

2A, 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: 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: 0.016g (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	
Configuration	Single die	



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
Forward current	I_F	2			A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3 \text{ ms}$	40			A
	$t = 1.0 \text{ ms}$	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	$^{\circ}\text{C/W}$
Junction-to-ambient thermal resistance	$R_{\theta JA}$	116	$^{\circ}\text{C/W}$
Junction-to-case thermal resistance	$R_{\theta JC}$	69	$^{\circ}\text{C/W}$

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	1.00	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	1.30	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	1.70	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	1.50	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	1MHz, $V_R = 4.0\text{V}$	C_J	22	-	pF
	ES2GFL			15	-	pF
	ES2JFL			9	-	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
ES2xFL	SOD-123FL	10,000 / Tape & 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

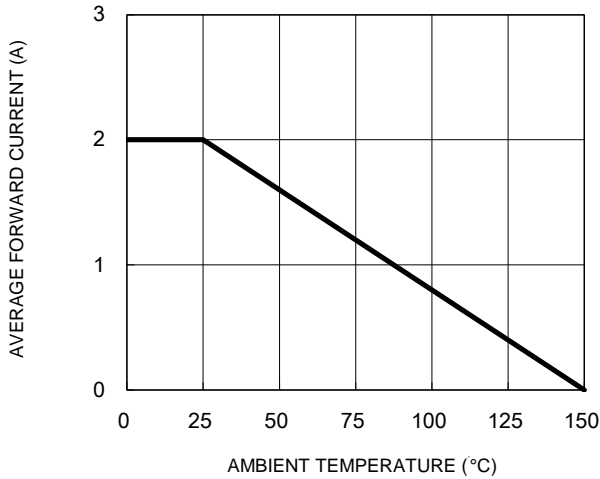


Fig.2 Typical Junction Capacitance

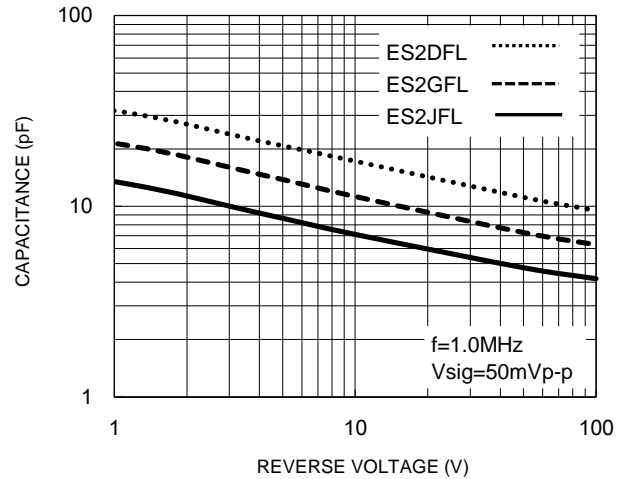


Fig.3 Typical Reverse Characteristics

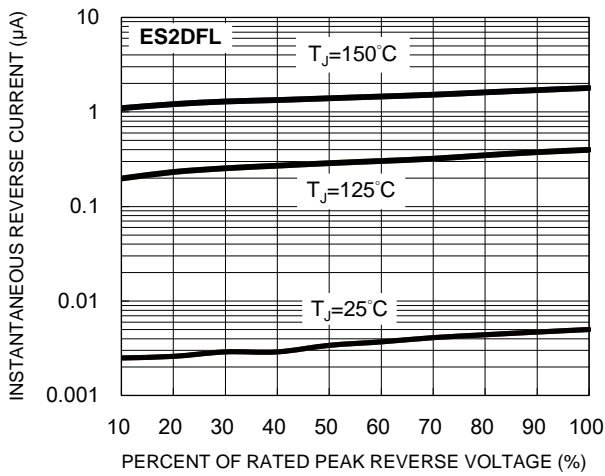


Fig.4 Typical Forward Characteristics

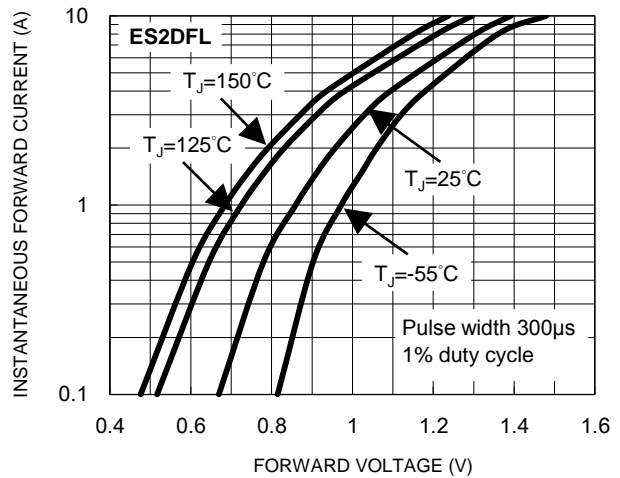


Fig.5 Typical Reverse Characteristics

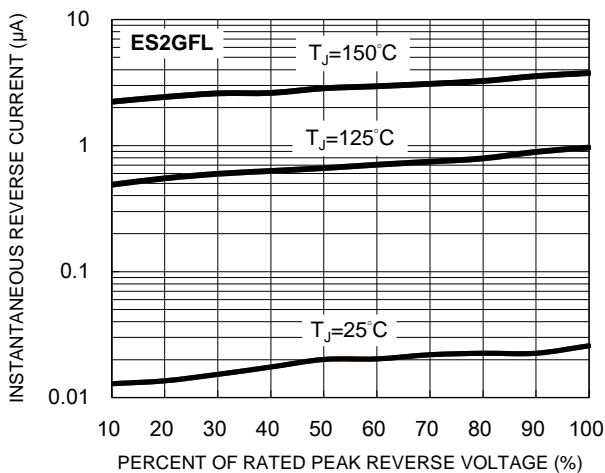
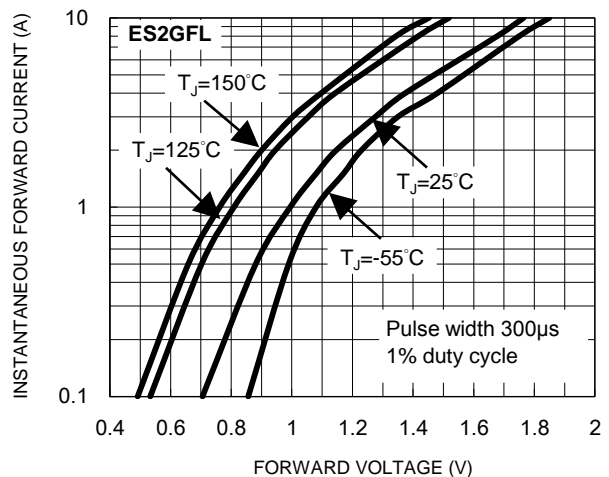


