

## Ultrafast Avalanche SMD Rectifier


**DO-214AC (SMA)**

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- 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
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, automotive and telecommunication.

### MECHANICAL DATA

**Case:** DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS compliant, commercial grade

Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
$V_{RRM}$	1000 V
$I_{FSM}$	30 A
$I_R$	5.0 $\mu$ A
$t_{rr}$	75 ns
$E_R$	20 mJ
$T_J$ max.	150 °C

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	BYG23M	UNIT
Device marking code		BYG23M	
Maximum repetitive peak reverse voltage	$V_{RRM}$	1000	V
Average forward current at $T_A = 65$ °C	$I_{F(AV)}$	1.5	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	30	A
Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R} = 1$ A, $T_J = 25$ °C	$E_R$	20	mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 150	°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	BYG23M	UNIT
Minimum breakdown voltage	$I_R = 100\text{ }\mu\text{A}$		$V_{BR}$	1000	V
Maximum instantaneous voltage	$I_F = 1.0\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	1.7	V
		$T_J = 150\text{ }^\circ\text{C}$		1.35	V
Maximum reverse current	$V_R = V_{RRM}$	$T_J = 25\text{ }^\circ\text{C}$	$I_R$	5	$\mu\text{A}$
		$T_J = 125\text{ }^\circ\text{C}$		50	
Maximum reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$		$t_{rr}$	75	ns

**Note**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	BYG23M	UNIT
Typical thermal resistance, junction to case	$R_{\theta JC}$	25	$^\circ\text{C/W}$
Typical thermal resistance, junction to ambient	$R_{\theta JA}^{(1)}$	150	$^\circ\text{C/W}$
	$R_{\theta JA}^{(2)}$	125	
	$R_{\theta JA}^{(3)}$	100	

**Notes**

- (1) Mounted on epoxy-glass hard tissue, 17 mm<sup>2</sup> 35  $\mu\text{m}$  Cu
- (2) Mounted on epoxy-glass hard tissue, 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu
- (3) Mounted on Al-oxide-ceramic ( $\text{Al}_2\text{O}_3$ ), 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QANTITY	DELIVERY MODE
BYG23M-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG23M-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG23MHE3/TR <sup>(1)</sup>	0.064	TR	1800	7" diameter plastic tape and reel
BYG23MHE3/TR3 <sup>(1)</sup>	0.064	TR3	7500	13" diameter plastic tape and reel

