

## 3A, 50 - 200V Surface Mount Ultrafast Power Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Ultrafast recovery time for high efficiency
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

### APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Monitor
- TV

### MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Packing code with suffix "G" means green compound (halogen-free)
- Part No. with suffix "H" means AEC-Q101 qualified
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.11 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	3	A
$V_{RRM}$	200	V
$I_{FSM}$	75	A
$T_{JMAX}$	175	°C
Package	DO-214AA (SMB)	
Configuration	Single Die	



DO-214AA (SMB)

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	MUR305SB	MUR310SB	MUR315SB	MUR320SB	UNIT
Marking code on the device		MUR305SB	MUR310SB	MUR315SB	MUR320SB	
Repetitive peak reverse voltage	$V_{RRM}$	50	100	150	200	V
Reverse voltage, total rms value	$V_{R(RMS)}$	35	70	105	140	V
Forward current	$I_{F(AV)}$	3				A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	75				A
Junction temperature	$T_J$	- 55 to +175				°C
Storage temperature	$T_{STG}$	- 55 to +175				°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>LIMIT</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	42	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	76	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	45	°C/W

**Thermal Performance Note:** Units mounted on recommended PCB (10mm x 10mm Cu pad test board)

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
<b>PARAMETER</b>	<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Forward voltage per diode <sup>(1)</sup>	$I_F = 1.5\text{A}, T_J = 25^\circ\text{C}$	$V_F$	0.79	0.85	V
	$I_F = 3\text{A}, T_J = 25^\circ\text{C}$		0.86	0.90	V
	$I_F = 1.5\text{A}, T_J = 150^\circ\text{C}$		0.61	0.68	V
	$I_F = 3\text{A}, T_J = 150^\circ\text{C}$		0.69	0.73	V
Reverse current @ rated $V_R$ per diode <sup>(2)</sup>	$T_J = 25^\circ\text{C}$	$I_R$	-	5	$\mu\text{A}$
	$T_J = 150^\circ\text{C}$		-	150	$\mu\text{A}$
Junction capacitance	1 MHz, $V_R = 4.0\text{V}$	$C_J$	45	-	pF
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

**Notes:**

1. Pulse test with  $PW = 0.3\text{ ms}$
2. Pulse test with  $PW = 30\text{ ms}$

<b>ORDERING INFORMATION</b>					
<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>PACKAGE</b>	<b>PACKING</b>
MUR3xxSB (Note 1, 2)	H	R5	G	SMB	850 / 7" Plastic reel
		R4		SMB	3,000 / 13" Paper reel
		M4		SMB	3,000 / 13" Plastic reel

**Notes:**

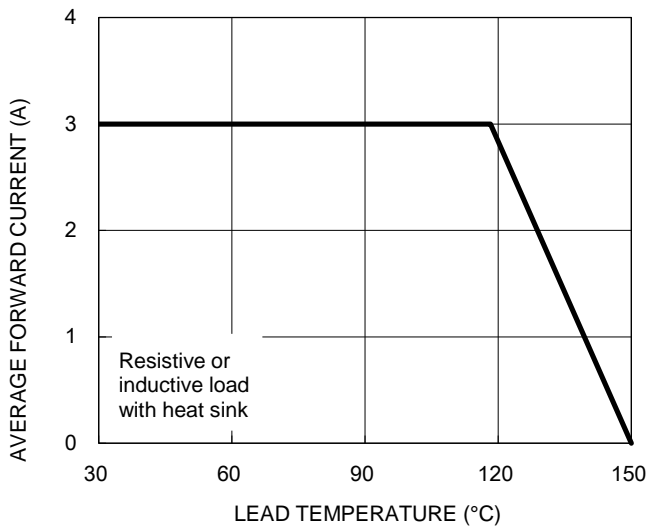
1. "xx" defines voltage from 50V (MUR305SB) to 200V (MUR320SB)
2. Whole series with green compound (halogen-free)

<b>EXAMPLE</b>					
<b>EXAMPLE P/N</b>	<b>PART NO.</b>	<b>PART NO. SUFFIX</b>	<b>PACKING CODE</b>	<b>PACKING CODE SUFFIX</b>	<b>DESCRIPTION</b>
MUR320SBHR5	MUR320SB	H	R5	G	Green compound AEC-Q101 qualified

