AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN FREE



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Vishay General Semiconductor

Fast Avalanche SMD Rectifier



SMA (DO-214AC)



ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	1.5 A			
V_{RRM}	800 V, 1000 V			
I _{FSM}	30 A			
I _R	1.0 μΑ			
V _F	1.6 V			
t _{rr}	120 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 pellet chip junction
- Low reverse current
- Soft recovery characteristic
- 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

TYPICAL APPLICATIONS

For use in fast switching rectification of power supply, 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, and

commercial grade

Base P/NHE3_X - RoHS-compliant, and AEC-Q101

gualified P/NHE3_X - HoHS-compliant, and AEC-Q10

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 °C unless otherwise noted)					
PARAMETER	SYMBOL	BYG21K	BYG21M	UNIT	
Device marking code		BYG21K	BYG21M		
Maximum repetitive peak reverse voltage	V _{RRM}	800 1000		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		А	
Pulse energy in avalanche mode, non repetitive (inductive load switch off) $I_{(BR)R} = 1 \text{ A}$, $T_J = 25 ^{\circ}\text{C}$	E _R	20		mJ	
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +150			

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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	BYG21K	BYG21M	UNIT
Maximum instantaneous	I _F = 1 A	T _{.1} = 25 °C V _F ⁽¹⁾		1.5	5	V
forward voltage	I _F = 1.5 A	1 _J = 25 C	V _F (')	1.6		1 V
Maximum reverse current		T _J = 25 °C	_	1		
	$V_R = V_{RRM}$ T_J :	T _J = 100 °C		10		- μΑ
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	120		ns

Note

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	MBOL BYG21K BYG21M		UNIT
Typical thermal resistance, junction to lead, T_L = const.	$R_{ heta JL}$	25		°C/W
Typical thermal resistance, junction to ambient	R _{θJA} ⁽¹⁾	150		
	R _{0JA} (2)	125		°C/W
	R _{0JA} (3)	10	00	

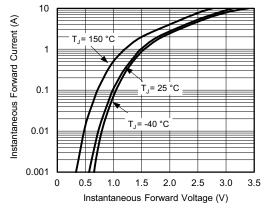
Notes

- (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		
BYG21K-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel		
BYG21K-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel		
BYG21KHE3_A/H (1)	0.064	Н	1800	7" diameter plastic tape and reel		
BYG21KHE3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel		
BYG21K-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel		
BYG21K-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel		
BYG21KHM3_A/H (1)	0.064	Н	1800	7" diameter plastic tape and reel		
BYG21KHM3_A/I (1)	0.064	I	7500	13" diameter plastic tape and reel		

Note

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





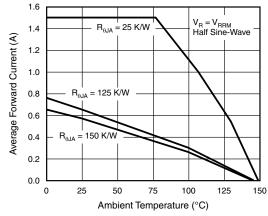


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

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⁽¹⁾ AEC-Q101 qualified



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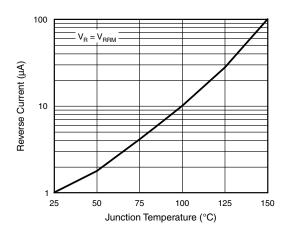


Fig. 3 - Reverse Current vs. Junction Temperature

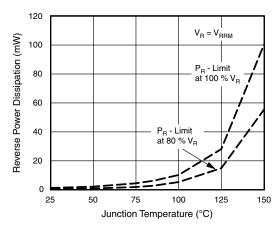


Fig. 4 - Max. Reverse Power Dissipation vs. Junction Temperature

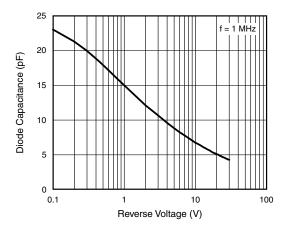


Fig. 5 - Diode Capacitance vs. Reverse Voltage

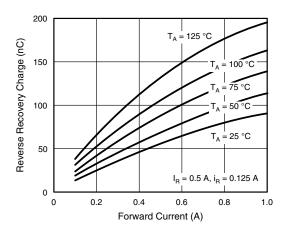


Fig. 6 - Max. Reverse Recovery Charge vs. Forward Current

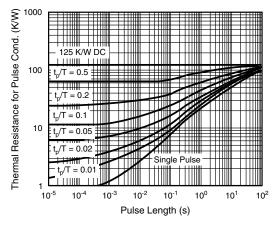


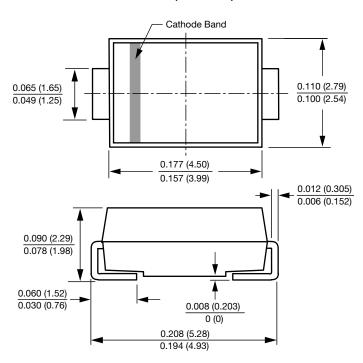
Fig. 7 - Thermal Response

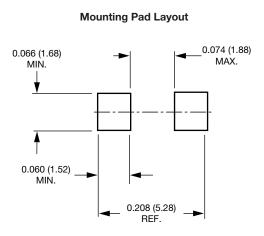


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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMA (DO-214AC)





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