

## Features

- For surface mounted applications in order to optimize board space
- Pb-free plated
- Peak Power is 720W@1ms
- ESD Rating of Class X (> 15 kV) (IEC6100-4-2)
- Response Time is Typically <1 ns
- Low profile package
- Typical I<sub>R</sub> less than 1μA above 10V
- Low inductance
- Excellent clamping capability
- AEC-Q101



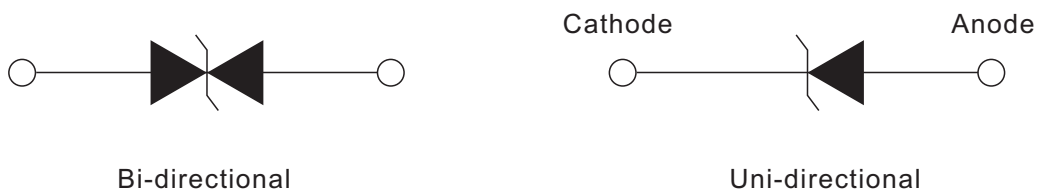
## Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

## Mechanical Characteristics

- **Case:** JEDEC DO-214AA. Molded plastic over glass passivated junction
- **Terminal:** Solderable per MIL-STD-750, Method 2026
- **Polarity:** Color band denoted positive end (cathode) except Bidirectional
- **Standard Packaging:** 12mm tape (EIA STD RS-481)
- **Weight:** 0.003 ounce, 0.093 gram

## Functional Diagram



## Maximum Ratings And Characteristics

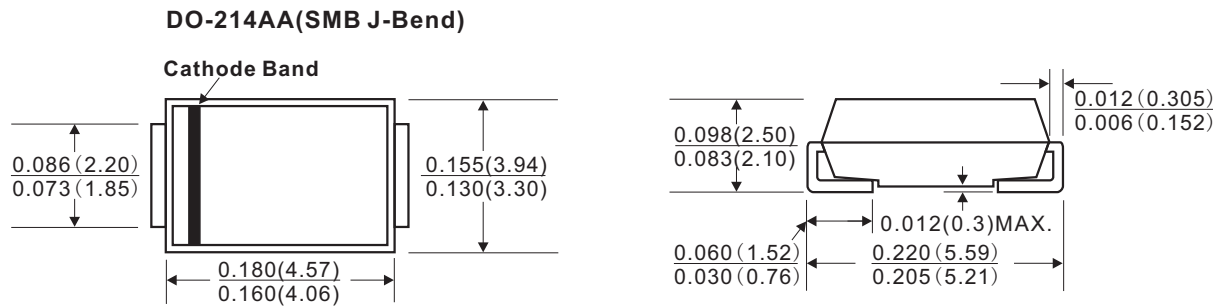
Ratings at 25°C ambient temperature unless otherwise specified.

RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000μs waveform	P <sub>PPM</sub>	Minimum 720	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load, (JEDEC Method) (Note 2,3)	I <sub>FSM</sub>	100	Amps
Operating junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Notes :

1. Non-repetitive current pulse, per Fig. 3 and derated above TA = 25°C per Fig. 2.
2. Mounted on 5.0mm x 5.0mm (0.03mm thick) Copper Pads to each terminal
3. 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

## Dimensions (DO-214AA)



Dimensions in inches and (millimeters)

