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

FEATURES

- 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

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- Converter

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	

Pb-Free RoHS COMPLIANT HALOGEN FREE



DO-214AA (SMB)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)										
PARAMETER	**SYMBOL**	**ES 3AB**	**ES 3BB**	**ES 3CB**	**ES 3DB**	**ES 3FB**	**ES 3GB**	**ES 3HB**	**ES 3JB**	**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]	ES3AB ES3BB ES3CB ES3DB	I_F = 1.5A, T_J = 25°C	V_F	0.80	0.92	V
	ES3FB ES3GB			0.90	1.04	V
	ES3HB ES3JB			1.11	1.30	V
	ES3AB ES3BB ES3CB ES3DB	I_F = 3.0A, T_J = 25°C	V_F	0.86	1.00	V
	ES3FB ES3GB			0.98	1.13	V
	ES3HB ES3JB			1.24	1.45	V
	ES3AB ES3BB ES3CB ES3DB	I_F = 1.5A, T_J = 125°C	V_F	0.66	0.75	V
	ES3FB ES3GB			0.73	0.85	V
	ES3HB ES3JB			0.85	0.98	V
	ES3AB ES3BB ES3CB ES3DB	I_F = 3.0A,T_J = 125°C	V_F	0.73	0.84	V
	ES3FB ES3GB			0.83	0.95	V
	ES3HB ES3JB			0.99	1.13	V
Reverse current @ rated V_R[2]		T_J = 25°C	I_R	-	10	μA
		T_J = 125°C		-	100	μA
Junction capacitance	ES3AB ES3BB ES3CB ES3DB	1MHz, V_R = 4.0V	C_J	46	-	pF
	ES3FB ES3GB			41	-	pF
	ES3HB ES3JB			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

ORDERING INFORMATION		
ORDERING CODE[1]	**PACKAGE**	**PACKING**
ES3xB	DO-214AA (SMB)	3,000 / Tape & Reel

Notes:

1. "x" defines voltage from 50V(ES3AB) to 600V(ES3JB)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Forward Current Derating Curve