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

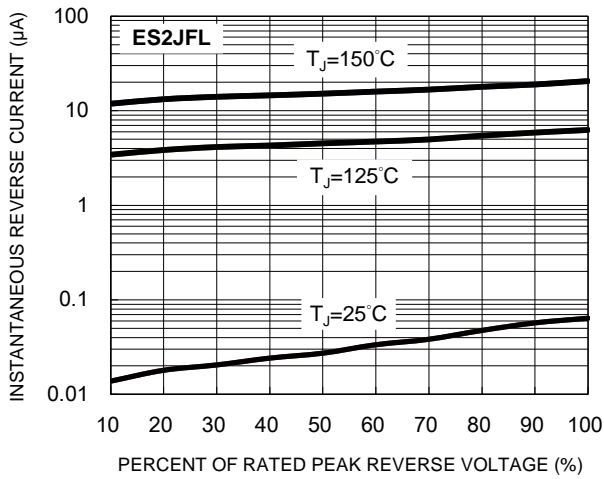


Fig.8 Typical Forward Characteristics

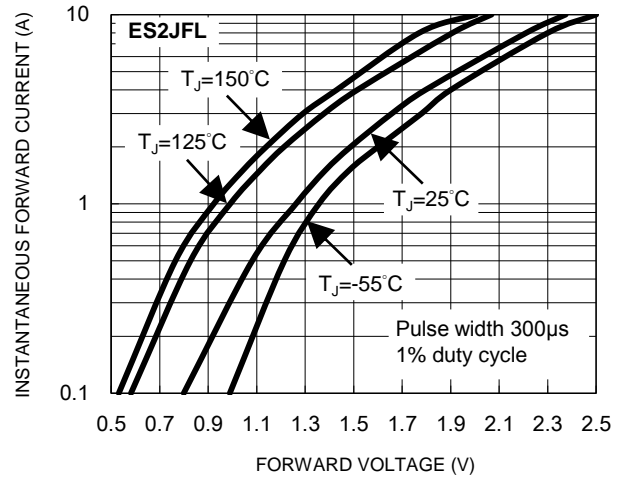
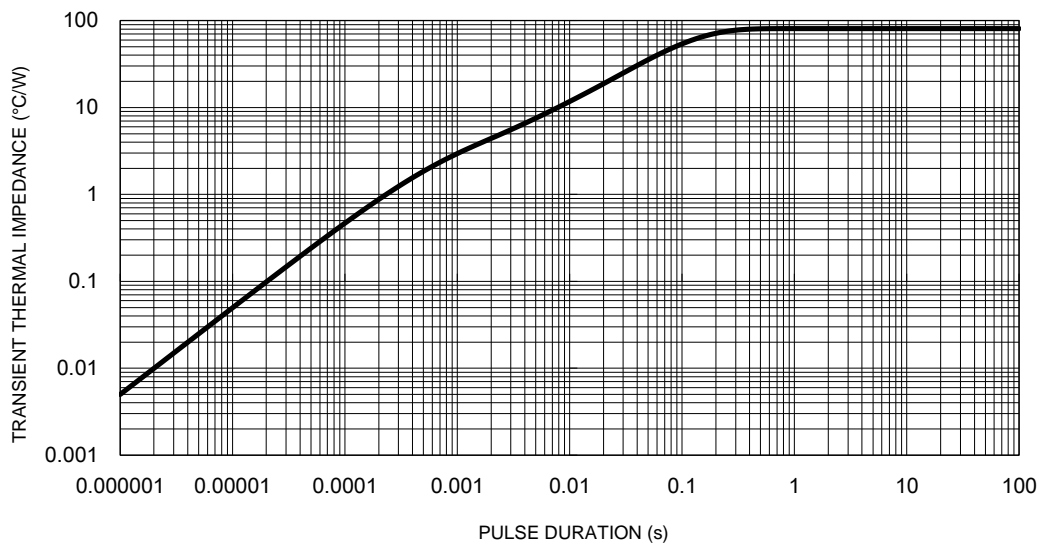
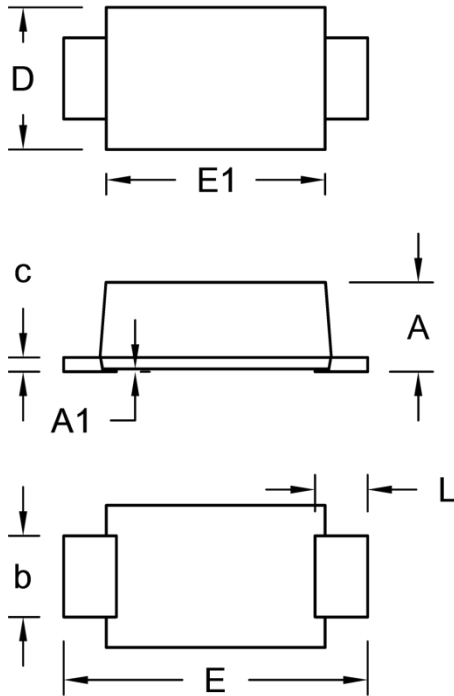


Fig.9 Typical Transient Thermal Impedance



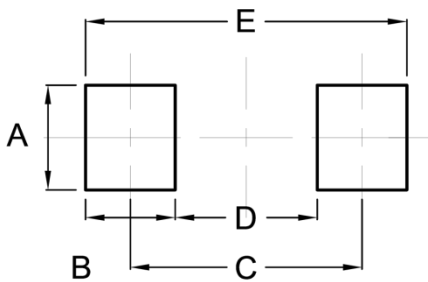
PACKAGE OUTLINE DIMENSIONS

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	1.40	0.055
B	1.20	0.047
C	3.10	0.122
D	1.90	0.075
E	4.30	0.169

MARKING DIAGRAM



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

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