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Vishay General Semiconductor

Ultrafast Avalanche SMD Rectifier



DO-214AC (SMA)

PRIMARY CHARACTERISTICS					
I _{F(AV)}	1.5 A				
V_{RRM}	200 V, 400 V, 600 V				
I _{FSM}	30 A				
I _R	1.0 μA				
V _F at I _F	1.4 V				
t _{rr}	75 ns				
E _R	20 mJ				
T _J max.	150 °C				
Package	DO-214AC (SMA)				
Diode variations Single die					

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated junction
- Low reverse current
- Soft recovery characteristics
- Ultrafast 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 <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in high frequency rectification of power supply, inverters, converters, and freewheeling diodes for consumer, automotive and telecommunication.

MECHANICAL DATA

Case: DO-214AC (SMA)

Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

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

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	BYG20D	BYG20G	BYG20J	UNIT
Device marking code		BYG20D	BYG20G	BYG20J	
Maximum repetitive peak reverse voltage	V _{RRM}	200	400	600	V
Average forward current	I _{F(AV)}	1.5			А
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 A, T _J = 25 °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 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	BYG20D	BYG20G	BYG20J	UNIT
Maximum instantaneous	I _F = 1 A	T _{.1} = 25 °C	T ₁ = 25 °C V _F ⁽¹⁾ -		1.3		V
forward voltage	I _F = 1.5 A	11 = 25 0	v _F (·)	1.4			
Maximum DC reverse current	V - V	T _J = 25 °C	1			μΑ	
	$V_R = V_{RRM}$	T _J = 100 °C	IR	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}	75		ns	

Note

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

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	BYG20D BYG20G BYG20J		BYG20J	UNIT
Typical thermal resistance, junction to lead, T _L = const.	$R_{ heta JL}$	25			°C/W
Typical thermal resistance, junction to ambient	R ₀ JA (1)	150			
	R ₀ JA (2)	125		°C/W	
	R ₀ JA (3)		100		

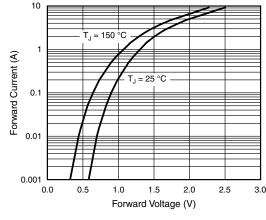
Notes

- (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	
BYG20D-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel	
BYG20D-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel	
BYG20DHE3/TR (1)	0.064	TR	1800	7" diameter plastic tape and reel	
BYG20DHE3/TR3 (1)	0.064	TR3	7500	13" diameter plastic tape and reel	

Note

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





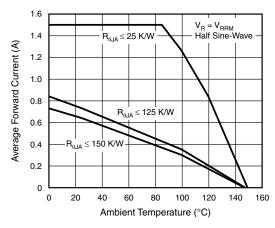


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

⁽¹⁾ AEC-Q101 qualified



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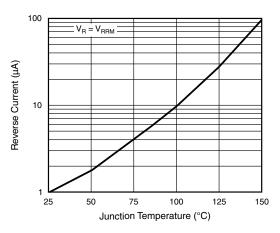


Fig. 3 - Reverse Current vs. Junction Temperature

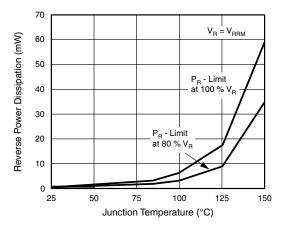


Fig. 4 - Max. Reverse Power Dissipation vs. Junction Temperature

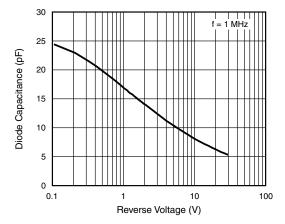


Fig. 5 - Diode Capacitance vs. Reverse Voltage

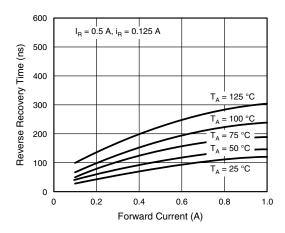


Fig. 6 - Reverse Recovery Time vs. Forward Current

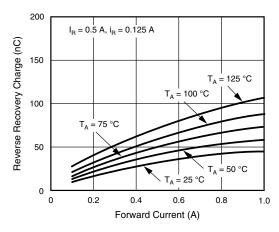


Fig. 7 - Reverse Recovery Charge vs. Forward Current

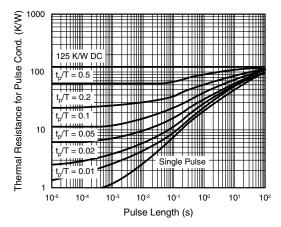


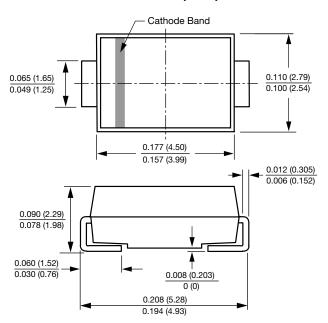
Fig. 8 - Thermal Response



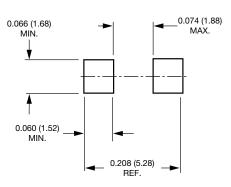
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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