

1.5A, 200V - 600V Surface Mount Super Fast Rectifier

FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Low power loss, high efficiency
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

MECHANICAL DATA

- Case: SOD-123W
- Molding compound meets UL 94V-0 flammability rating
- Part no. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 16mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	1.5	A
V_{RRM}	200 - 600	V
I_{FSM}	40	A
$T_{J\ MAX}$	150	°C
Package	SOD-123W	
Configuration	Single die	


SOD-123W

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	ES15DLW	ES15GLW	ES15JLW	UNIT
Marking code on the device		ES15D	ES15G	ES15J	
Repetitive peak reverse voltage	V_{RRM}	200	400	600	V
Reverse voltage, total rms value	$V_{R(RMS)}$	140	280	420	V
Forward current	$I_{F(AV)}$	1.5			A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	40			A
Junction temperature	T_J	-55 to +150			°C
Storage temperature	T_{STG}	-55 to +150			°C

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-lead thermal resistance per diode	$R_{\theta JL}$	26	$^{\circ}C/W$
Junction-to-ambient thermal resistance per diode	$R_{\theta JA}$	76	$^{\circ}C/W$
Junction-to-case thermal resistance per diode	$R_{\theta JC}$	27	$^{\circ}C/W$

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

ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}C$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode (1)	ES15DLW	$I_F = 0.75A, T_J = 25^{\circ}C$	V_F	0.80	-	V
		$I_F = 1.50A, T_J = 25^{\circ}C$		0.85	0.95	V
		$I_F = 0.75A, T_J = 125^{\circ}C$		0.66	-	V
		$I_F = 1.50A, T_J = 125^{\circ}C$		0.73	0.8	V
	ES15GLW	$I_F = 0.75A, T_J = 25^{\circ}C$		0.87	-	V
		$I_F = 1.50A, T_J = 25^{\circ}C$		0.95	1.3	V
		$I_F = 0.75A, T_J = 125^{\circ}C$		0.72	-	V
		$I_F = 1.50A, T_J = 125^{\circ}C$		0.80	1.05	V
	ES15JLW	$I_F = 0.75A, T_J = 25^{\circ}C$		1.06	-	V
		$I_F = 1.50A, T_J = 25^{\circ}C$		1.18	1.7	V
		$I_F = 0.75A, T_J = 125^{\circ}C$		0.84	-	V
		$I_F = 1.50A, T_J = 125^{\circ}C$		0.97	1.3	V
Reverse current @ rated V_R per diode (2)		$T_J = 25^{\circ}C$	I_R	-	1	μA
		$T_J = 125^{\circ}C$		-	150	μA
Junction capacitance	ES15DLW	1 MHz, $V_R = 4.0V$	C_J	24	-	pF
	ES15GLW			21	-	pF
	ES15JLW			20	-	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 $PW = 0.3$ ms
2. Pulse test with $PW = 30$ ms

ORDERING INFORMATION					
PART NO.	PART NO. SUFFIX(*)	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
ES15xLW (Note 1,2)	H	RV	G	SOD-123W	3,000 / 7" Reel
		RQ		SOD-123W	10,000 / 13" Reel

Notes:

1. "x" defines voltage from 200V (ES15DLW) to 600V (ES15JLW)
 2. Whole series with green compound (halogen-free)
- *: Optional available

EXAMPLE P/N					
EXAMPLE P/N	PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
ES15DLWHRVG	ES15DLW	H	RV	G	AEC-Q101 qualified Green compound

