

Features

- For surface mounted applications in order to optimize board space
- Pb-free plated
- Peak Power is 1800W@1ms
- ESD Rating of Class X (> 15 kV) (IEC6100-4-2)
- Response Time is Typically<1 ps
- Low profile package
- Typical I_R less than 1 μ A above 10V
- Low inductance
- Excellent clamping capability
- AEC-Q101



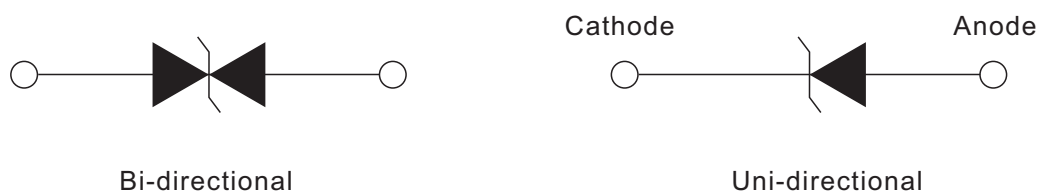
Applications

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

Mechanical Characteristics

- Case:** JEDEC DO-214AB. 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:** 16mm tape (EIA STD RS-481)

Functional Diagram



Maximum Ratings And Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

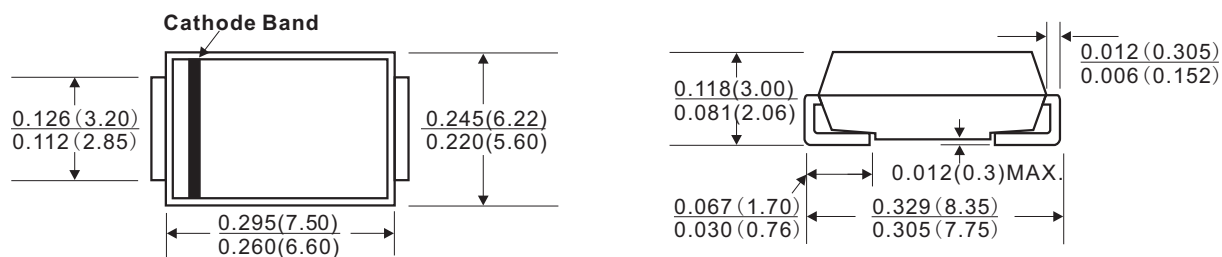
RATING	SYMBOL	VALUE	UNITS
Peak Pulse Power Dissipation on 10/1000 μ s waveform	P_{PPM}	1800	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load, (JEDEC Method) (Note 2, 3)	I_{FSM}	200	Amps
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes :

- Non-repetitive current pulse , per Fig. 3 and derated above $T_A = 25^\circ\text{C}$ per Fig. 2 .
- Mounted on 8.0mm x 8.0mm Copper Pads to each terminal
- 8.3ms single half sine-wave , or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Dimensions (DO-214AB)

DO-214AB(SMC J-Bend)



Dimensions in inches and(millimeters)

