

## 3A, 50V - 600V Super Fast Surface Mount Rectifier

### FEATURES

- AEC-Q101 qualified
- Glass passivated chip junction
- Ideal for automated placement
- Low profile package
- Super fast recovery time for high efficiency
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- DC to DC converter
- Automotive application
- Car lighting
- Snubber
- Freewheeling application

### MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.110g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	3	A
$V_{RRM}$	50 - 600	V
$I_{FSM}$	100	A
$T_{J\ MAX}$	150	°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	ES3 ABH	ES3 BBH	ES3 CBH	ES3 DBH	ES3 FBH	ES3 GBH	ES3 HBH	ES3 JBH	UNIT
Marking code on the device		ES 3AB	ES 3BB	ES 3CB	ES 3DB	ES 3FB	ES 3GB	ES 3HB	ES 3JB	
Repetitive peak reverse voltage	$V_{RRM}$	50	100	150	200	300	400	500	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	35	70	105	140	210	280	350	420	V
Forward current	$I_F$	3								A
Surge peak forward current, 8.3ms single half sine-wave superimposed on rated load	$I_{FSM}$	100								A
Junction temperature	$T_J$	- 55 to +150								°C
Storage temperature	$T_{STG}$	- 55 to +150								°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>UNIT</b>
Junction-to-lead thermal resistance	$R_{\theta JL}$	24	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	84	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	26	°C/W

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

<b>ELECTRICAL SPECIFICATIONS</b> (TA = 25°C unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>

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Forward voltage <sup>(1)</sup>	ES3ABH ES3BBH ES3CBH ES3DBH	$I_F = 1.5A, T_J = 25^\circ C$	$V_F$	0.80	0.92	V	
	ES3FBH ES3GBH			0.90	1.04	V	
	ES3HBH ES3JBH			1.11	1.30	V	
	ES3ABH ES3BBH ES3CBH ES3DBH	$I_F = 3.0A, T_J = 25^\circ C$	$V_F$	0.86	1.00	V	
	ES3FBH ES3GBH			0.98	1.13	V	
	ES3HBH ES3JBH			1.24	1.45	V	
	Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^\circ C$	$I_R$	-	10	$\mu A$
			$T_J = 125^\circ C$		-	100	$\mu A$
		Junction capacitance	ES3ABH ES3BBH ES3CBH ES3DBH ES3FBH ES3GBH ES3HBH ES3JBH	1MHz, $V_R = 4.0V$	$C_J$	46	-
		41	-			pF	
		34	-			pF	
	Reverse recovery time		$I_F = 0.5A, I_R = 1.0A$ $I_{rr} = 0.25A$	$t_{rr}$	-	35	ns

**Notes:**

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
ES3xBH	DO-214AA (SMB)	3,000 / Tape & Reel

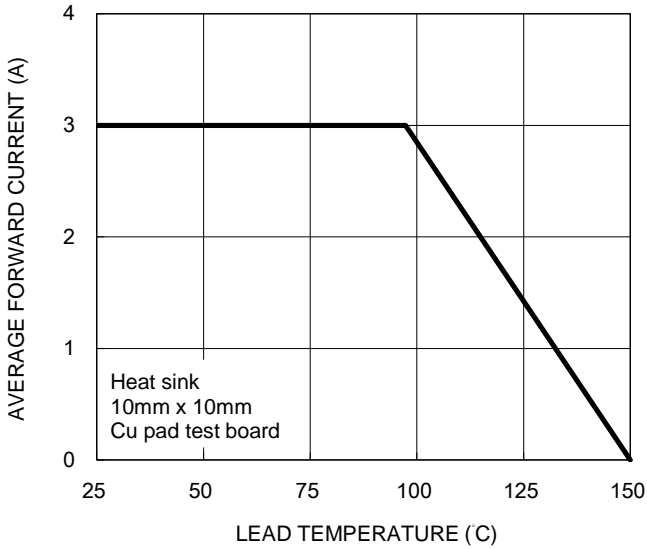
**Notes:**

1. "x" defines voltage from 50V(ES3ABH) to 600V(ES3JBH)

