

## 3A, 200V - 600V Super Fast Surface Mount Rectifier

### FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- 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 1 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.090g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_F$	3	A
$V_{RRM}$	200 - 600	V
$I_{FSM}$	80	A
$T_{JMAX}$	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	ES3DB-A	ES3GB-A	ES3JB-A	UNIT
Marking code on the device		ES3DB	ES3GB	ES3JB	
Repetitive peak reverse voltage	$V_{RRM}$	200	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	V
Forward current	$I_F$	3			A
Surge peak forward current single half sine-wave superimposed on rated load	t = 8.3ms	80			A
	t = 1.0ms	224			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	$R_{\theta JL}$	20	$^{\circ}\text{C/W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	78	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	26	$^{\circ}\text{C/W}$

**Thermal Performance Note:** Units mounted on 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 <sup>(1)</sup>	ES3DB-A	$I_F = 1.5\text{A}, T_J = 25^{\circ}\text{C}$	$V_F$	0.81	-	V
		$I_F = 3.0\text{A}, T_J = 25^{\circ}\text{C}$		0.88	0.95	V
		$I_F = 1.5\text{A}, T_J = 125^{\circ}\text{C}$		0.64	-	V
		$I_F = 3.0\text{A}, T_J = 125^{\circ}\text{C}$		0.73	0.88	V
	ES3GB-A	$I_F = 1.5\text{A}, T_J = 25^{\circ}\text{C}$		0.96	-	V
		$I_F = 3.0\text{A}, T_J = 25^{\circ}\text{C}$		1.10	1.25	V
		$I_F = 1.5\text{A}, T_J = 125^{\circ}\text{C}$		0.74	-	V
		$I_F = 3.0\text{A}, T_J = 125^{\circ}\text{C}$		0.87	1.17	V
	ES3JB-A	$I_F = 1.5\text{A}, T_J = 25^{\circ}\text{C}$		1.25	-	V
		$I_F = 3.0\text{A}, T_J = 25^{\circ}\text{C}$		1.48	1.7	V
		$I_F = 1.5\text{A}, T_J = 125^{\circ}\text{C}$		1.01	-	V
		$I_F = 3.0\text{A}, T_J = 125^{\circ}\text{C}$		1.13	1.61	V
Reverse current @ rated $V_R$ <sup>(2)</sup>		$T_J = 25^{\circ}\text{C}$	$I_R$	-	5	$\mu\text{A}$
		$T_J = 125^{\circ}\text{C}$		-	100	$\mu\text{A}$
Reverse recovery time		$I_F = 0.5\text{A}, I_R = 1.0\text{A}$ $I_{rr} = 0.25\text{A}$	$t_{rr}$	-	35	ns
Junction capacitance	ES3DB-A	1MHz, $V_R = 4.0\text{V}$	$C_J$	57	-	pF
	ES3GB-A			37	-	pF
	ES3JB-A			24	-	pF

**Notes:**

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

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
ES3xB-A	DO-214AA (SMB)	3,000 / Tape & Reel

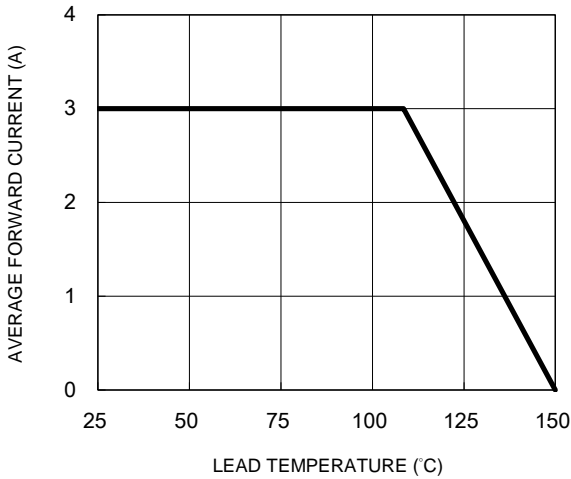
**Notes:**

1. "x" defines voltage from 200V(ES3DB-A) to 600V(ES3JB-A)

