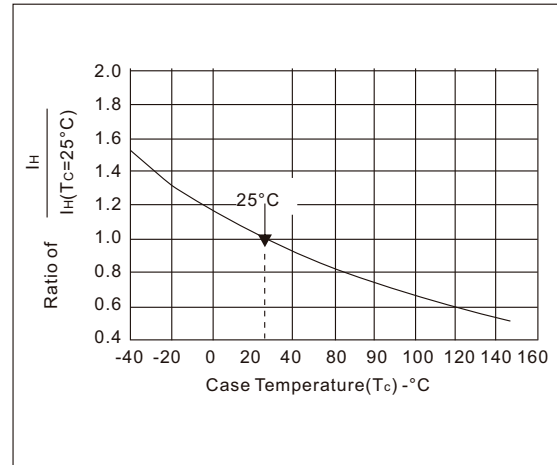


# KWPXXXSD Series Thyristor Surge Suppressors

**Normalized Vs Change vs. Junction Temperature**



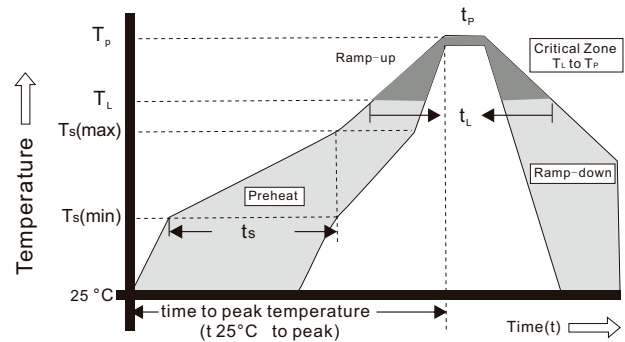
**Normalized DC Holding Current vs. Case Temperature**

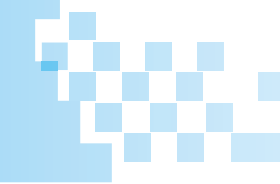


## Recommended Conditions

Profile Feature	Pb – Free assembly
Average ramp-up rate(T <sub>L</sub> to T <sub>P</sub> )	3°C/second max
Preheat	
-Temperature Min(T <sub>s</sub> min)	150°C
-Temperature Max(T <sub>s</sub> max)	200°C
-Time (Min to Max)(t <sub>s</sub> )	60 – 180 secs
T <sub>s</sub> (max) to T <sub>L</sub> - Ramp-up Rate	3°C/second max
Time maintained above:	
-Temperature(T <sub>L</sub> )	217°C
-Time (t <sub>L</sub> )	60 – 150 seconds
Peak Temperature (T <sub>P</sub> )	260 °C
Time within 5°C of actual peak Temperature (t <sub>p</sub> )	30 second max
Ramp-down Rate	6°C/second max
Time 25°C to peak Temperature	8 minutes Max.

## Recommended Soldering Conditions

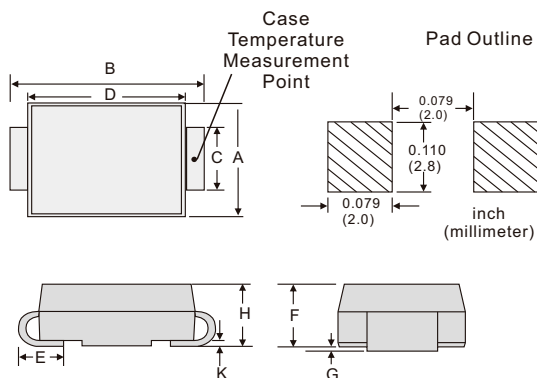




# KWPXXXSD Series Thyristor Surge Suppressors



## Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.130	0.156	3.30	3.95
B	0.201	0.220	5.10	5.60
C	0.077	0.087	1.95	2.20
D	0.159	0.181	4.05	4.60
E	0.030	0.063	0.75	1.60
F	0.075	0.096	1.90	2.45
G	0.002	0.008	0.05	0.20
H	0.077	0.104	1.95	2.65
K	0.006	0.016	0.15	0.41

## Packaging

Package Type	Description	Quantity	Added Suffix	Industry Standard
S	DO-214AA Tape & Reel Pack	2500	RP	EIA-481-D