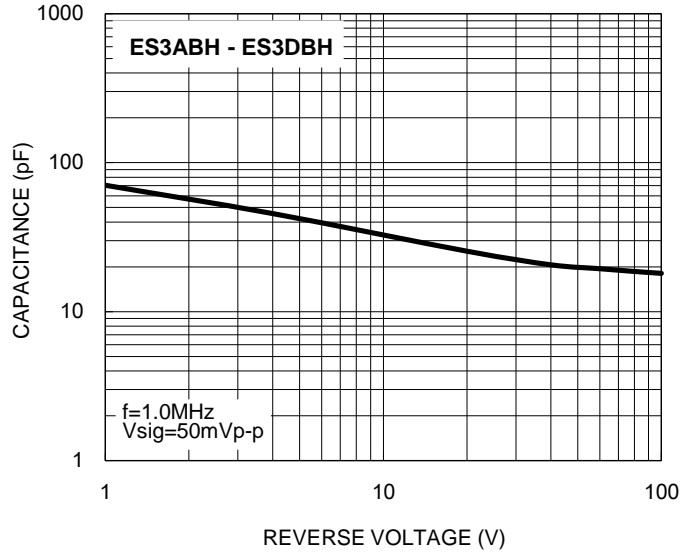
**CHARACTERISTICS CURVES**

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

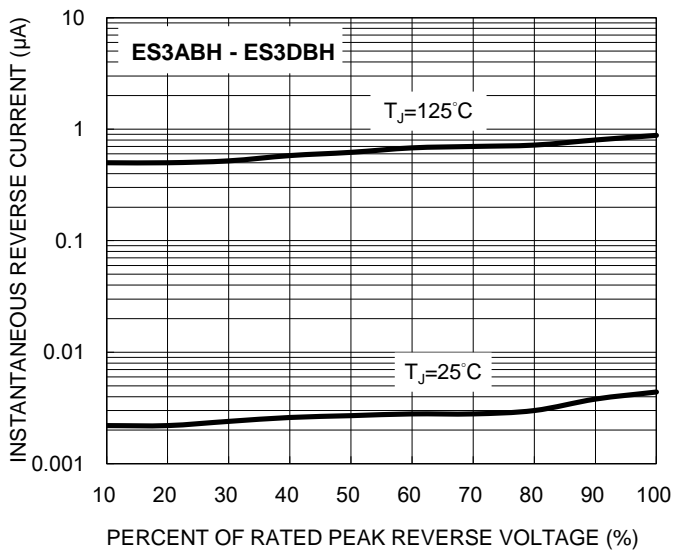
**Fig.1 Forward Current Derating Curve**



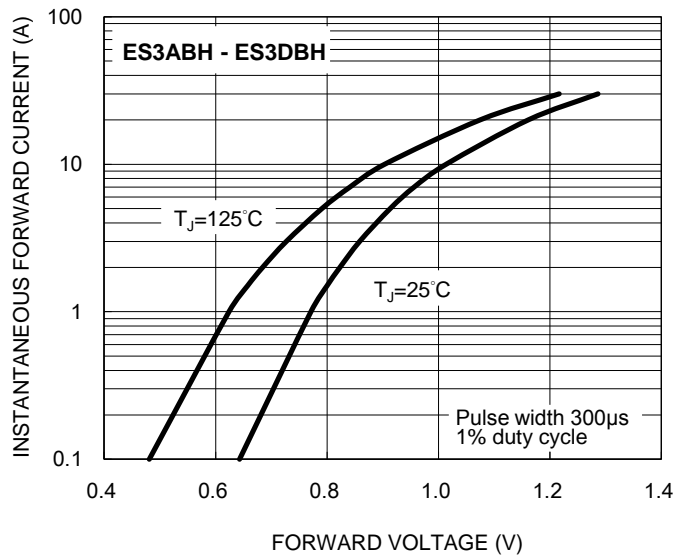
**Fig.2 Typical Junction Capacitance**



**Fig.3 Typical Reverse Characteristics**



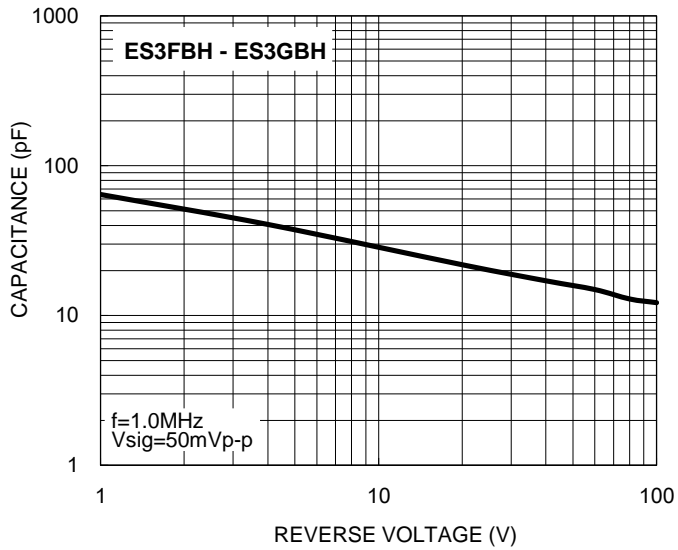
**Fig.4 Typical Forward Characteristics**



