Fast Avalanche SMD Rectifier



DO-214AC (SMA)

FEATURES

- Low profile package
- Ideal for automated placement
- Glass passivated 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
- Solder dip 260 °C, 40 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

RoHS COMPLIANT

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	800 V, 1000 V
I_{FSM}	30 A
I_R	1.0 µA
V_F	1.6 V
t_{rr}	120 ns
E_R	20 mJ
T_J max.	150 °C

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: DO-214AC (SMA)

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), 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	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		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 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**BYG21K**	**BYG21M**	**UNIT**
Maximum instantaneous forward voltage (1)	I_F = 1 A I_F = 1.5 A	T_J = 25 °C	V_F	1.5 1.6		V
Maximum reverse current	$V_R = V_{RRM}$	T_J = 25 °C T_J = 100 °C	I_R	1 10		µA
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**	**BYG21K**	**BYG21M**	**UNIT**
Typical thermal resistance, junction to lead T_L = const.	$R_{\theta JL}$	25		°C/W
Typical thermal resistance, junction to ambient	$R_{\theta JA}$	150 (1) 125 (2) 100 (3)		°C/W

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)**	**PACKAGE CODE**	**BASE Q'TY**	**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/TR (1)	0.064	TR	1800	7" diameter plastic tape and reel
BYG21KHE3/TR3 (1)	0.064	TR3	7500	13" diameter plastic tape and reel

Note:
(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

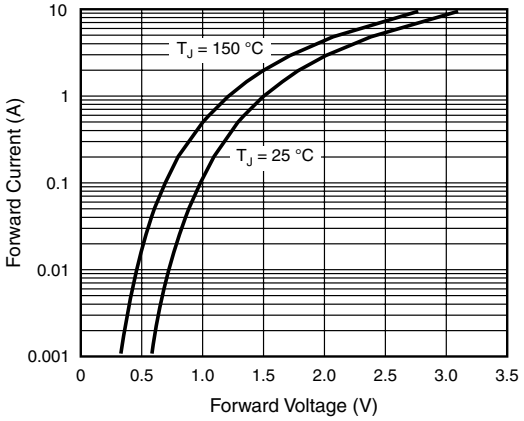


Figure 1. Forward Current vs. Forward Voltage

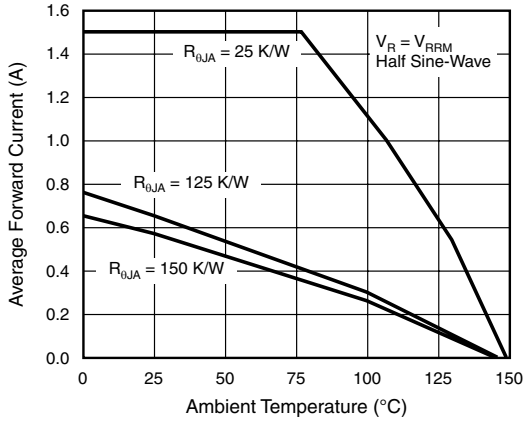


Figure 2. Max. Average Forward Current vs. Ambient Temperature

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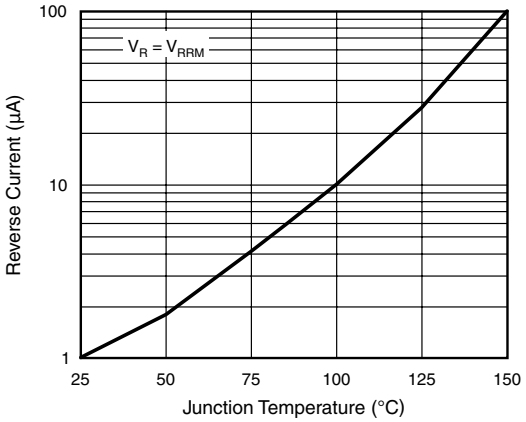


