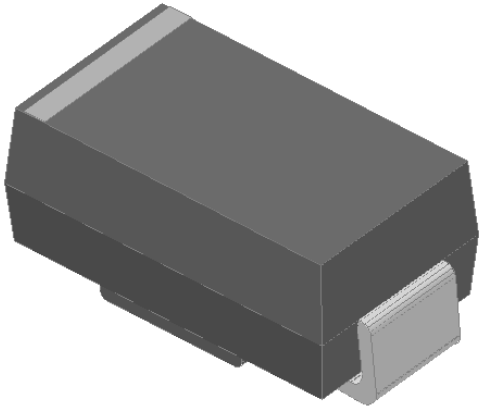


## Surface Mount Super Fast Recovery Rectifier

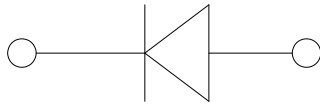


### Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- High forward surge capability
- Super Fast reverse recovery time
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Part no. with suffix "Q" means AEC-Q101 qualified

### Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, automotive and telecommunication.



### Mechanical Data

- **Package:** DO-214AC (SMA)  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

### ■ Maximum Ratings ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	ES1AQ	ES1BQ	ES1CQ	ES1DQ	ES1FQ	ES1GQ	ES1HQ	ES1JQ
Device marking code			ES1A	ES1B	ES1C	ES1D	ES1F	ES1G	ES1H	ES1J
Repetitive peak reverse voltage	$V_{RRM}$	V	50	100	150	200	300	400	500	600
Average rectified output current @ 60Hz sine wave, Resistance load, $T_L$ (Fig.1)	$I_O$	A	1.0							
Surge(non-repetitive)forward current @ 60Hz Half-sine wave, 1 cycle, $T_a=25^\circ\text{C}$	$I_{FSM}$	A	30							
Storage temperature	$T_{stg}$	$^\circ\text{C}$	-55~+150							
Junction temperature	$T_J$	$^\circ\text{C}$	-55~+150							

### ■ Electrical Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	ES1AQ	ES1BQ	ES1CQ	ES1DQ	ES1FQ	ES1GQ	ES1HQ	ES1JQ
Maximum instantaneous forward voltage drop per diode	$V_F$	V	$I_{FM}=1.0\text{A}$	0.95			1.3		1.7		
Maximum reverse recovery time	$T_{RR}$	ns	$I_F=0.5\text{A}, I_R=1.0\text{A}, I_{rr}=0.25\text{A}$	35							
Typical junction capacitance	$C_J$	pF	$V_R=4\text{V}, f=1\text{MHz}$	21				13			
Maximum DC reverse current at rated DC blocking voltage per diode @ $V_{RM}=V_{RRM}$	$I_{RRM}$	$\mu\text{A}$	$T_a=25^\circ\text{C}$	5							
			$T_a=125^\circ\text{C}$	100							



# ES1AQ THRU ES1JQ

## ■ Dynamic Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	TEST CONDITIONS	Min	Typ	Max
Reverse Recovery Time	$T_{RR}$	ns	$I_F=1\text{A}$ $di/dt=-50\text{A}/\mu\text{s}$ $V_{RM}=30\text{V}$	-	40	-
Peak recovery current	$I_{RRM}$	A		-	1.7	-
Reverse recovery charge	$Q_{rr}$	nC		-	33	-

## ■ Thermal Characteristics ( $T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	ES1AQ	ES1BQ	ES1CQ	ES1DQ	ES1FQ	ES1GQ	ES1HQ	ES1JQ
Thermal Resistance	$R_{\theta J-A}$	$^\circ\text{C}/\text{W}$	85 <sup>(1)</sup>							
	$R_{\theta J-L}$		35 <sup>(1)</sup>							

Note

(1) Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 0.2" x 0.2" (5.0 mm x 5.0 mm) copper pad areas