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

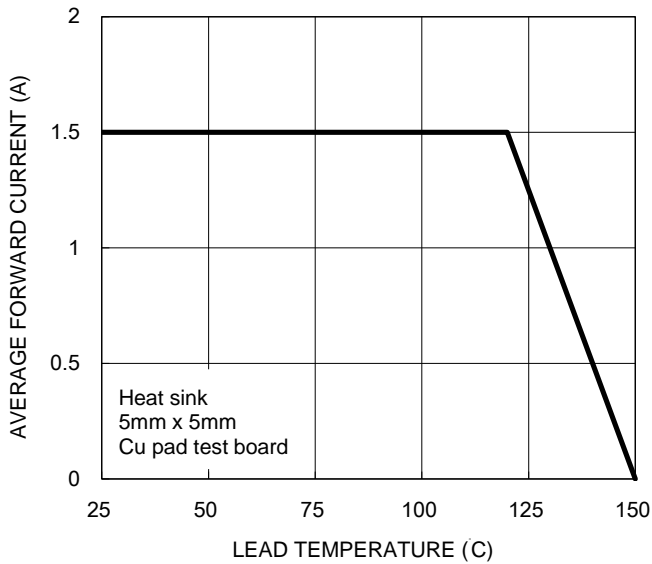


Fig.2 Typical Junction Capacitance

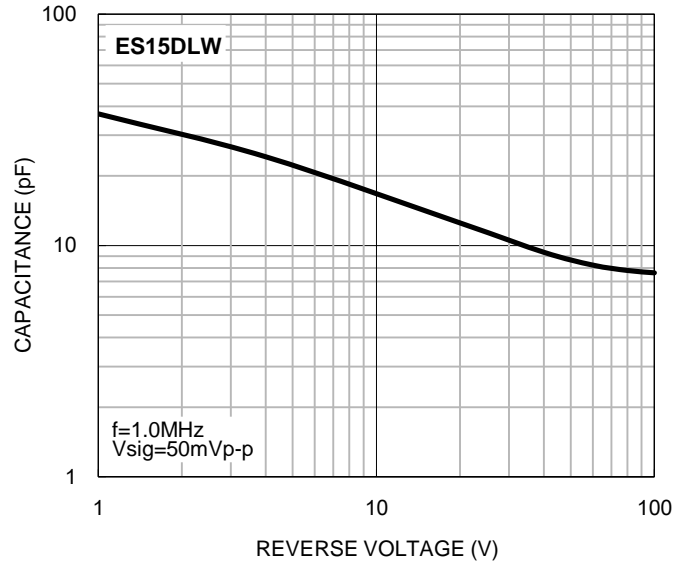


Fig.3 Typical Reverse Characteristics

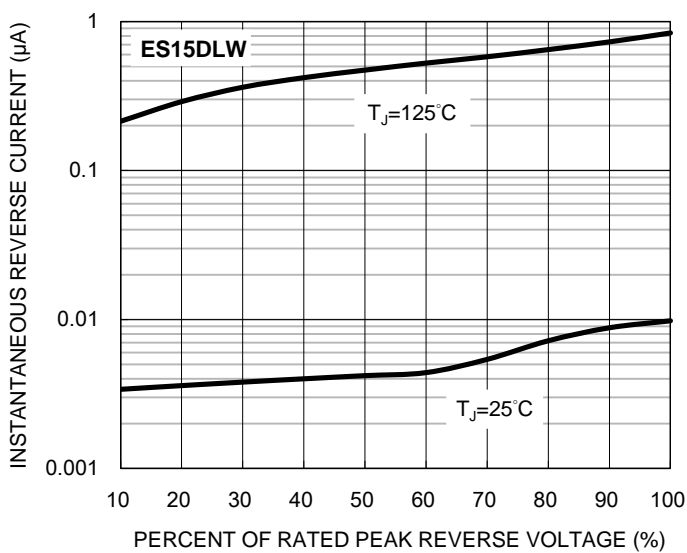
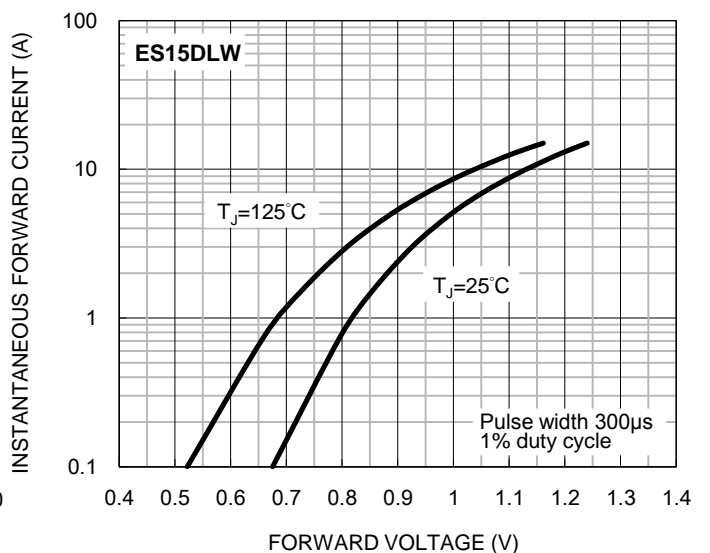


