

## Fast Avalanche SMD Rectifier



SMA (DO-214AC)

### FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- Low reverse current
- Soft recovery characteristics
- Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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:** SMA (DO-214AC)

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHE3\_X - RoHS-compliant and AEC-Q101 qualified ("X" denotes revision code e.g. A, B,...)

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

E3 suffix meets JESD 201 class 2 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
$V_{RRM}$	200 V, 400 V, 600 V
$I_{FSM}$	30 A
$I_R$	1.0 $\mu$ A
$V_F$	1.25 V
$t_{rr}$	140 ns
$E_R$	20 mJ
$T_J$ max.	150 °C
Package	SMA (DO-214AC)
Diode variation	Single

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	BYG24D	BYG24G	BYG24J	UNIT
Device marking code		BYG24D	BYG24G	BYG24J	
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	400	600	V
Average forward current at $T_A = 65\text{ °C}$	$I_{F(AV)}$	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) $I_{(BR)R} = 1\text{ A}$ , $T_J = 25\text{ °C}$	$E_R$	20			mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150			°C



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	BYG24D	BYG24G	BYG24J	UNIT
Minimum breakdown voltage	I <sub>R</sub> = 100 μA		V <sub>BR</sub>	200	400	600	V
Maximum instantaneous forward voltage	I <sub>F</sub> = 1 A	T <sub>J</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.15			V
	I <sub>F</sub> = 1.5 A			1.25			
Maximum reverse current	V <sub>R</sub> = V <sub>RRM</sub>	T <sub>J</sub> = 25 °C	I <sub>R</sub>	1			μA
		T <sub>J</sub> = 100 °C		10			
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	140			ns

**Note**

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

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	BYG24D	BYG24G	BYG24J	UNIT
Junction to case	R <sub>θJC</sub>	25			°C/W
Maximum thermal resistance, junction to ambient	R <sub>θJA</sub> <sup>(1)</sup>	150			°C/W
	R <sub>θJA</sub> <sup>(2)</sup>	125			

**Notes**

(1) Mounted on epoxy-glass hard tissue 35  $\mu\text{m}$  x 17  $\text{mm}^2$  cooper area per electrode

(2) Mounted on epoxy-glass hard tissue 35  $\mu\text{m}$  x 50  $\text{mm}^2$  cooper area per electrode

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
BYG24D-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel	
BYG24D-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel	
BYG24DHE3_A/H <sup>(1)</sup>	0.064	H	1800	7" diameter plastic tape and reel	
BYG24DHE3_A/I <sup>(1)</sup>	0.064	I	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)

