

Surface Mount Super Fast Recovery Rectifier

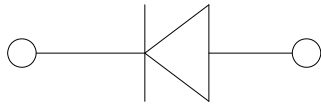


Features

- 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°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°C	I _{FSM}	A	30							
Storage temperature	T _{stg}	°C	-55~+150							
Junction temperature	T _J	°C	-55~+150							

■Electrical Characteristics (T_a=25°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} =1.0A	0.95			1.3		1.7		
Maximum reverse recovery time	T _{RR}	ns	I _F =0.5A, I _R =1.0A, I _{rr} =0.25A	35							
Typical junction capacitance	C _J	pF	V _R =4V, f=1MHz	21				13			
Maximum DC reverse current at rated DC blocking voltage per diode @ V _{RM} =V _{RRM}	I _{RRM}	μA	T _a =25°C	5							
			T _a =125°C	100							



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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 ⁽¹⁾							
	$R_{\theta J-L}$		35 ⁽¹⁾							

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

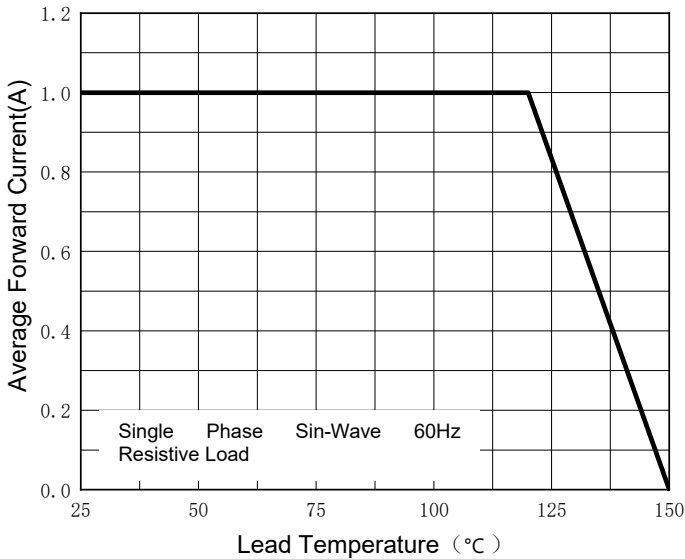


Fig.2: Surge Forward Current Capability

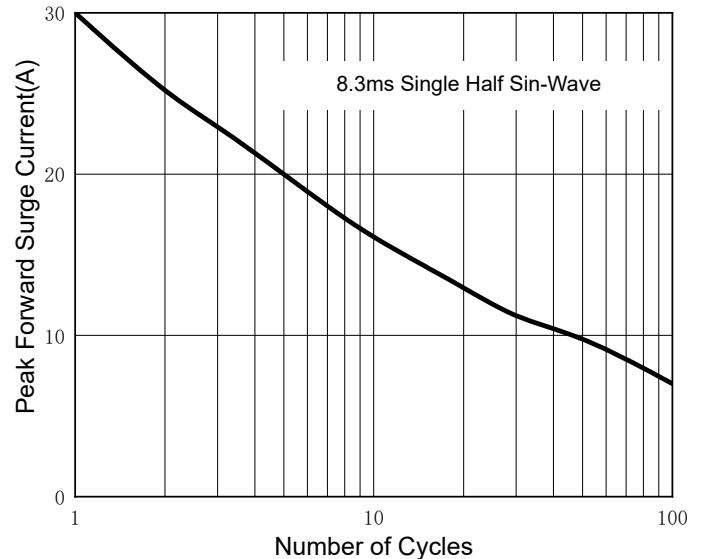
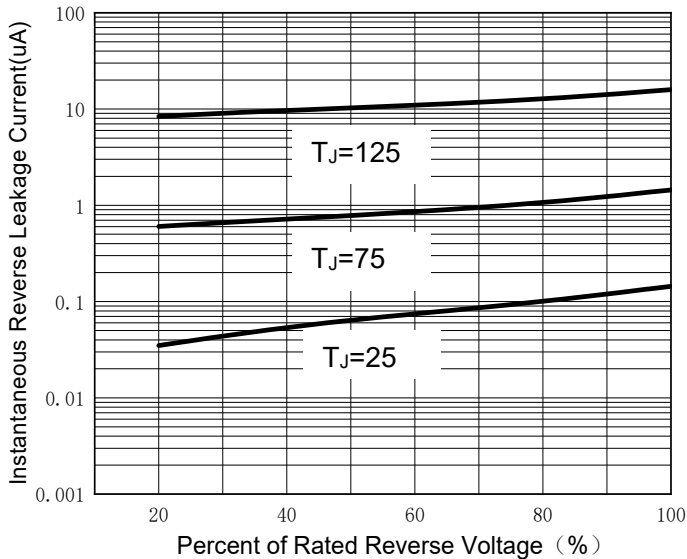
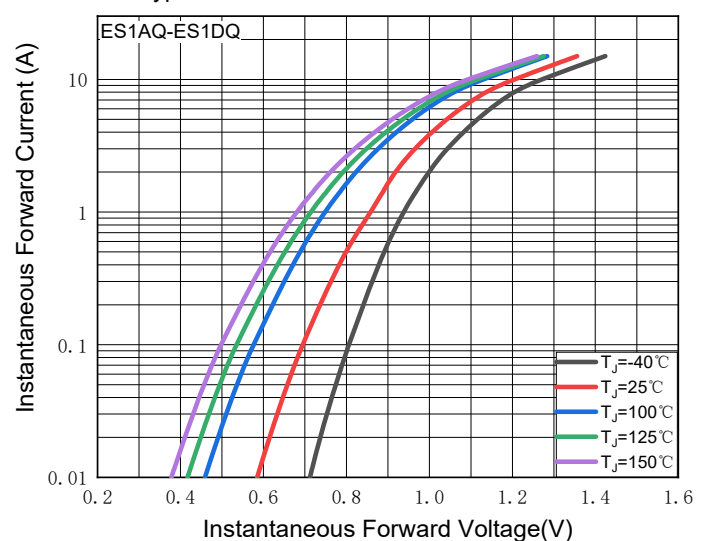


Fig.4: Typical Reverse Characteristics



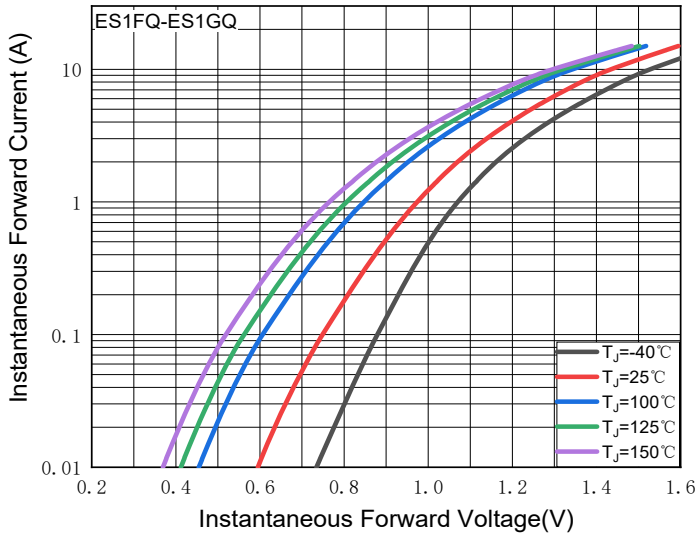
Typical Instantaneous Forward Characteristics





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Typical Instantaneous Forward Characteristics



