

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

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
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)

ELECTRICAL SPECIFICATIONS (TA = 25°C unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	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
	ES3ABH ES3BBH ES3CBH ES3DBH	$I_F = 1.5A, T_J = 125^\circ C$	V_F	0.66	0.75	V
	ES3FBH ES3GBH			0.73	0.85	V
	ES3HBH ES3JBH			0.85	0.98	V
	ES3ABH ES3BBH ES3CBH ES3DBH	$I_F = 3.0A, T_J = 125^\circ C$	V_F	0.73	0.84	V
	ES3FBH ES3GBH			0.83	0.95	V
	ES3HBH ES3JBH			0.99	1.13	V
Reverse current @ rated V_R ⁽²⁾		$T_J = 25^\circ C$	I_R	-	10	μA
		$T_J = 125^\circ C$		-	100	μA
Junction capacitance	ES3ABH ES3BBH ES3CBH ES3DBH	1MHz, $V_R = 4.0V$	C_J	46	-	pF
	ES3FBH ES3GBH			41	-	pF
	ES3HBH ES3JBH			34	-	pF
Reverse recovery time		$I_F = 0.5A, I_R = 1.0A$ $I_{rr} = 0.25A$	t_{rr}	-	35	ns

Notes:

- Pulse test with PW = 0.3ms
- Pulse test with PW = 30ms

ORDERING INFORMATION

ORDERING CODE⁽¹⁾	PACKAGE	PACKING
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