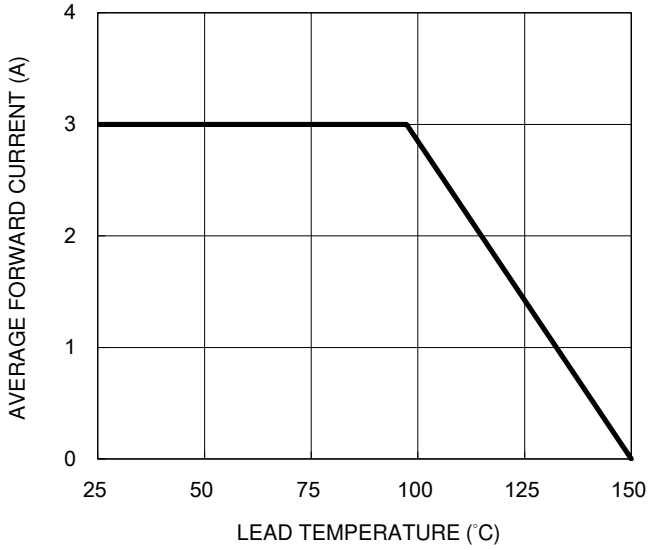


Fig.2 Typical Junction Capacitance

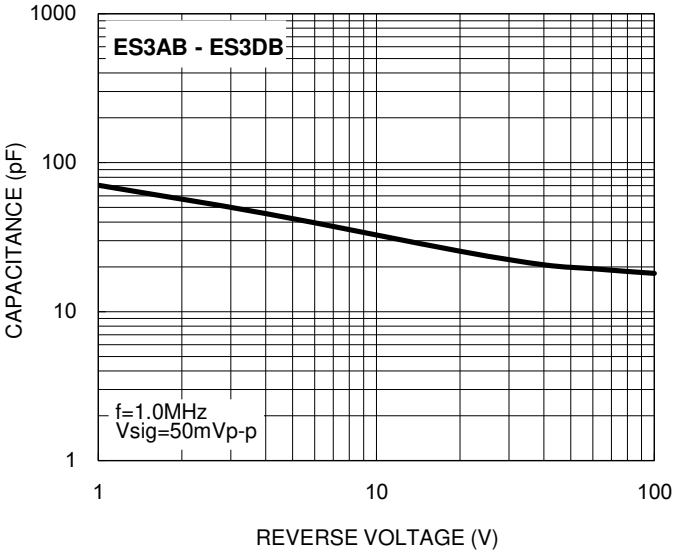


Fig.3 Typical Reverse Characteristics

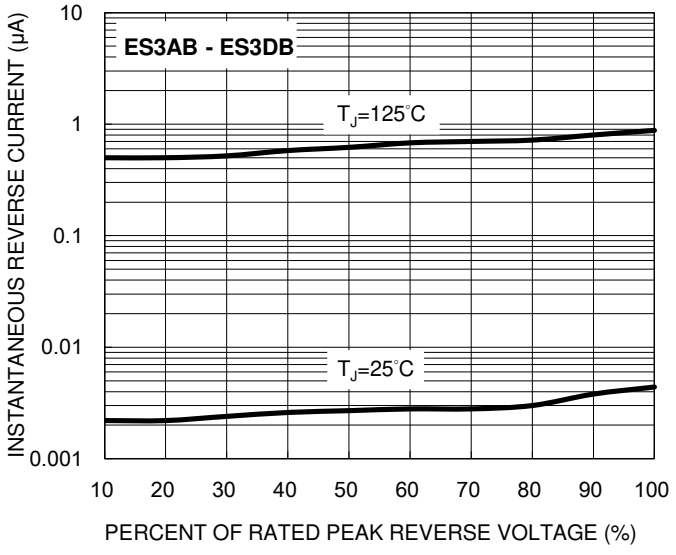
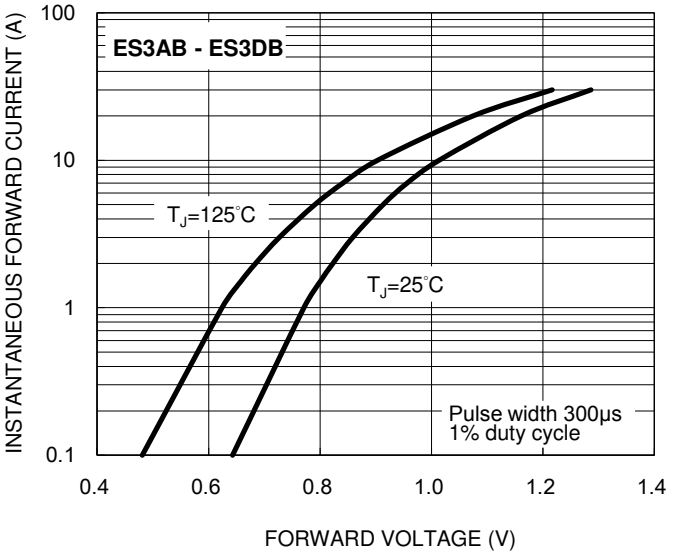


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.5 Typical Junction Capacitance

