

Ultrafast Avalanche SMD Rectifier



SMA (DO-214AC)

Cathode  Anode

ADDITIONAL RESOURCES



FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pellet chip junction
- Low reverse current
- Low forward voltage
- Soft recovery characteristic
- 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: base 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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2.0 A
V_{RRM}	50 V, 100 V, 200 V
I_{FSM}	35 A
I_R	1.0 μ A
V_F at I_F	1.1 V
t_{rr}	25 ns
E_R	20 mJ
T_J max.	150 °C
Package	SMA (DO-214AC)
Circuit configurations	Single

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	BYG22A	BYG22B	BYG22D	UNIT
Device marking code		BYG22A	BYG22B	BYG22D	
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	V
Average forward current	$I_{F(AV)}$	2.0			A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	35			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	BYG22A	BYG22B	BYG22D	UNIT
Maximum instantaneous forward voltage	I _F = 1.0 A	T _J = 25 °C	V _F ⁽¹⁾	1.0			V
	I _F = 2.0 A			1.1			
Maximum reverse current	V _R = V _{RRM}	T _J = 25 °C	I _R	1			μA
		T _J = 100 °C		10			
Maximum reverse recovery time	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A		t _{rr}	25			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	BYG22A	BYG22B	BYG22D	UNIT
Maximum thermal resistance, junction to lead, T _L = const.	R _{θJL}	25			°C/W
Maximum thermal resistance, junction to ambient	R _{θJA} ⁽¹⁾	150			°C/W
	R _{θJA} ⁽²⁾	125			
	R _{θJA} ⁽³⁾	100			

Notes

⁽¹⁾ Mounted on epoxy-glass hard tissue

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

⁽³⁾ Mounted on Al-oxide-ceramic (Al_2O_3), 50 mm^2 35 μm Cu

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
BYG22D-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG22D-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG22DHE3_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYG22DHE3_A/I ⁽¹⁾	0.064	I	7500	13" diameter plastic tape and reel
BYG22D-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG22D-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG22DHM3_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYG22DHM3_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)