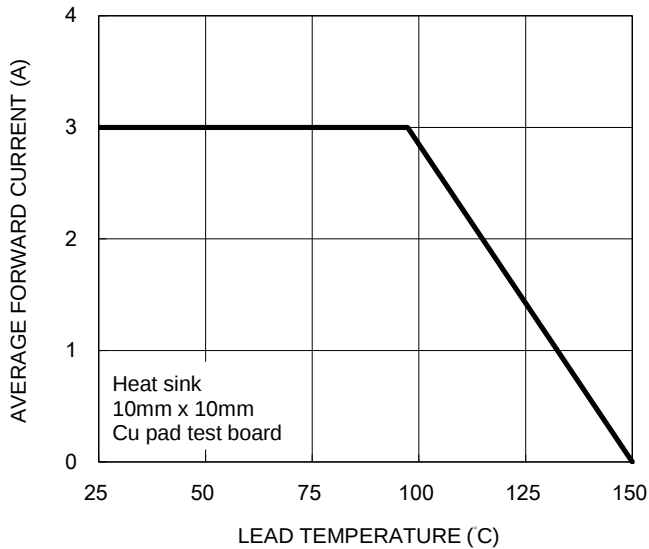


Fig.2 Typical Junction Capacitance

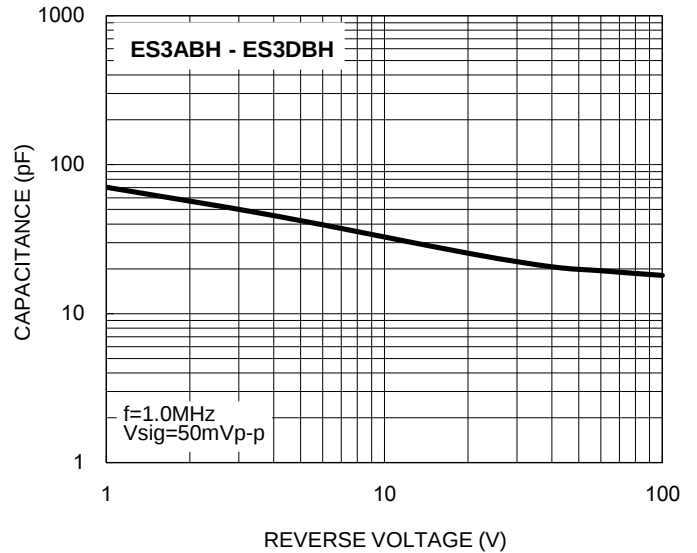


Fig.3 Typical Reverse Characteristics

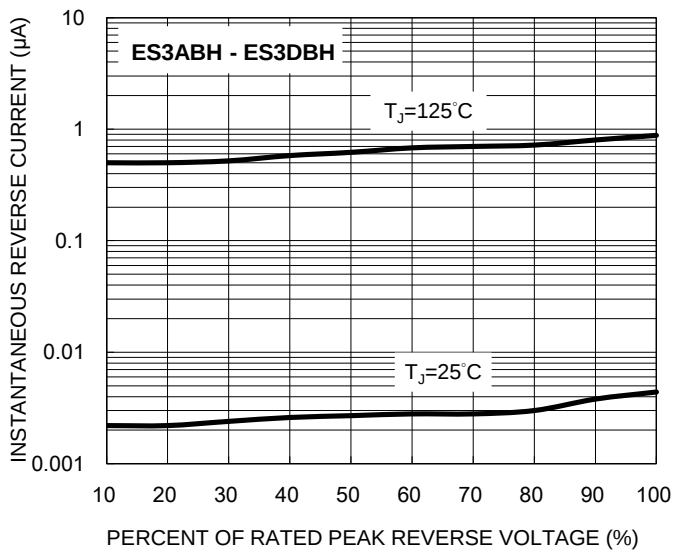
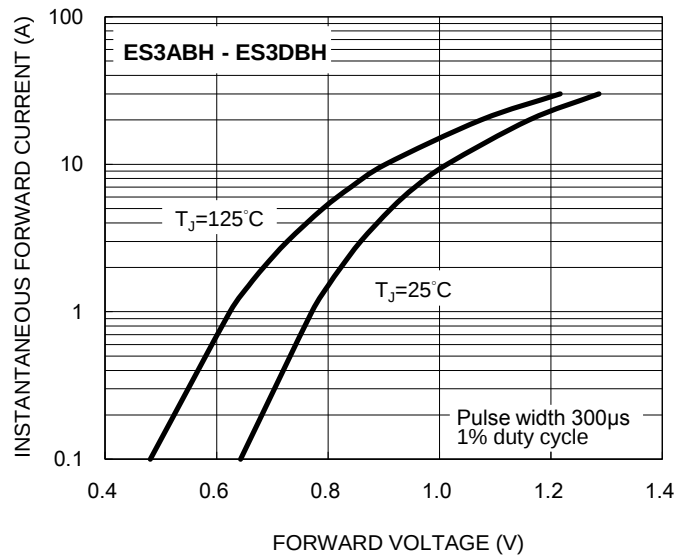


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Typical Junction Capacitance

