

## Standard Avalanche SMD Rectifier


**DO-214AC (SMA)**
**FEATURES**

- Low profile package
- Ideal for automated placement
- Controlled avalanche characteristics
- Glass passivated junction
- Low reverse current
- High surge current capability
- 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


**PRIMARY CHARACTERISTICS**

$I_{F(AV)}$	1.5 A
$V_{RRM}$	200 V to 1600 V
$I_{FSM}$	30 A
$I_R$	1.0 $\mu$ A
$V_F$	1.15 V
$E_R$	20 mJ
$T_j$ max.	150 °C

**TYPICAL APPLICATIONS**

For use in general purpose rectification of power supplies, inverters, converters and free-wheeling diodes for consumer, 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	BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	UNIT
Device marking code		BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	400	600	800	1000	1600	V
Average forward current	$I_{F(AV)}$	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 (for BYG10D-BYG10M)	$E_R$	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	BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	UNIT
Maximum instantaneous forward voltage (1)	at $I_F = 1\text{ A}$ $I_F = 1.5\text{ A}$ $T_j = 25\text{ }^\circ\text{C}$	$V_F$				1.1 1.15			V
Maximum DC reverse current	at $V_R = V_{RRM}$ $T_j = 25\text{ }^\circ\text{C}$ $T_j = 100\text{ }^\circ\text{C}$	$I_R$				1 10			$\mu\text{A}$
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$				4			$\mu\text{s}$

**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	BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	UNIT	
Typical thermal resistance - Junction lead	$R_{\theta JL}$							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
- (2) Mounted on epoxy-glass hard tissue, 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu
- (3) Mounted on Al-oxide-ceramic (Al<sub>2</sub>O<sub>3</sub>), 50 mm<sup>2</sup> 35  $\mu\text{m}$  Cu

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
BYG10D-E3/TR	0.064	TR	1800	7" Diameter Plastic Tape & Reel
BYG10D-E3/TR3	0.064	TR3	7500	13" Diameter Plastic Tape & Reel
BYG10DHE3/TR (1)	0.064	TR	1800	7" Diameter Plastic Tape & Reel
BYG10DHE3/TR3 (1)	0.064	TR3	7500	13" Diameter Plastic Tape & Reel