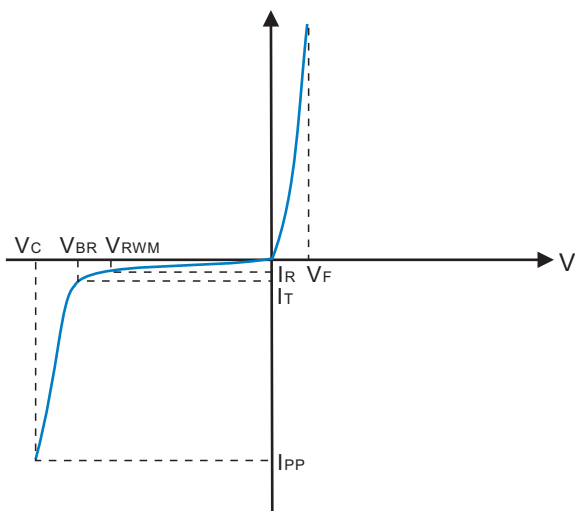
Electrical Characteristics

TSD 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)
TSD6.0U	TSD6.0B	GDG	BDG	6.0	6.67	7.37	10	10.3	174.8	200
TSD8.0U	TSD8.0B	GDR	BDR	8.0	8.89	9.83	1	13.6	132.4	50
TSD12U	TSD12B	GEE	BEE	12.0	13.30	14.70	1	19.9	90.5	1
TSD15U	TSD15B	GEM	BEM	15.0	16.70	18.50	1	24.4	73.8	1
TSD16U	TSD16B	GEP	BEP	16.0	17.80	19.70	1	26.0	69.2	1
TSD18U	TSD18B	GET	BET	18.0	20.0	22.10	1	29.2	61.6	1
TSD20U	TSD20B	GEV	BEV	20.0	22.20	24.50	1	32.4	55.6	1
TSD22U	TSD22B	GEX	BEX	22.0	24.40	26.90	1	35.5	50.7	1
TSD24U	TSD24B	GEZ	BEZ	24.0	26.70	29.50	1	38.9	46.3	1
TSD26U	TSD26B	GFE	BFE	26.0	28.90	31.90	1	42.1	42.8	1
TSD28U	TSD28B	GFG	BFG	28.0	31.10	34.40	1	45.4	39.6	1
TSD30U	TSD30B	GFK	BFK	30.0	33.30	36.80	1	48.4	37.2	1
TSD33U	TSD33B	GFM	BFM	33.0	36.70	40.60	1	53.3	33.8	1
TSD36U	TSD36B	GFP	BFP	36.0	40.00	44.20	1	58.1	31.0	1
TSD40U	TSD40B	GFR	BFR	40.0	44.40	49.10	1	64.5	27.9	1
TSD51U	TSD51B	GFZ	BFZ	51.0	56.70	62.70	1	82.4	21.8	1
TSD58U	TSD58B	GGG	BGG	58.0	64.40	71.20	1	93.6	19.2	1
TSD60U	TSD60B	GGK	BGK	60.0	66.70	73.70	1	96.8	18.6	1
TSD150U	TSD150B	GHM	BHM	150.0	167.00	185.00	1	243.0	7.4	1
TSD170U	TSD170B	GHR	BHR	170.0	189.00	209.00	1	275.0	6.5	1

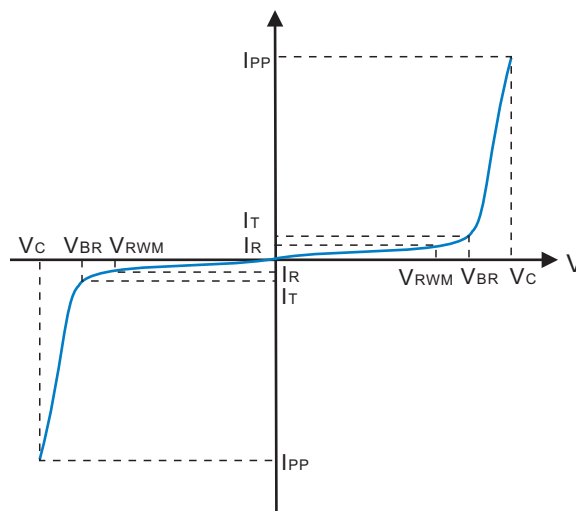
For bidirectional type having VRWM of 10 volts and less, the IR limit is double.

