

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-214AB (SMC)
- 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: 0.250g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	3	A
V_{RRM}	200 - 600	V
I_{FSM}	88	A
T_{JMAX}	150	°C
Package	DO-214AB (SMC)	
Configuration	Single die	



DO-214AB (SMC)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	ES3D-A	ES3G-A	ES3J-A	UNIT
Marking code on the device		ES3D	ES3G	ES3J	
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	$t = 8.3\text{ms}$	88			A
	$t = 1.0\text{ms}$	244			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	$R_{\theta JL}$	25	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	54	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	18	°C/W

Thermal Performance Note: Units mounted on PCB (16mm x 16mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	ES3D-A	$I_F = 1.5\text{A}, T_J = 25^\circ\text{C}$	V_F	0.81	-	V
		$I_F = 3.0\text{A}, T_J = 25^\circ\text{C}$		0.89	0.95	V
		$I_F = 1.5\text{A}, T_J = 125^\circ\text{C}$		0.66	-	V
		$I_F = 3.0\text{A}, T_J = 125^\circ\text{C}$		0.75	0.88	V
	ES3G-A	$I_F = 1.5\text{A}, T_J = 25^\circ\text{C}$		0.91	-	V
		$I_F = 3.0\text{A}, T_J = 25^\circ\text{C}$		1.04	1.30	V
		$I_F = 1.5\text{A}, T_J = 125^\circ\text{C}$		0.72	-	V
		$I_F = 3.0\text{A}, T_J = 125^\circ\text{C}$		0.84	1.00	V
	ES3J-A	$I_F = 1.5\text{A}, T_J = 25^\circ\text{C}$		1.11	-	V
		$I_F = 3.0\text{A}, T_J = 25^\circ\text{C}$		1.31	1.70	V
		$I_F = 1.5\text{A}, T_J = 125^\circ\text{C}$		0.83	-	V
		$I_F = 3.0\text{A}, T_J = 125^\circ\text{C}$		0.99	1.18	V
Reverse current @ rated V_R ⁽²⁾		$T_J = 25^\circ\text{C}$	I_R	-	5	μA
		$T_J = 125^\circ\text{C}$		-	200	μA
Reverse recovery time		$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{tr} = 0.25\text{A}$	t_{rr}	-	35	ns
Junction capacitance	ES3D-A	1MHz, $V_R = 4.0\text{V}$	C_J	55	-	pF
	ES3G-A			38	-	pF
	ES3J-A			25	-	pF

Notes:

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

ORDERING INFORMATION		
ORDERING CODE⁽¹⁾	PACKAGE	PACKING
ES3x-A	DO-214AB (SMC)	3,000 / Tape & Reel

Notes:

1. "x" defines voltage from 200V(ES3D-A) to 600V(ES3J-A)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

