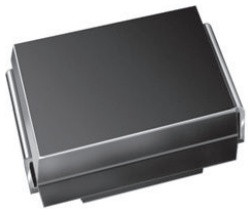
Surface-Mount Ultrafast Plastic Rectifier



SMB (DO-214AA)

Cathode ○—▶|—○ Anode

FEATURES

- Glass passivated pellet chip junction
- Ideal for automated placement
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- High forward surge 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE Available

Pb

e3

RoHS COMPLIANT

LINKS TO ADDITIONAL RESOURCES

3D Models

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	200 V
I_{FSM}	40 A
t_{rr}	25 ns
V_F	0.71 V
T_J max.	175 °C
Package	SMB (DO-214AA)
Circuit configuration	Single

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer and telecommunication.

MECHANICAL DATA

Case: SMB (DO-214AA)
Molding compound meets UL 94 V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3_X - RoHS-compliant, 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 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**VALUE**	**UNIT**
Device marking code			MD	
Maximum repetitive peak reverse voltage		V_{RRM}	200	V
Working peak reverse voltage		V_{RWM}	200	V
Maximum DC blocking voltage		V_{DC}	200	V
Maximum average forward rectified current at (fig. 1)	T_L = 155 °C	$I_{F(AV)}$	1.0	A
	T_L = 145 °C		2.0	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I_{FSM}	40	A
Operating junction and storage temperature range		T_J, T_{STG}	-65 to +175	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)					
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**VALUE**	**UNIT**
Maximum instantaneous forward voltage	I_F = 1.0 A	T_J = 25 °C	V_F (1)	0.875	V
		T_J = 150 °C		0.71	
Maximum instantaneous reverse current at rated DC blocking voltage		T_J = 25 °C	I_R (1)	2.0	μA
		T_J = 150 °C		50	
Maximum reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	25	ns
Maximum reverse recovery time	I_F = 1.0 A, dI/dt = 50 A/μs, V_R = 30 V, I_{rr} = 10 % I_{RM}		t_{rr}	35	ns
Maximum forward recovery time	I_F = 1.0 A, dI/dt = 100 A/μs, recovery to 1.0 V		t_{fr}	25	ns

Note

(1) Pulse test: t_p = 300 μs, duty cycle ≤ 2 %

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance, junction to lead	$R_{\theta JL}$	13	°C/W

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
MURS120-E3/52T	0.096	52T	750	7" diameter plastic tape and reel
MURS120-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel
MURS120HE3_A/H (1)	0.096	H	750	7" diameter plastic tape and reel
MURS120HE3_A/I (1)	0.096	I	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