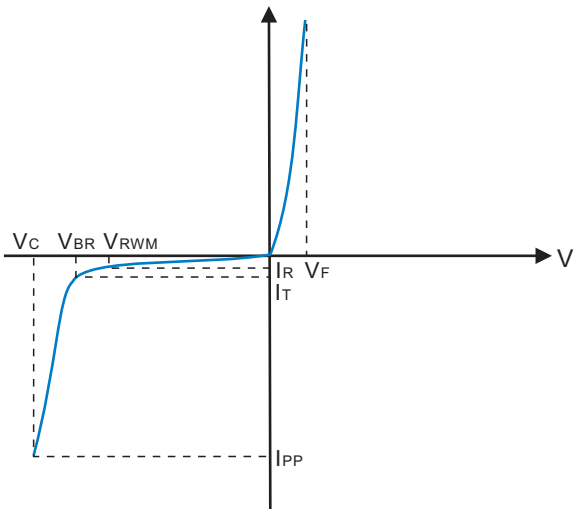
## Electrical Characteristics

TSC Part Number		Device Marking Code		Reverse Stand-Off Voltage	Breakdown Voltage @IT		Test Current	Maximum Clamping Voltage @Ipp	Peak Pulse Current	Reverse Leakage @VRWM
UNI-Polar	BI-Polar	UNI	BI	VRWM(V)	VBR(V)Min.	VBR(V)Max.	IT(mA)	Vc(V)	Ipp(A)	IR(μA)
TSC6.0U	TSC6.0B	KG	AG	6.0	6.67	7.37	10	10.3	70.0	100
TSC8.0U	TSC8.0B	KR	AR	8.0	8.89	9.83	1	13.6	52.9	50
TSC12U	TSC12B	LE	BE	12.0	13.30	14.70	1	19.9	36.2	1
TSC15U	TSC15B	LM	BM	15.0	16.70	18.50	1	24.4	29.5	1
TSC16U	TSC16B	LP	BP	16.0	17.80	19.70	1	26.0	27.7	1
TSC18U	TSC18B	LT	BT	18.0	20.00	22.10	1	29.2	24.7	1
TSC20U	TSC20B	LV	BV	20.0	22.20	24.50	1	32.4	22.2	1
TSC22U	TSC22B	LX	BX	22.0	24.40	26.90	1	35.5	20.3	1
TSC26U	TSC26B	ME	CE	26.0	28.90	31.90	1	42.1	17.0	1
TSC28U	TSC28B	MG	CG	28.0	31.10	34.40	1	45.4	15.9	1
TSC30U	TSC30B	MK	CK	30.0	33.30	36.80	1	48.4	14.9	1
TSC33U	TSC33B	MM	CM	33.0	36.70	40.60	1	53.3	13.5	1
TSC36U	TSC36B	MP	CP	36.0	40.00	44.20	1	58.1	12.4	1
TSC40U	TSC40B	MR	CR	40.0	44.40	49.10	1	64.5	11.2	1
TSC58U	TSC58B	NG	DG	58.0	64.40	71.20	1	93.6	7.7	1
TSC60U	TSC60B	NK	DK	60.0	66.70	73.70	1	96.8	7.4	1
TSC150U	TSC150B	PM	EM	150.0	167.00	185.00	1	243.0	3.0	1
TSC170U	TSC170B	PR	ER	170.0	189.00	209.00	1	275.0	2.6	1
TSC440U	TSC440B	QM	FM	440.0	492.00	543.00	1	713.0	1.0	1

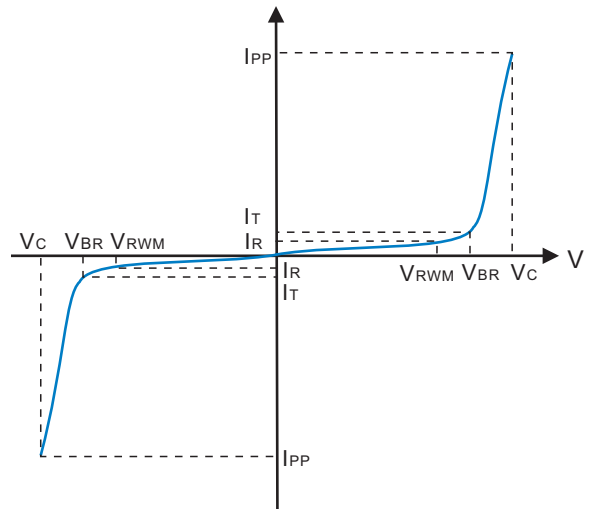
For bidirectional type having VRWM of 10 volts and less, the IR limit is double.

