

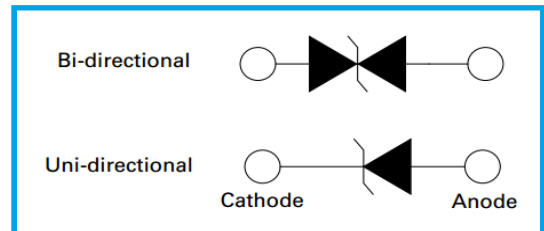
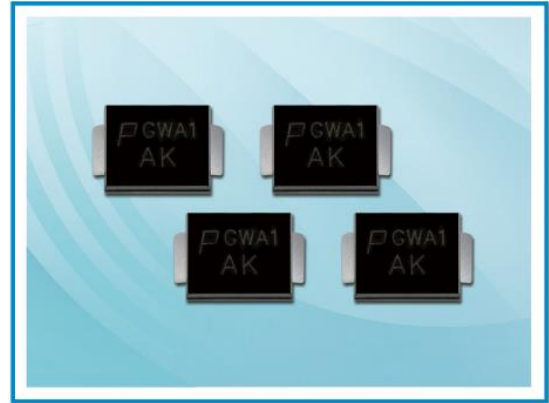
## TVS Diode – 8.0SMDJ Series

### Features

- Plastic package, excellent insulation strength.
- 8,000 W peak pulse power capability with a 10/1000  $\mu$ s
- Built-in strain relief
- Low inductance
- Low leakage
- Uni and Bi-directional unit
- Excellent voltage clamping capability
- Very fast response time
- Typical maximum temperature coefficient
- $\Delta V_{BR} = 0.1\% \times V_{BR} @ 25\text{ }^{\circ}\text{C} \times \Delta T$
- High temperature soldering guaranteed: 265 $^{\circ}$ C/10 sec.
- Matte Tin Lead-free plated

### Applications

- I/O interface,  $V_{CC}$  bus
- Telecom / Automotive
- Industrial and consumer electronic applications.
- Relay and electromagnetic valve surge absorption.



### Mechanical and Physical Data

- Case: JEDEC DO-214AB. Molded plastic over glass passivated junction
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Color band denoted cathode end except Bi-polar
- Terminal: Solderable per MIL-STD-750, Method 2026
- Mounting position: Any

### Maximum Ratings and Thermal Characteristics

Parameter	Symbol	Value	Unit
Peak power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$P_{PP}$	8,000	Watt
Peak pulse current with a 10/1000 $\mu$ s waveform <sup>(1)</sup>	$I_{PP}$	See Table	Amp
Power dissipation on infinite heatsink at $T_L = 50\text{ }^{\circ}\text{C}$	$P_D$	6.5	Watt
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only <sup>(2)</sup>	$I_{FSM}$	300	Amp
Maximum instantaneous forward voltage at 100 A for unidirectional only	$V_F$	5	V
Operating junction and storage temperature range	$T_J, T_{STG}$	-55~150	$^{\circ}\text{C}$

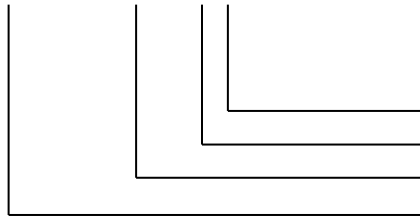
Note:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25\text{ }^{\circ}\text{C}$  per Fig.1
2. 8.3 ms single half sine wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

