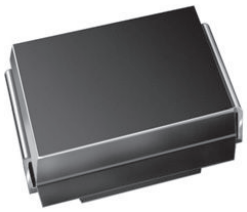
Surface Mount Ultrafast Plastic Rectifier



DO-214AA (SMB)

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

RoHS COMPLIANT

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	400 V, 600 V
I_{FSM}	35 A
t_{rr}	50 ns
V_F	1.05 V
T_J max.	175 °C
Package	DO-214AA (SMB)
Diode variation	Single die

MECHANICAL DATA

Case: DO-214AA (SMB)
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
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	MURS140	MURS160	UNIT
Device marking code			MG	MJ	
Maximum repetitive peak reverse voltage		V_{RRM}	400	600	V
Working peak reverse voltage		V_{RWM}	400	600	
Maximum DC blocking voltage		V_{DC}	400	600	
Maximum average forward rectified current at (Fig. 1)	T_L = 150 °C	$I_{F(AV)}$	1.0		A
	T_L = 125 °C		2.0		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I_{FSM}	35		
Operating junction and storage temperature range		T_J, T_{STG}	-65 to +175		°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**		**MURS140**	**MURS160**	**UNIT**
Maximum instantaneous forward voltage	V_F (1)	I_F = 1.0 A	T_J = 25 °C	1.25		V
			T_J = 150 °C	1.05		
Maximum instantaneous reverse current at DC blocking voltage	I_R (2)	Rated V_R	T_J = 25 °C	5.0		µA
			T_J = 150 °C	150		
Maximum reverse recovery time	t_{rr}	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		50		ns
		I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 10 % I_{RM}		75		
Maximum forward recovery time	t_{fr}	I_F = 1.0 A, dI/dt = 100 A/µs, recovery to 1.0 V		50		

Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)				
PARAMETER	**SYMBOL**	**MURS140**	**MURS160**	**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**
MURS160-E3/52T	0.096	52T	750	7" diameter plastic tape and reel
MURS160-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel
MURS160HE3/52T (1)	0.096	52T	750	7" diameter plastic tape and reel
MURS160HE3/5BT (1)	0.096	5BT	3200	13" diameter plastic tape and reel
MURS160HE3_A/H (1)	0.096	H	750	7" diameter plastic tape and reel
MURS160HE3_A/I (1)	0.096	I	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified

