

## 1A, 200V - 600V Surface Mount Super Fast Rectifiers

### FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Super fast recovery time for 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

- High frequency rectification
- Freewheeling application
- Switching mode converters and inverters in computer, automotive and telecommunication.

### MECHANICAL DATA

- **Case:** DO-214AC (SMA)
- Molding compound, UL flammability classification rating 94V-0
- Moisture sensitivity level: level 1, per J-STD-020
- Part No. with suffix "H" means AEC-Q101 qualified
- Packing code with suffix "G" means green compound (halogen-free)
- **Terminal:** Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- **Polarity:** Indicated by cathode band
- **Weight:** 0.06 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	1	A
$V_{RRM}$	200-600	V
$I_{FSM}$	30	A
$V_F$ at $I_F=1A$	1.7	V
$T_{JMAX}$	150	°C
Package	DO-214AC (SMA)	
Configuration	Single dice	



DO-214AC (SMA)

ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	ES1LD	ES1LG	ES1LJ	UNIT
Marking code on the device		ES1LD	ES1LG	ES1LJ	
Maximum repetitive peak reverse voltage	$V_{RRM}$	200	400	600	V
Maximum RMS voltage	$V_{RMS}$	140	280	420	V
Maximum DC blocking voltage	$V_{DC}$	200	400	600	V
Maximum average forward rectified current	$I_{F(AV)}$	1			A
Peak forward surge current, 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	30			A
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	- 55 to +150			°C

<b>THERMAL PERFORMANCE</b>			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>LIMIT</b>	<b>UNIT</b>
Junction to Lead Thermal Resistance	$R_{\theta JL}$	35	$^{\circ}\text{C/W}$
Junction to Ambient Thermal Resistance	$R_{\theta JA}$	80	$^{\circ}\text{C/W}$
Junction to Case Thermal Resistance	$R_{\theta JC}$	25	$^{\circ}\text{C/W}$

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

<b>ELECTRICAL SPECIFICATIONS</b> ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)						
<b>PARAMETER</b>		<b>CONDITIONS</b>	<b>SYMBOL</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
Maximum instantaneous forward voltage (Note 1)	ES1LD	$I_F = 1\text{A}$ $T_J = 25^{\circ}\text{C}$	$V_F$	-	0.95	V
	ES1LG			-	1.3	
	ES1LJ			-	1.7	
Maximum reverse current @ rated $V_R$ (Note 2)			$I_R$	-	5	$\mu\text{A}$
				$T_J = 125^{\circ}\text{C}$	-	100
Junction capacitance	ES1LD	1 MHz, $V_R = 4.0\text{V}$	$C_J$	16	-	pF
	ES1LG			18		
	ES1LJ			18		
Reverse recovery time			$t_{rr}$	-	35	ns
		$I_F = 0.5\text{A}$ $I_R = 1.0\text{A}$ $I_{RR} = 0.25\text{A}$				

**Notes:**

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

**ORDERING INFORMATION**

PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX *	PACKAGE	PACKING
ES1Lx (Note 1)	H	R3	G	SMA	1,800 / 7" Plastic reel
		R2			7,500 / 13" Paper reel
		M2			7,500 / 13" Plastic reel
		F3		1,800 / 7" Plastic reel	
		F2		7,500 / 13" Paper reel	
		F4		7,500 / 13" Plastic reel	
	N/A	E3		Clip SMA	1,800 / 7" Plastic reel
					7,500 / 13" Plastic reel

Note 1: "x" defines voltage from 200V (ES1LD) to 600V (ES1LJ)

\*: G is optional available.