## ■ Characteristics (Typical)

Fig.1:  $I_O-T_L$  Curve

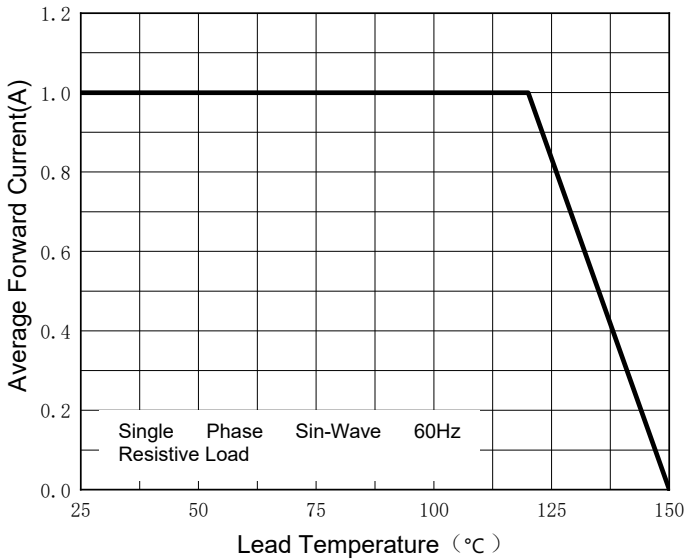


Fig.2: Surge Forward Current Capability

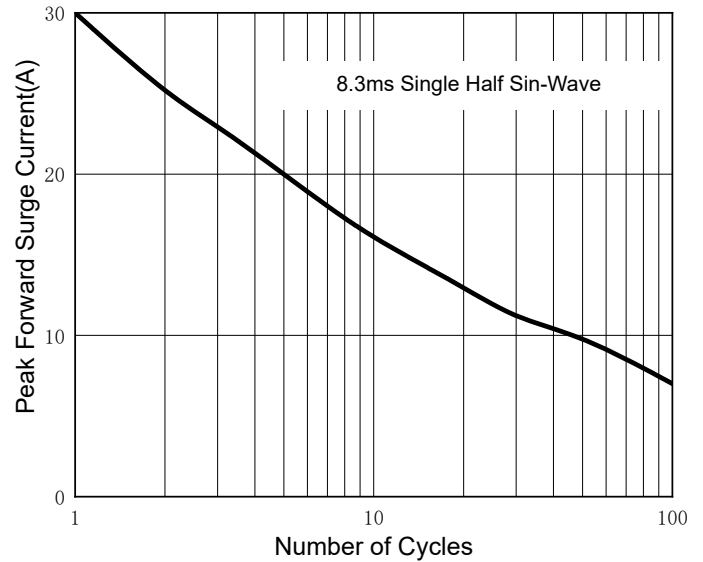
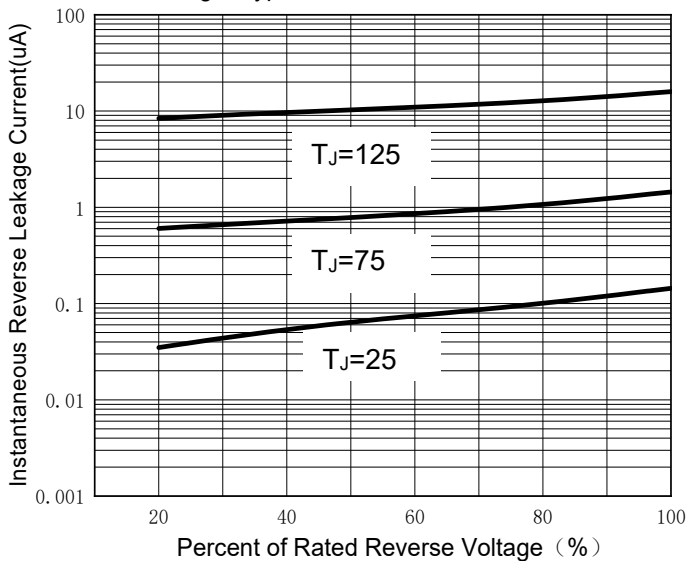
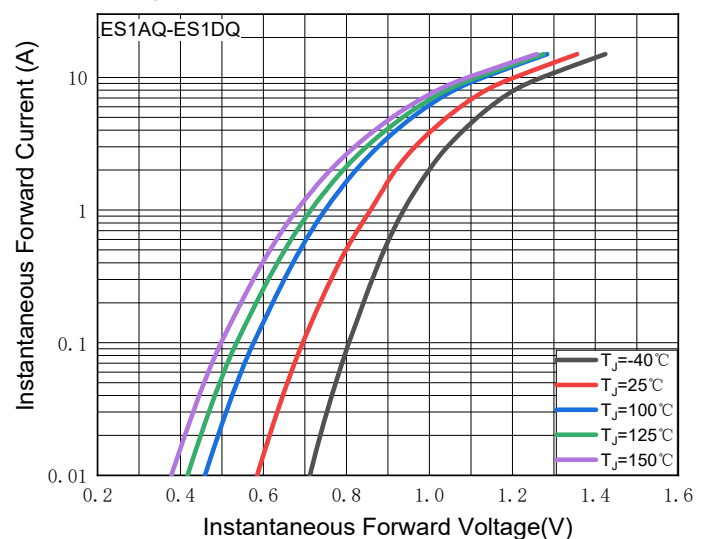