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

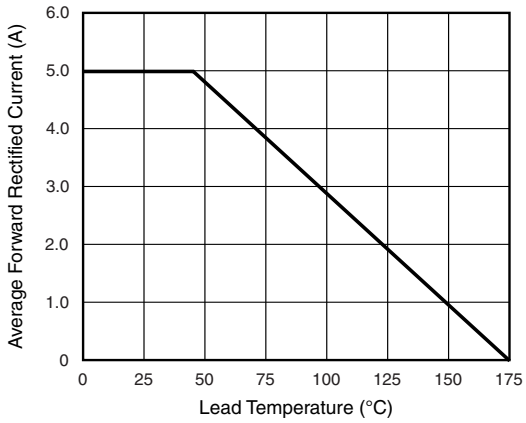

Fig. 1 - Forward Current Derating Curve

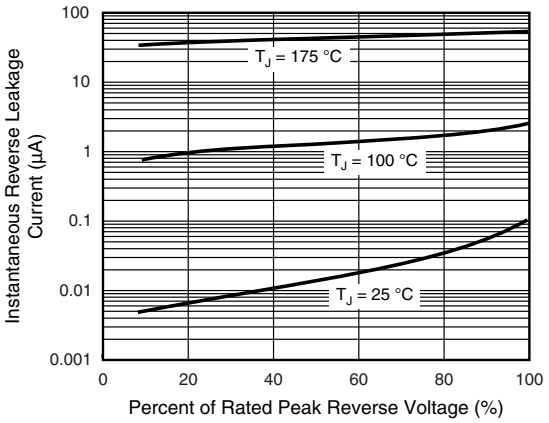

Fig. 4 - Typical Reverse Leakage Characteristics

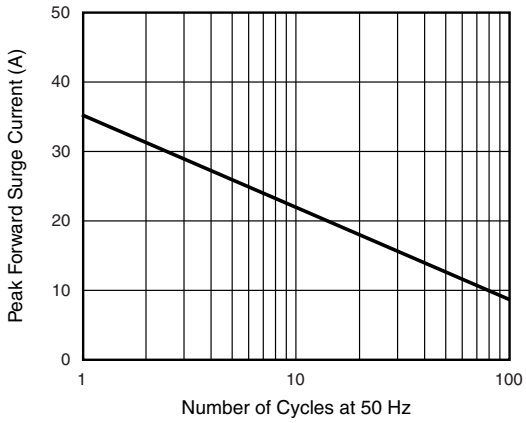

Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

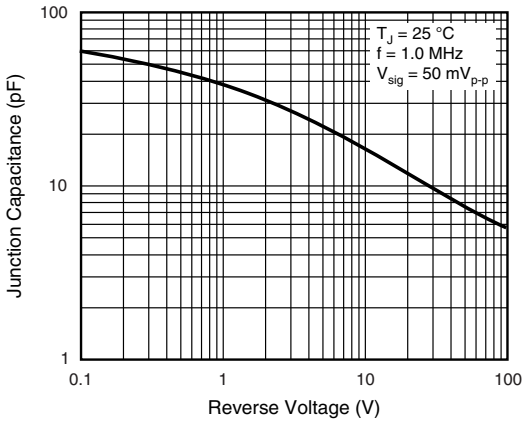

Fig. 5 - Typical Junction Capacitance

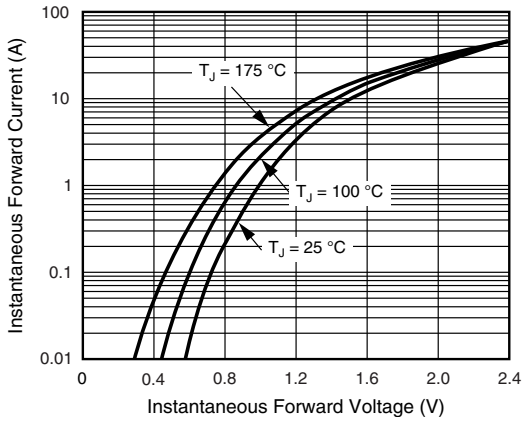

Fig. 3 - Typical Instantaneous Forward Characteristics

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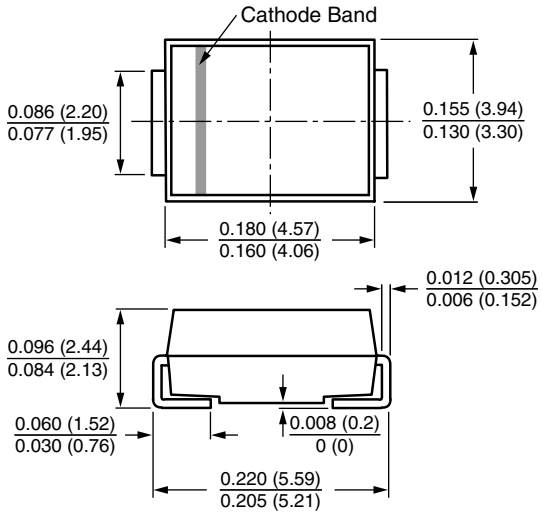
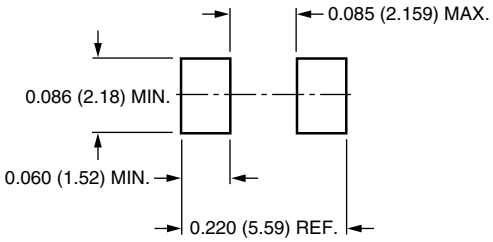
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-214AA (SMB)



Mounting Pad Layout



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