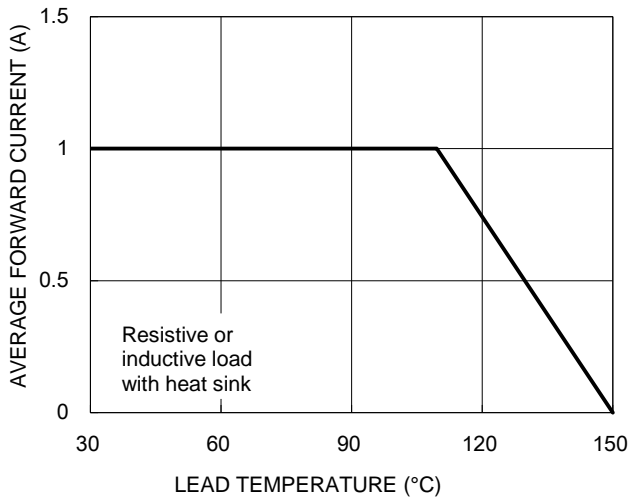
**EXAMPLE:**

EXAMPLE P/N	PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
ES1LDHR3G	ES1LD	H	R3	G	AEC-Q101 qualified Green compound

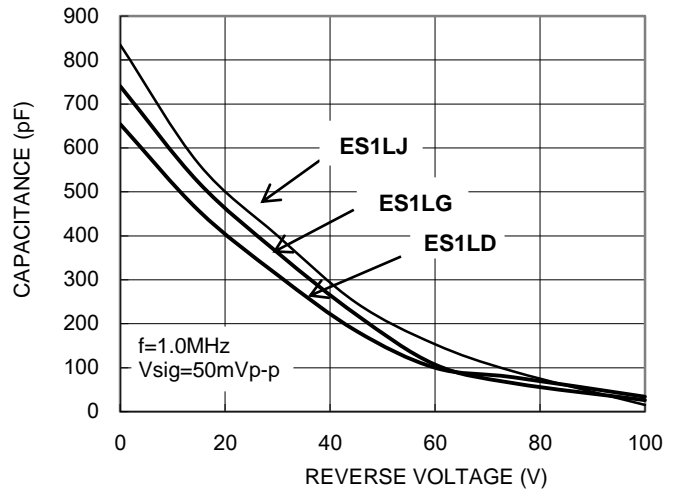
**CHARACTERISTICS CURVES**

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

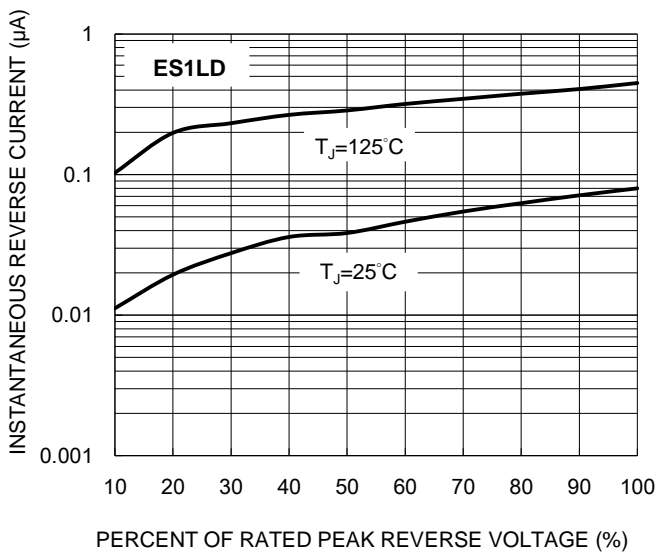