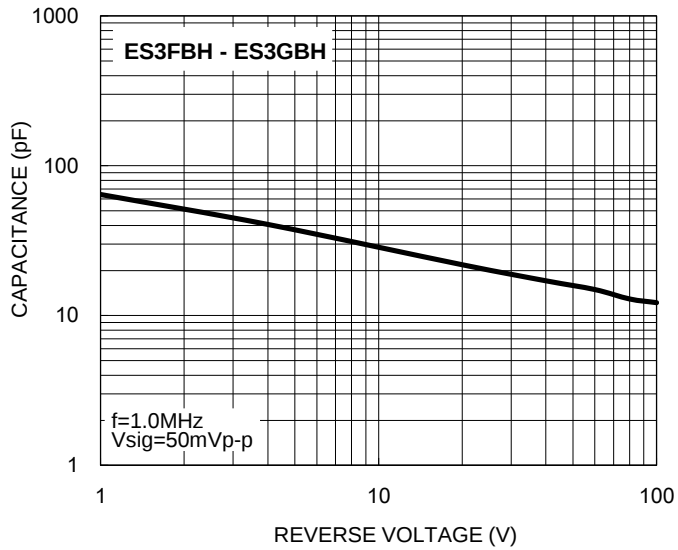


Fig.6 Typical Reverse Characteristics

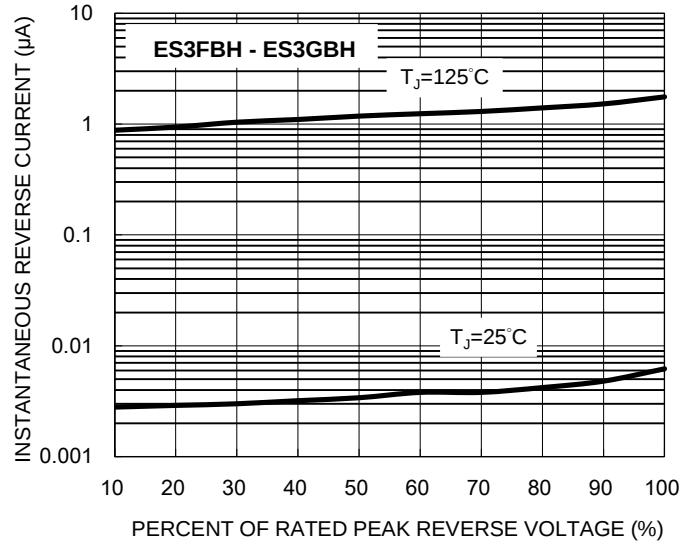
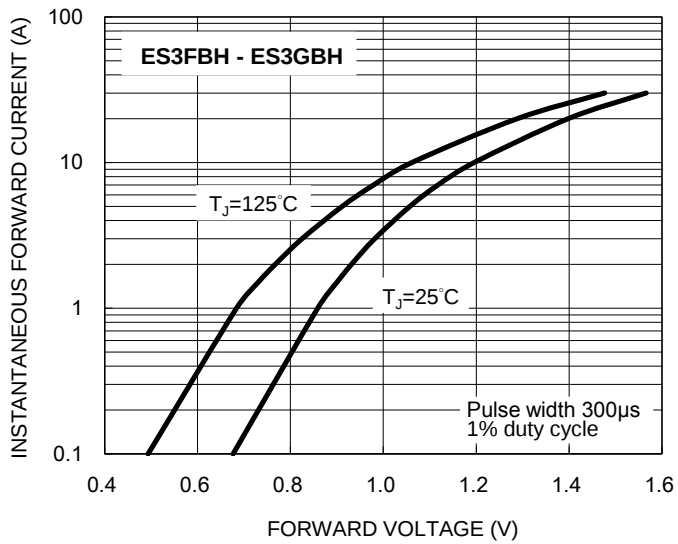


Fig.7 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.8 Typical Junction Capacitance