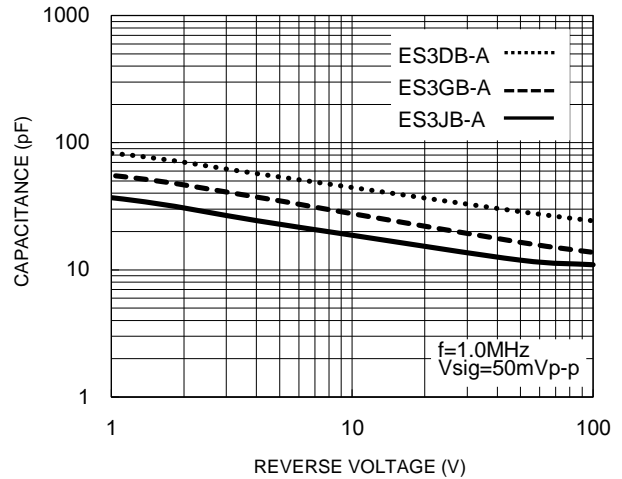
**CHARACTERISTICS CURVES**

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

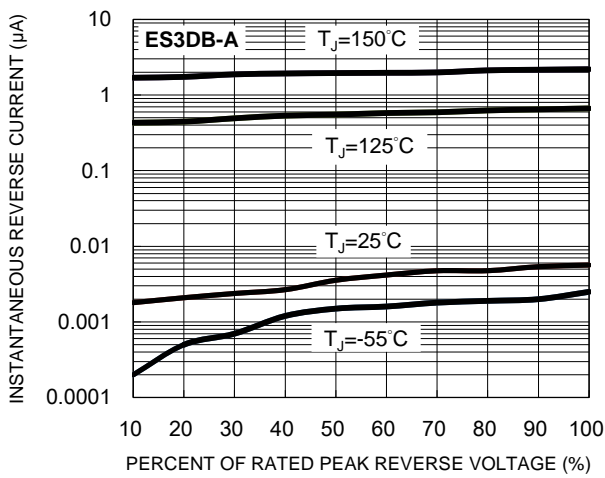
**Fig.1 Forward Current Derating Curve**



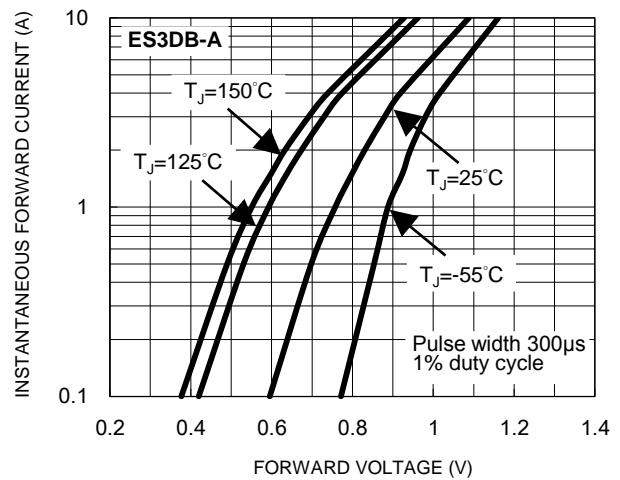
**Fig.2 Typical Junction Capacitance**



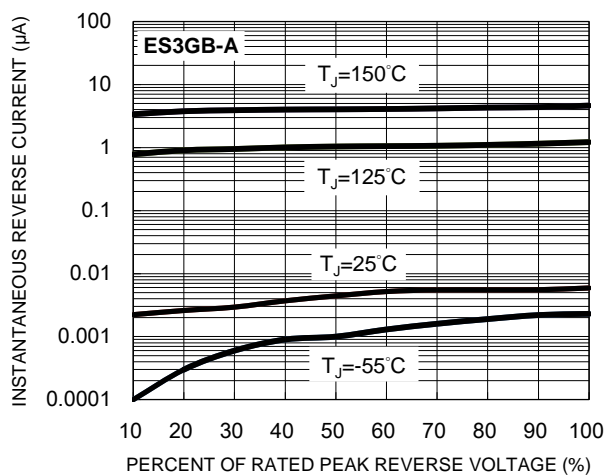
**Fig.3 Typical Reverse Characteristics**