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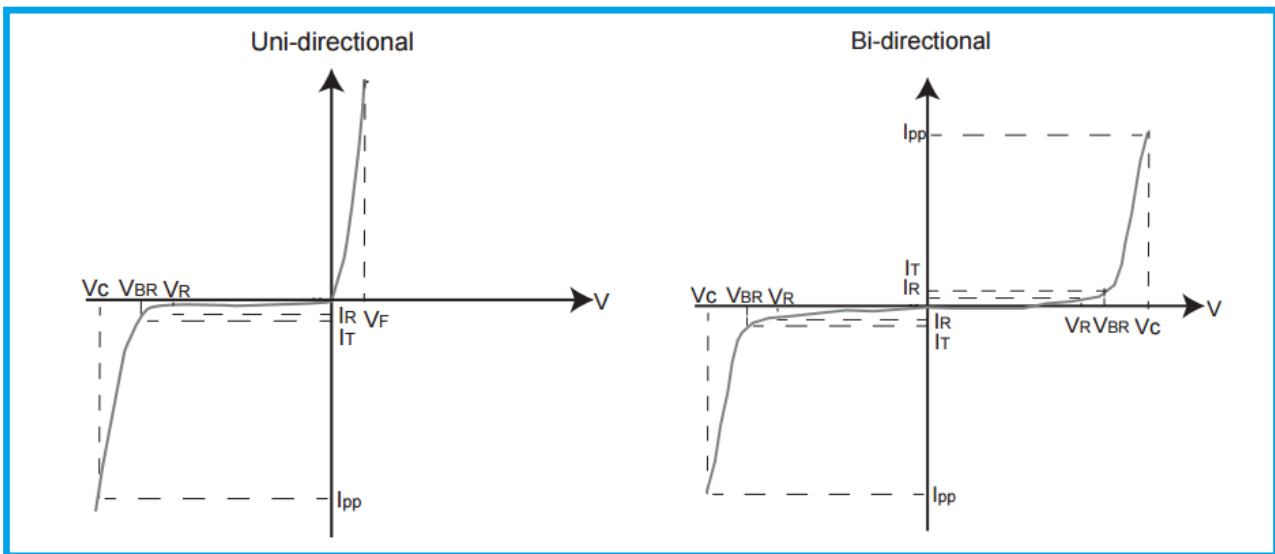
### Part Number Code

8.0SMDJ □□□ C A



V<sub>BR</sub> Voltage tolerance (A: 5%; Blank: 10%)  
C: Bi-directional; Blank: Uni-directional  
Reverse Stand-Off Voltage or Typical Breakdown Voltage  
8.0SMDJ Series (8,000W)

### I-V Curve Characteristics



P<sub>PPM</sub> Peak Pulse Power Dissipation – Maximum power dissipation

V<sub>R</sub> Stand-off Voltage – Maximum voltage that can be applied to the TVS without operation

V<sub>BR</sub> Breakdown Voltage – Maximum voltage that flows through the TVS at a specified test current (I<sub>T</sub>)

V<sub>C</sub> Clamping Voltage – Peak voltage measured across the TVS at a specified I<sub>PPM</sub> (Peak Impulse Current)

I<sub>R</sub> Reverse Leakage Current – Current measured at V<sub>R</sub>

V<sub>F</sub> Forward Voltage Drop for Uni-directional

### Electrical Characteristics

Part Number		Marking		Reverse Stand Off Voltage V <sub>R</sub> (V)	Breakdown Voltage V <sub>BR</sub> (V) @ I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Clamping Voltage V <sub>C</sub> (V) @ I <sub>PP</sub>	Maximum Peak Pulse Current I <sub>PP</sub> (A)	Maximum Reverse Leakage I <sub>R</sub> (μA) @ V <sub>R</sub>
Uni	Bi	Uni	Bi		Min.	Max.				
8.0SMDJ12A	8.0SMDJ12CA	8PEP	8BEP	12	13.30	14.70	10	19.9	402.1	800
8.0SMDJ13A	8.0SMDJ13CA	8PEQ	8BEQ	13	14.40	15.90	10	21.5	372.1	500
8.0SMDJ14A	8.0SMDJ14CA	8PER	8BER	14	15.60	17.20	10	23.2	344.9	200
8.0SMDJ15A	8.0SMDJ15CA	8PES	8BES	15	16.70	18.50	1	24.4	327.9	100
8.0SMDJ16A	8.0SMDJ16CA	8PET	8BET	16	17.80	19.70	1	26.0	307.7	50
8.0SMDJ17A	8.0SMDJ17CA	8PEU	8BEU	17	18.90	20.90	1	27.6	290.0	20
8.0SMDJ18A	8.0SMDJ18CA	8PEV	8BEV	18	20.00	22.10	1	29.2	274.0	10
8.0SMDJ20A	8.0SMDJ20CA	8PEW	8BEW	20	22.20	24.50	1	32.4	247.0	5
8.0SMDJ22A	8.0SMDJ22CA	8PEX	8BEX	22	24.40	26.90	1	35.5	225.4	5