Figure 3. Reverse Current vs. Junction Temperature

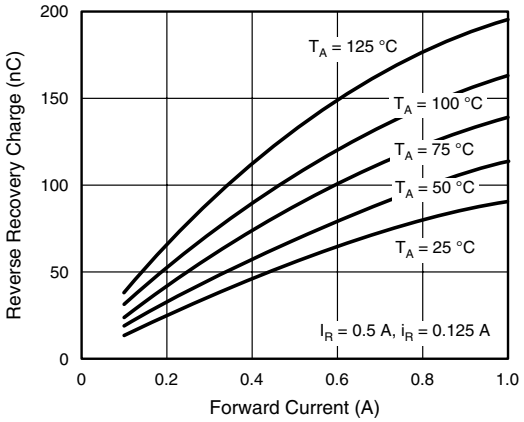


Figure 6. Max. Reverse Recovery Charge vs. Forward Current

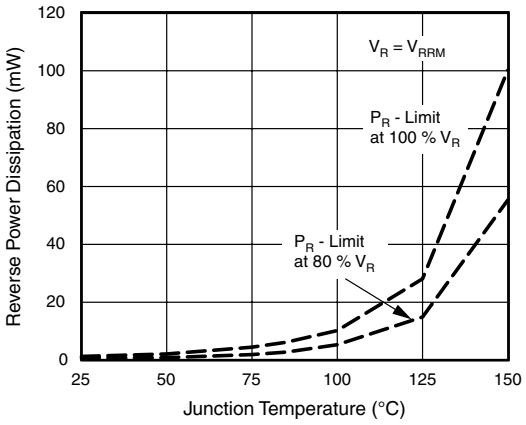


Figure 4. Max. Reverse Power Dissipation vs. Junction Temperature

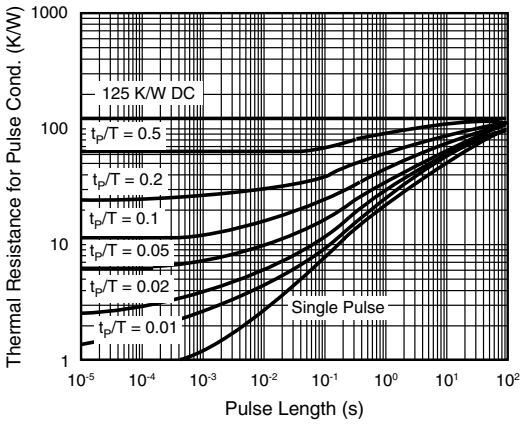


Figure 7. Thermal Response

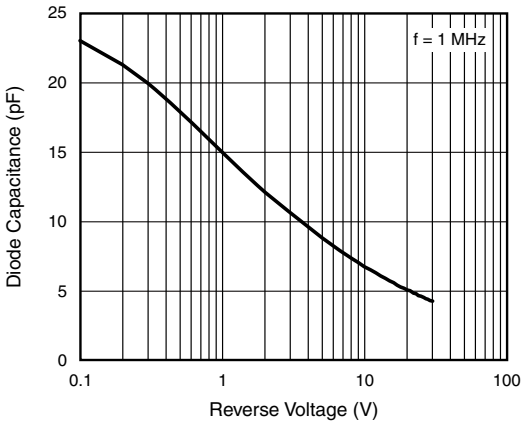
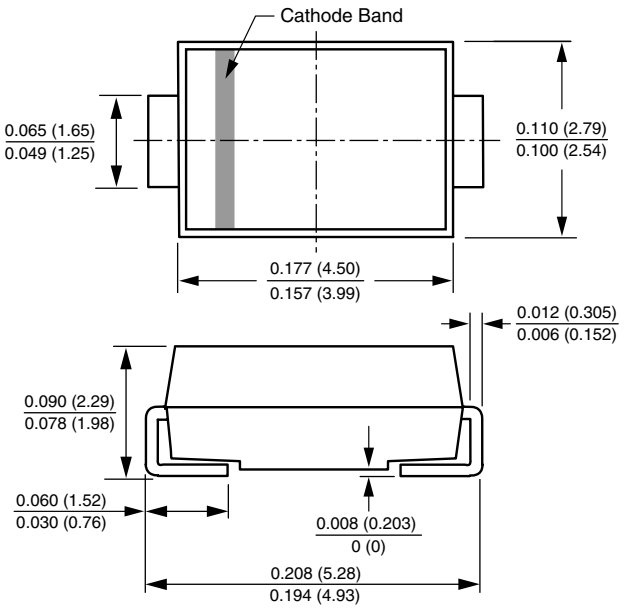


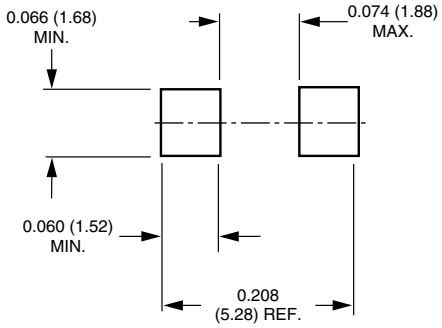
Figure 5. Diode Capacitance vs. Reverse Voltage

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AC (SMA)



Mounting Pad Layout



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