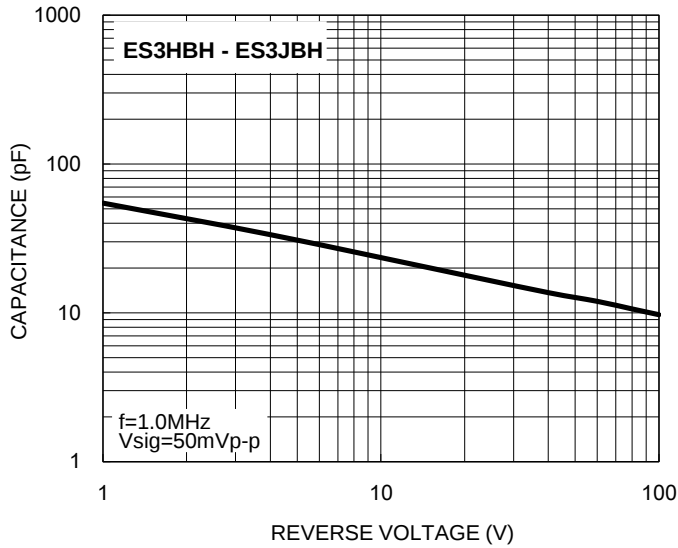


Fig.9 Typical Reverse Characteristics

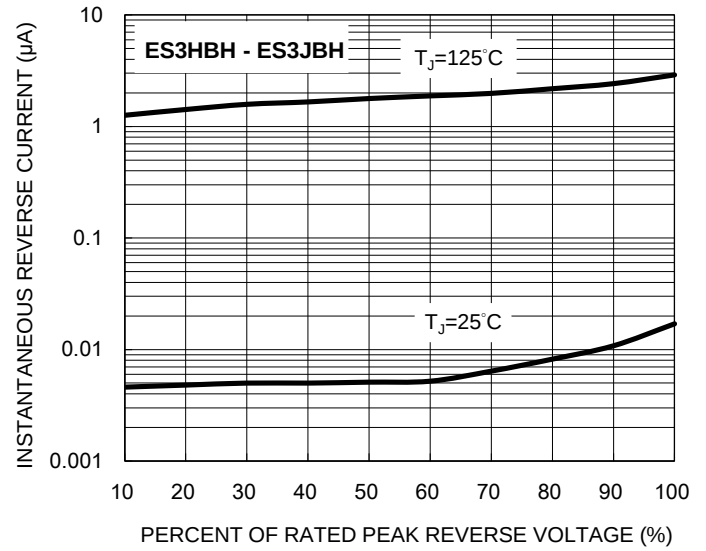
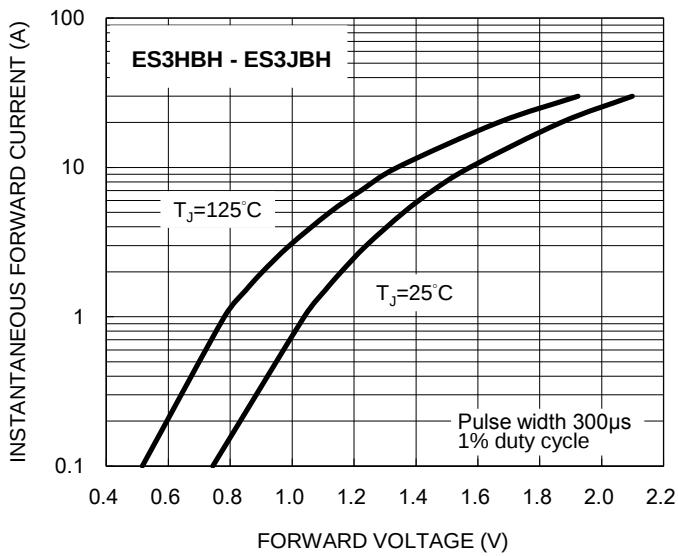
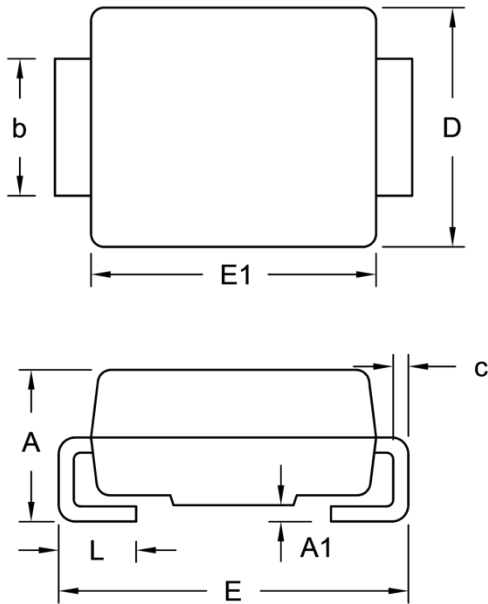


Fig.10 Typical Forward Characteristics



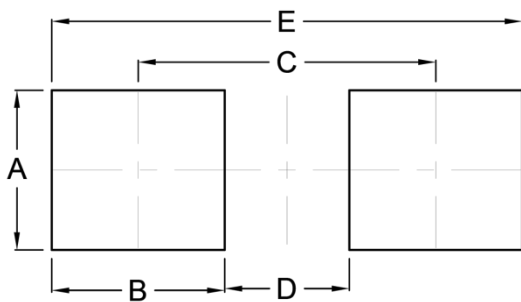
PACKAGE OUTLINE DIMENSIONS

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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