## TVS Diode – 8.0SMDJ Series

Part Number		Marking		Reverse Stand Off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR}$ (V) @ $I_T$		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) @ $I_{PP}$ Uni	Maximum Peak Pulse Current $I_{PP}$ (A) Bi	Maximum Reverse Leakage $I_R$ ( $\mu$ A) @ $V_R$ Uni
Uni	Bi	Uni	Bi		Min.	Max.				
8.0SMDJ24A	8.0SMDJ24CA	8PEZ	8BEZ	24	26.70	29.50	1	205.7	38.9	5
8.0SMDJ26A	8.0SMDJ26CA	8PFE	8BFE	26	28.90	31.90	1	190.1	42.1	5
8.0SMDJ28A	8.0SMDJ28CA	8PFG	8BFG	28	31.10	34.40	1	176.2	45.4	5
8.0SMDJ30A	8.0SMDJ30CA	8PFK	8BFK	30	33.30	36.80	1	165.3	48.4	5
8.0SMDJ33A	8.0SMDJ33CA	8PFM	8BFM	33	36.70	40.60	1	150.1	53.3	5
8.0SMDJ36A	8.0SMDJ36CA	8PFP	8BFP	36	40.00	44.20	1	137.8	58.1	5
8.0SMDJ40A	8.0SMDJ40CA	8PFR	8BFR	40	44.40	49.10	1	124.1	64.5	5
8.0SMDJ43A	8.0SMDJ43CA	8PFT	8BFT	43	47.80	52.80	1	115.3	69.4	5
8.0SMDJ45A	8.0SMDJ45CA	8PFV	8BFV	45	50.00	55.30	1	110.1	72.7	5
8.0SMDJ48A	8.0SMDJ48CA	8PFX	8BFX	48	53.30	58.90	1	103.4	77.4	5
8.0SMDJ51A	8.0SMDJ51CA	8PFZ	8BFZ	51	56.70	62.70	1	97.1	82.4	5
8.0SMDJ54A	8.0SMDJ54CA	8PGE	8BGE	54	60.00	66.30	1	91.9	87.1	5
8.0SMDJ58A	8.0SMDJ58CA	8PGG	8BGG	58	64.40	71.20	1	85.5	93.6	5
8.0SMDJ60A	8.0SMDJ60CA	8PGK	8BGK	60	66.70	73.70	1	82.7	96.8	5

Note:

- For bi-directional type having  $V_R$  of 20 volts and less, the  $I_R$  limit is double.