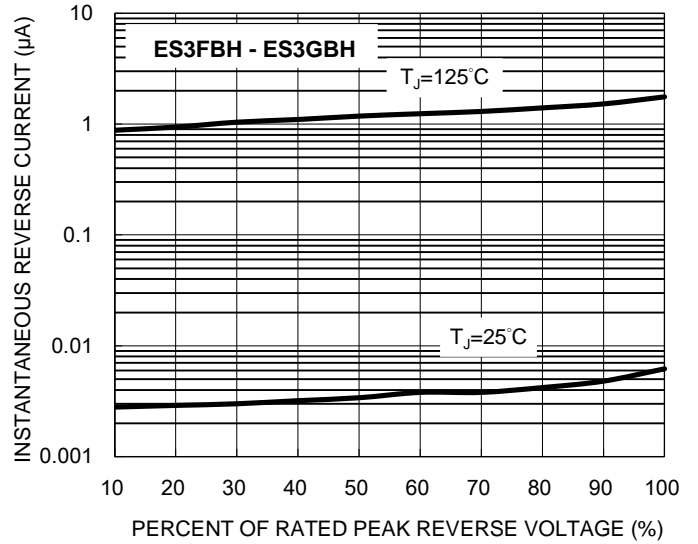
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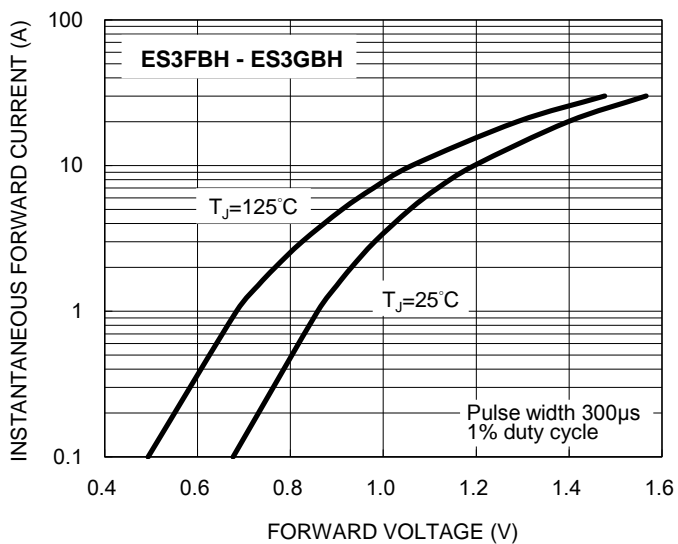
**Fig.5 Typical Junction Capacitance**



**Fig.6 Typical Reverse Characteristics**



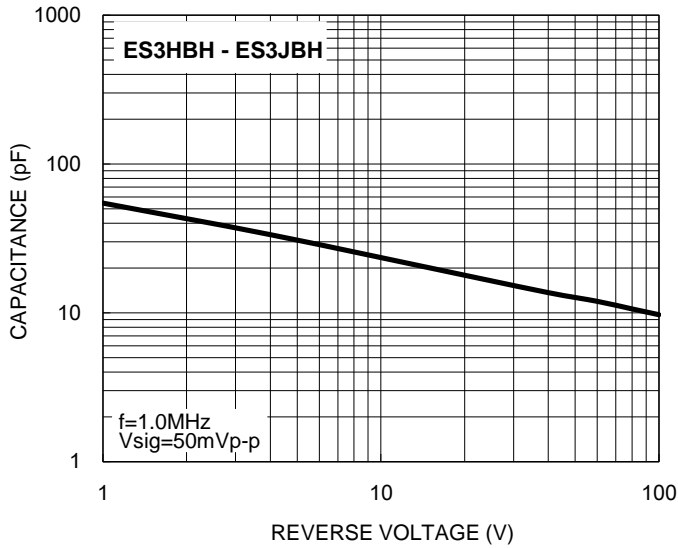
**Fig.7 Typical Forward Characteristics**



