High Voltage Ultrafast Avalanche SMD Rectifiers

DO-214AC (SMA)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	1300 V
I_{FSM}	18 A
t_{rr}	75 ns
E_R	5 mJ
V_F at I_F = 1.0 A (T_A = 125 °C)	1.39 V
T_J max.	150 °C

TYPICAL APPLICATIONS

For use in high voltage, high frequency rectification specially suited for freewheeling, clamping, snubbering in power supply, ignition drive of HID, UHP and industrial ballast and snubber for PDP TV power supply application.

FEATURES

- Glass passivated junction
- Low profile package
- Ideal for automated placement
- Low reverse current
- High reverse voltage
- Ultra fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- **Halogen-free according to IEC 61249-2-21 definition**

RoHS COMPLIANT

HALOGEN FREE

MECHANICAL DATA

Case: DO-214AC (SMA)
Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS compliant, and commercial grade

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test

Polarity: Color band denotes the cathode end

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**BYG23T**	**UNIT**
Device marking code		BYG23T	
Maximum repetitive peak reverse voltage	V_{RRM}	1300	V
Maximum DC forward current (fig.1)	I_F (1)	1.0	A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	18	A
Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R}$ = 0.4 A, T_L = 25 °C	E_R	5	mJ
Maximum operating junction temperature	T_J	150	°C
Storage temperature range	T_{STG}	- 55 to + 150	°C

Note

- Free air, mounted on recommended copper pad area

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage (1)	I_F = 1.0 A	T_A = 25 °C	V_F	1.74	1.9	V
		T_A = 125 °C		1.39	1.65	
Reverse current (2)	V_R = 1300 V	T_A = 25 °C	I_R	-	5.0	µA
		T_A = 125 °C		2.9	50	
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	T_A = 25 °C	t_{rr}	65	75	ns
Forward recovery time	I_F = 1.5 A, dI/dt = 12 A/µs, V_F = 1.1 x V_F max.	T_A = 25 °C	t_{fr}	620	-	
Peak forward voltage			V_{FP}	9.0	-	V
Typical junction capacitance	4.0 V, 1 MHz		C_J	9.0	-	pF

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	BYG23T	UNIT
Typical thermal resistance (1)	$R_{\theta JA}$	120	°C/W
	$R_{\theta JM}$	20	

Note

(1) Free air, mounted on recommended PCB 1 oz. pad area. Thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ - junction to mount.

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QANTITY	DELIVERY MODE
BYG23T-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG23T-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