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Typical Junction Capacitance

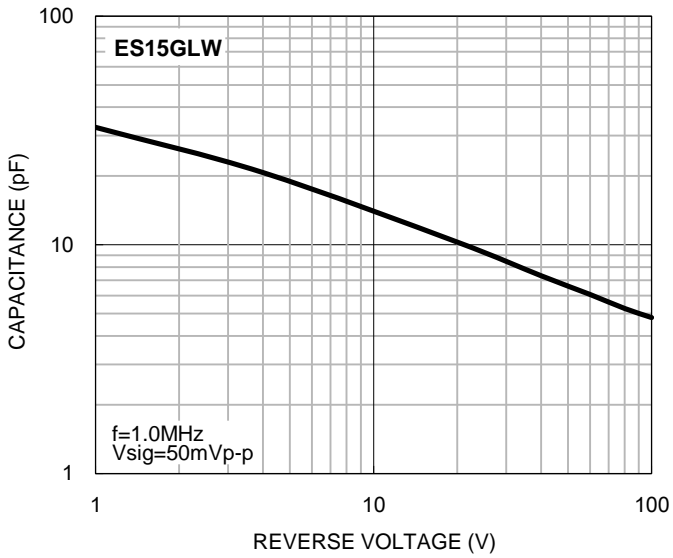


Fig.6 Typical Reverse Characteristics

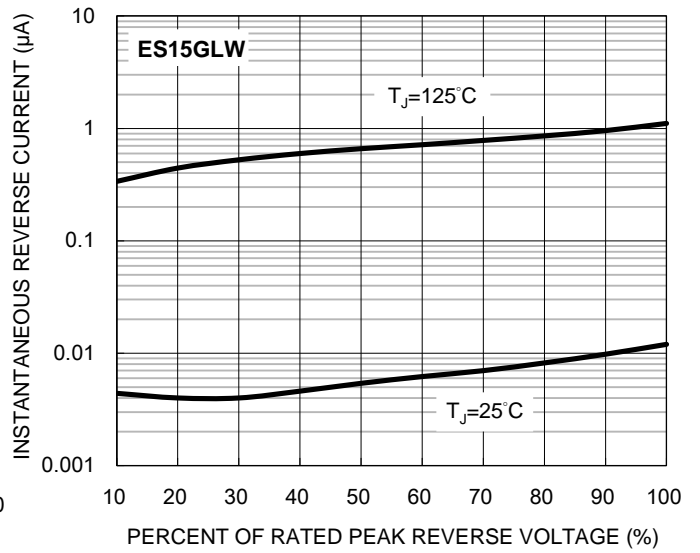
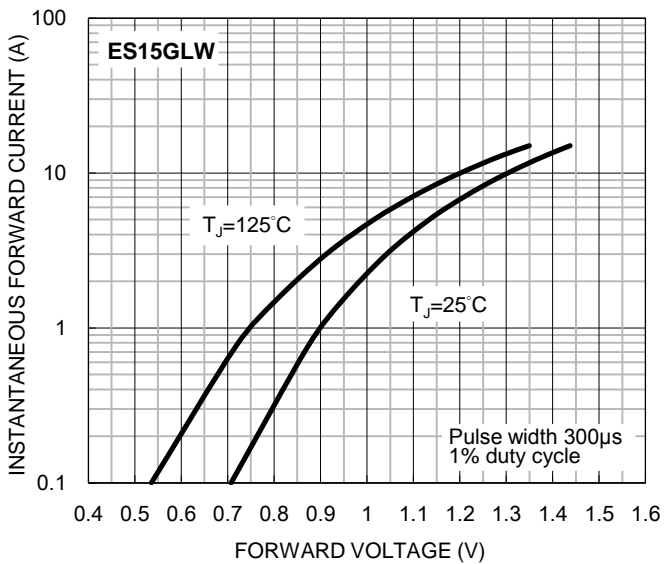


