

High Voltage Ultrafast Avalanche SMD Rectifiers


DO-214AC (SMA)

RoHS
 COMPLIANT
 HALOGEN
FREE
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

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	DO-214AC (SMA)
Diode variations	Single die

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 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, snubbing 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



ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage ⁽¹⁾	$I_F = 1.0\text{ A}$	V_F	$T_A = 25\text{ }^\circ\text{C}$	1.74	1.9	V
			$T_A = 125\text{ }^\circ\text{C}$	1.39	1.65	
Reverse current ⁽²⁾	$V_R = 1300\text{ V}$	I_R	$T_A = 25\text{ }^\circ\text{C}$	-	5.0	μA
			$T_A = 125\text{ }^\circ\text{C}$	2.9	50	
Maximum reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	t_{rr}	65	75	ns
Forward recovery time	$I_F = 1.5\text{ A}, dI/dt = 12\text{ A}/\mu\text{s}, V_F = 1.1 \times V_F\text{ max.}$	$T_A = 25\text{ }^\circ\text{C}$	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 $\leq 40\text{ ms}$

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

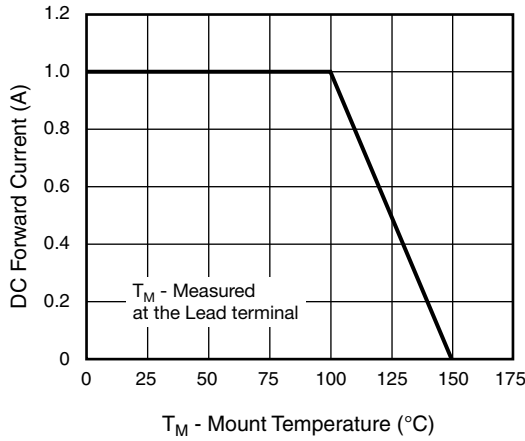


Fig. 1 - Max. Forward Current Derating Curve

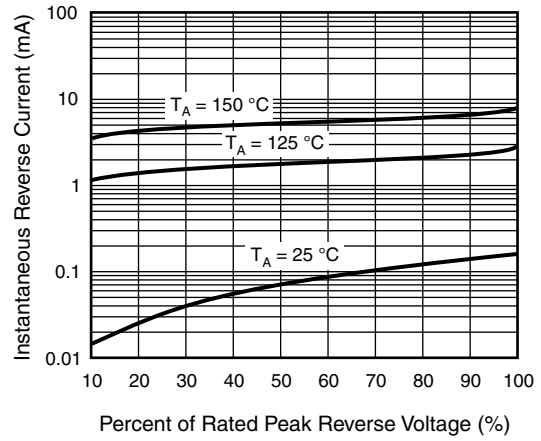


Fig. 4 - Typical Reverse Characteristics

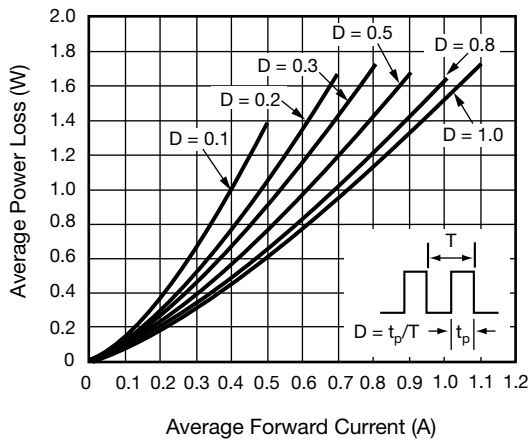


Fig. 2 - Forward Power Loss Characteristics

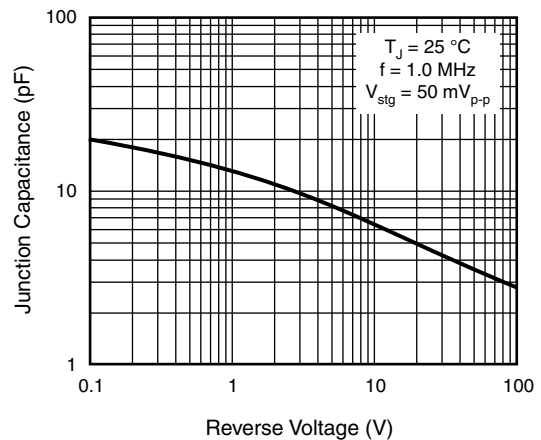


Fig. 5 - Typical Junction Capacitance

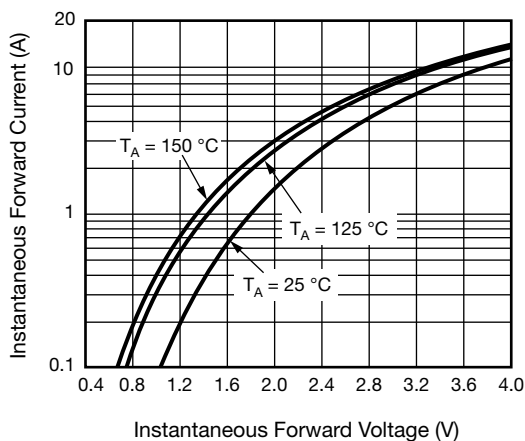


Fig. 3 - Typical Instantaneous Forward Characteristics

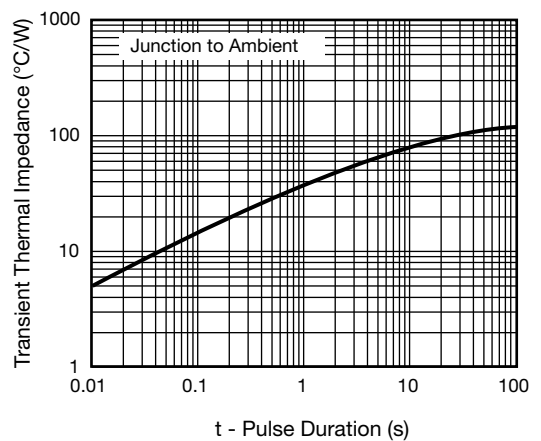
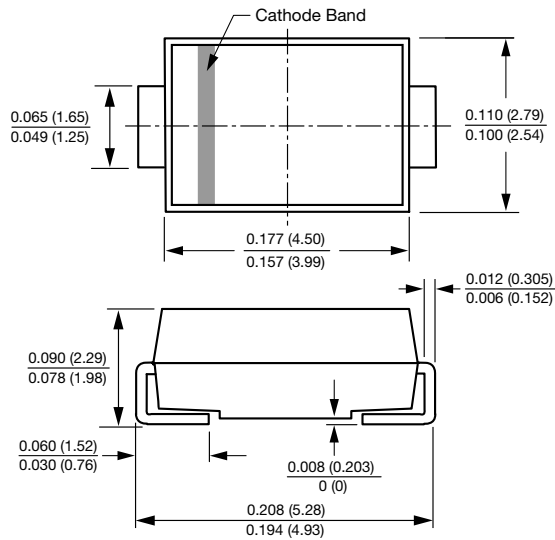


Fig. 6 - Typical Transient Thermal Impedance

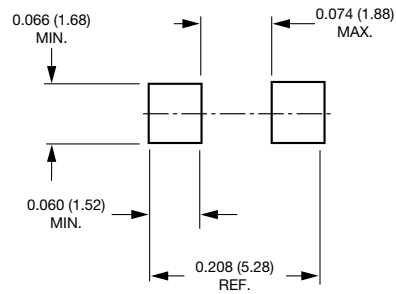


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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