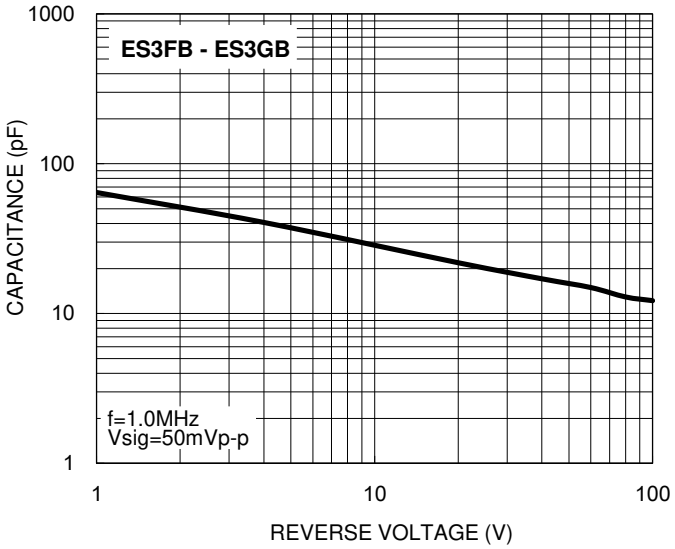


Fig.6 Typical Reverse Characteristics

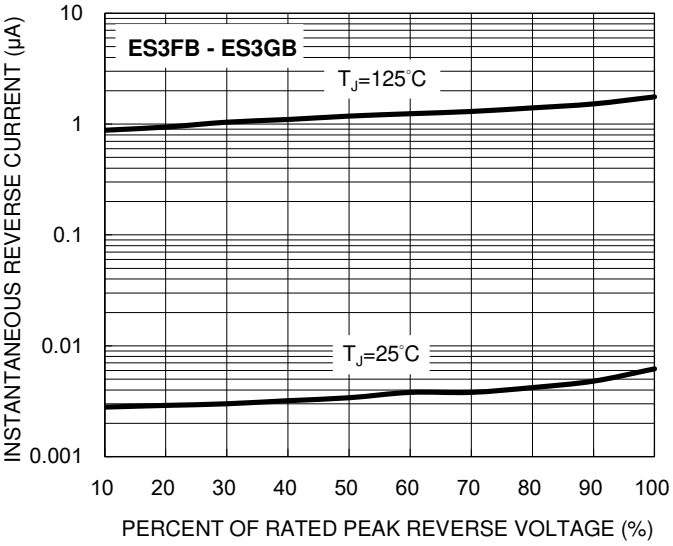
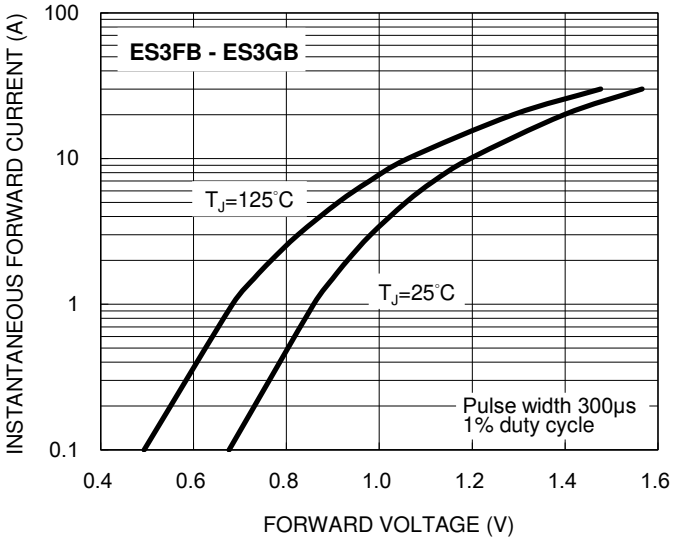


Fig.7 Typical Forward Characteristics



CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.8 Typical Junction Capacitance