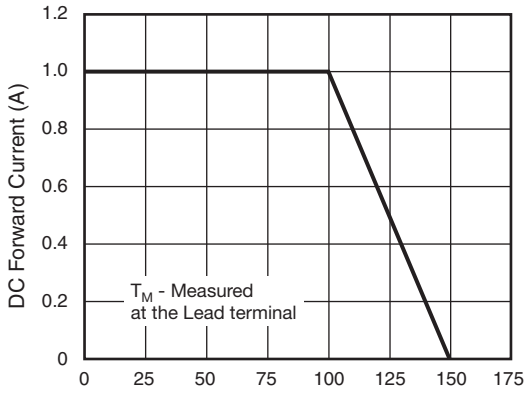


Fig. 1 - Max. Forward Current Derating Curve

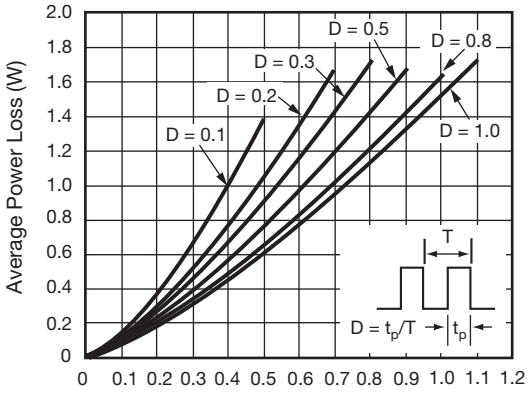


Fig. 2 - Forward Power Loss Characteristics

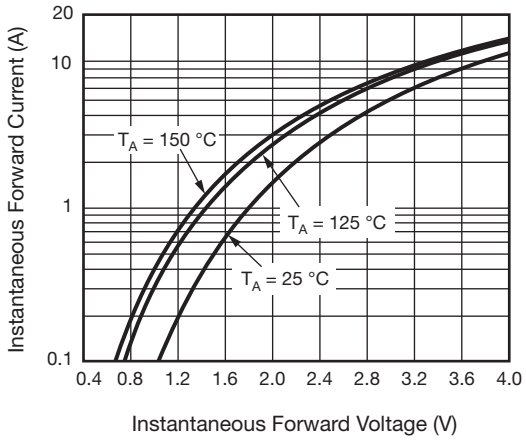


Fig. 3 - Typical Instantaneous Forward Characteristics

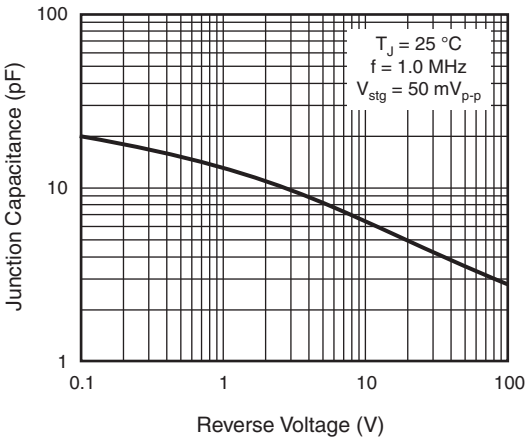


Fig. 5 - Typical Junction Capacitance

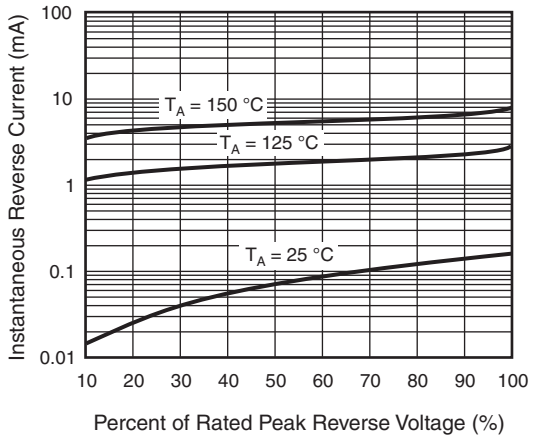


Fig. 4 - Typical Reverse Characteristics

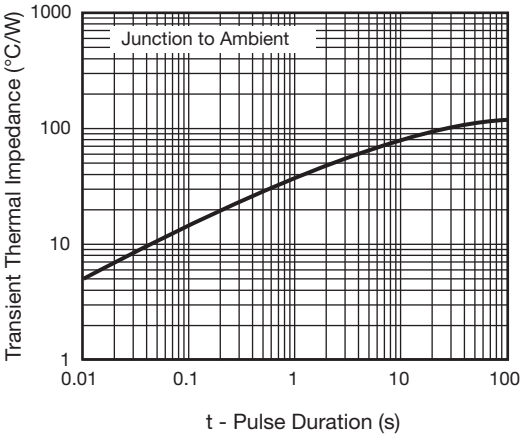
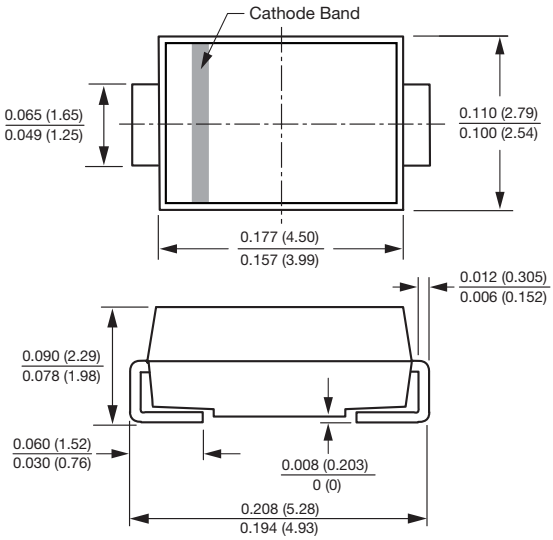


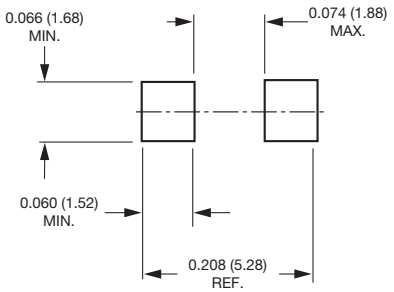
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout



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