

Fast Avalanche SMD Rectifier


SMA (DO-214AC)

 Cathode  Anode

ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	200 V, 400 V, 600 V
I_{FSM}	30 A
I_R	1.0 μ A
V_F	1.25 V
t_{rr}	140 ns
E_R	20 mJ
T_J max.	150 °C
Package	SMA (DO-214AC)
Circuit configuration	Single

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 available
- Automotive ordering code P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT
HALOGEN
FREE

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/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Base P/NHE3_X - RoHS-compliant, and AEC-Q101 qualified
Base P/NHM3_X - halogen-free, 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, M3, HE3, and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

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 ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	BYG24D	BYG24G	BYG24J	UNIT
Minimum breakdown voltage	$I_R = 100\text{ }\mu\text{A}$	V_{BR}	200	400	600	V
Maximum instantaneous forward voltage	$I_F = 1\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	1.15		V
	$I_F = 1.5\text{ A}$			1.25		
Maximum reverse current	$V_R = V_{RRM}$	$T_J = 25\text{ }^\circ\text{C}$	1		I_R	μA
		$T_J = 100\text{ }^\circ\text{C}$	10			
Maximum reverse recovery time	$I_F = 0.5\text{ A}, I_R = 1.0\text{ A}, I_{rr} = 0.25\text{ A}$	t_{rr}	140			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	BYG24D	BYG24G	BYG24J	UNIT	
Junction to case	$R_{\theta JC}$	25			$^\circ\text{C/W}$	
Maximum thermal resistance, junction to ambient	$R_{\theta JA}^{(1)}$	150			$^\circ\text{C/W}$	
	$R_{\theta JA}^{(2)}$	125				

Notes

(1) Mounted on epoxy-glass hard tissue 35 μm x 17 mm^2 cooper area per electrode

(2) Mounted on epoxy-glass hard tissue 35 μm x 50 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 ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYG24DHE3_A/I ⁽¹⁾	0.064	I	7500	13" diameter plastic tape and reel
BYG24D-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG24D-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG24DHM3_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYG24DHM3_A/I ⁽¹⁾	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)

