

Ultrafast Avalanche SMD Rectifier



DO-214AC (SMA)

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
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS
COMPLIANT

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 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes the cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	200 V to 600 V
I_{FSM}	30 A
I_R	1.0 μ A
V_F	1.4 V
t_{rr}	75 ns
E_R	20 mJ
T_J max.	150 °C

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			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) $I_{(BR)R} = 1$ A, $T_J = 25$ °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	BYG20D	BYG20G	BYG20J	UNIT
Maximum instantaneous forward voltage	I _F = 1 A	T _J = 25 °C	V _F ⁽¹⁾	1.3			V
	I _F = 1.5 A			1.4			
Maximum DC 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}	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	BYG20D	BYG20G	BYG20J	UNIT
Typical thermal resistance, junction to lead, $T_L = \text{const.}$	$R_{\theta JL}$	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

(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
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

(1) AEC-Q101 qualified

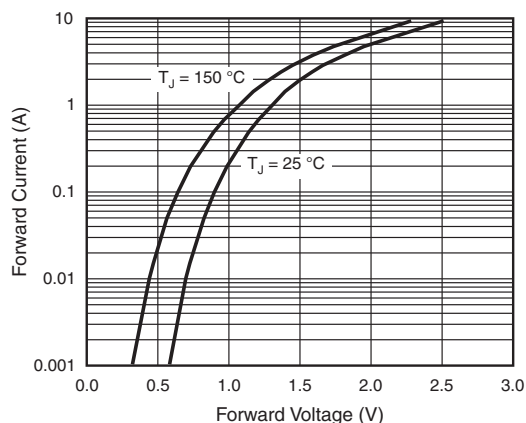
RATINGS AND CHARACTERISTICS CURVES($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Fig. 1 - Forward Current vs. Forward Voltage