**Note:**

- (1) Automotive grade AEC Q101 qualified



**RATINGS AND CHARACTERISTICS CURVES**

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

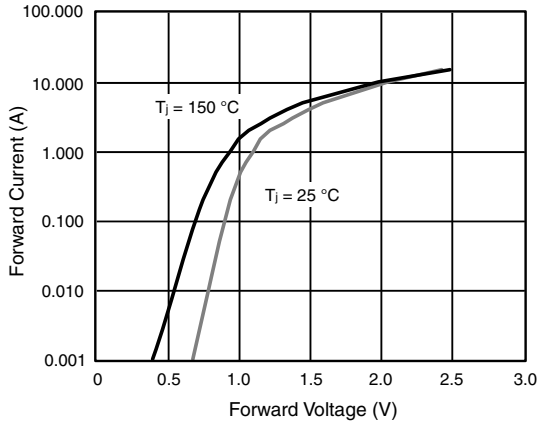


Figure 1. Forward Current vs. Forward Voltage

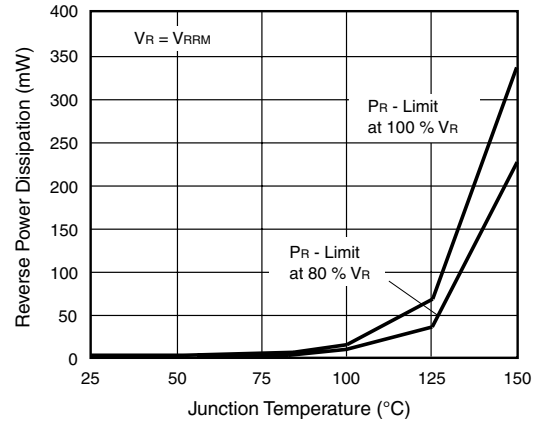


Figure 4. Max. Reverse Power Dissipation vs. Junction Temperature

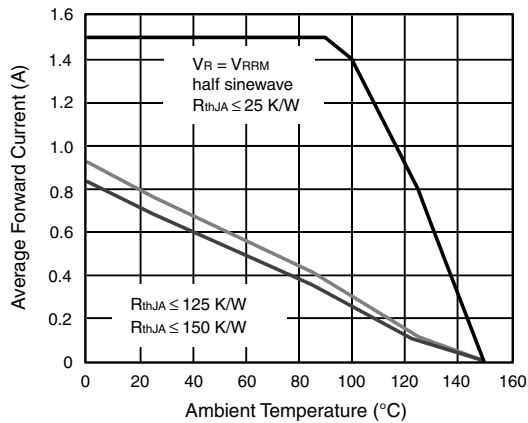


Figure 2. Max. Average Forward Current vs. Ambient Temperature

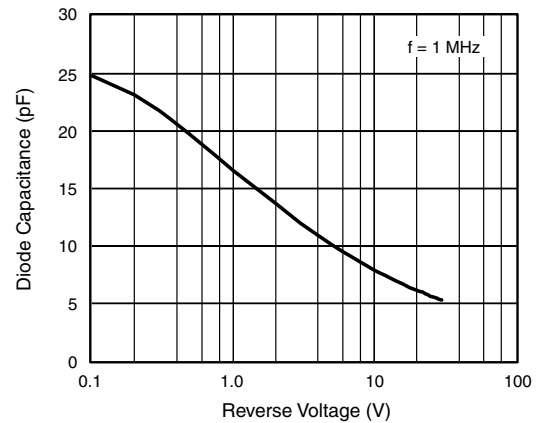


Figure 5. Diode Capacitance vs. Reverse Voltage

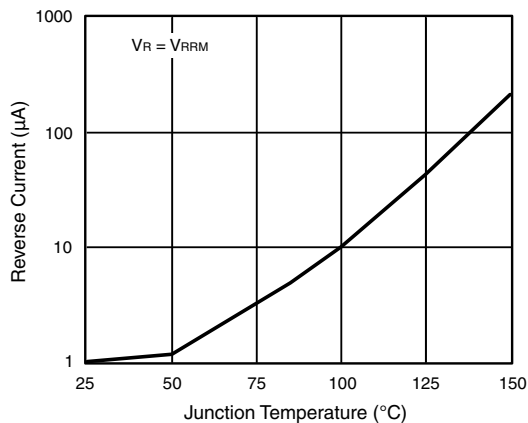


Figure 3. Reverse Current vs. Junction Temperature

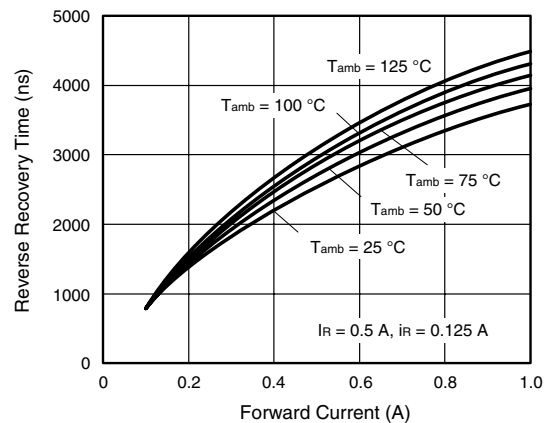


Figure 6. Reverse Recovery Time vs. Forward Current

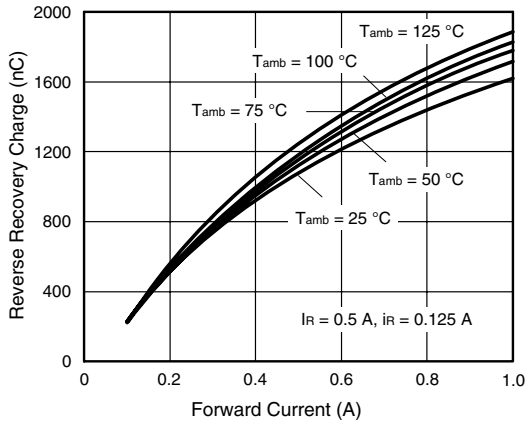
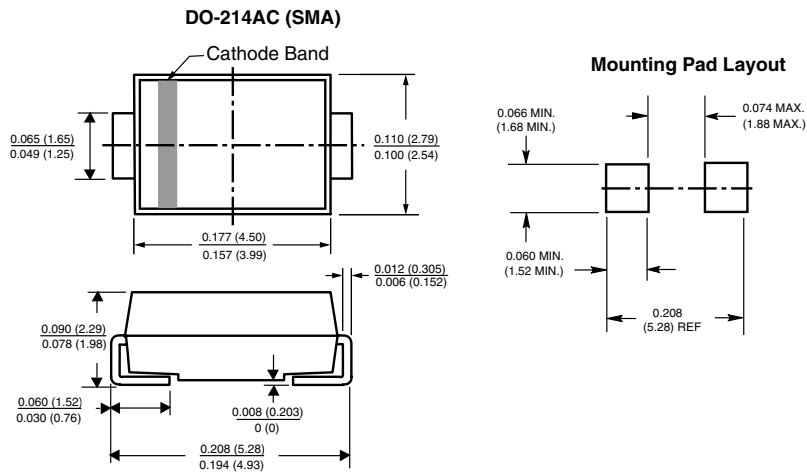


Figure 7. Reverse Recovery Charge vs. Forward Current

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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