BYG23M

Vishay General Semiconductor

Ultrafast Avalanche SMD Rectifier



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SMA (DO-214AC)



ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS			
I _{F(AV)}	1.5 A		
V _{RRM}	1000 V		
I _{FSM}	30 A		
I _R	5.0 µA		
t _{rr}	75 ns		
V _F	1.7 V		
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 pellet chip 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
- AEC-Q101 qualified available
 Automotive ordering code P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

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	BYG23M	UNIT	
Device marking code		BYG23M		
Maximum repetitive peak reverse voltage	V _{RRM}	1000	V	
Average forward current at $T_A = 65 \text{ °C}$	I _{F(AV)}	1.5	А	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30	А	
Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R}$ = 1 A, T_J = 25 $^\circ C$	E _R	20	mJ	
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150	°C	

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ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		TEST CONDITIONS		SYMBOL	BYG23M	UNIT
Minimum breakdown voltage	I _R = 100 μA		V _{BR}	1000	V		
Maximum instantaneous voltage	I _F = 1.0 A	T _J = 25 °C	V _F ⁽¹⁾	1.7	N/		
		T _J = 150 °C		1.35	v		
Maximum reverse current	$\mathcal{M} = \mathcal{M}$	T _J = 25 °C	– I _R	5	μΑ		
	$V_{R} = V_{RRM}$	T _J = 125 °C		50			
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

SHAY

 $^{(1)}\,$ Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	BYG23M	UNIT		
Typical thermal resistance, junction to case	$R_{ extsf{ heta}JC}$	25	°C/W		
	R _{0JA} ⁽¹⁾	150			
Typical thermal resistance, junction to ambient	R _{0JA} ⁽²⁾	125	°C/W		
	R _{0JA} ⁽³⁾	100			

Notes

 $^{(1)}\,$ Mounted on epoxy-glass hard tissue, 17 mm^2 35 μm Cu

⁽²⁾ Mounted on epoxy-glass hard tissue, 50 mm² 35 µm Cu

⁽³⁾ Mounted on Al-oxide-ceramic (Al₂O₃), 50 mm² 35 µm Cu

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	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_A/H ⁽¹⁾	0.064	Н	1800	7" diameter plastic tape and reel	
BYG23MHE3_A/I ⁽¹⁾	0.064	I	7500	13" diameter plastic tape and reel	
BYG23M-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel	
BYG23M-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel	
BYG23MHM3_A/H ⁽¹⁾	0.064	Н	1800	7" diameter plastic tape and reel	
BYG23MHM3_A/I ⁽¹⁾	0.064		7500	13" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified



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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

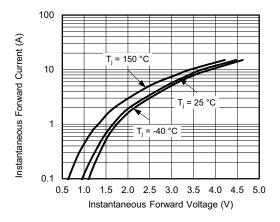


Fig. 1 - Max. Forward Current vs. Forward Voltage

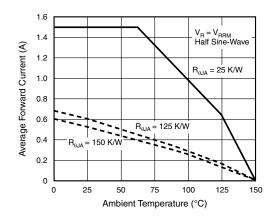


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

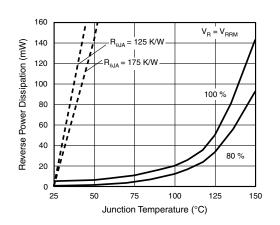


Fig. 3 - Max. Reverse Power Dissipation vs. Junction Temperature

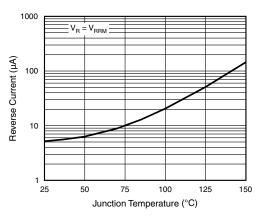


Fig. 4 - Reverse Current vs. Junction Temperature

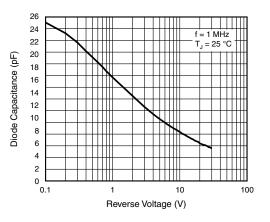


Fig. 5 - Diode Capacitance vs. Reverse Voltage

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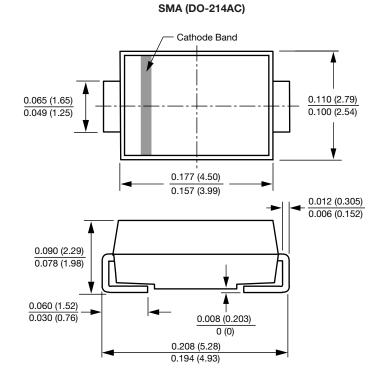
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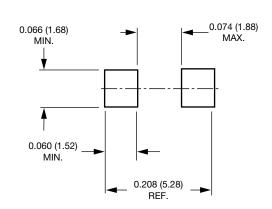
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

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Mounting Pad Layout

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