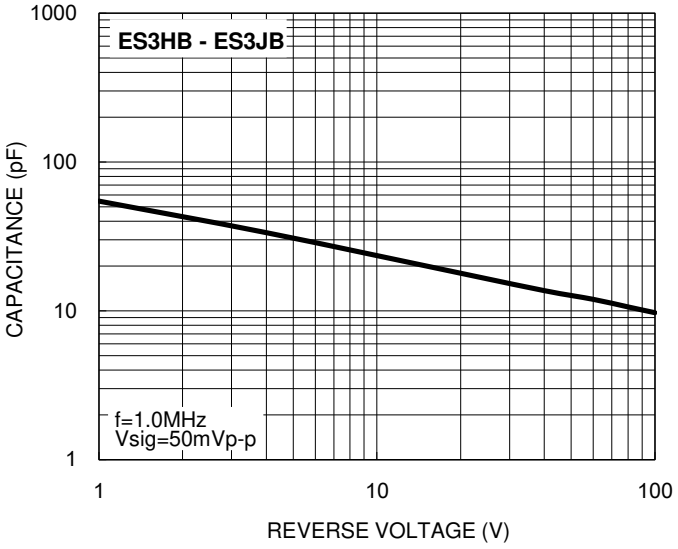


Fig.9 Typical Reverse Characteristics

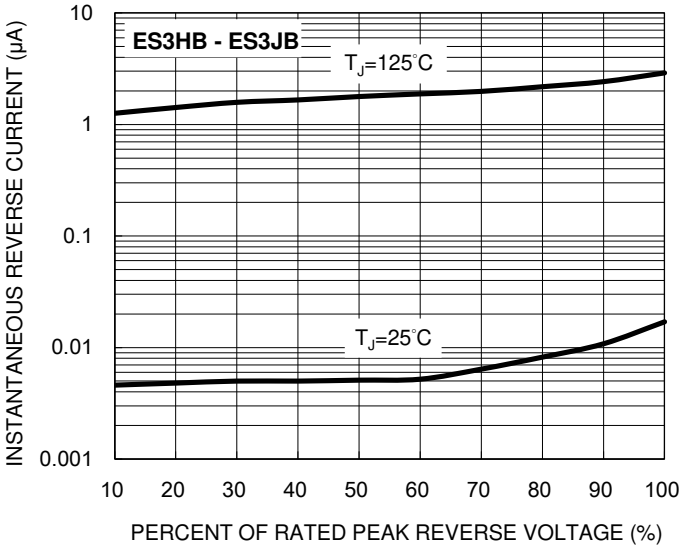
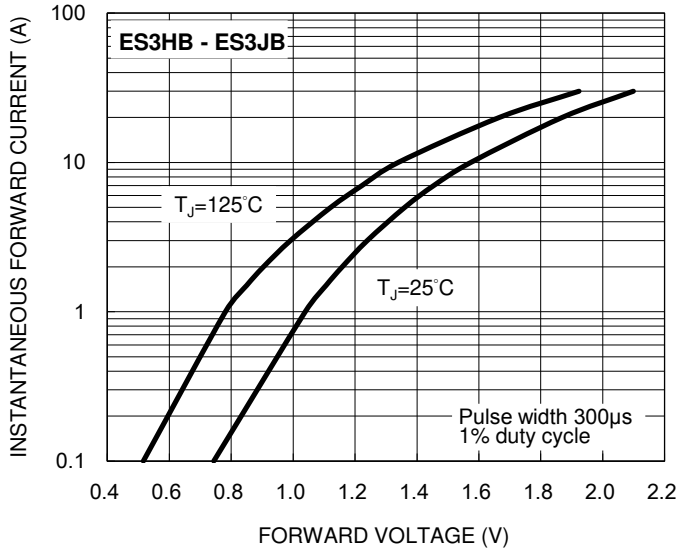
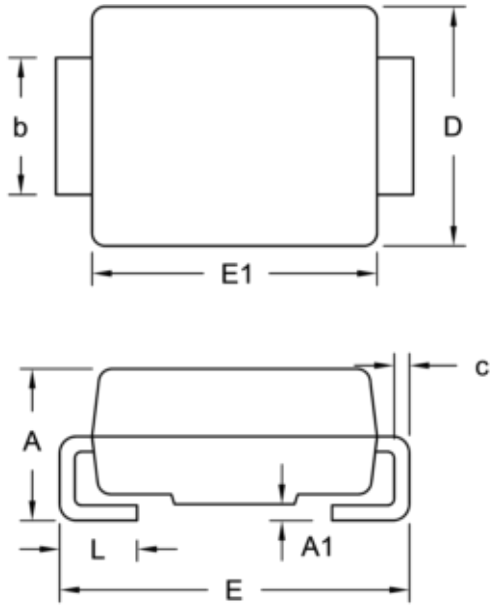


Fig.10 Typical Forward Characteristics



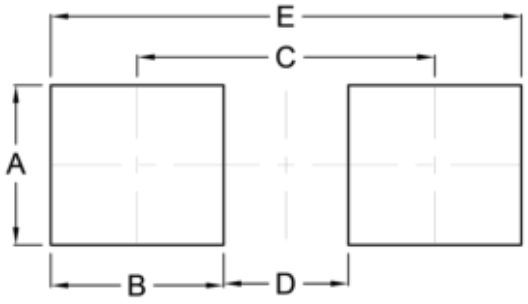
PACKAGE OUTLINE DIMENSIONS

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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