

## 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
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES



### 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
$V_{RRM}$	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

### MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 2 whisker test

**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 (fig. 1)	$T_L = 155\text{ °C}$	$I_{F(AV)} = 1.0$	A
	$T_L = 145\text{ °C}$	$I_{F(AV)} = 2.0$	
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** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage	$I_F = 1.0\text{ A}$	$V_F^{(1)}$	0.875	V
			0.71	
Maximum instantaneous reverse current at rated DC blocking voltage		$I_R^{(1)}$	2.0	$\mu\text{A}$
			50	
Maximum reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	25	ns
Maximum reverse recovery time	$I_F = 1.0\text{ A}$ , $dI/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 10\% I_{RM}$	$t_{rr}$	35	ns
Maximum forward recovery time	$I_F = 1.0\text{ A}$ , $dI/dt = 100\text{ A}/\mu\text{s}$ , recovery to 1.0 V	$t_{fr}$	25	ns

**Note**<sup>(1)</sup> Pulse test:  $t_p = 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to lead	$R_{\theta JL}$	13	$^{\circ}\text{C}/\text{W}$

**ORDERING INFORMATION** (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
MURS120-M3/52T	0.096	52T	750	7" diameter plastic tape and reel
MURS120-M3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel

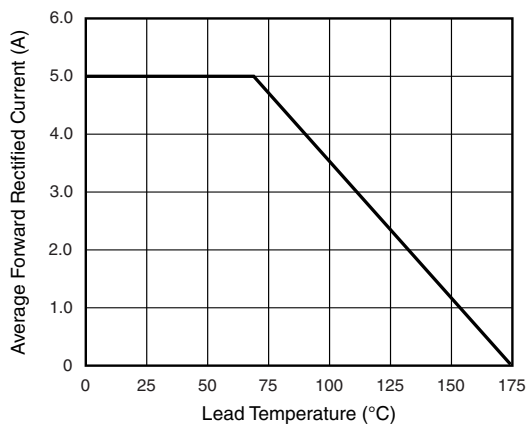
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

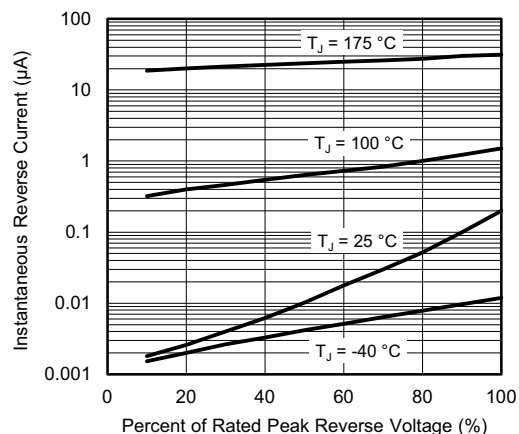


Fig. 4 - Typical Reverse Leakage Characteristics

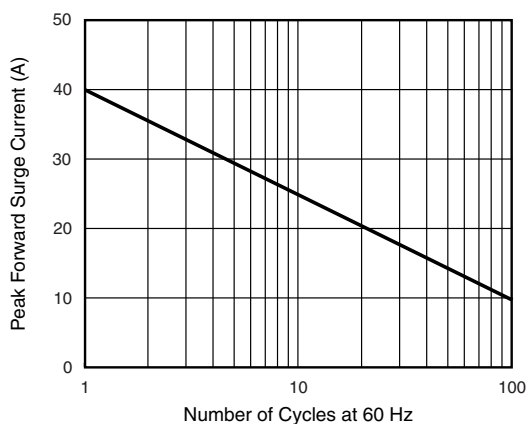


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

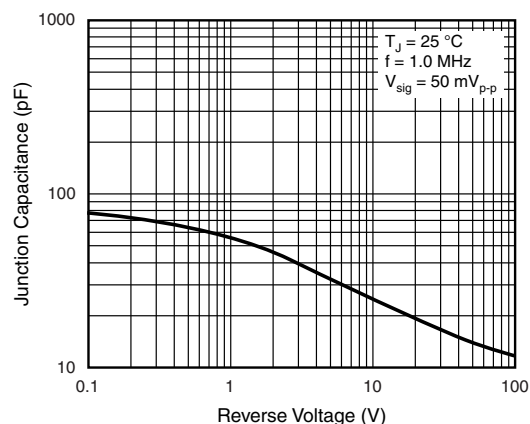


Fig. 5 - Typical Junction Capacitance

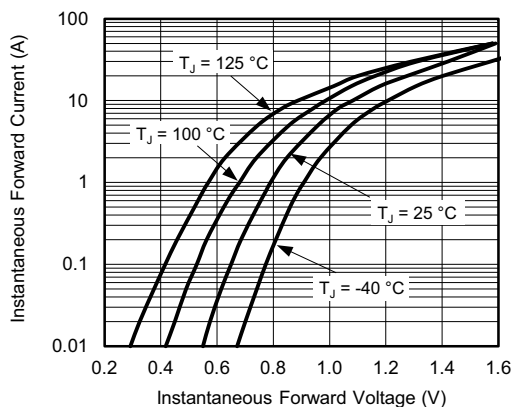
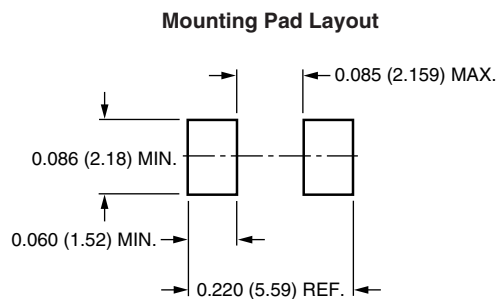
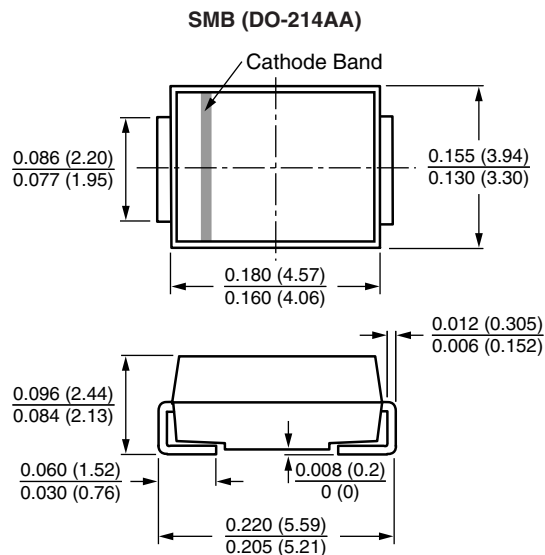


Fig. 3 - Typical Instantaneous Forward Characteristics



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





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