I-V Curve Characteristics

Uni-directional



Bi-directional



Ratings And Characteristic Curves($T_A=25^\circ\text{C}$ Unless otherwise noted)

Fig.1 Peak Pulse Power Rating

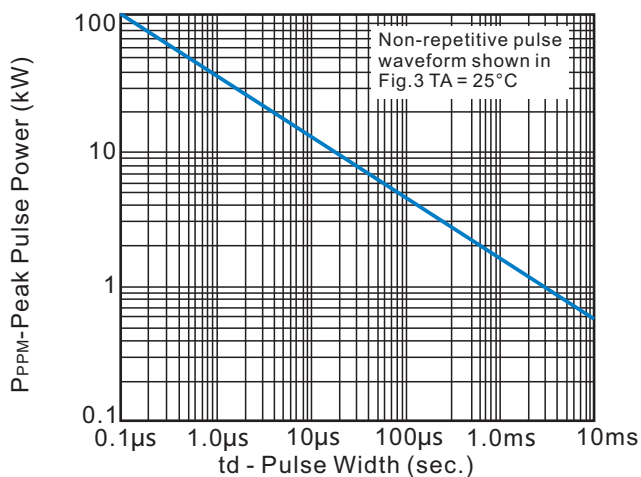


Fig.2 Pulse Derating Curve

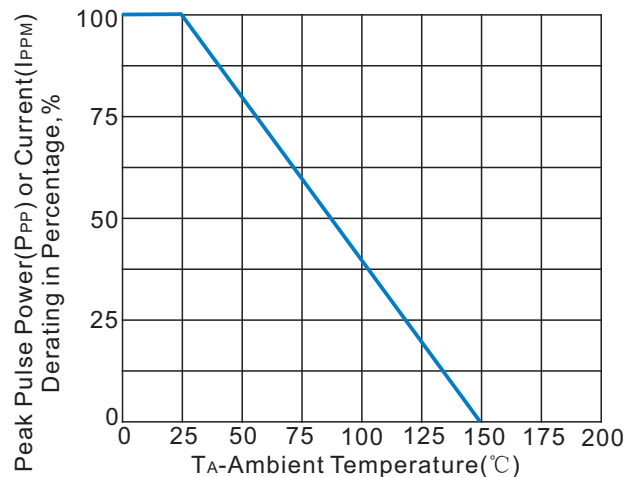


Fig.3 Pulse Waveform

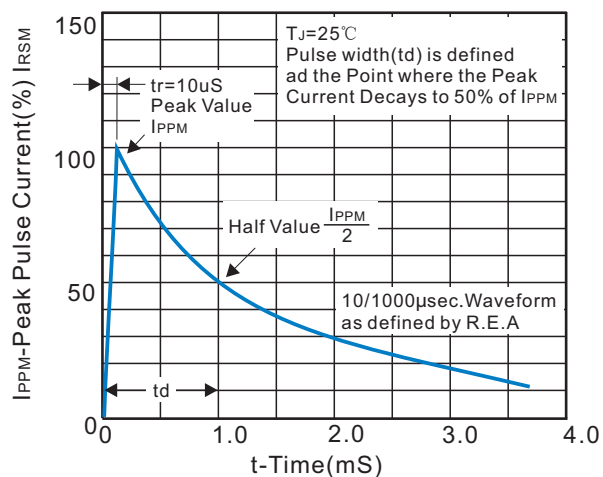
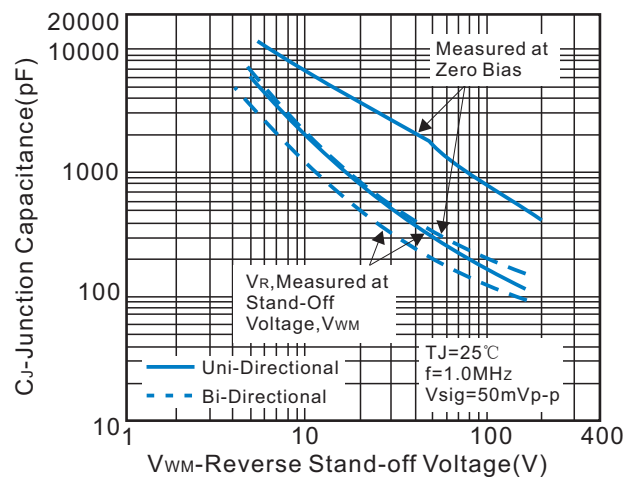