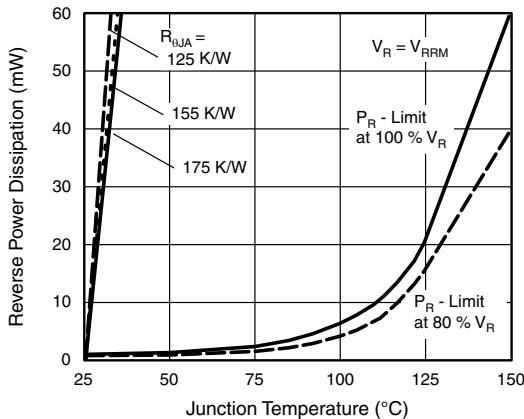


Fig. 1 - Max. Reverse Power Dissipation vs. Junction Temperature

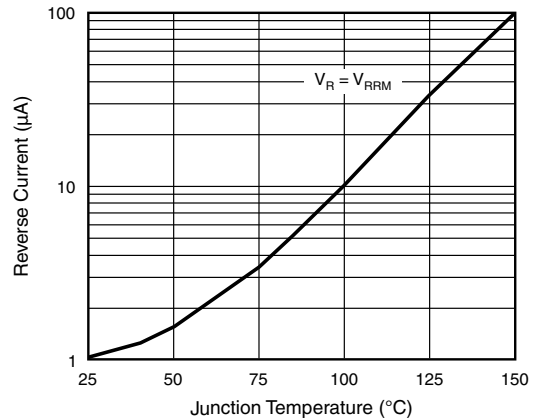


Fig. 2 - Reverse Current vs. Junction Temperature

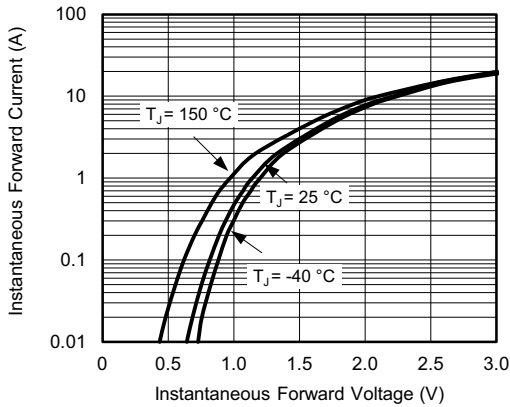


Fig. 3 - Forward Current vs. Forward Voltage

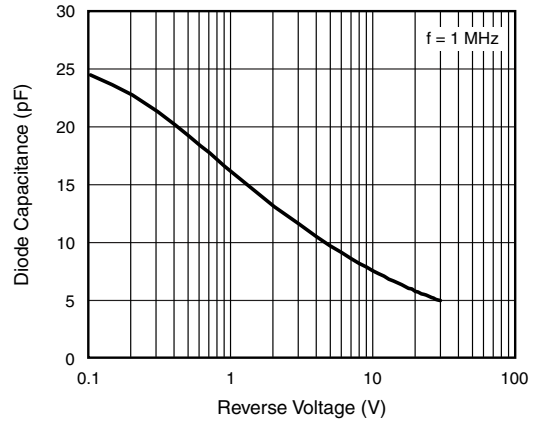


Fig. 5 - Diode Capacitance vs. Reverse Voltage

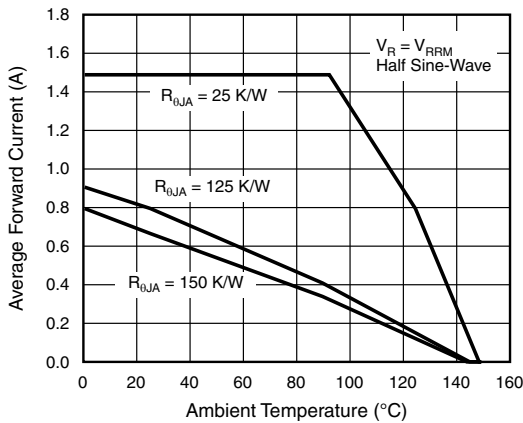
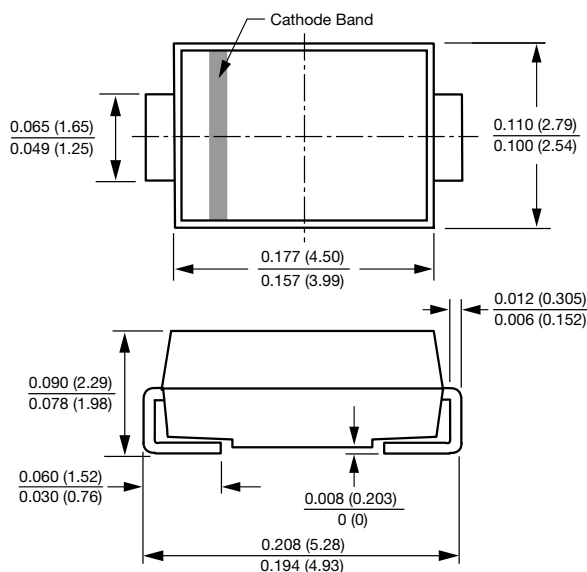


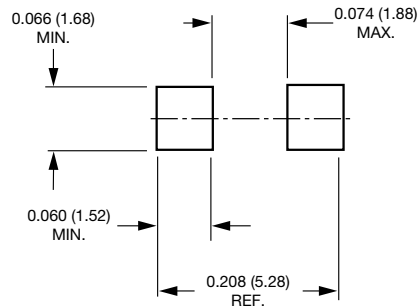
Fig. 4 - Average Forward Current vs. Ambient Temperature

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)



Mounting Pad Layout





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