### Ratings and Characteristic Curves

Fig 1 - Peak Pulse Power Rating Curve

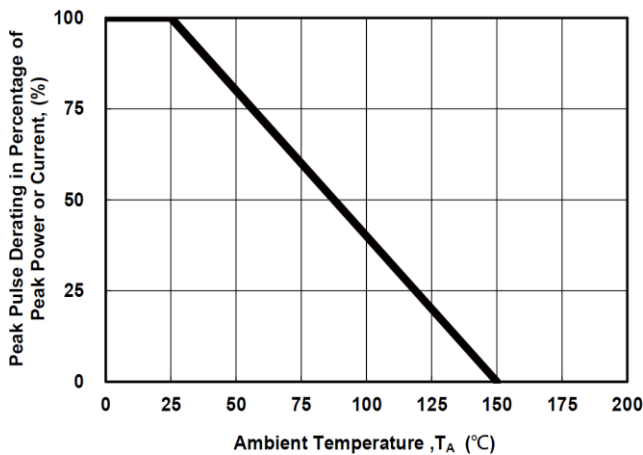
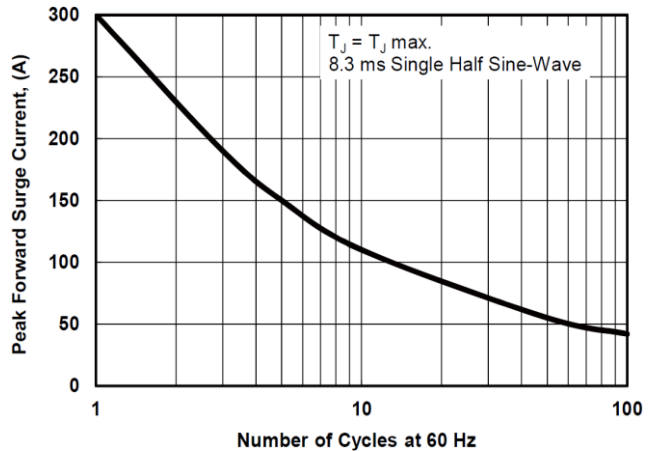


Fig 2 - Maximum Non-Repetitive Surge Current



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Fig 3 – Typical Junction Capacitance

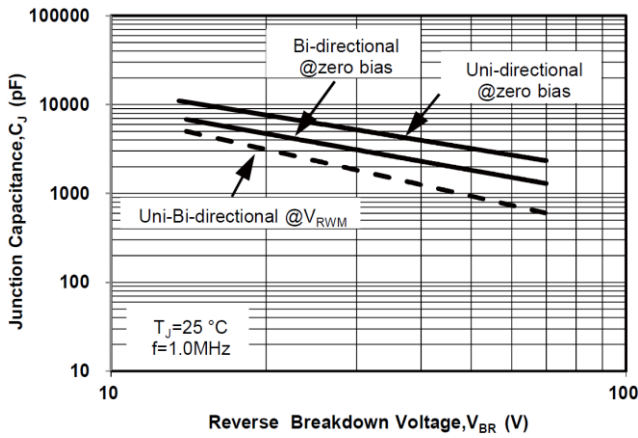


Fig 4 – Peak Pulse Power Rating Curve

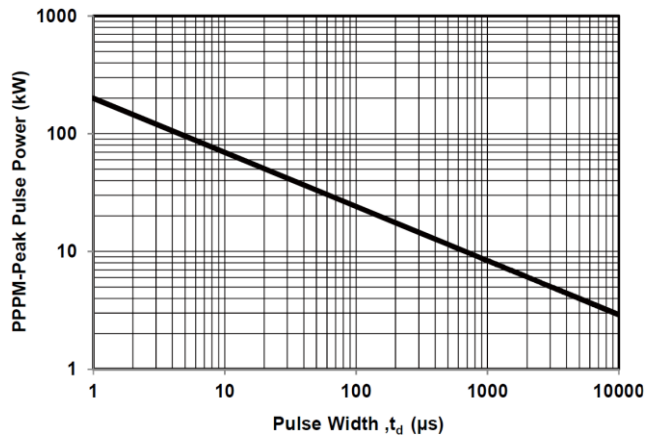
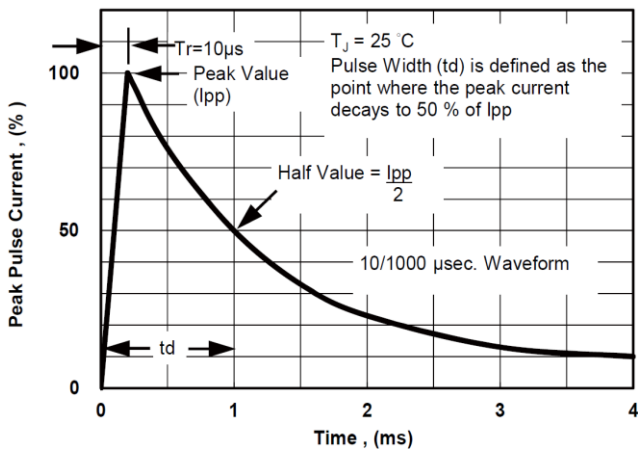
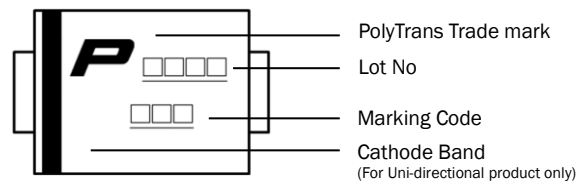