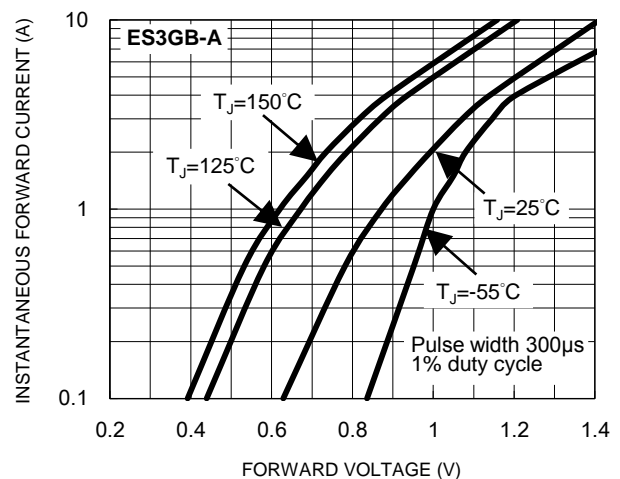
**Fig.4 Typical Forward Characteristics**



**Fig.5 Typical Reverse Characteristics**



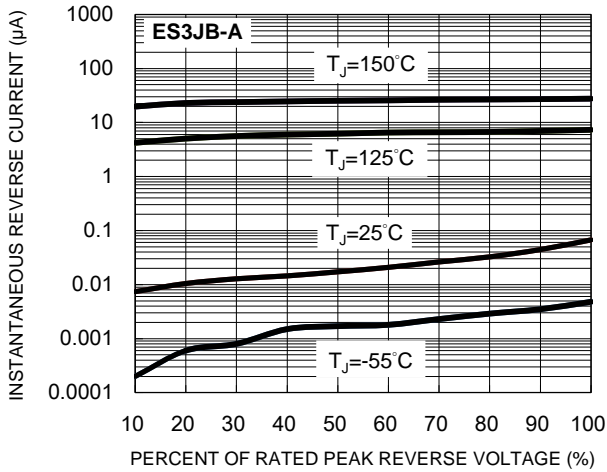
**Fig.6 Typical Forward Characteristics**