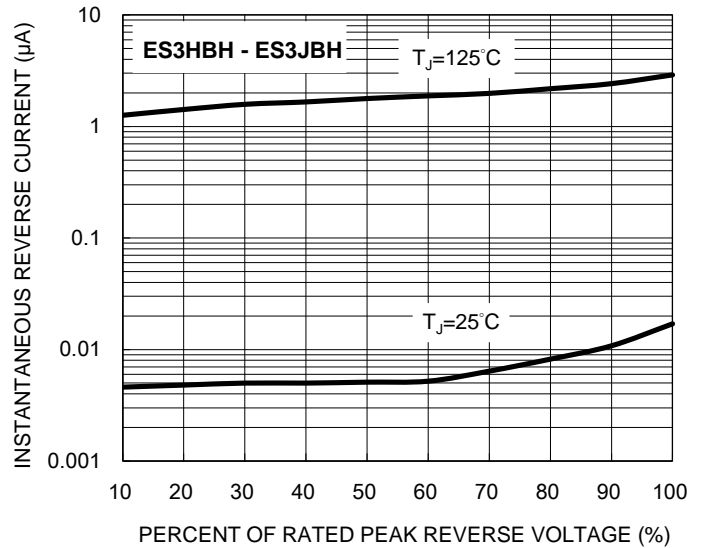
**CHARACTERISTICS CURVES**

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

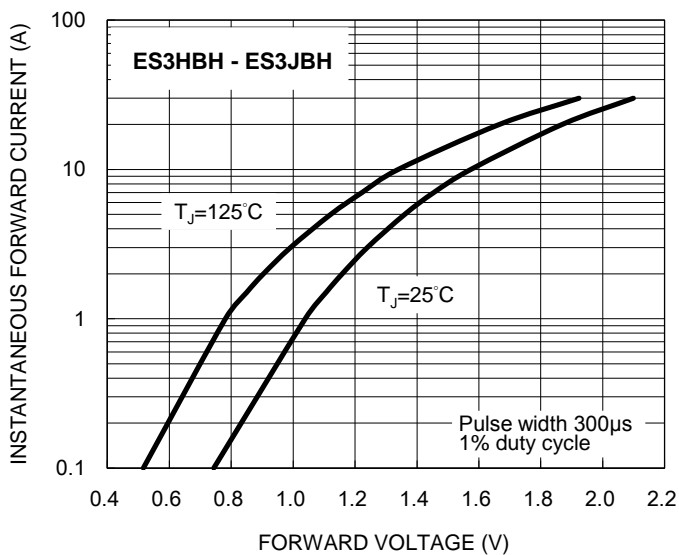
**Fig.8 Typical Junction Capacitance**



**Fig.9 Typical Reverse Characteristics**

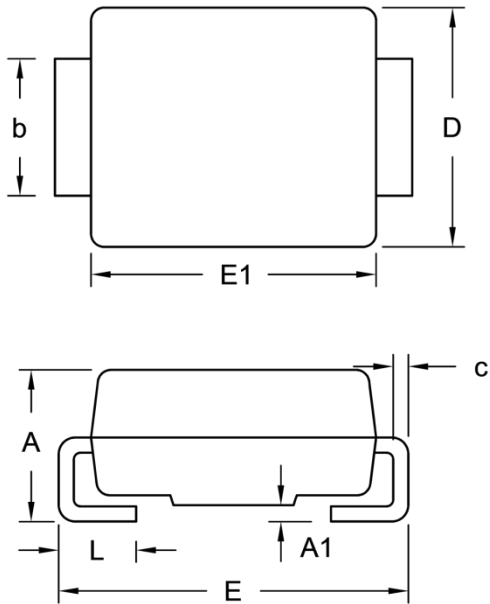


**Fig.10 Typical Forward Characteristics**



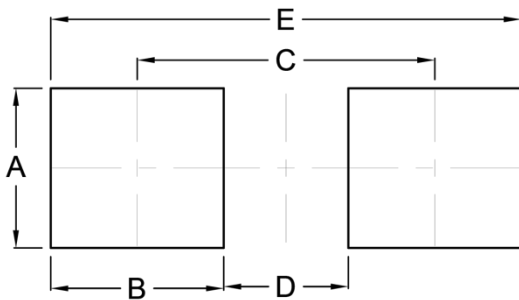
**PACKAGE OUTLINE DIMENSIONS**

DO-214AA (SMB)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.95	2.65	0.077	0.104
A1	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.31	0.006	0.012
D	3.30	3.95	0.130	0.156
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
L	0.75	1.60	0.030	0.063

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	2.30	0.091
B	2.50	0.098
C	4.30	0.169
D	1.80	0.071
E	6.80	0.268

**MARKING DIAGRAM**



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

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