

2A, 200V-600V Super Fast Surface Mount Rectifier

FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switch Mode Power Supply
- Inverters and Converters
- Free Wheeling diodes

MECHANICAL DATA

- Case: SOD-123FL
- 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: 0.016 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	2	A
V_{RRM}	200-600	V
I_{FSM}	40	A
T_{JMAX}	150	°C
Package	SOD-123FL	



SOD-123FL



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	ES2DFL	ES2GFL	ES2JFL	UNIT
Marking code on the device		E2DF	E2GF	E2JF	
Repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	V
DC blocking voltage	V_{DC}	200	400	600	V
Forward current	I_F	2			A
Surge peak forward current single half sine-wave superimposed on rated load	8.3 ms at $T_A = 25^\circ\text{C}$	I_{FSM}	40		A
	1.0 ms at $T_A = 25^\circ\text{C}$		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	$R_{\theta JL}$	81	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	116	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	69	°C/W

Thermal Performance Note: Units mounted on PCB (5mm x 5mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	ES2DFL	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$	V_F	0.84	-	V
		$I_F = 2\text{A}, T_J = 25^\circ\text{C}$		0.93	1	V
		$I_F = 1\text{A}, T_J = 125^\circ\text{C}$		0.73	-	V
		$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		0.83	0.90	V
	ES2GFL	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$		0.96	-	V
		$I_F = 2\text{A}, T_J = 25^\circ\text{C}$		1.09	1.3	V
		$I_F = 1\text{A}, T_J = 125^\circ\text{C}$		0.81	-	V
		$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		0.95	1.15	V
	ES2JFL	$I_F = 1\text{A}, T_J = 25^\circ\text{C}$		1.21	-	V
		$I_F = 2\text{A}, T_J = 25^\circ\text{C}$		1.46	1.7	V
		$I_F = 1\text{A}, T_J = 125^\circ\text{C}$		0.99	-	V
		$I_F = 2\text{A}, T_J = 125^\circ\text{C}$		1.21	1.5	V
Reverse current @ rated V_R ⁽²⁾		$T_J = 25^\circ\text{C}$	I_R	-	5	μA
		$T_J = 125^\circ\text{C}$		-	100	μA
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	ES2DFL	1 MHz, $V_R = 4.0\text{V}$	C_J	22	-	pF
	ES2GFL			15	-	pF
	ES2JFL			9	-	pF

Notes:

- (1) Pulse test with PW=0.3 ms
- (2) Pulse test with PW=30 ms

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
ES2XFL RVG ⁽¹⁾	SOD-123FL	3,000 / 7" Plastic reel
ES2XFL RQG ⁽¹⁾	SOD-123FL	10,000 / 13" Paper reel

Notes:

- (1) "X" defines voltage from 200V(ES2DFL) to 600V(ES2JFL)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

