

Standard Avalanche SMD Rectifier

BYG10D, BYG10G, BYG10J BYG10K, BYG10M, BYG10Y Vishaymas General Semiconductor



SMA (DO-214AC)

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.5 A
V_{RRM}	200 V, 400 V, 600 V, 800 V, 1000 V, 1600 V
I_{FSM}	30 A
I_R	1.0 μ A
V_F	1.15 V
E_R	20 mJ
T_J max.	150 °C
Package	SMA (DO-214AC)
Diode variations	Single

FEATURES

- Low profile package
- Ideal for automated placement
- Controlled avalanche characteristics
- Glass passivated pellet chip junction
- Low reverse current
- High surge current capability
- 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.vishaymas.com

TYPICAL APPLICATIONS

For use in general purpose rectification of power supplies, 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, 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, HM3 suffix meet JESD 201 class 2 whisker test

Note

- BYG10Y for commercial grade only

Polarity: color band denotes the cathode end

MAXIMUM RATINGS ($T_A = 25\text{ °C}$ unless otherwise noted)								
PARAMETER	SYMBOL	BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	UNIT
Device marking code		BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	
Maximum repetitive peak reverse voltage	V_{RRM}	200	400	600	800	1000	1600	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) $I_{(BR)R} = 1\text{ A}$, $T_J = 25\text{ °C}$ (for BYG10D thru BYG10M) $I_{(BR)R} = 0.4\text{ A}$, $T_J = 25\text{ °C}$ (for BYG10Y)	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	BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	I _F = 1 A	T _J = 25 °C	V _F	1.1						V
	I _F = 1.5 A			1.15						
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}	4						μs

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

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)								
PARAMETER	SYMBOL	BYG10D	BYG10G	BYG10J	BYG10K	BYG10M	BYG10Y	UNIT
Typical thermal resistance, junction to lead	R _{θJL}	25						°C/W
Typical 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
BYG10M-E3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG10M-E3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG10MHE3_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYG10MHE3_A/I ⁽¹⁾	0.064	I	7500	13" diameter plastic tape and reel
BYG10M-M3/TR	0.064	TR	1800	7" diameter plastic tape and reel
BYG10M-M3/TR3	0.064	TR3	7500	13" diameter plastic tape and reel
BYG10MHM3_A/H ⁽¹⁾	0.064	H	1800	7" diameter plastic tape and reel
BYG10MHM3_A/I ⁽¹⁾	0.064	I	7500	13" diameter plastic tape and reel