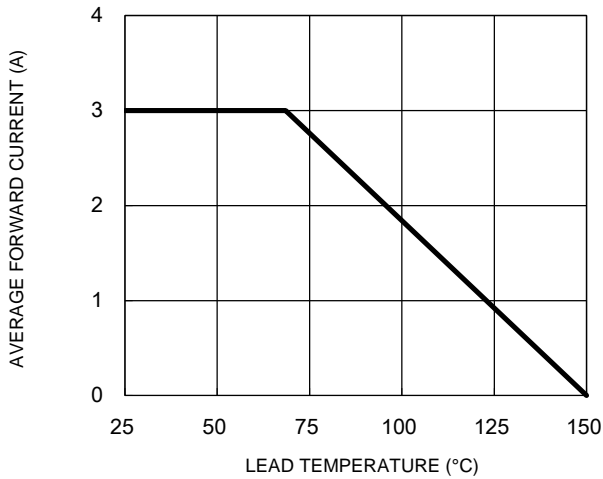


Fig.2 Typical Junction Capacitance

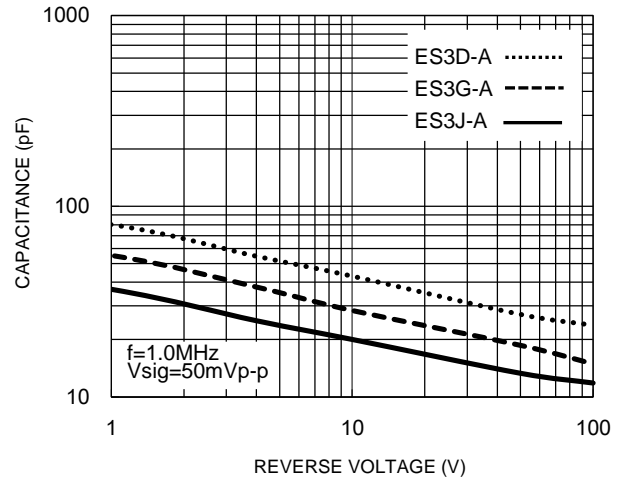


Fig.3 Typical Reverse Characteristics

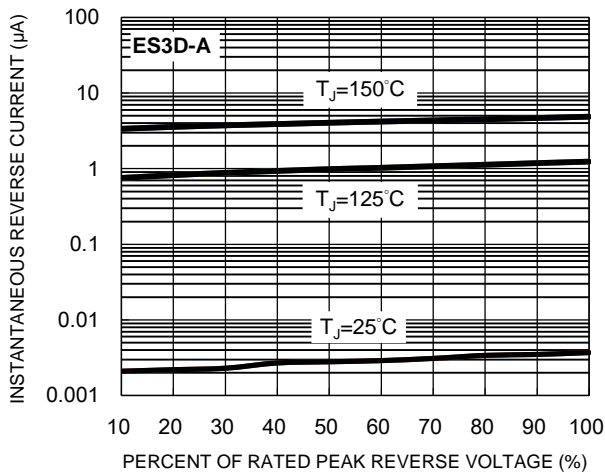


Fig.4 Typical Forward Characteristics

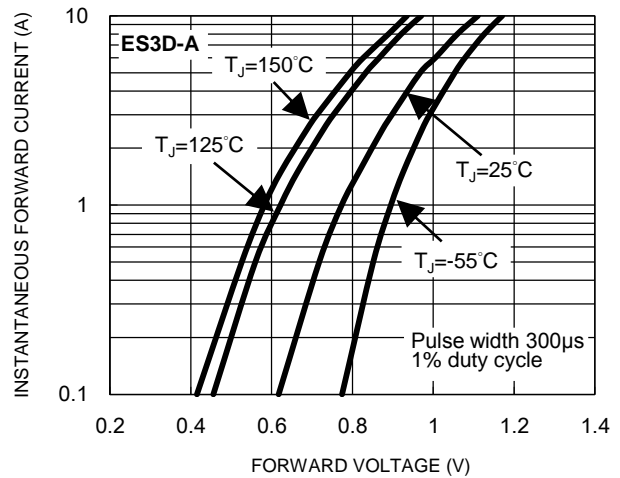


Fig.5 Typical Reverse Characteristics

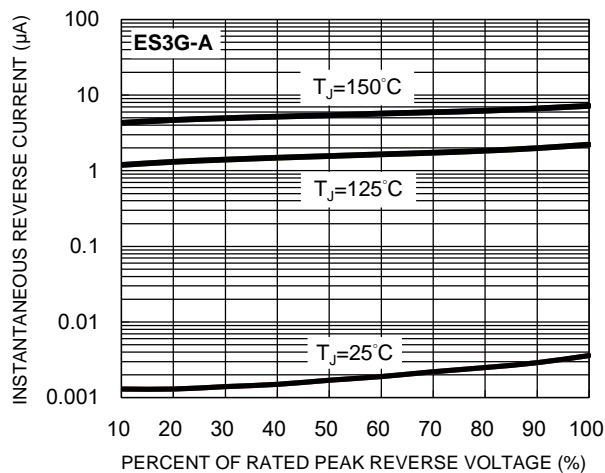
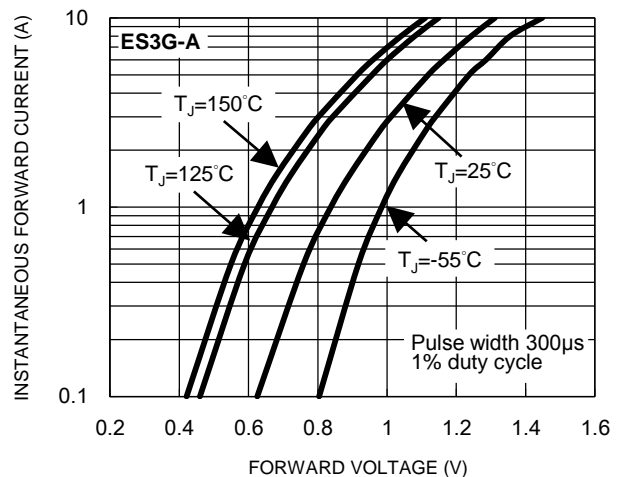