Fig.4: Typical Reverse Characteristics



Typical Instantaneous Forward Characteristics





# ES1AQ THRU ES1JQ

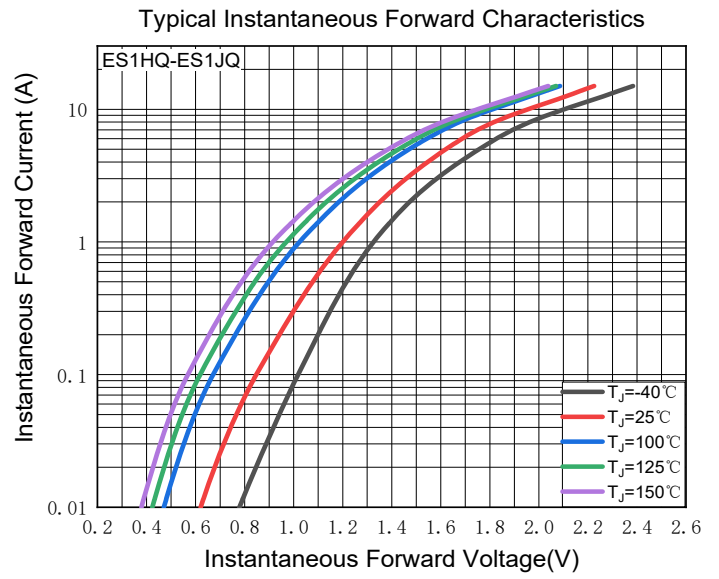
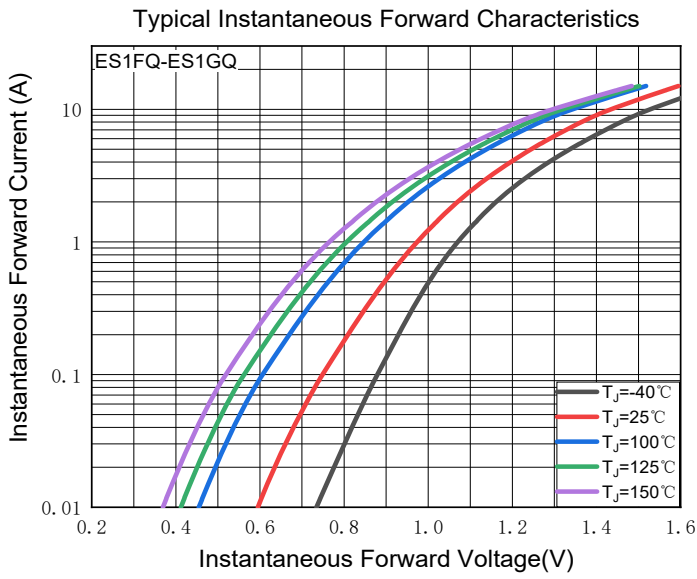
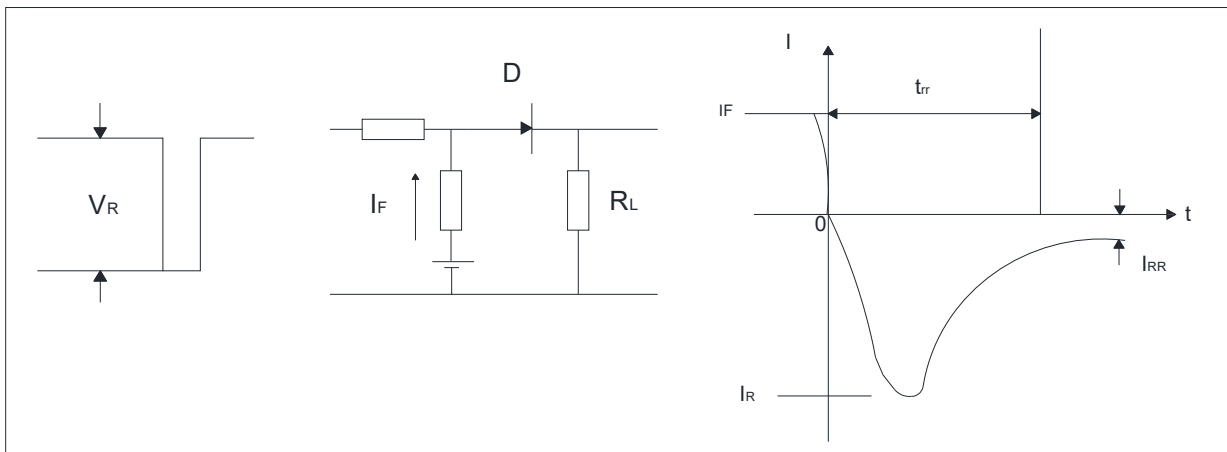