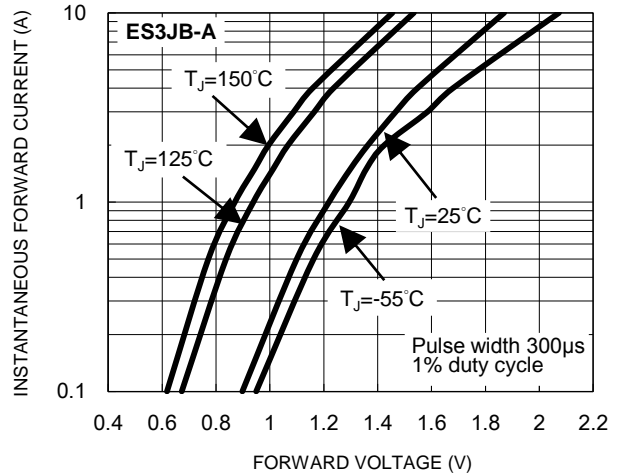
**CHARACTERISTICS CURVES**

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

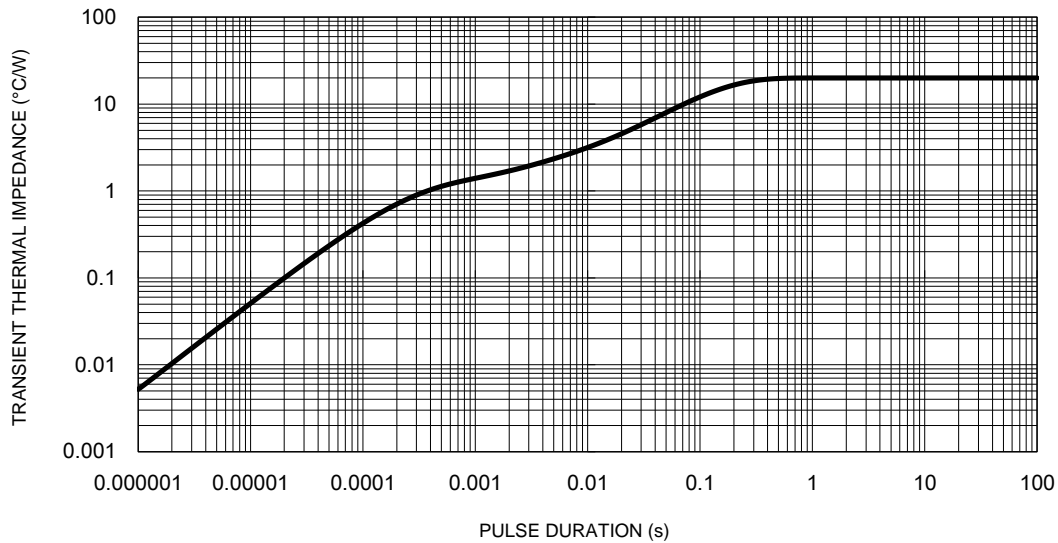
**Fig.7 Typical Reverse Characteristics**



**Fig.8 Typical Forward Characteristics**

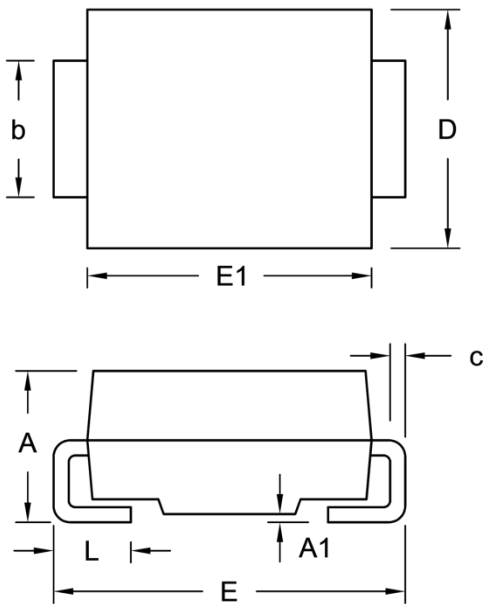


**Fig.9 Typical Transient Thermal Impedance**



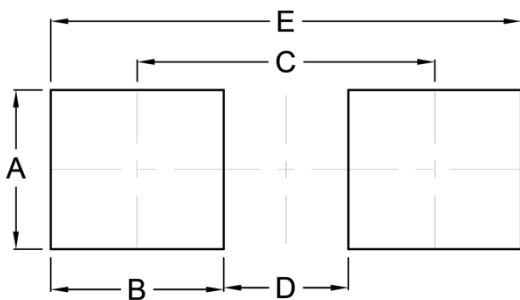
**PACKAGE OUTLINE DIMENSIONS**

DO-214AA (SMB)



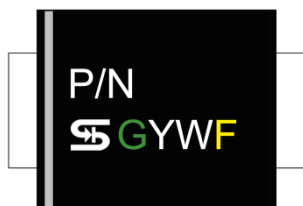
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.95	2.65	0.077	0.104
A1	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.31	0.006	0.012
D	3.30	3.95	0.130	0.156
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
L	0.75	1.60	0.030	0.063

**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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