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Vishay General Semiconductor

AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN FREE

Standard Avalanche SMD Rectifier



SMA (DO-214AC)



DESIGN SUPPORT TOOLS AVAILABLE



PRIMARY CHARACTERISTICS						
I _{F(AV)}	1.5 A					
V _{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V, 1600 V					
I _{FSM}	30 A					
I _R	1.0 μA					
V _F	1.15 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
- Controlled avalanche characteristics
- · Glass passivated pellet chip junction
- Low reverse current
- · High surge current capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHE3 or P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, 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, 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, HM3 suffix meet JESD 201 class 2 whisker test

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						Α
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30					Α	
Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R} = 1 \text{ A}, T_J = 25 \text{ °C (for BYG10D thru BYG10M)}$ $I_{(BR)R} = 0.4 \text{ A}, T_J = 25 \text{ °C (for BYG10Y)}$	E _R	20					mJ	
Operating junction and storage temperature range	T _J , T _{STG}	TG -55 to +150					°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)										
PARAMETER	TEST CONDITIONS		SYMBOL	BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	UNIT
Maximum	I _F = 1 A	T 05 00	V	1.1					V	
instantaneous forward voltage ⁽¹⁾	$I_F = 1.5 A$	T _J = 25 °C	V_{F}	1.15						
Maximum DC	W -W	T _J = 25 °C 1					μA			
reverse current	$V_R = V_{RRM}$	T _J = 100 °C	l _R	10					μΛ	
Maximum reverse recovery time	$I_F = 0.5 A, I_R$ $I_{rr} = 0.25 A$	= 1.0 A,	t _{rr}	4				μs		

Note

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

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL BYG10D BYG10G BYG10J BYG10K BYG10M BYG10Y						BYG10Y	UNIT
Typical thermal resistance, junction to lead	$R_{\theta JL}$	25					°C/W	
	R ₀ JA (1)	150						
Typical thermal resistance, junction to ambient	R ₀ JA (2)	125						°C/W
	R _{0JA} (3)	100						

Notes

- (1) Mounted on epoxy-glass hard tissue
- (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					
BYG10M-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel					
BYG10M-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel					
BYG10MHE3_A/H (1)	0.064	Н	1800	7" diameter plastic tape and reel					
BYG10MHE3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel					
BYG10M-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel					
BYG10M-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel					
BYG10MHM3_A/H (1)	0.064	Н	1800	7" diameter plastic tape and reel					
BYG10MHM3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel					

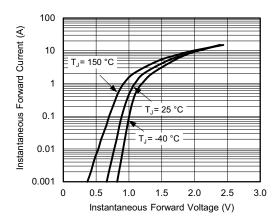
Note

(1) AEC-Q101 qualified



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



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Fig. 1 - Forward Current vs. Forward Voltage

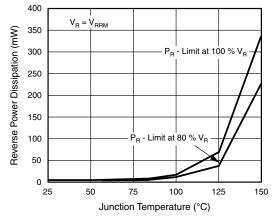


Fig. 4 - Max. Reverse Power Dissipation vs. Junction Temperature

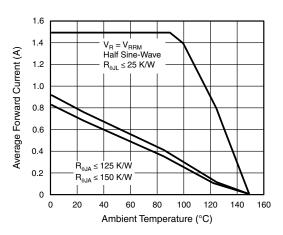


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

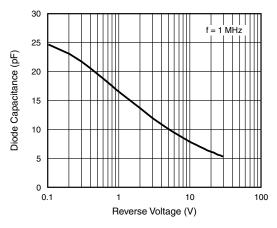


Fig. 5 - Diode Capacitance vs. Reverse Voltage

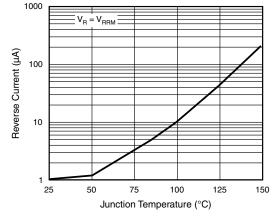


Fig. 3 - Reverse Current vs. Junction Temperature

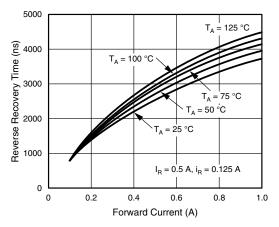


Fig. 6 - Reverse Recovery Time vs. Forward Current

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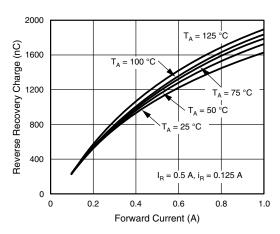
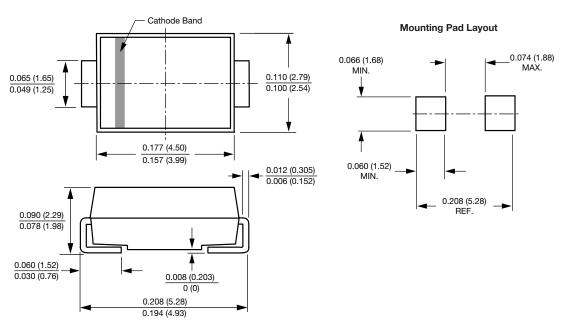


Fig. 7 - Reverse Recovery Charge vs. Forward Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)





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