Note
⁽¹⁾ AEC-Q101 qualified

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

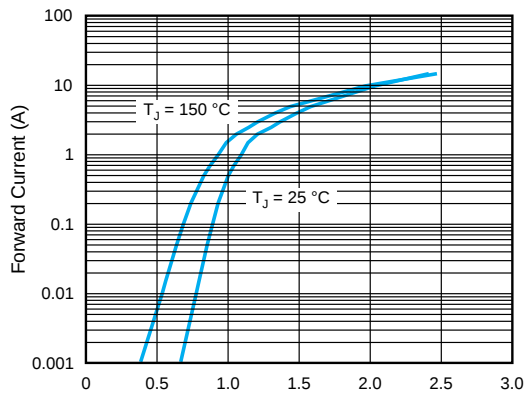


Fig. 1 - Forward Current vs. Forward Voltage

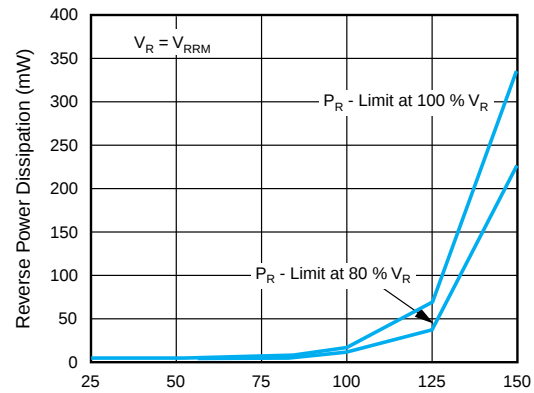


Fig. 4 - Max. Reverse Power Dissipation vs. Junction Temperature

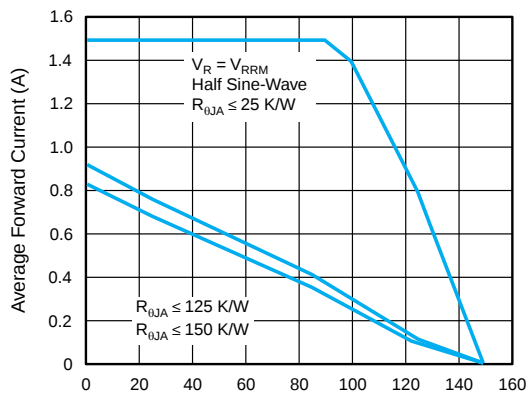


Fig. 2 - Max. Average Forward Current vs. Ambient Temperature

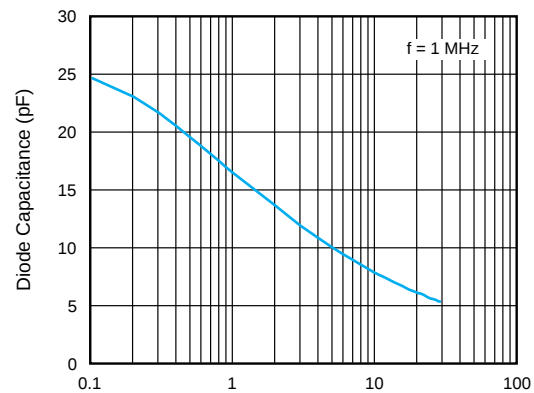


Fig. 5 - Diode Capacitance vs. Reverse Voltage

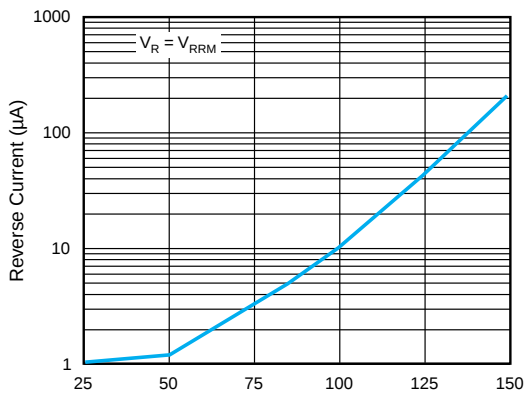


Fig. 3 - Reverse Current vs. Junction Temperature

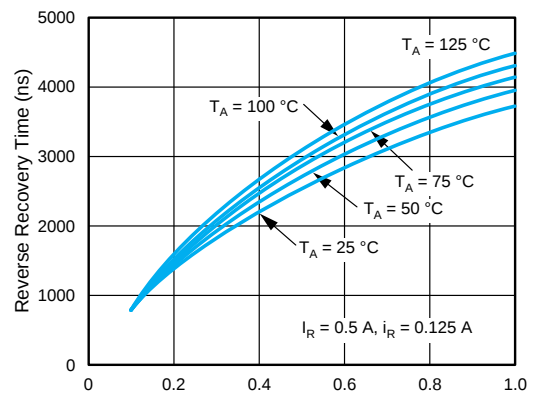


Fig. 6 - Reverse Recovery Time vs. Forward Current

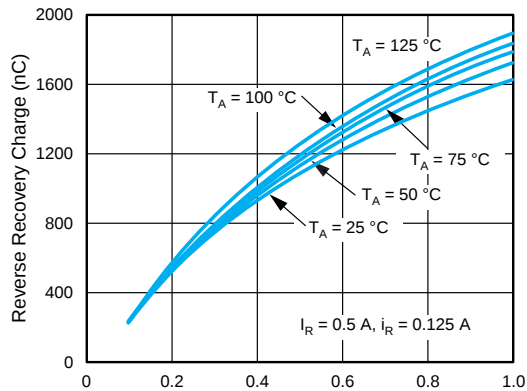


Fig. 7 - Reverse Recovery Charge vs. Forward Current

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