Fig.4 Typical Junction Capacitance



Ratings And Characteristic Curves($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Fig.5 Typ. Transient Thermal Impedance

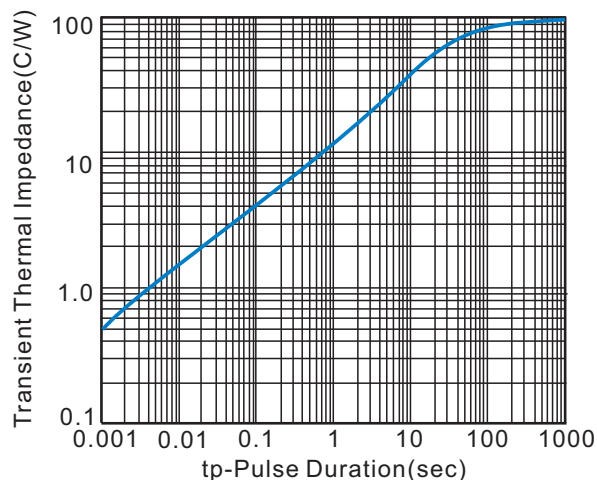
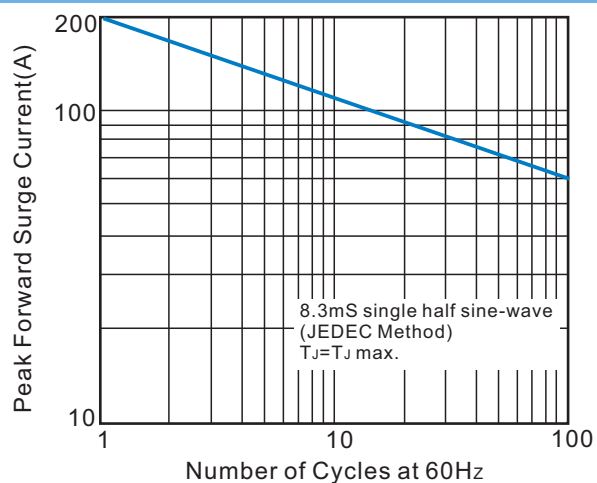


Fig.6 Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only

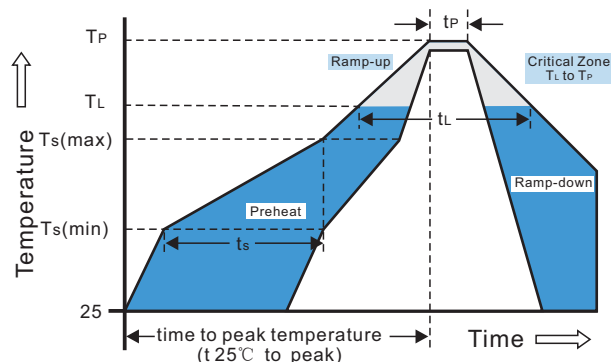


Recommended Soldering Conditions

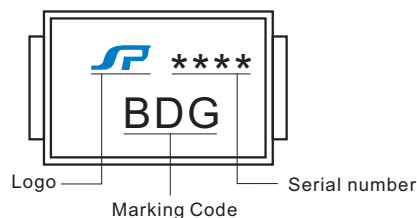
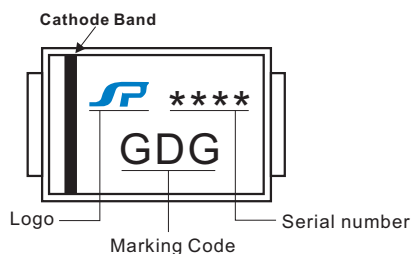
Recommended Conditions

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

Reflow Soldering



Marking Code



Packing Options And Reel Specification-DO-214AB

Symbol	Ea Per Reel	REEL DIA (mm)	Industry Standard
TSD***	500/3000	178/330	EIARS-481