Fig 5 – Pulse Waveform

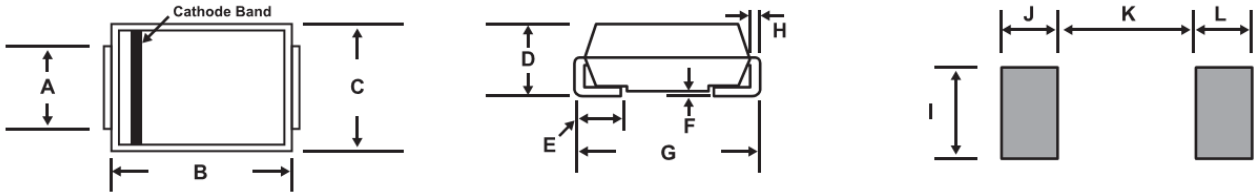


### Marking Definitions



## TVS Diode – 8.0SMDJ Series

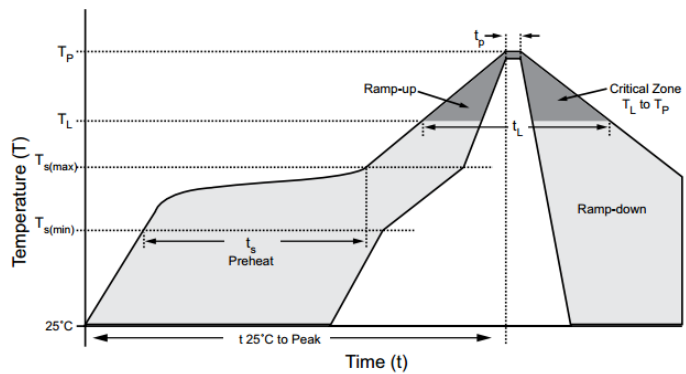
### Physical Dimensions



Dimension	Millimeters		Inches	
	Min	Max	Min	Max
A	2.90	3.20	0.114	0.126
B	6.60	6.22	0.220	0.245
C	5.59	6.22	0.220	0.245
D	2.00	2.95	0.079	0.116
E	0.75	1.51	0.030	0.060
F	0.02	0.20	0.001	0.008
G	7.75	8.13	0.305	0.320
H	0.15	0.30	0.006	0.012
I	3.20	-	-	-
J	1.52	-	-	-
K	4.69	-	-	-
L	1.52	-	-	-

### Lead Free Reflow Soldering Recommendations

<b>Preheat</b>	
- Temperature Min ( $T_{s\_min}$ )	150°C
- Temperature Max ( $T_{s\_max}$ )	200°C
- Time ( $T_{s\_min}$ to $T_{s\_max}$ )	60-180 seconds
- Average Ramp-Up Rate	1~3°C/second
<b>Peak Temperature</b>	260°C max.
<b>Time within 5°C of actual Peak Temperature (<math>t_p</math>)</b>	40 seconds max.
<b>Ramp-Down Rate</b>	6 °C /second max.



**Note:** If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

### Packaging Information

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
8.0SMDJ Series	DO-214AB	5000	Tape & Reel – 16mm tape/13" reel	EIA STD RS-481

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### Tape and Reel Specifications