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

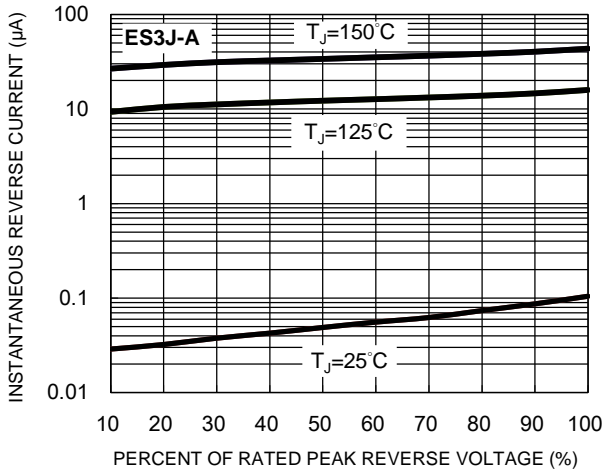


Fig.8 Typical Forward Characteristics

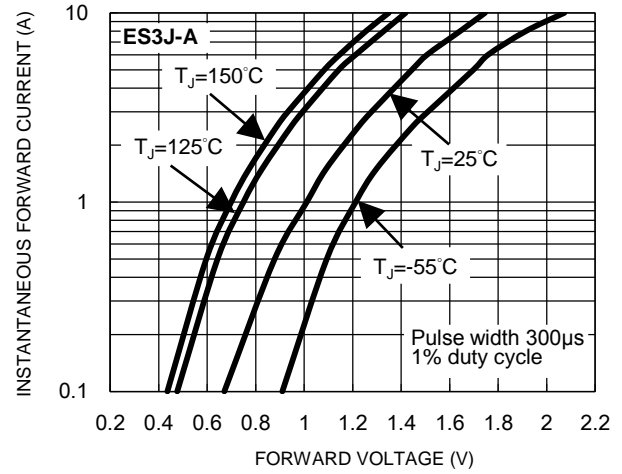
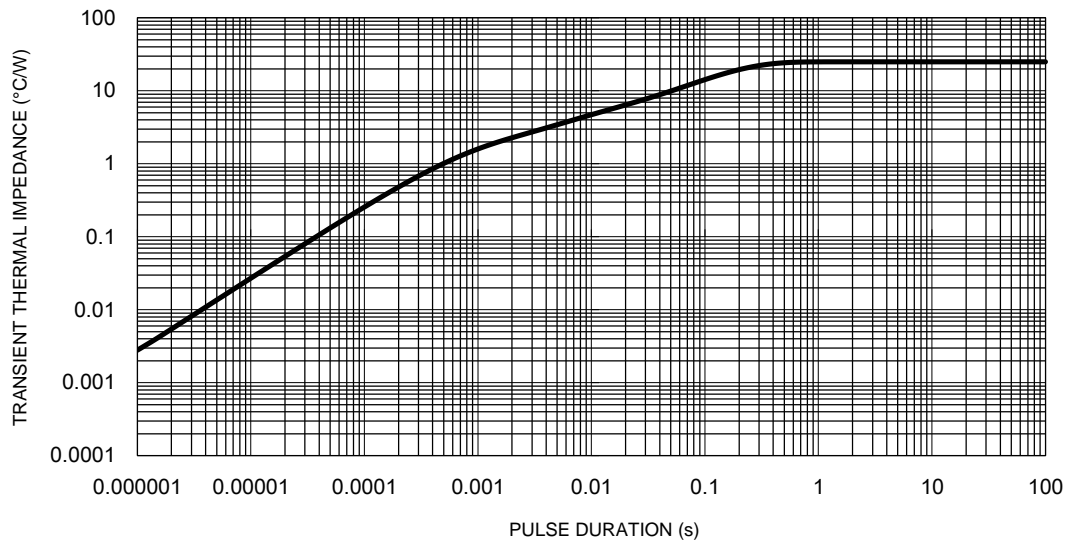
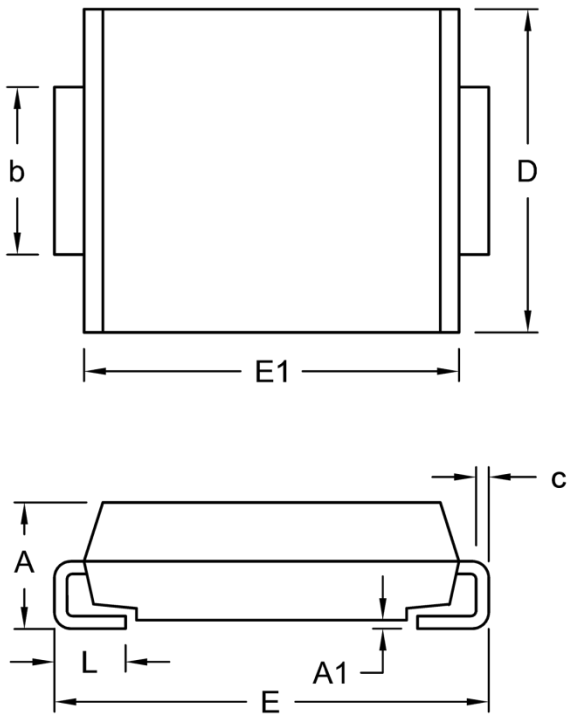


Fig.9 Typical Transient Thermal Impedance



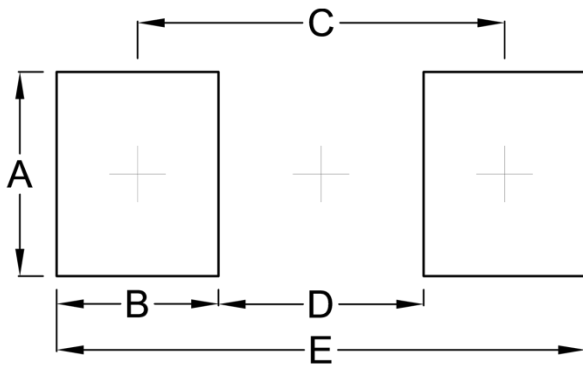
PACKAGE OUTLINE DIMENSIONS

DO-214AB (SMC)



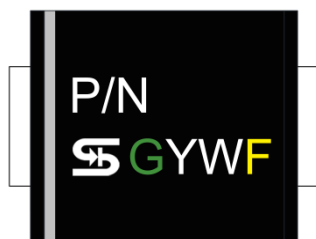
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.99	2.61	0.078	0.103
A1	0.10	0.20	0.004	0.008
b	2.85	3.27	0.112	0.129
c	0.15	0.31	0.006	0.012
D	5.59	6.22	0.220	0.245
E	7.75	8.13	0.305	0.320
E1	6.60	7.11	0.260	0.280
L	0.76	1.52	0.030	0.060

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	3.82	0.150
B	3.03	0.119
C	6.87	0.270
D	3.84	0.151
E	9.90	0.390

MARKING DIAGRAM



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

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