

## Surface Mount Ultrafast Plastic Rectifier


**DO-214AA (SMB)**

MAJOR RATINGS AND CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
$V_{RRM}$	200 V
$I_{FSM}$	40 A
$t_{rr}$	25 ns
$V_F$	0.71 V
$T_j \text{ max.}$	175 °C

### FEATURES

- Glass passivated 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-020C, LF max peak of 260 °C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** DO-214AA (SMB)

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** Color band denotes cathode end

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ 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 (see Fig. 1)	$I_{F(AV)}$	1.0 2.0	A
			$T_L = 155\text{ °C}$ $T_L = 145\text{ °C}$
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

<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	at $I_F = 1.0\text{ A}$ , $T_j = 25\text{ }^\circ\text{C}$ at $I_F = 1.0\text{ A}$ , $T_j = 150\text{ }^\circ\text{C}$	$V_F$	0.875 0.71	V
Maximum instantaneous reverse current at rated DC blocking voltage <sup>(1)</sup>	$T_j = 25\text{ }^\circ\text{C}$ $T_j = 150\text{ }^\circ\text{C}$	$I_R$	2.0 50	$\mu\text{A}$
Maximum reverse recovery time	at $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	25	ns
Maximum reverse recovery time	at $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 10\% I_{RM}$	$t_{rr}$	35	ns
Maximum forward recovery time	at $I_F = 1.0\text{ A}$ , $di/dt = 100\text{ A}/\mu\text{s}$ , recovery to $1.0\text{ V}$	$t_{fr}$	25	ns

**Note:**

(1) Pulse test:  $t_p = 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$

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

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
MURS120-E3/52T	0.096	52T	750	7" Diameter Plastic Tape & Reel
MURS120-E3/5BT	0.096	5BT	3200	13" Diameter Plastic Tape & Reel
MURS120HE3/52T <sup>(1)</sup>	0.096	52T	750	7" Diameter Plastic Tape & Reel
MURS120HE3/5BT <sup>(1)</sup>	0.096	5BT	3200	13" Diameter Plastic Tape & Reel

**Note:**

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

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

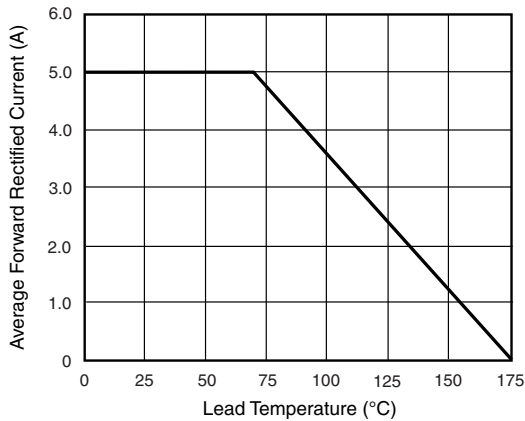


Figure 1. Forward Current Derating Curve

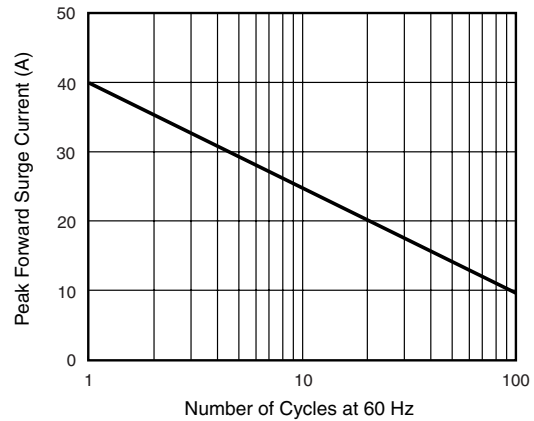


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

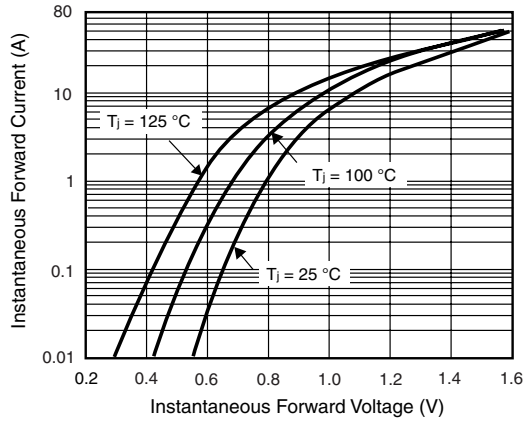


Figure 3. Typical Instantaneous Forward Characteristics

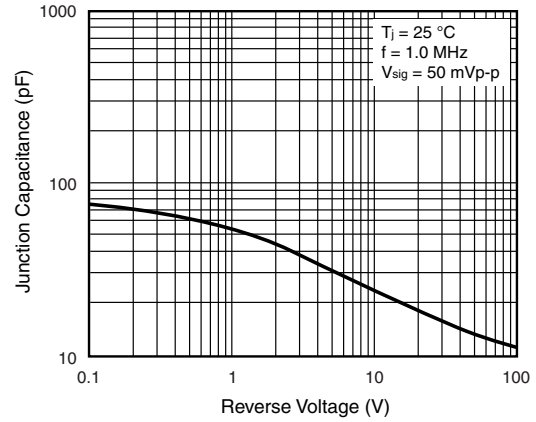


Figure 5. Typical Junction Capacitance

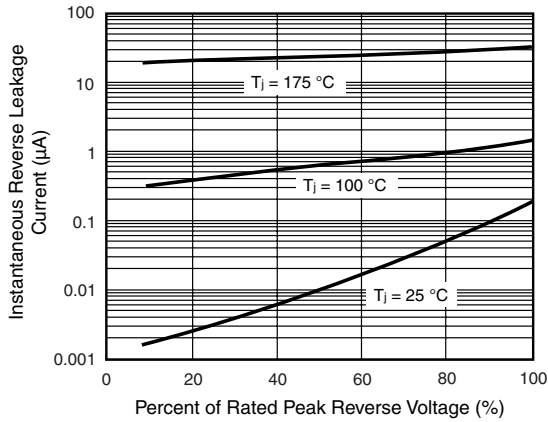
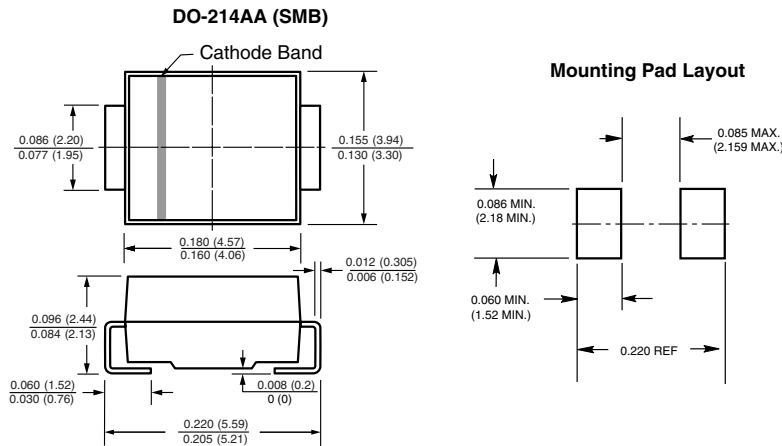


Figure 4. Typical Reverse Leakage Characteristics

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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