

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
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and 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)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), 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 μ 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 $T_A = 65$ °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

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ 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 ⁽¹⁾	$I_F = 1.0\text{ A}$ $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 150\text{ }^{\circ}\text{C}$	V_F	1.7 1.35	V
Maximum reverse current	$V_R = V_{RRM}$ $T_J = 25\text{ }^{\circ}\text{C}$ $T_J = 125\text{ }^{\circ}\text{C}$	I_R	5 50	μA
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 μs pulse width, 1 % duty cycle**THERMAL CHARACTERISTICS** ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	BYG23M	UNIT
Typical thermal resistance - Junction case	R_{thJC}	25	$^{\circ}\text{C/W}$
Typical thermal resistance - Junction Ambient	$R_{\theta JA}$	150 ⁽¹⁾ 125 ⁽²⁾ 100 ⁽³⁾	$^{\circ}\text{C/W}$

Notes:(1) Mounted on epoxy-glass hard tissue, 17 mm² 35 μm Cu(2) Mounted on epoxy-glass hard tissue, 50 mm² 35 μm Cu(3) Mounted on Al-oxide-ceramic (Al_2O_3), 50 mm² 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 and reel
BYG23M-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG23MHE3/TR ⁽¹⁾	0.064	TR	1800	7" diameter plastic tape and reel
BYG23MHE3/TR3 ⁽¹⁾	0.064	TR3	7500	13" diameter plastic tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

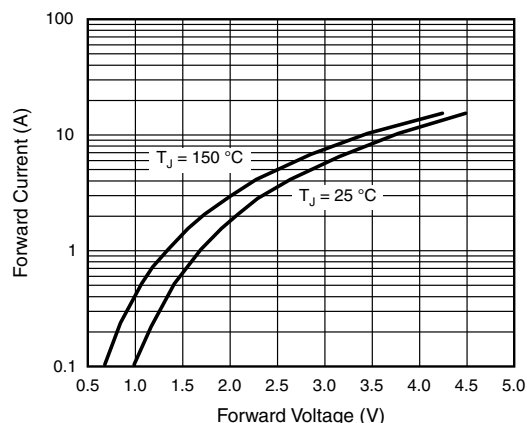
RATINGS AND CHARACTERISTICS CURVES($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Figure 1. Max. Forward Current vs. Forward Voltage

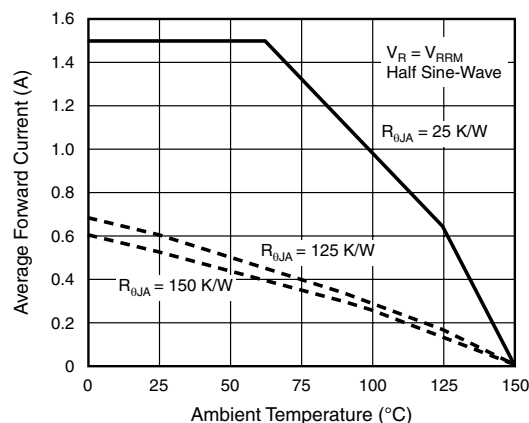


Figure 2. Max. Average Forward Current vs. Ambient Temperature

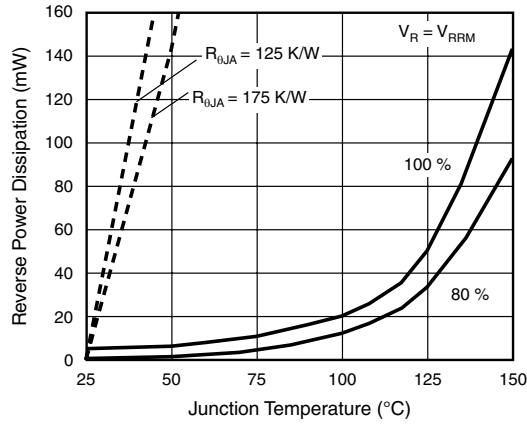


Figure 3. Max. Reverse Power Dissipation vs. Junction Temperature

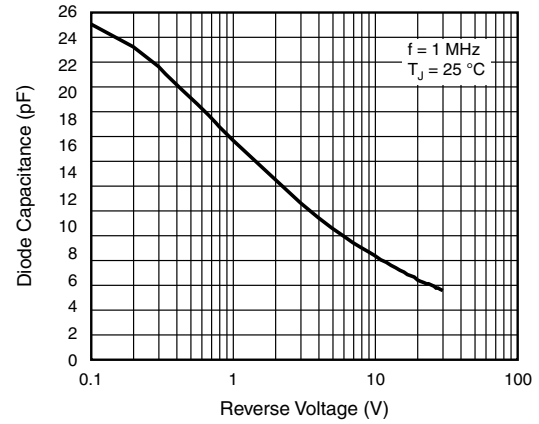


Figure 5. Diode Capacitance vs. Reverse Voltage

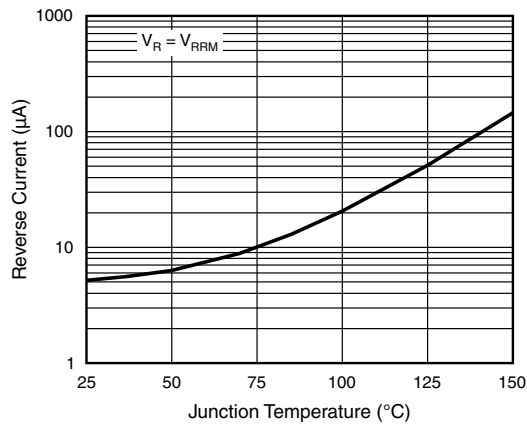
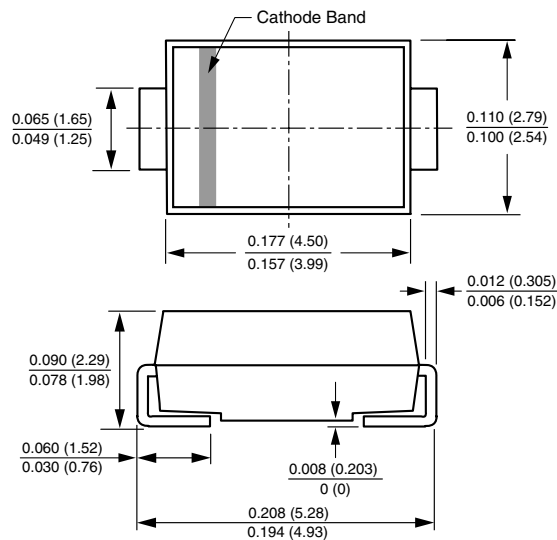


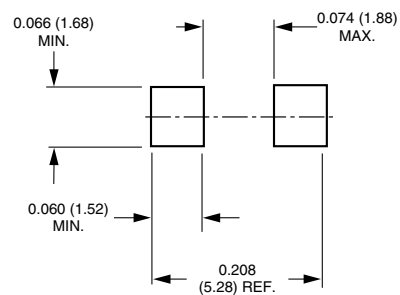
Figure 4. Reverse Current vs. Junction Temperature

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.