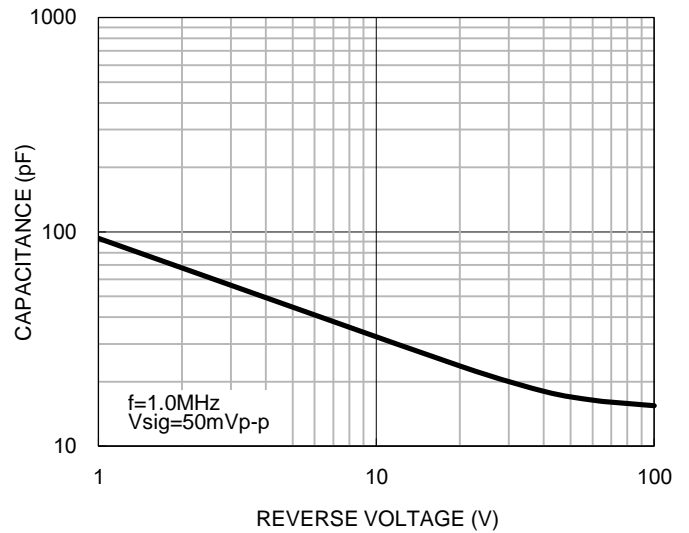
**CHARACTERISTICS CURVES**

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

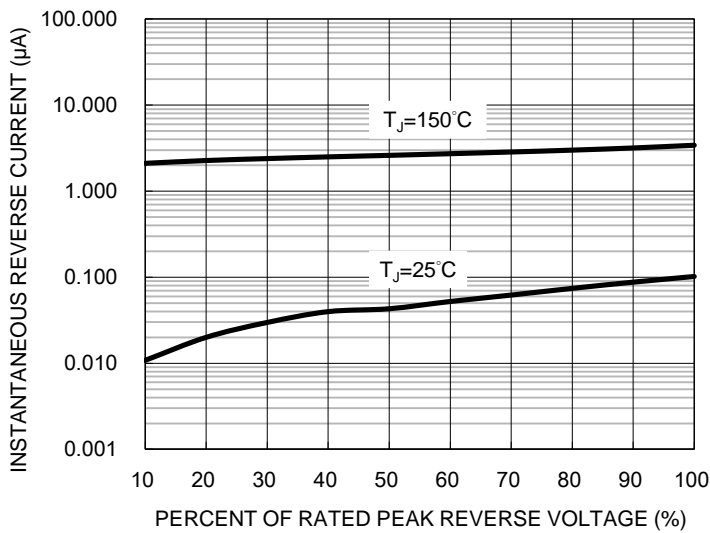
**Fig.1 Forward Current Derating Curve**



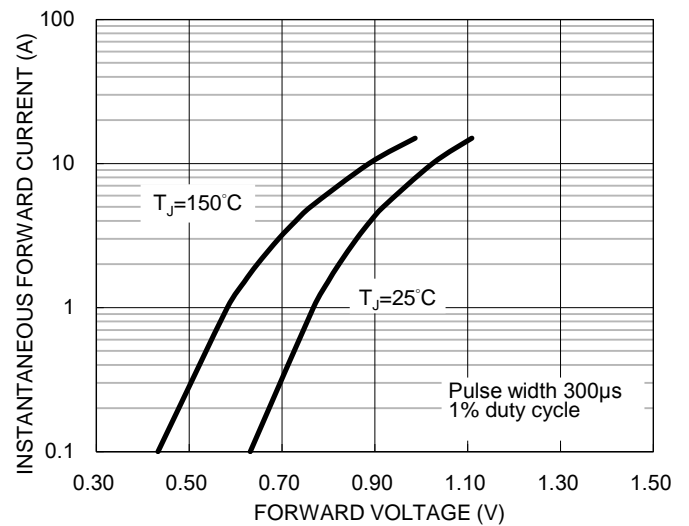
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**

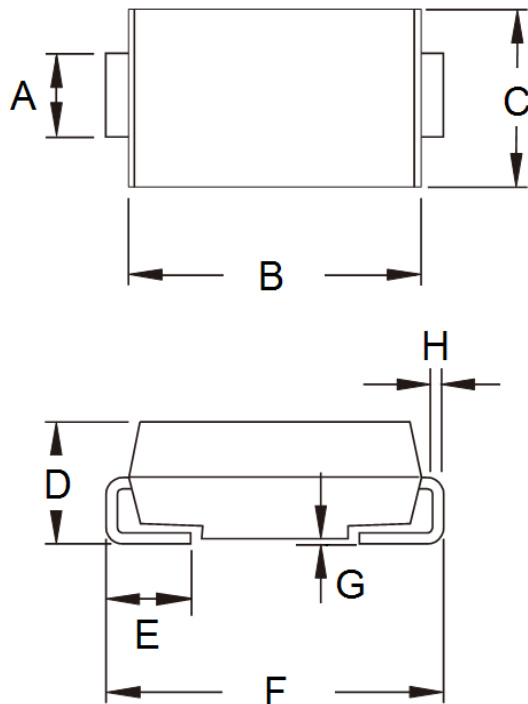


**Fig.4. Typical Forward Characteristics**



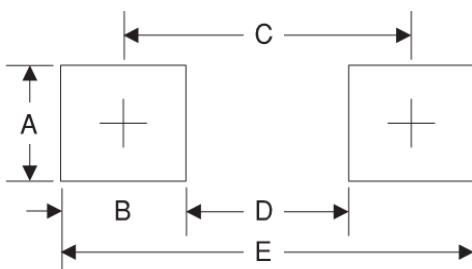
**PACKAGE OUTLINE DIMENSIONS**

DO-214AA (SMB)



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.95	2.20	0.077	0.087
B	4.05	4.60	0.159	0.181
C	3.30	3.95	0.130	0.156
D	1.95	2.65	0.077	0.104
E	0.75	1.60	0.030	0.063
F	5.10	5.60	0.201	0.220
G	0.05	0.20	0.002	0.008
H	0.15	0.31	0.006	0.012

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	2.3	0.091
B	2.5	0.098
C	4.3	0.169
D	1.8	0.071
E	6.8	0.268

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YW = Date Code
- F = Factory Code

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