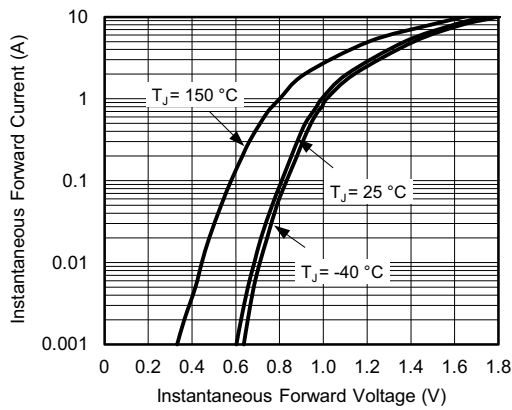


Fig. 1 - Forward Current vs. Forward Voltage

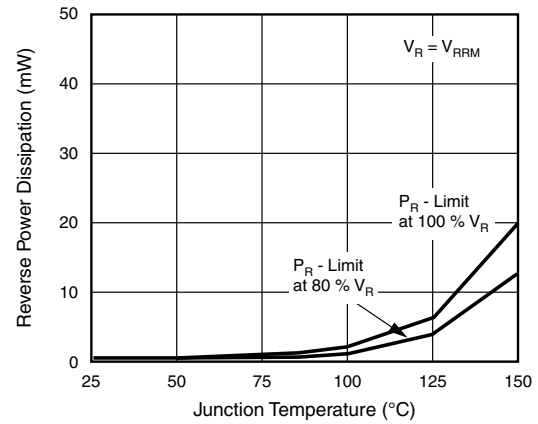


Fig. 4 - Max. Reverse Power Dissipation vs. Junction Temperature

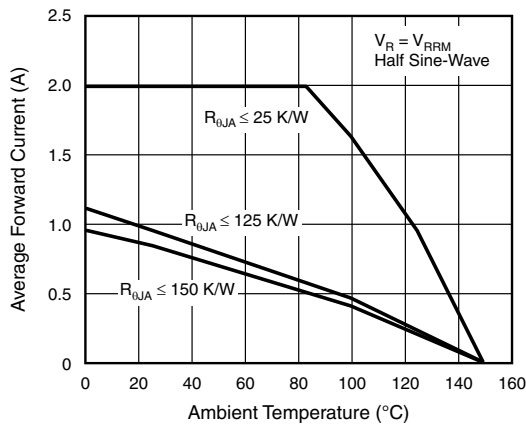


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

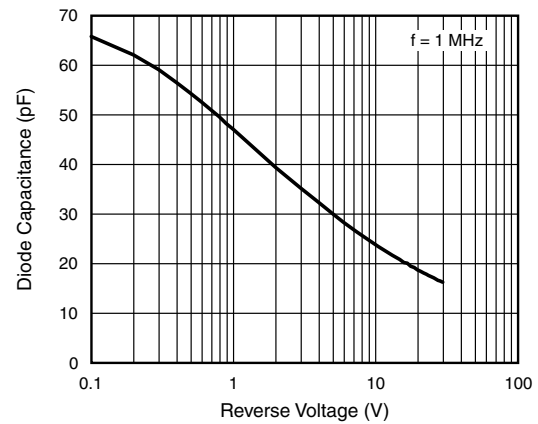


Fig. 5 - Diode Capacitance vs. Reverse Voltage

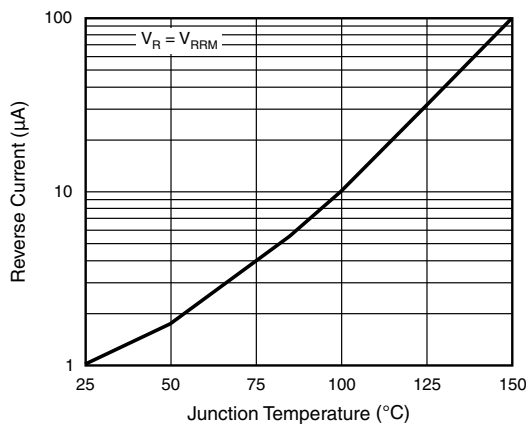


Fig. 3 - Reverse Current vs. Junction Temperature

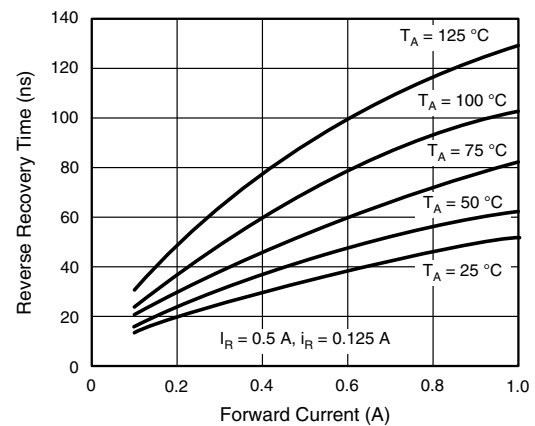


Fig. 6 - Max. Reverse Recovery Time vs. Forward Current

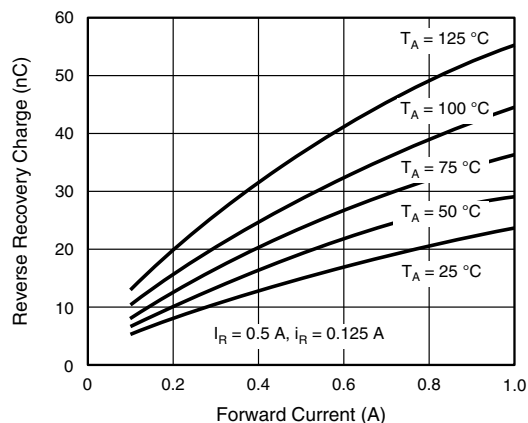


Fig. 7 - Max. Reverse Recovery Charge vs. Forward Current

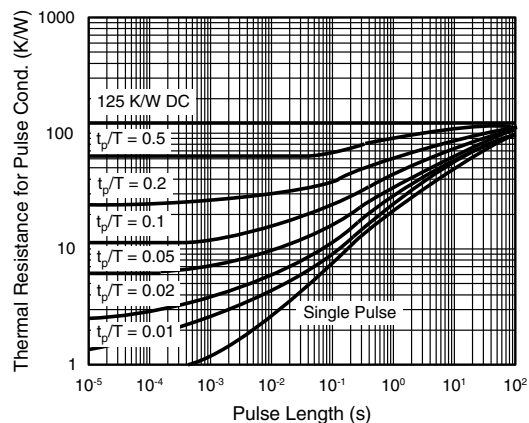
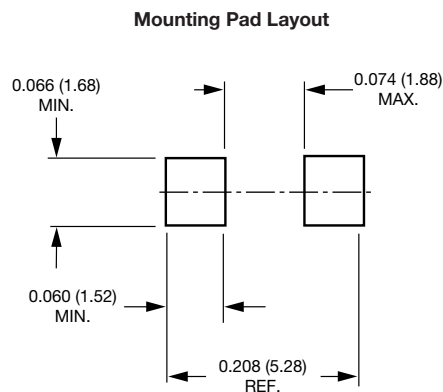
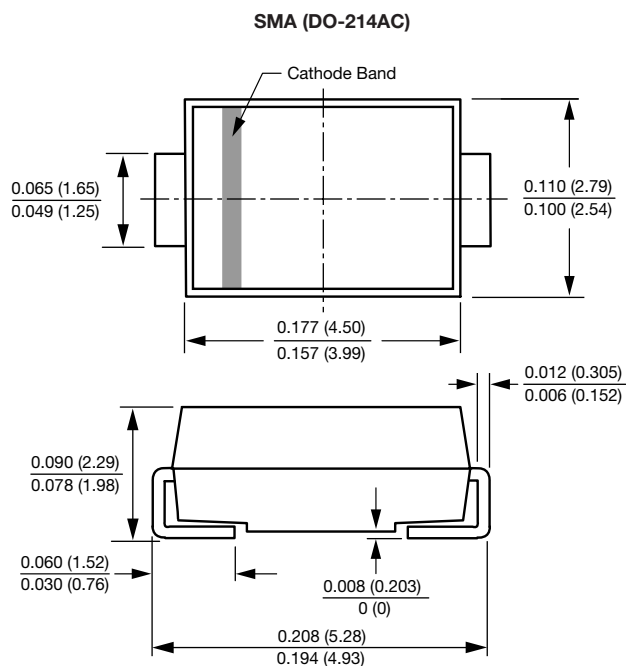


Fig. 8 - Thermal Response

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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