I-V Curve Characteristics

Uni-directional



Bi-directional



Ratings And Characteristic Curves(TA=25°C Unless otherwise noted)

Fig.1 Peak Pulse Power Rating

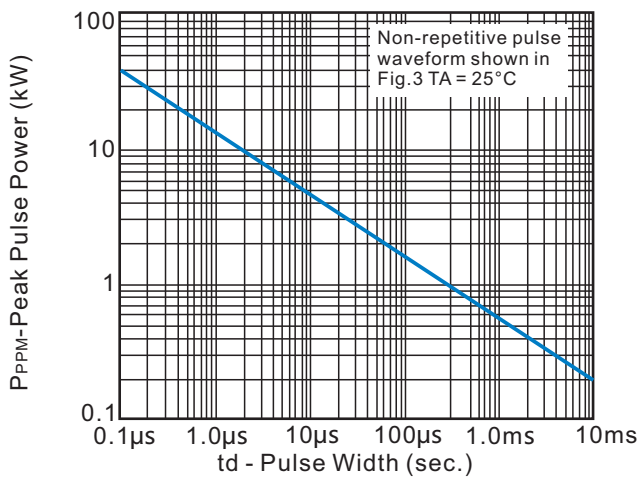


Fig.2 Pulse Derating Curve

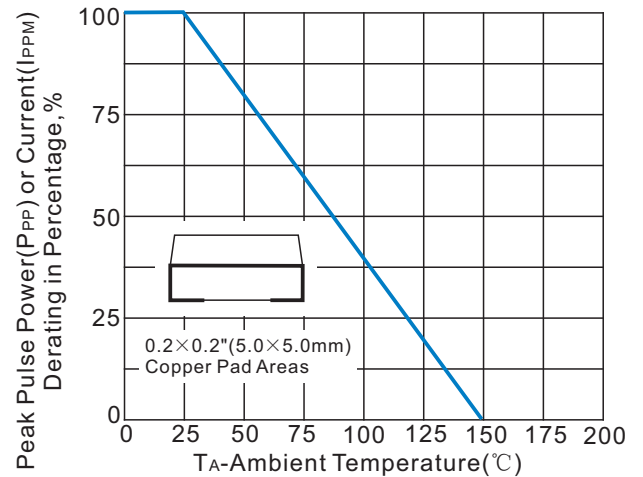


Fig.3 Pulse Waveform

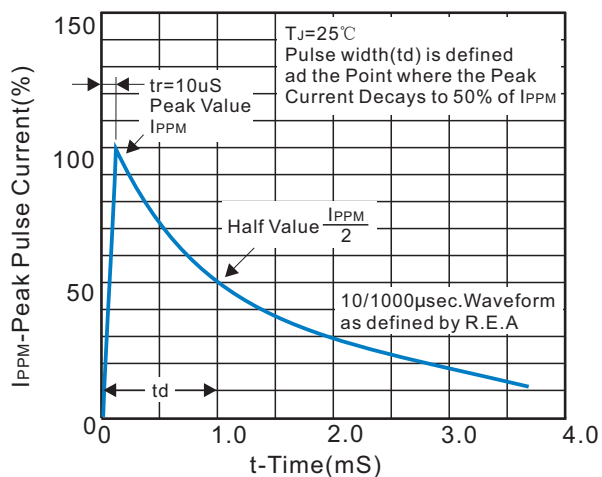
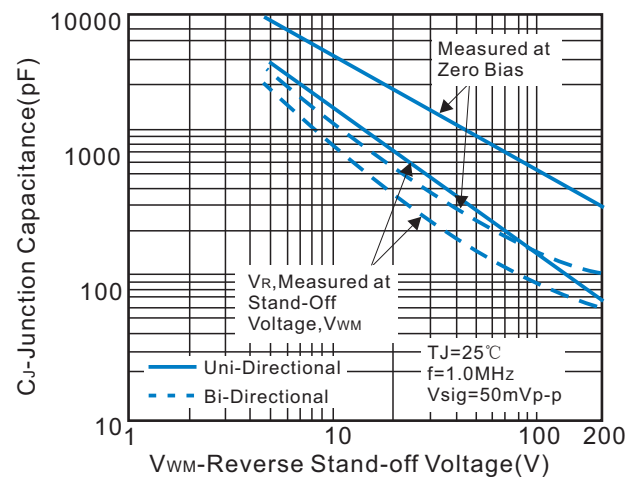