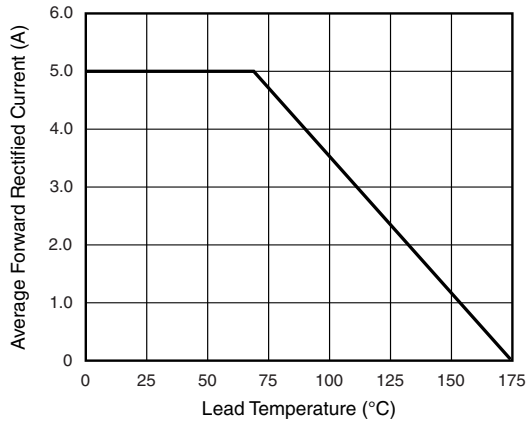


Fig. 1 - Forward Current Derating Curve

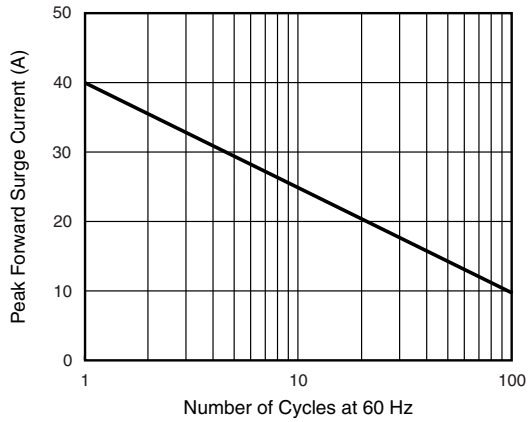


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

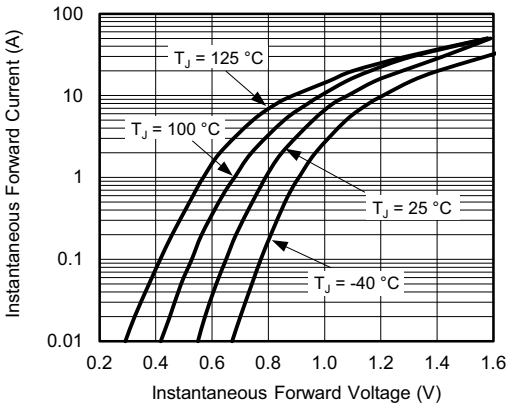


Fig. 3 - Typical Instantaneous Forward Characteristics

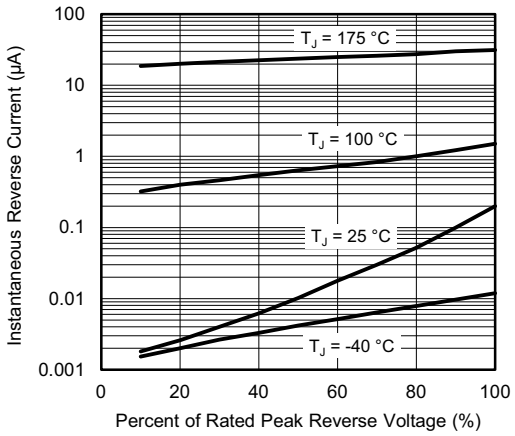


Fig. 4 - Typical Reverse Leakage Characteristics

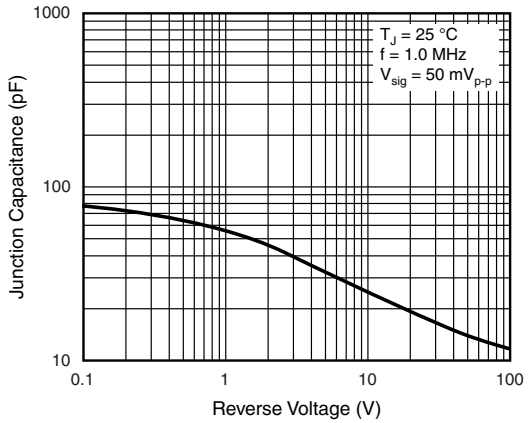
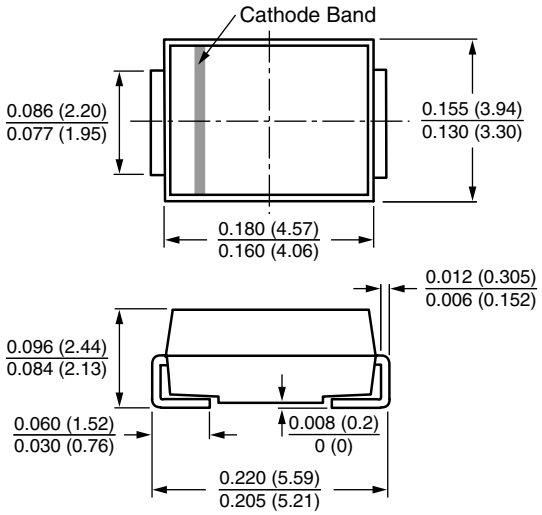


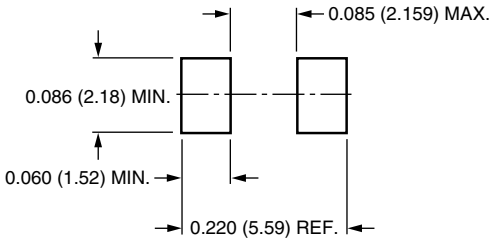
Fig. 5 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMB (DO-214AA)



Mounting Pad Layout



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