

Ultrafast Avalanche SMD Rectifier


DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated pallet 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	1000 V
I_{FSM}	30 A
I_R	5.0 μ A
t_{rr}	75 ns
V_F	1.7 V
E_R	20 mJ
T_J max.	150 °C
Package	DO-214AC (SMA)
Diode variations	Single die

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: 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 ($T_A = 25\text{ °C}$ 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	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	30	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	BYG23M	UNIT
Minimum breakdown voltage	$I_R = 100\ \mu\text{A}$		V_{BR}	1000	V
Maximum instantaneous voltage	$I_F = 1.0\ \text{A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	1.7	V
		$T_J = 150\text{ }^\circ\text{C}$		1.35	
Maximum reverse current	$V_R = V_{RRM}$	$T_J = 25\text{ }^\circ\text{C}$	I_R	5	μA
		$T_J = 125\text{ }^\circ\text{C}$		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(1) Pulse test: 300 μs pulse width, 1 % duty cycle

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

Notes(1) Mounted on epoxy-glass hard tissue, 17 mm² 35 μm Cu(2) Mounted on epoxy-glass hard tissue, 50 mm² 35 μm Cu(3) Mounted on Al-oxide-ceramic (Al_2O_3), 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/TR ⁽¹⁾	0.064	TR	1800	7" diameter plastic tape and reel
BYG23MHE3/TR3 ⁽¹⁾	0.064	TR3	7500	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified



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

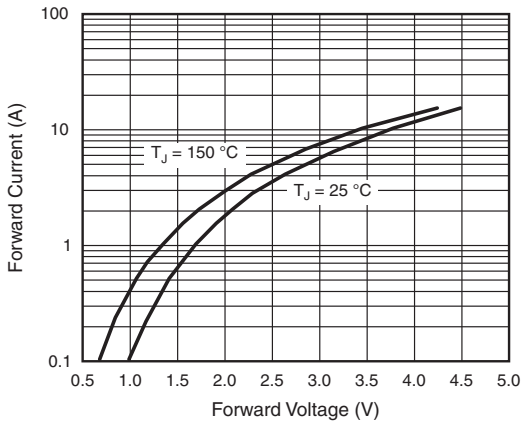


Fig. 1 - Max. Forward Current vs. Forward Voltage

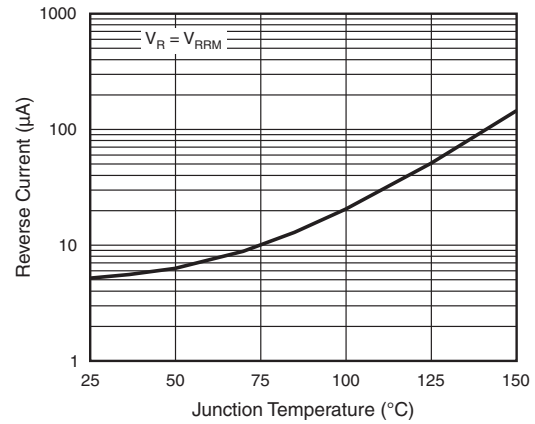


Fig. 4 - Reverse Current vs. Junction Temperature

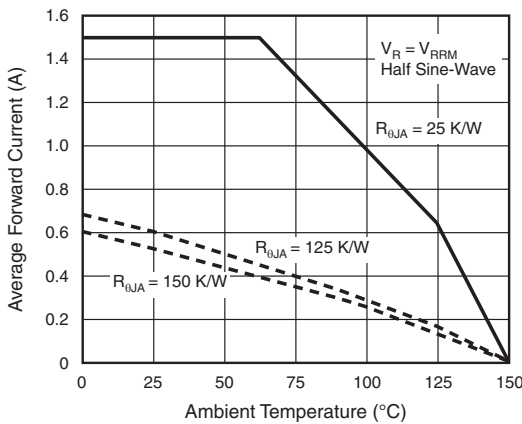


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

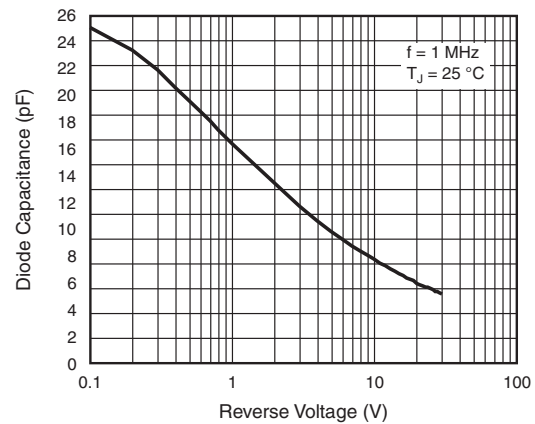


Fig. 5 - Diode Capacitance vs. Reverse Voltage

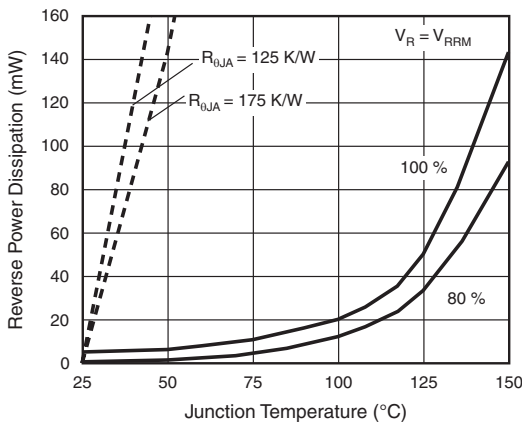
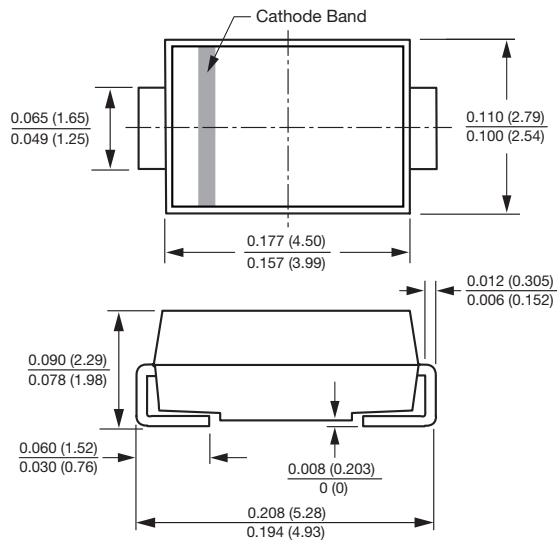


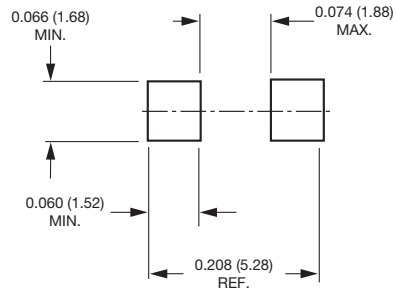
Fig. 3 - Max. Reverse Power Dissipation vs. Junction Temperature

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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