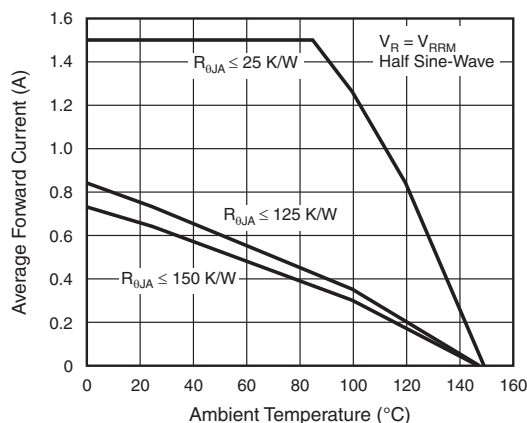


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

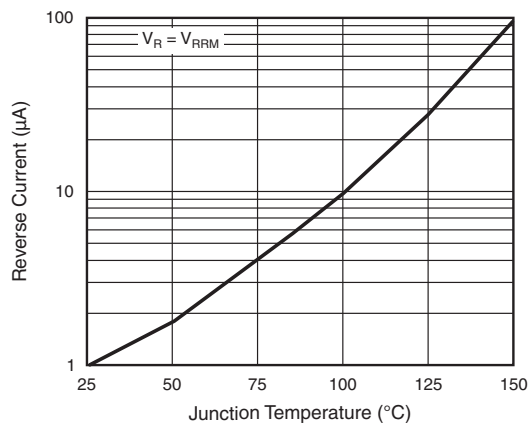


Fig. 3 - Reverse Current vs. Junction Temperature

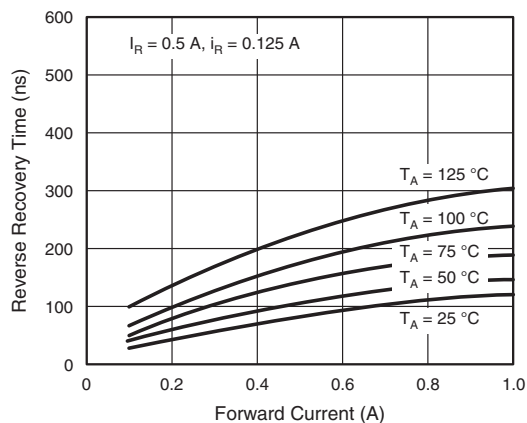


Fig. 6 - Reverse Recovery Time vs. Forward Current

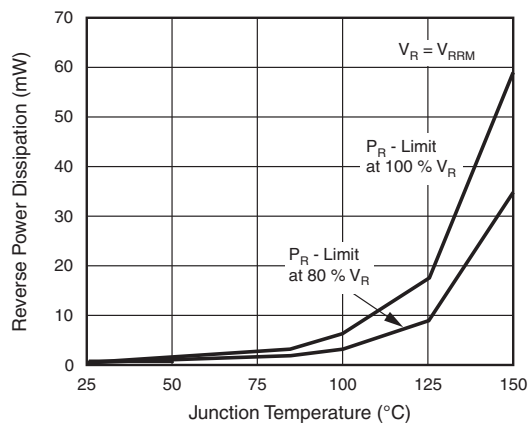


Fig. 4 - Max. Reverse Power Dissipation vs. Junction Temperature

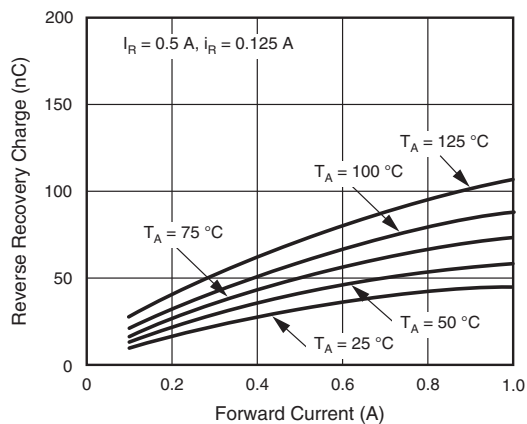


Fig. 7 - Reverse Recovery Charge vs. Forward Current

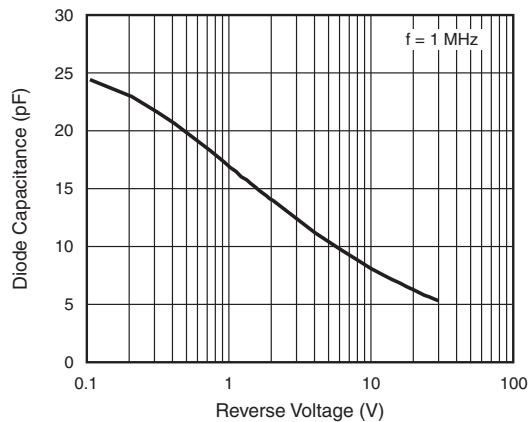


Fig. 5 - Diode Capacitance vs. Reverse Voltage

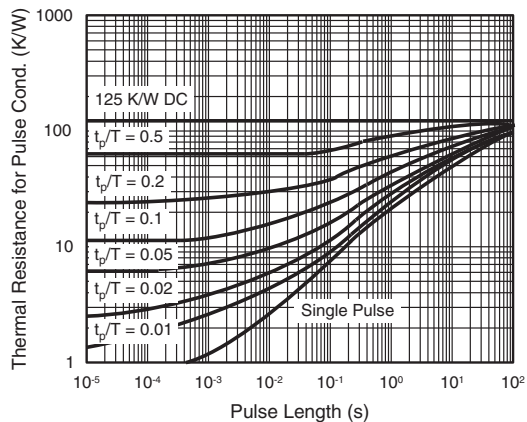
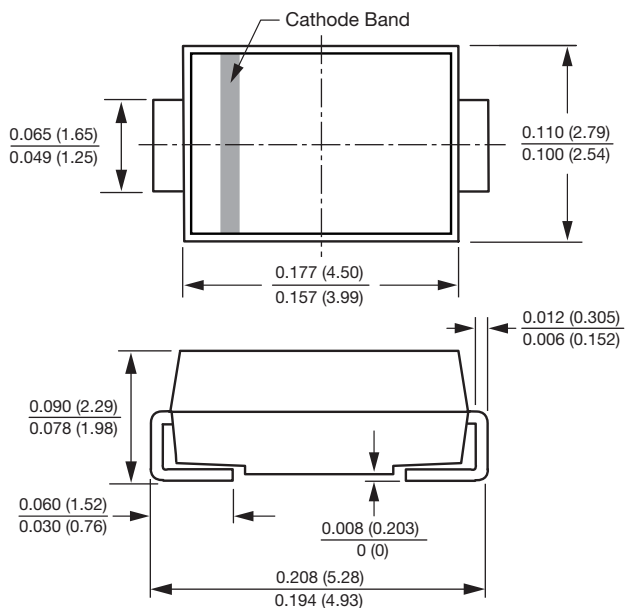


Fig. 8 - Thermal Response

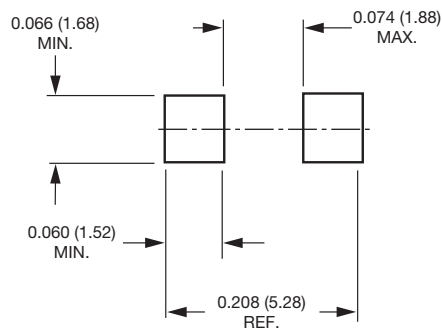


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout





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