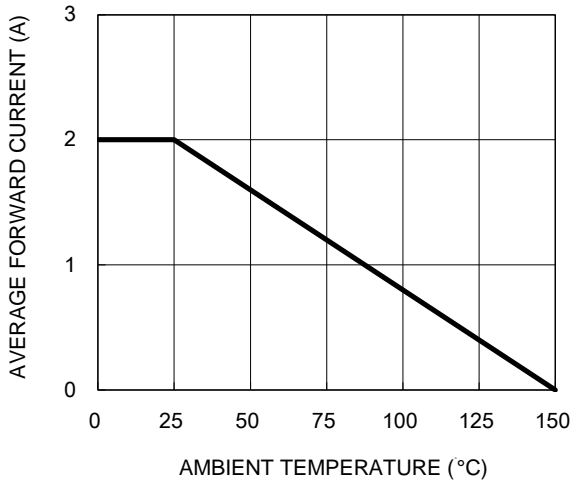


Fig.2 Typical Junction Capacitance

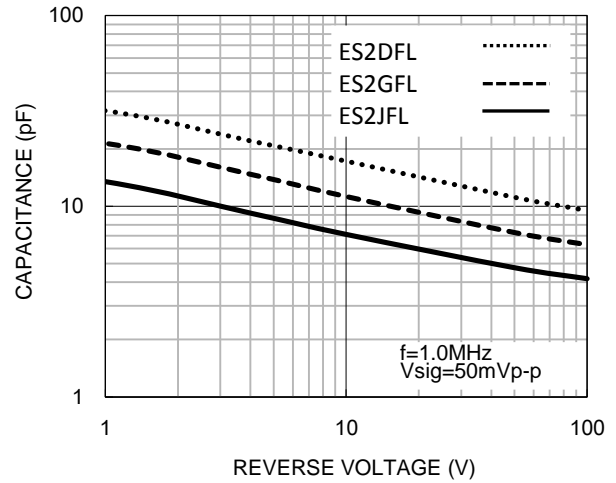


Fig.3 Typical Reverse Characteristics

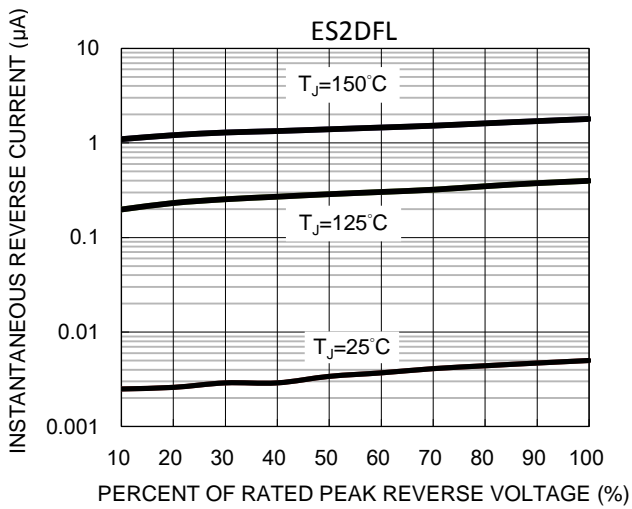


Fig.4 Typical Forward Characteristics

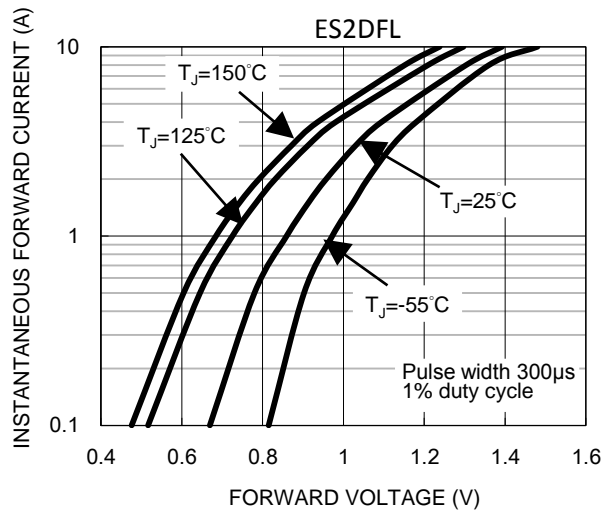


Fig.5 Typical Reverse Characteristics

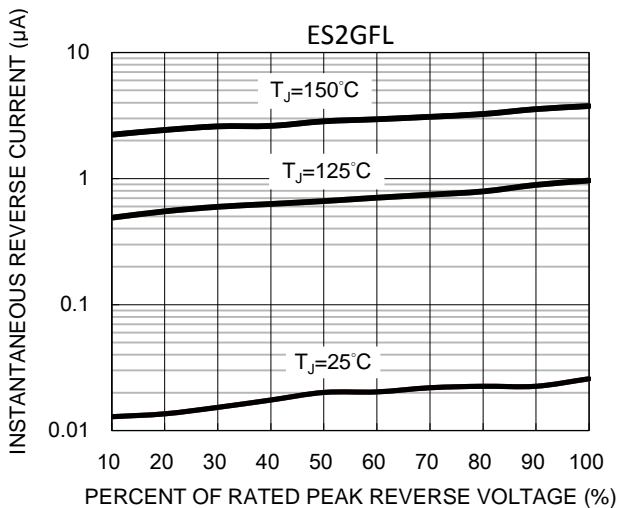


Fig.6 Typical Forward Characteristics

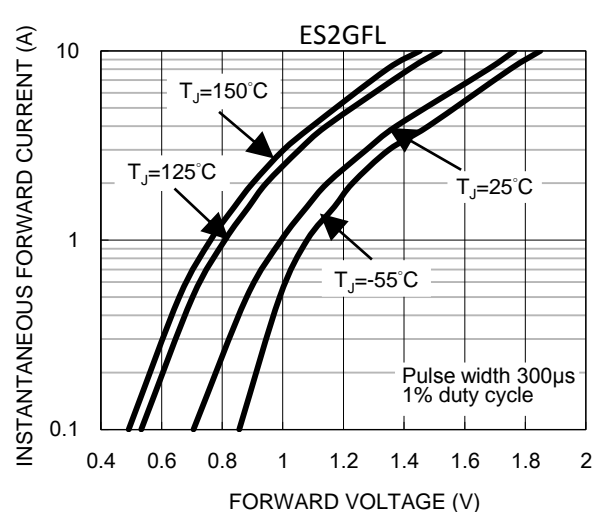