Fig.4 Typical Junction Capacitance



## Ratings And Characteristic Curves

Fig.5 Typ. Transient Thermal Impedance

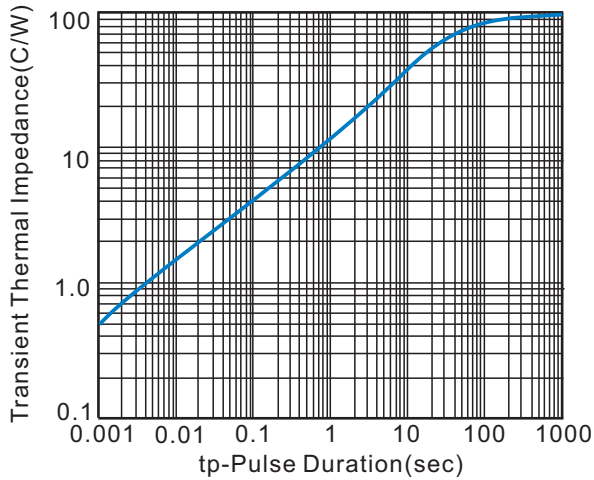
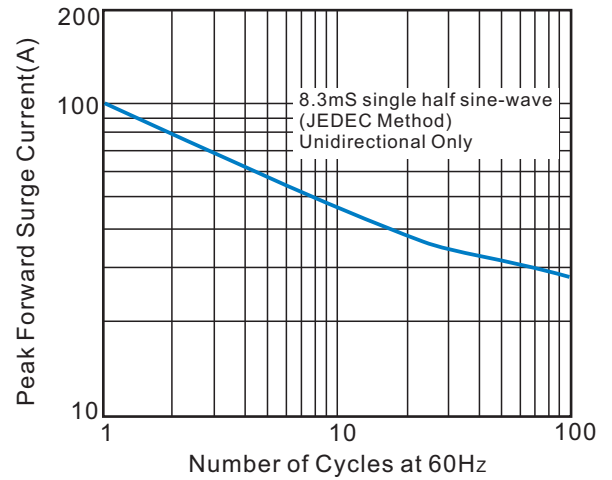


Fig.6 Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

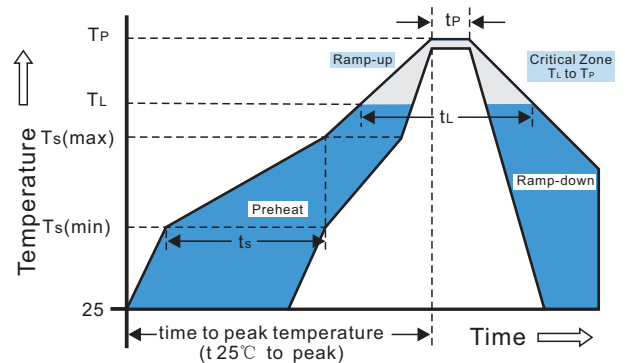


## Recommended Soldering Conditions

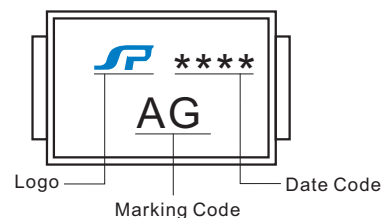
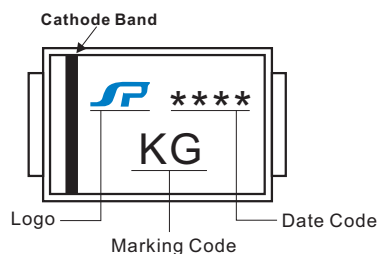
### Recommended Conditions

Reflow Condition		Pb-Free assembly (see Fig.1)
Pre Heat	-Temperature Min( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time(Min to Max)( $t_s$ )	60-180secs
Average ramp up rate (Liquidus Temp( $T_L$ ) to peak)		3°C/sec.Max.
$T_{s(max)}$ to $T_L$ -Ramp-up Rate		3°C/sec.Max.
Reflow	-Temperature( $T_L$ )(Liquidus)	+217°C
	-Temperature( $t_L$ )	60-150secs
Peak Temp( $T_P$ )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp( $t_P$ )		30 secs.Max.
Ramp-down Rate		6°C/sec.Max.
Time 25°C to Peak Temp( $T_P$ )		8 min.Max.
Do not exceed		+260°C

### Reflow Soldering



## Marking Code



Packing Options And Reel Specification-DO-214AA

Symbol	Ea Per Reel	REEL DIA (mm)	Industry Standard
TSC***	3000	330	EIARS-481