Typical Instantaneous Forward Characteristics

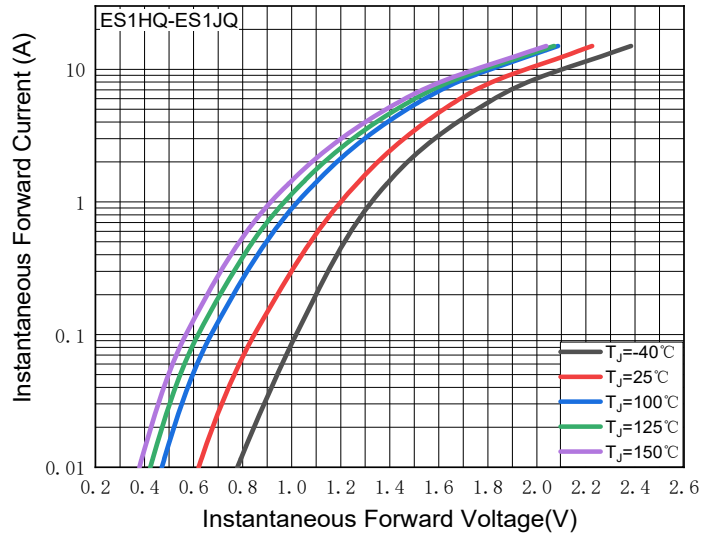
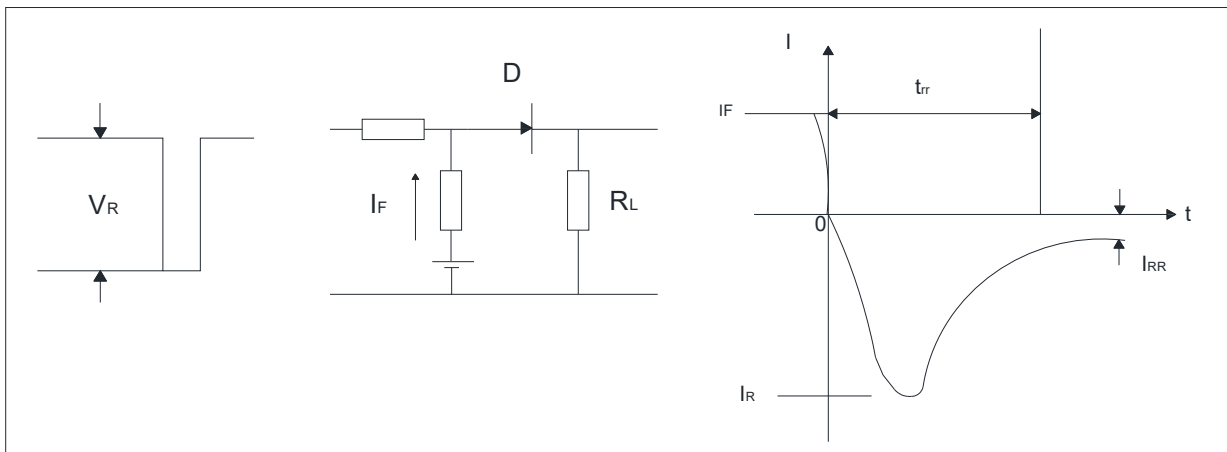


FIG5: Diagram of circuit and Testing wave form of reverse recovery time



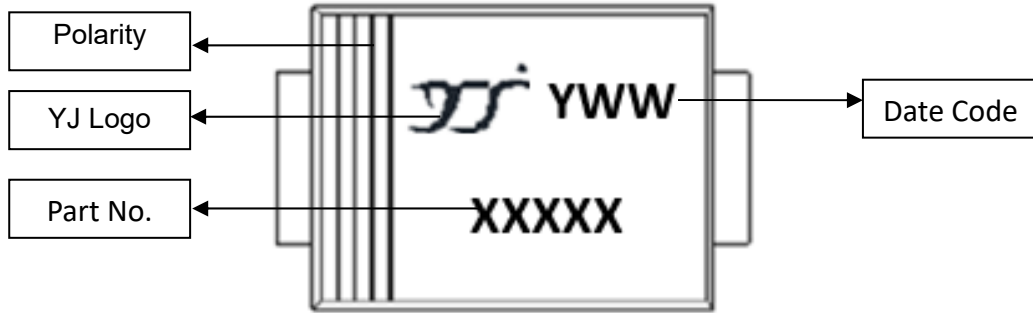


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■ Ordering Information (Example)

PREFERED 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

■ Marking Information



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. XXXXX is marking code, like ES1JQ marking code is ES1J
4. Body color: Black
5. YWW is date code, "Y" is year. "WW" is week.