**Forward Current Derating Curve**



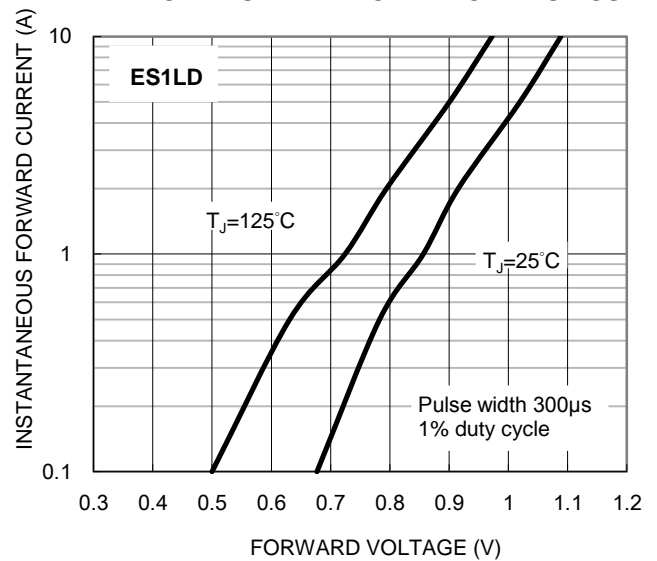
**Typical Junction Capacitance**



**TYPICAL REVERSE CHARACTERISTICS**

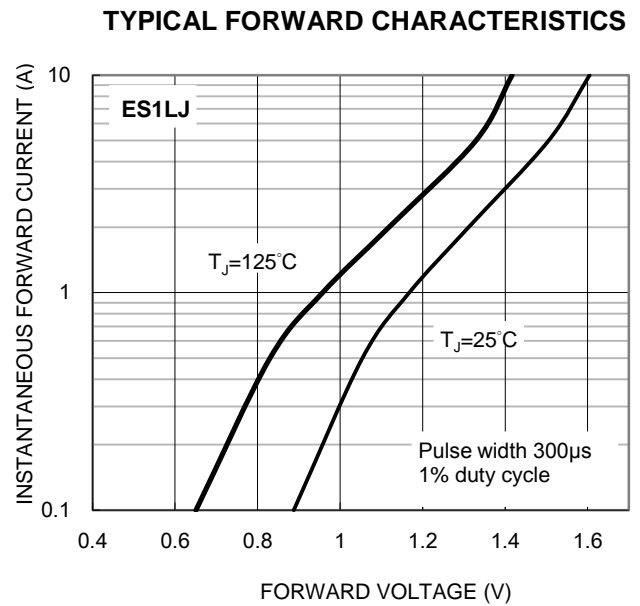
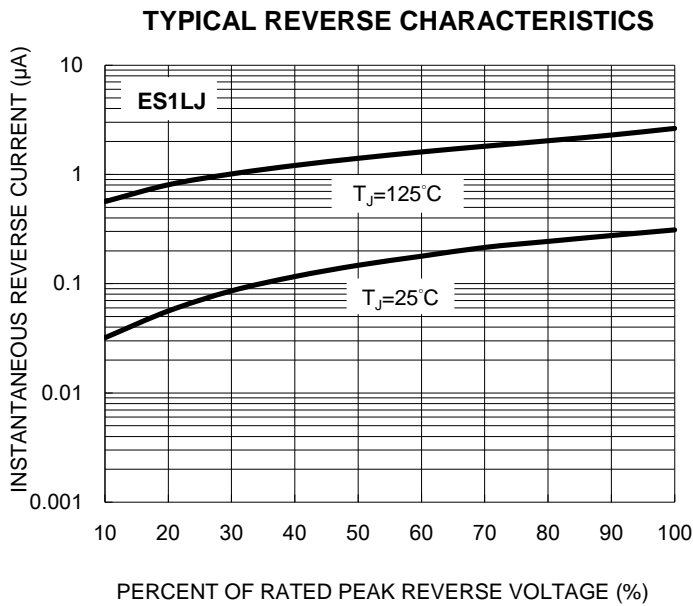
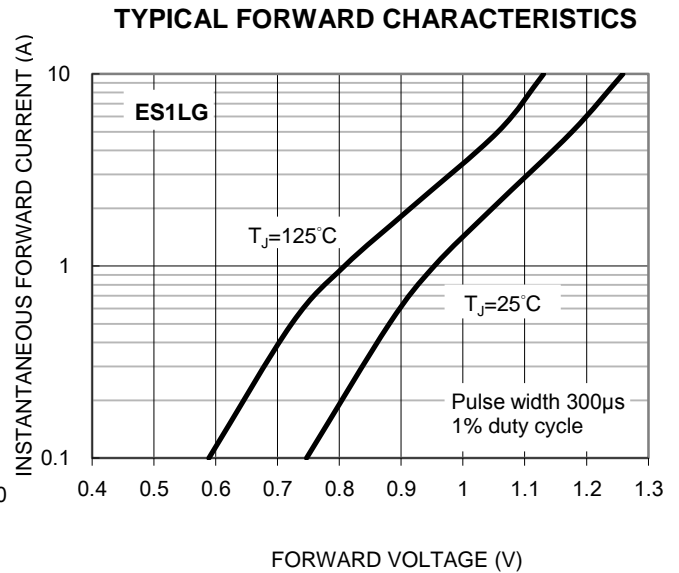
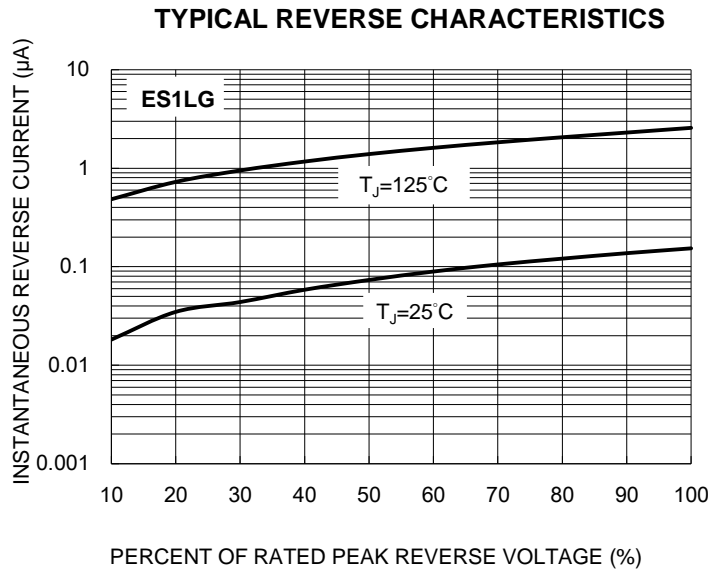


