High Voltage Ultrafast Avalanche SMD Rectifiers

SMA (DO-214AC)

Cathode ○—◀—○ Anode

ADDITIONAL RESOURCES

3D Models

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
Package	SMA (DO-214AC)
Circuit configurations	Single

FEATURES

- Glass passivated pellet chip 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

MECHANICAL DATA

Case: SMA (DO-214AC)
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 2 whisker test

Polarity: color band denotes the cathode end

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.

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

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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 QUANTITY**	**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

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

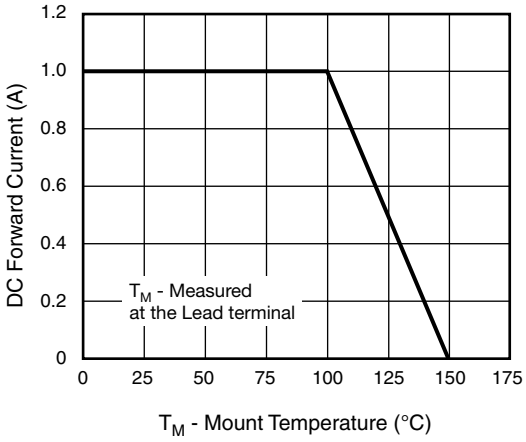

Fig. 1 - Max. Forward Current Derating Curve

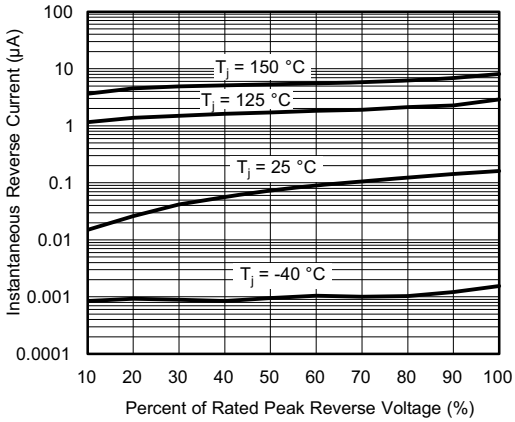

Fig. 4 - Typical Reverse Characteristics

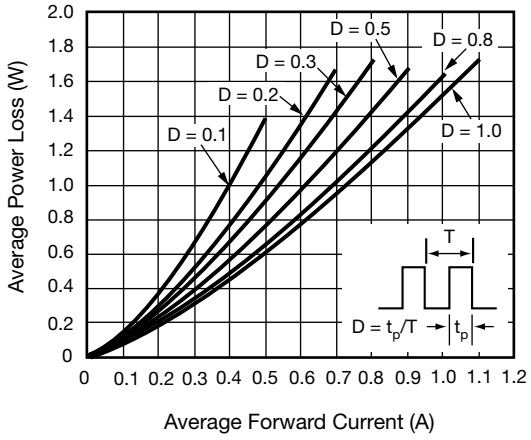

Fig. 2 - Forward Power Loss Characteristics

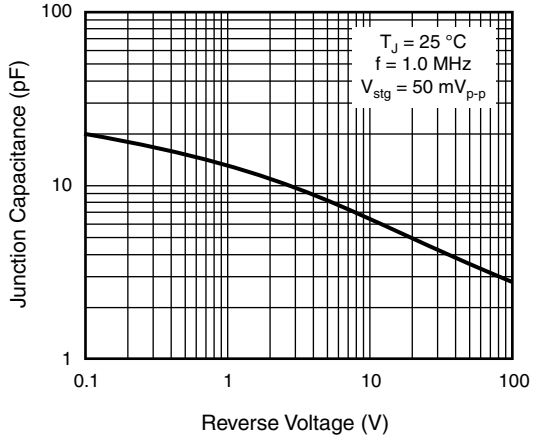

Fig. 5 - Typical Junction Capacitance

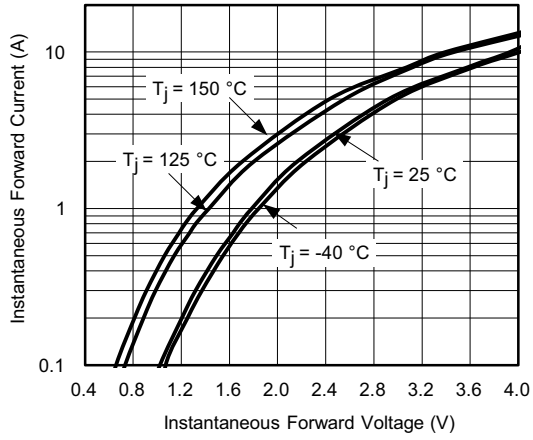

Fig. 3 - Typical Instantaneous Forward Characteristics

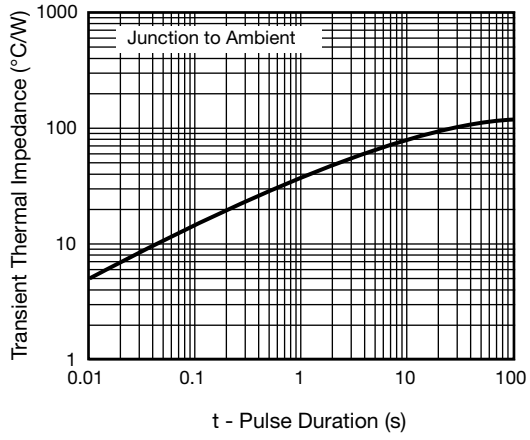

Fig. 6 - Typical Transient Thermal Impedance

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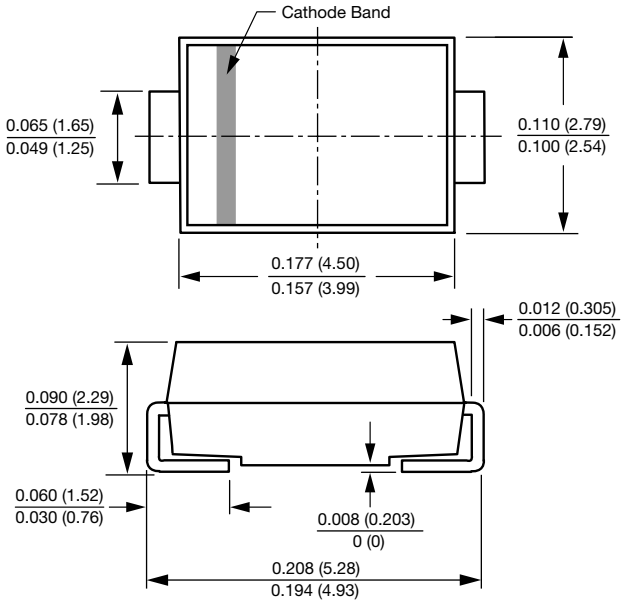
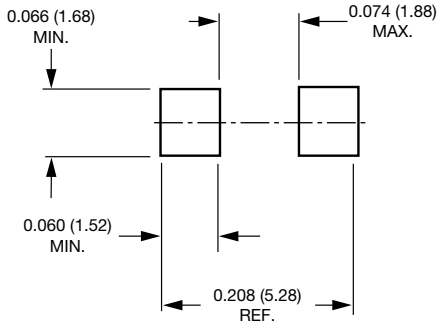
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout



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