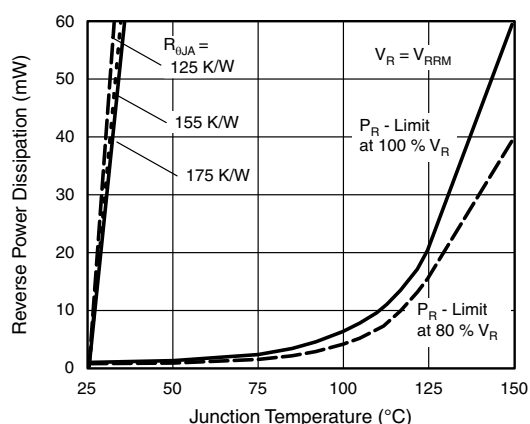


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

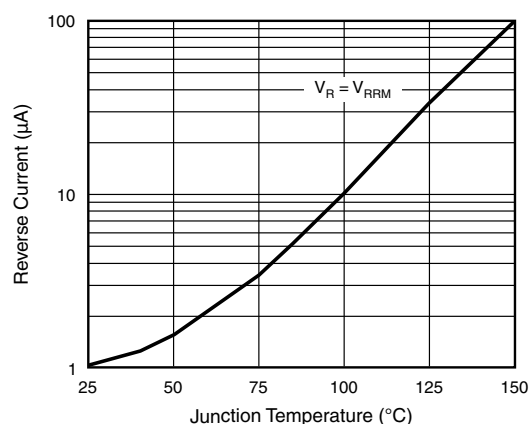


Fig. 2 - Reverse Current vs. Junction Temperature

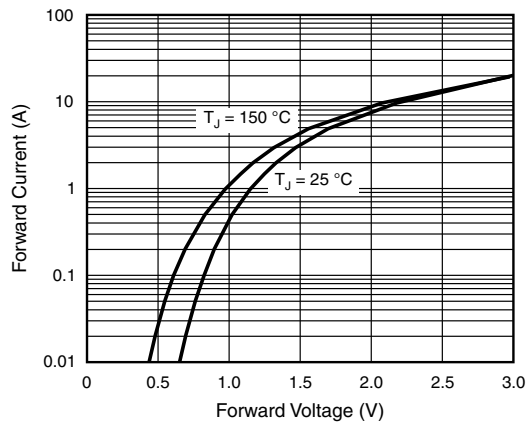


Fig. 3 - Forward Current vs. Forward Voltage

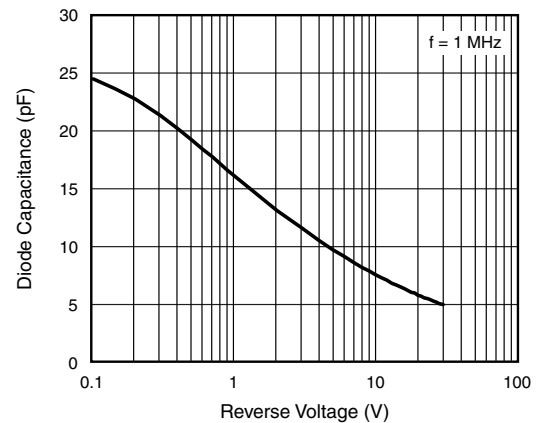


Fig. 5 - Diode Capacitance vs. Reverse Voltage

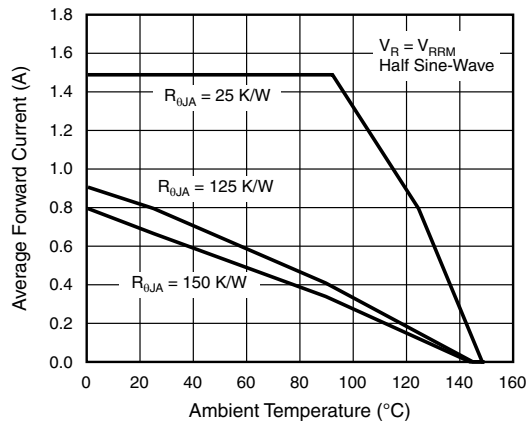
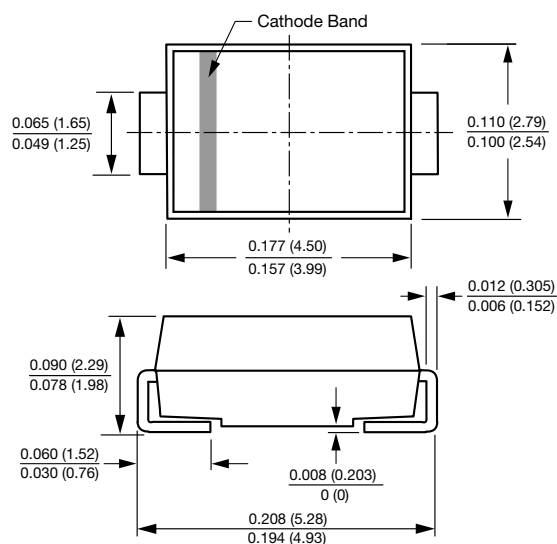
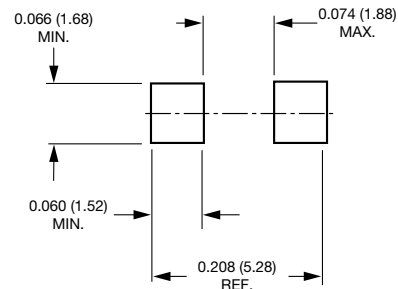


Fig. 4 - Average Forward Current vs. Ambient Temperature

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)  
**SMA (DO-214AC)**



**Mounting Pad Layout**





## Disclaimer

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