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-020C, LF max peak of 260 °C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	1000 V
I_{FSM}	30 A
I_R	5.0 µA
t_{rr}	75 ns
E_R	20 mJ
T_j max.	150 °C

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AC (SMA)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Color band denotes the cathode end

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 T_{amb} = 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

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**BYG23M**	**UNIT**
Minimum breakdown voltage	at I_R = 100 µA	$V_{(BR)}$	1000	V
Maximum instantaneous voltage (1)	at I_F = 1.0 A, T_j = 25 °C I_F = 1.0 A, T_j = 150 °C	V_F	1.7 1.35	V
Maximum reverse current	at $V_R = V_{RRM}$, T_j = 25 °C T_j = 125 °C	I_R	5 50	µA
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A	t_{rr}	75	ns

Note:

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

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**BYG23M**	**UNIT**
Typical thermal resistance - Junction case	R_{thJC}	25	°C/W
Typical thermal resistance - Junction Ambient	$R_{\theta JA}$	150 (1) 125 (2) 100 (3)	°C/W

Note:

(1) Mounted on epoxy-glass hard tissue, 17 mm^2 35 µm Cu
(2) Mounted on epoxy-glass hard tissue, 50 mm^2 35 µm Cu
(3) Mounted on Al-oxide-ceramic (Al_2O_3), 50 mm^2 35 µm Cu

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE Q'TY**	**DELIVERY MODE**
BYG23M-E3/TR	0.064	TR	1800	7" Diameter Plastic Tape & Reel
BYG23M-E3/TR3	0.064	TR3	7500	13" Diameter Plastic Tape & Reel
BYG23MHE3/TR (1)	0.064	TR	1800	7" Diameter Plastic Tape & Reel
BYG23MHE3/TR3 (1)	0.064	TR3	7500	13" Diameter Plastic Tape & Reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

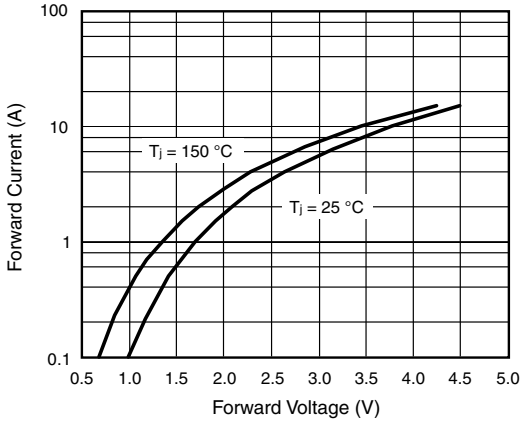


Figure 1. Max. Forward Current vs. Forward Voltage

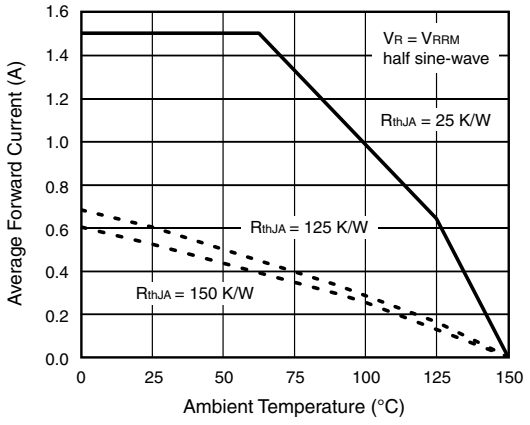


Figure 2. Max. Average Forward Current vs. Ambient Temperature

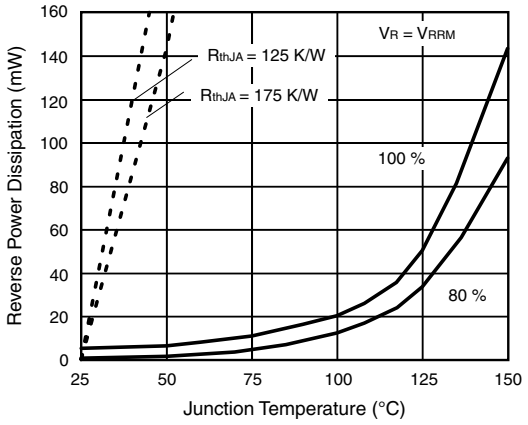


Figure 3. Max. Reverse Power Dissipation vs. Junction Temperature

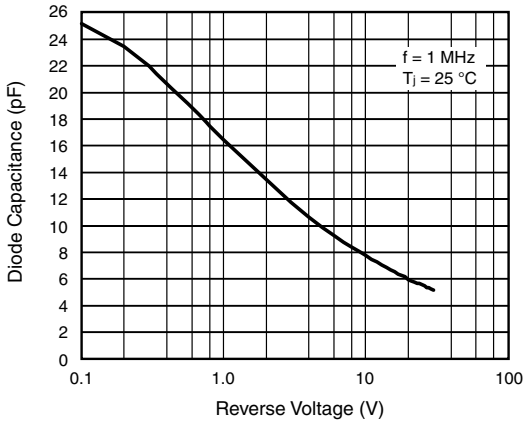


Figure 5. Diode Capacitance vs. Reverse Voltage

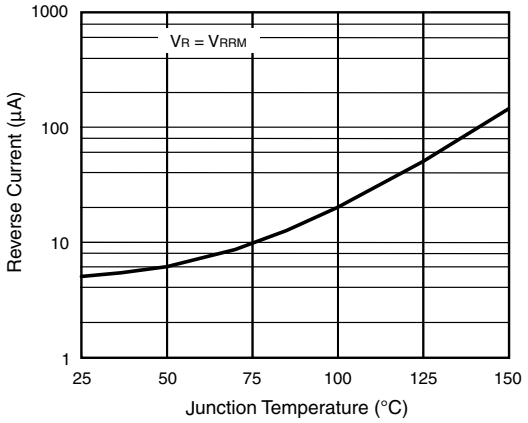
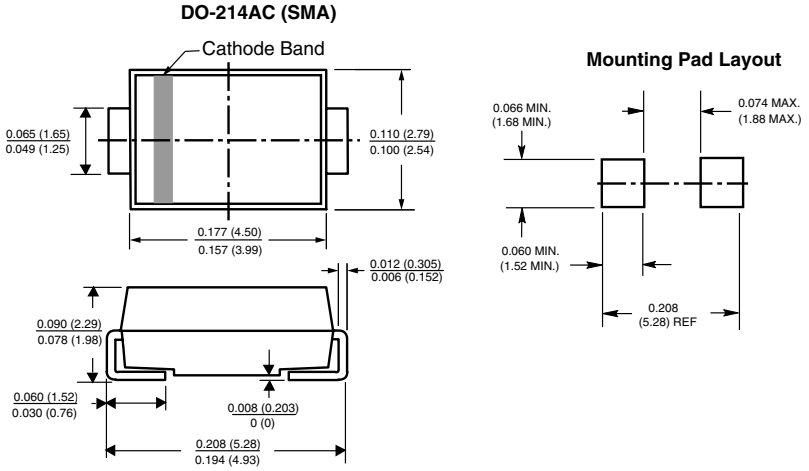


Figure 4. Reverse Current vs. Junction Temperature

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.