Fig.7 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.8 Typical Junction Capacitance

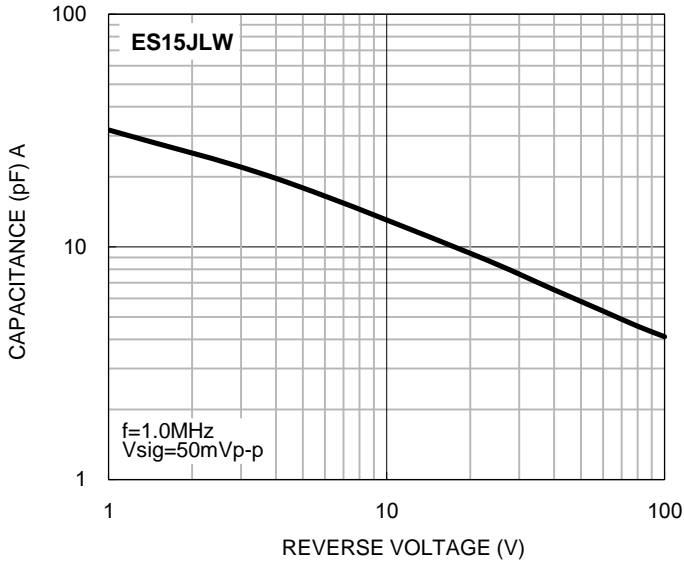


Fig.9 Typical Reverse Characteristics

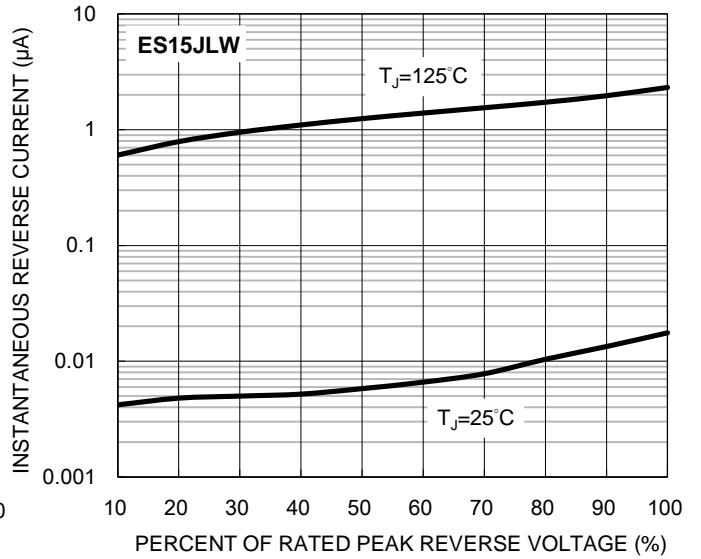
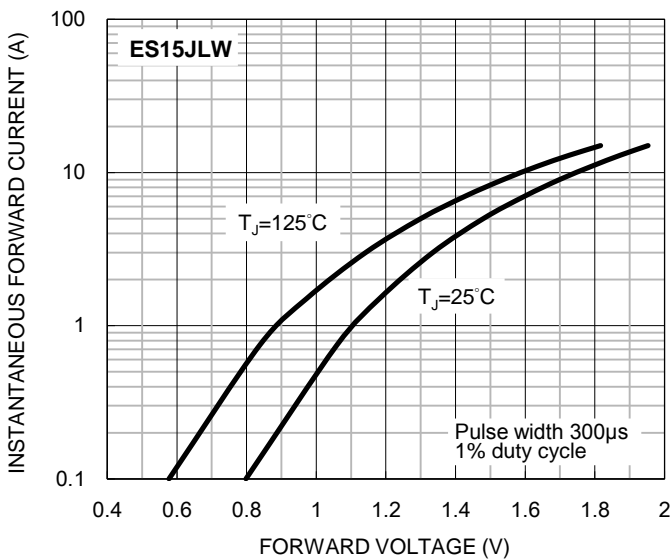
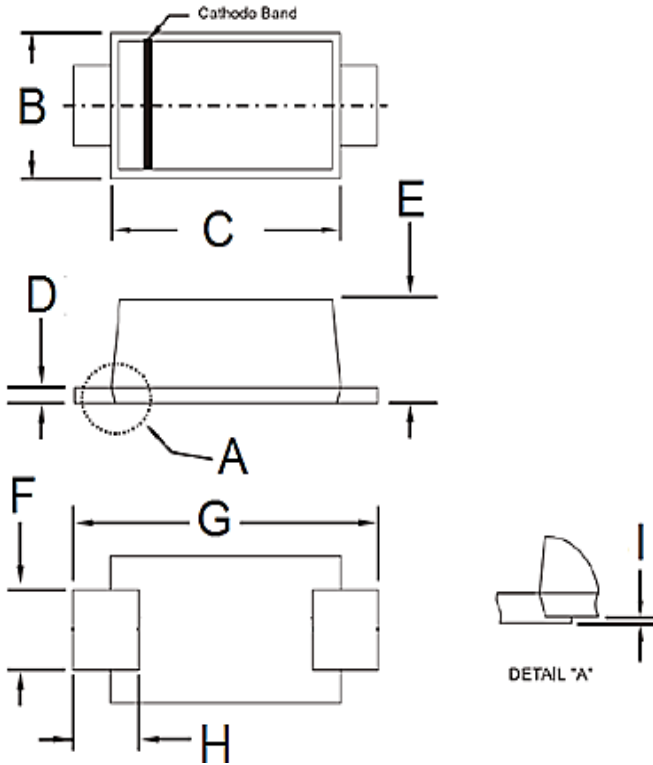


Fig.10 Typical Forward Characteristics



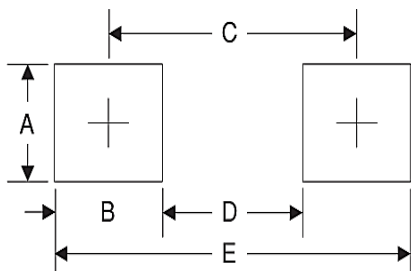
PACKAGE OUTLINE DIMENSIONS

SOD-123W



DIM.	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
B	1.70	1.90	0.067	0.075
C	2.60	2.90	0.102	0.114
D	0.10	0.22	0.004	0.009
E	0.90	1.02	0.035	0.040
F	0.90	1.05	0.035	0.041
G	3.60	3.80	0.142	0.150
H	0.50	0.85	0.020	0.033
I	0.00	0.10	0.000	0.004

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.4	0.055
B	1.2	0.047
C	3.1	0.122
D	1.9	0.075
E	4.3	0.169

MARKING DIAGRAM



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

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