Fig.7 Typical Reverse Characteristics

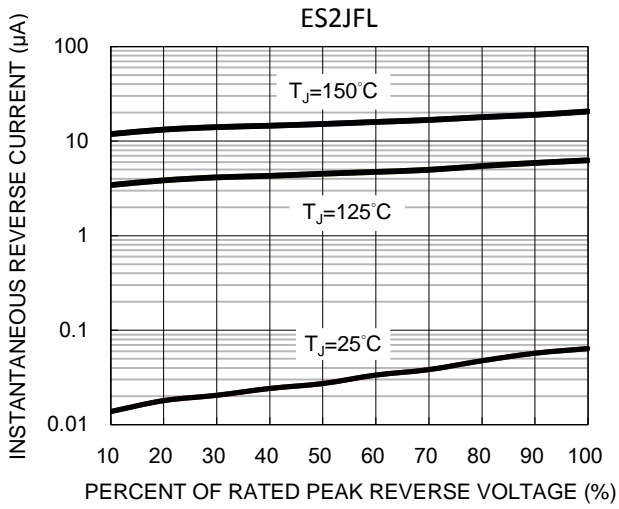


Fig.8 Typical Forward Characteristics

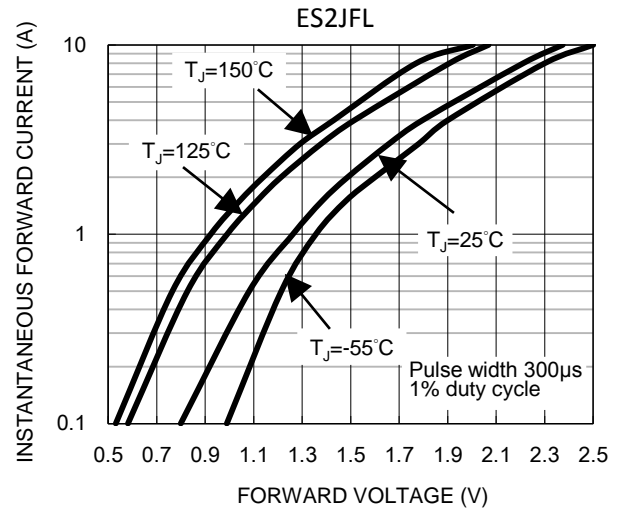
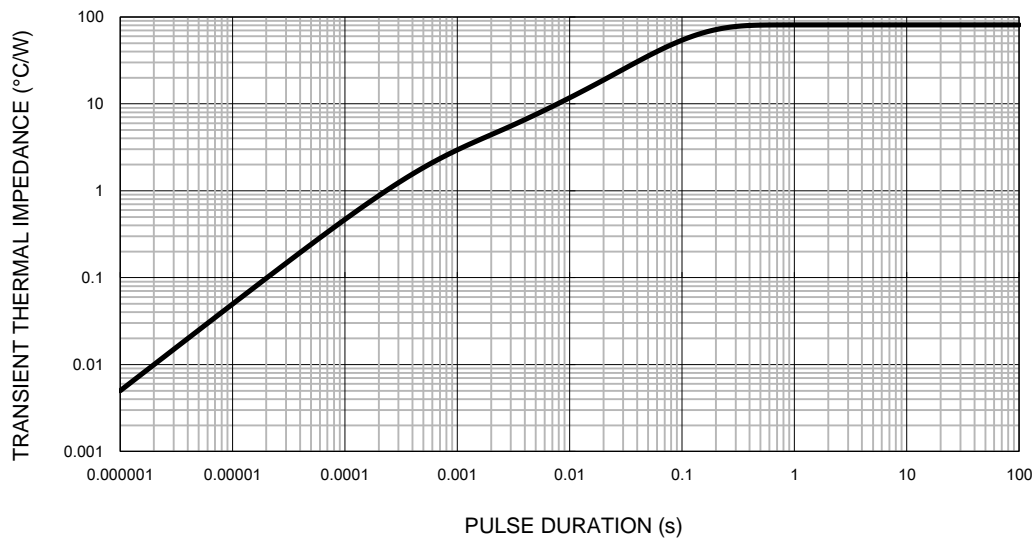
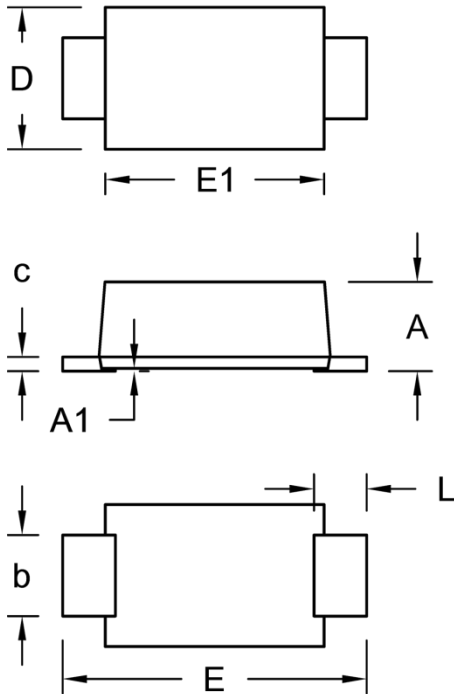


Fig.9 Typical Transient Thermal Impedance



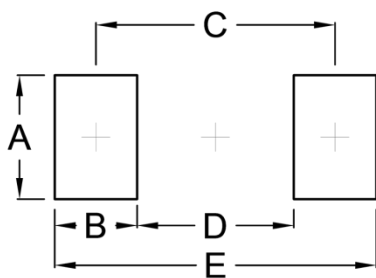
PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

SOD-123FL



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.00	1.20	0.039	0.047
A1	0.02	0.05	0.001	0.002
b	0.90	1.10	0.035	0.043
c	0.10	0.25	0.004	0.010
D	1.60	1.90	0.063	0.075
E	3.60	3.90	0.142	0.154
E1	2.55	2.85	0.100	0.112
L	0.40	0.90	0.016	0.035

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.50	0.059
B	1.00	0.039
C	2.90	0.114
D	1.90	0.075
E	3.90	0.154

MARKING DIAGRAM



P/N = Marking Code
 YW = Date Code
 F = Factory Code

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