**TYPICAL FORWARD CHARACTERISTICS**



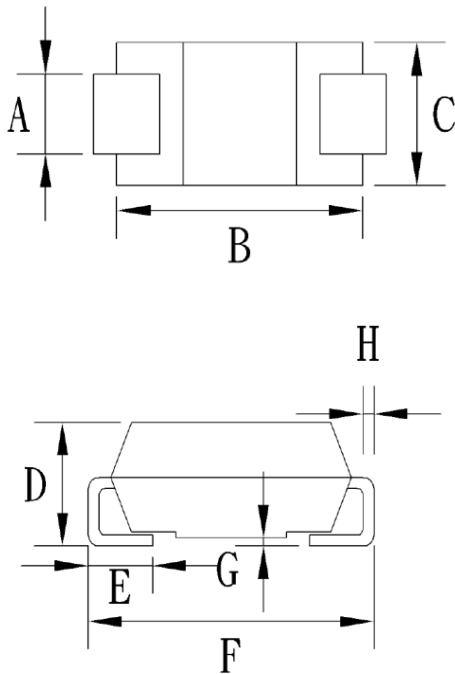
**CHARACTERISTICS CURVES**

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



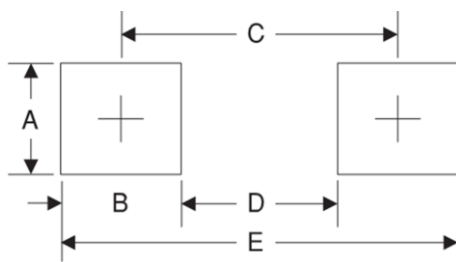
**PACKAGE OUTLINE DIMENSIONS** (Unit: Millimeters)

**DO-214AC (SMA)**



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	1.27	1.58	0.050	0.062
B	4.06	4.60	0.160	0.181
C	2.29	2.83	0.090	0.111
D	1.99	2.50	0.078	0.098
E	0.90	1.41	0.035	0.056
F	4.95	5.33	0.195	0.210
G	0.10	0.20	0.004	0.008
H	0.15	0.31	0.006	0.012

**SUGGESTED PAD LAYOUT** (Unit: Millimeters)



Symbol	Unit (mm)	Unit (inch)
A	1.68	0.066
B	1.52	0.060
C	3.93	0.155
D	2.41	0.095
E	5.45	0.215

**MARKING DIAGRAM**



P/N = Specific Device Code  
G = Green Compound  
YW = Date Code  
F = Factory Code

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