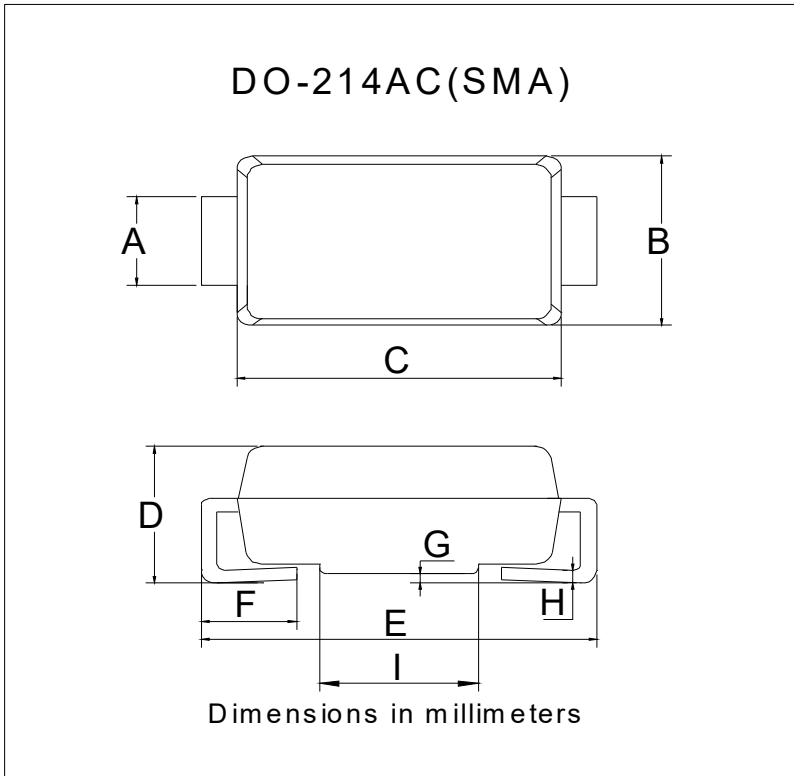
For instance:

The 17th week of 2021, date code is 117
The 17th week of 2022, date code is 217



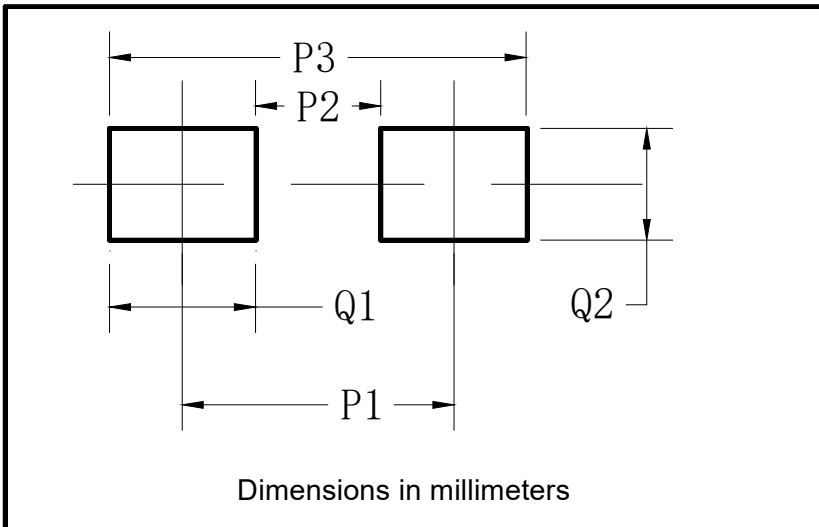
ES1AQ THRU ES1JQ

■ 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



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