FIG5: Diagram of circuit and Testing wave form of reverse recovery time



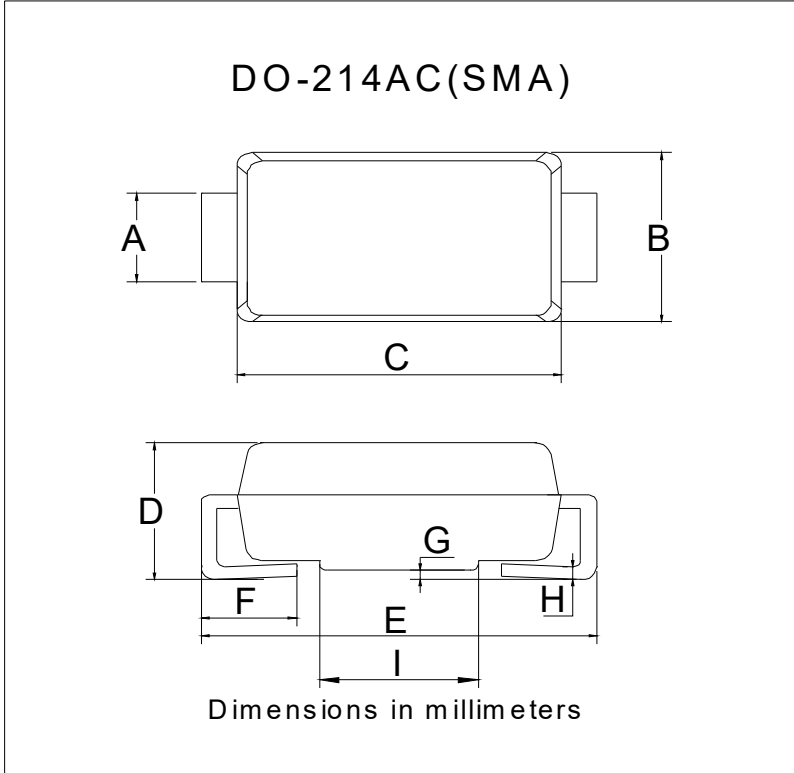


# ES1AQ THRU ES1JQ

## Ordering Information (Example)

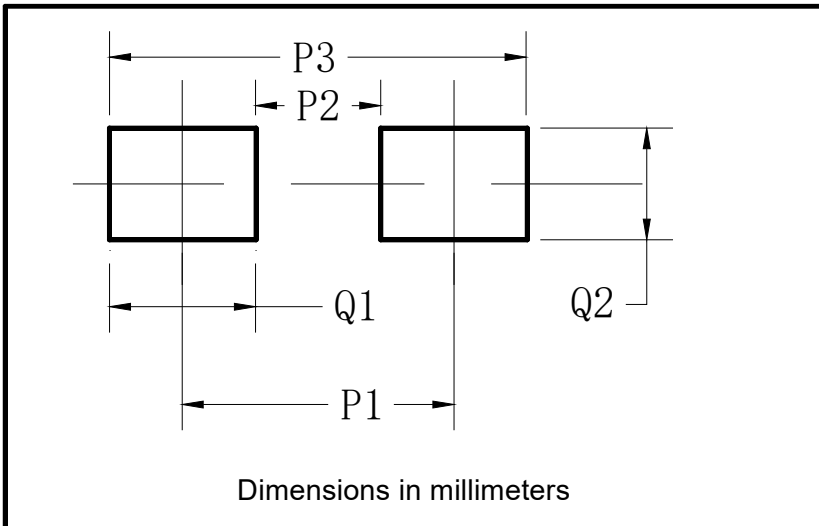
PREFERRED P/N	PACKAGE CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
ES1AQ-ES1JQ	F2	Approximate 0.067	7500	/	120000	13" reel

## Outline Dimensions



DO-214AC(SMA)		
Dim	Min	Max
A	1.25	1.58
B	2.40	2.83
C	4.00	4.75
D	1.90	2.30
E	4.93	5.28
F	0.76	1.41
G	0.05	0.20
H	0.15	0.31
I	1.7	2.1

## Suggested Pad Layout



DO-214AC(SMA)	
Dim	Millimeters
P1	4.00
P2	1.50
P3	6.50
Q1	2.50
Q2	1.70



## ES1AQ THRU ES1JQ

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