**Note**

(1) AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

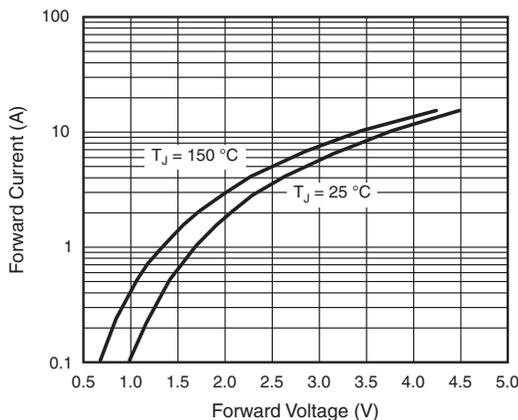


Fig. 1 - Max. Forward Current vs. Forward Voltage

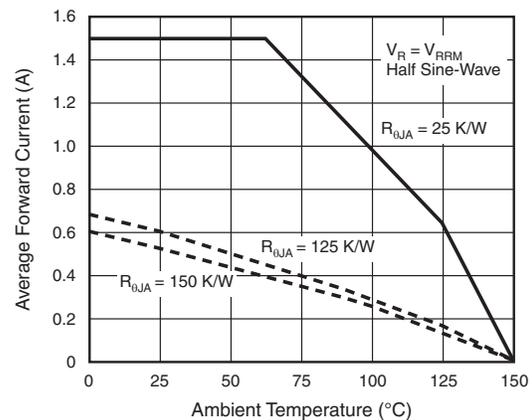


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

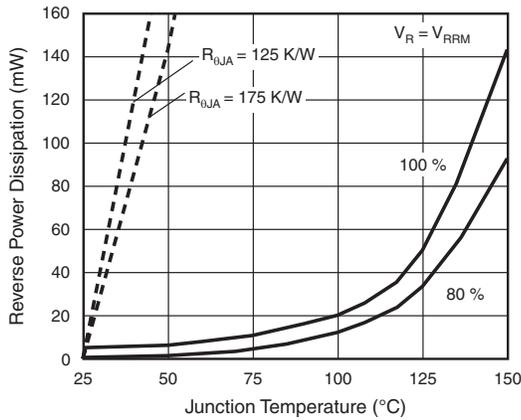


Fig. 3 - Max. Reverse Power Dissipation vs. Junction Temperature

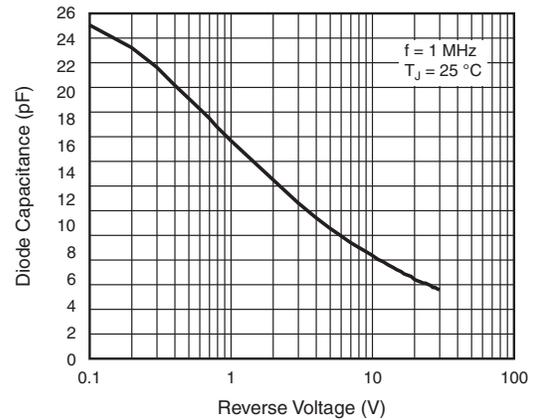


Fig. 5 - Diode Capacitance vs. Reverse Voltage

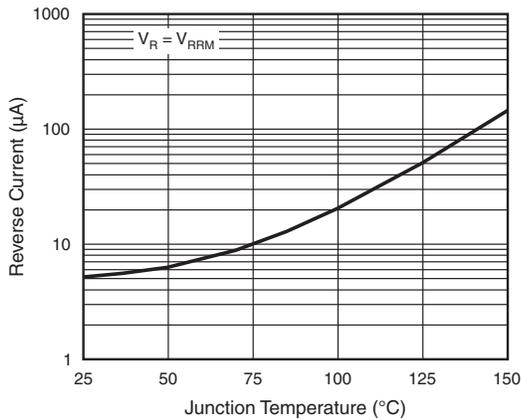
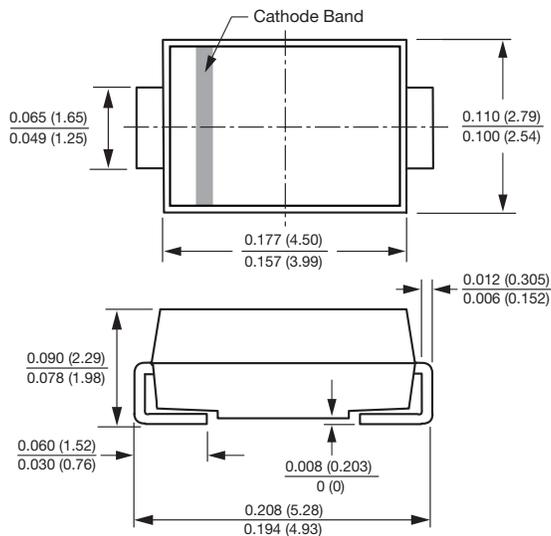


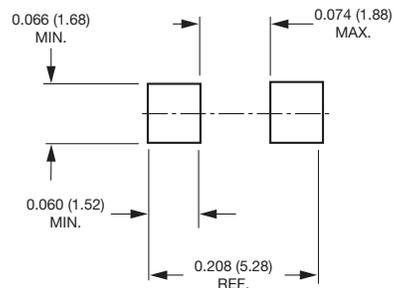
Fig. 4 - Reverse Current vs. Junction Temperature

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-214AC (SMA)**



**Mounting Pad Layout**





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