

## 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](http://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.

### 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

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
$T_J \text{ max.}$	175 °C
Package	DO-214AA (SMB)
Diode variation	Single die

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ 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)	$I_{F(AV)}$	$T_L = 150\text{ °C}$		A
		$T_L = 125\text{ °C}$		
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



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

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle  
(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	MURS140	MURS160	UNIT
Typical thermal resistance, junction to lead	$R_{\theta JL}$	13		$^\circ\text{C}/\text{W}$

<b>ORDERING INFORMATION</b> (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 <sup>(1)</sup>	0.096	52T	750	7" diameter plastic tape and reel
MURS160HE3/5BT <sup>(1)</sup>	0.096	5BT	3200	13" diameter plastic tape and reel
MURS160HE3_A/H <sup>(1)</sup>	0.096	H	750	7" diameter plastic tape and reel
MURS160HE3_A/I <sup>(1)</sup>	0.096	I	3200	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)

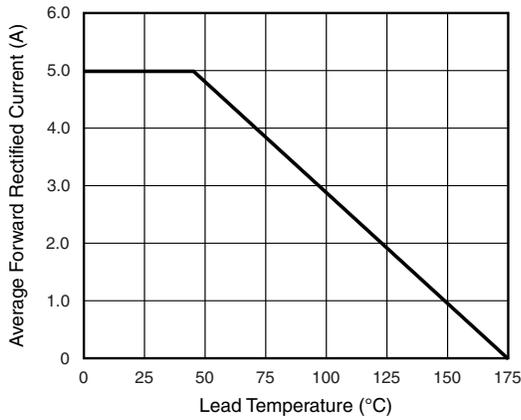


Fig. 1 - Forward Current Derating Curve

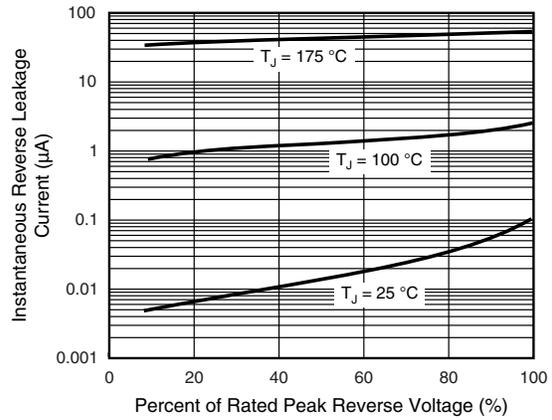


Fig. 4 - Typical Reverse Leakage Characteristics

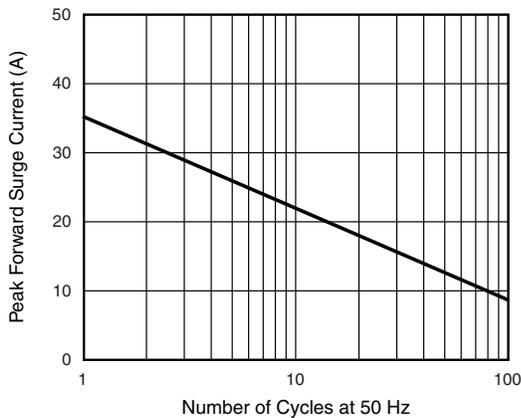


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

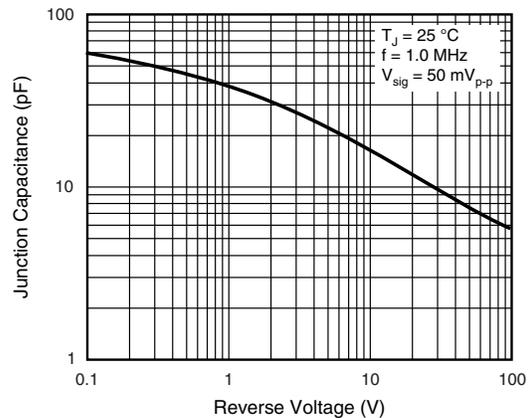


Fig. 5 - Typical Junction Capacitance

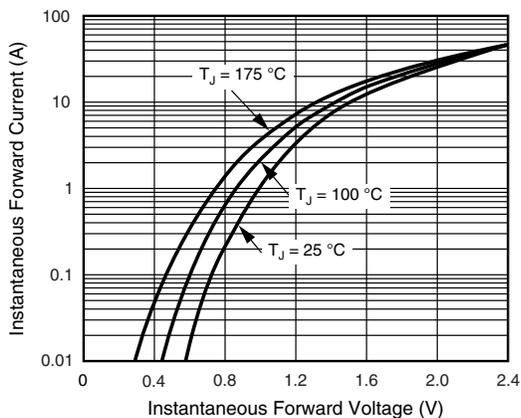
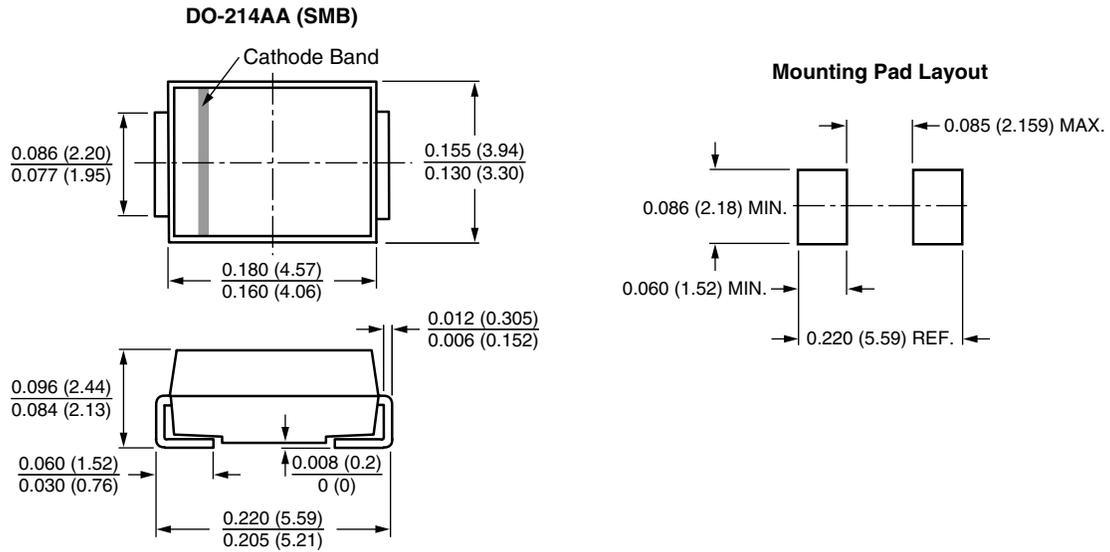


Fig. 3 - Typical Instantaneous Forward Characteristics



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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