ES1A THRU ES1M

SURFACE MOUNT SUPER FAST RECOVERY RECTIFIERS

VOLTAGE: 50～1000 Volts **CURRENT:** 1.0 Amperes

SOD-123FL **Marking and Polarity**

FEATURES

- Glass passivated chip junction
- Super fast reveESe recovery time
- Low Forward Voltage Drop for high efficiency
- Low leakage current for high reliability
- High forward surge capability for high reliability

MECHANICAL DATA

- **Terminals:** Plated Leads Solderable per MIL-STD-202, Method 208
- **Mounting Position:** Any
- **Lead Free:** Lead Free Finish, RoHS Compliant
- **Weight**:App. 0.0161 grams（0.0006 ounce)

TYPICAL APPLICATIONS

- For use in high frequency inverteES ,AC/DC converteES, DC/DC converteES,LED driver etc. applications

Remark:

①. NH=niuhang trademark

②. FF=Product line,According to actual changes;
YWW=Periodic code,According to actual changes;

③. ES1x=Modle,x=A,B,D,G,J,K,M

④. White band denotes cathode

Maximum Ratings (Ratings at 25℃ ambient temperature unless otherwise specified.)

Parameter	Symbol	ES1A	ES1B	ES1D	ES1G	ES1J	ES1K	ES1M	Unit
Mark	/	EA	EB	ED	EG	EJ	EK	EM	/
Maximum repetitive peak reveESe voltage	V_{RRM}	50	100	200	400	600	800	1000	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	560	700	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	800	1000	V
Maximum average forward rectified current(see fig.1)	$IF_{(AV)}$	1.0							A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC method at rated TL)(see fig.5)	I_{FSM}	30					20		A
Current Squared Time Per Diode(t<8.3ms)	I^2t	3.74					1.66		A^2sec

Electrical Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified).

Parameter	Test Conditions		Symbol	ES1A	ES1B	ES1D	ES1G	ES1J	ES1K	ES1M	Unit
Maximum instantaneous forward voltage (see fig.2) (Note 1)	T_A=25℃	IF= 1.0 A	V_F	0.95			1.25	1.68	1.95	3.50	V
Maximum instantaneous reveESecurrent at rated DC blockingvoltage (see fig.3)(Note 1)	T_A=25℃ T_A=125℃	VR= V_{RRM} VR= 80%*V_{RRM}	I_R	5 100							uA
Maximum ReveESe Recovery Time	IF=0.5A, IR=1.0A, IRR=0.25A		T_{RR}	35							ns
Typical junction capacitance(see fig.4)	4V,1MHz		C_J	10					5		pF

Thermal Characteristcs (Ratings at 25℃ ambient temperature unless otherwise specified)

Parameter	Symbol	ES1A	ES1B	ES1D	ES1G	ES1J	ES1K	ES1M	Unit
Operating junction	T_J	-55 to 150							℃
Storage temperature range	T_{STG}	-55 to 150							℃
Typical thermal resistance (Note 2)	$R_{\theta JA}$ $R_{\theta JC}$	85 35							℃/W

Note： 1.Pulse width < 300 uS, Duty cycle < 2%

2.P. C. B mounted with 0.1"*0.1"(2.54 x 2.54) mm copper Pad Areas.

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RATINGANDCHARACTERISTICCURVES

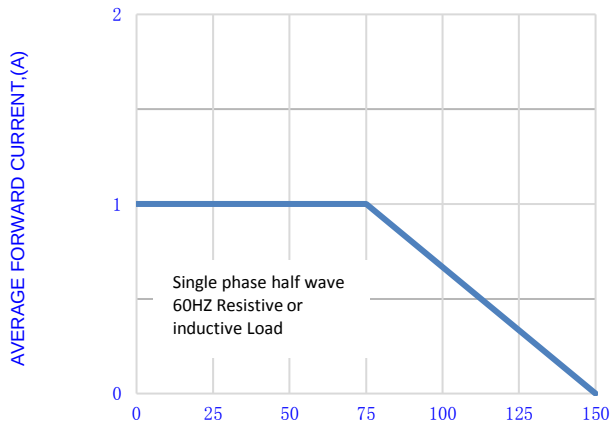

Fig.1- FORWARD CURRENT DERATING CURVE

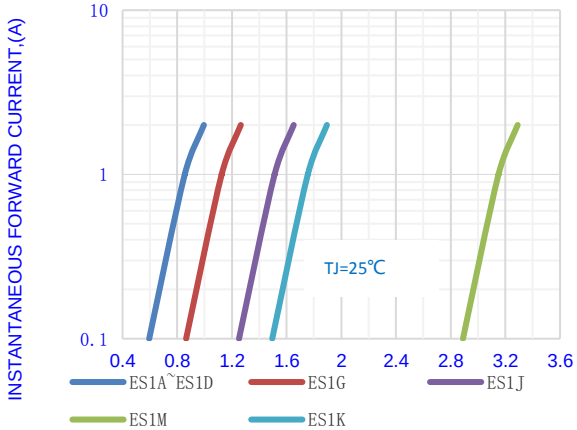

Fig.2-TYPICAL INSTANTANEOUS FORWARD

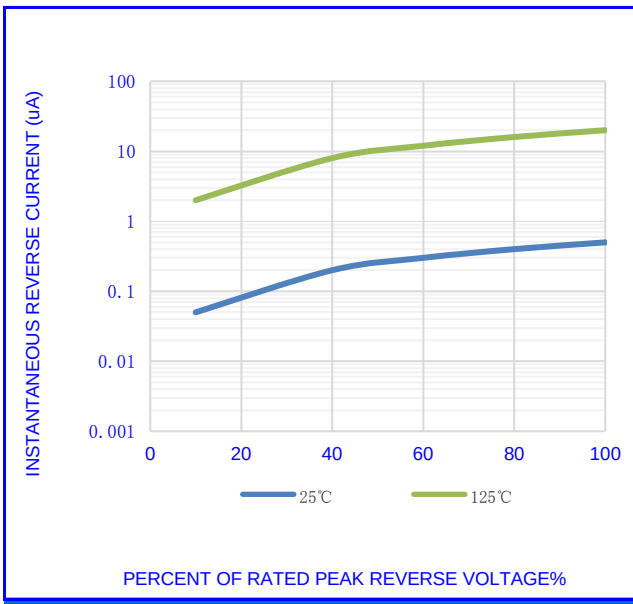

Fig.3-TYPICAL REVERSE CHARACTERISTICS

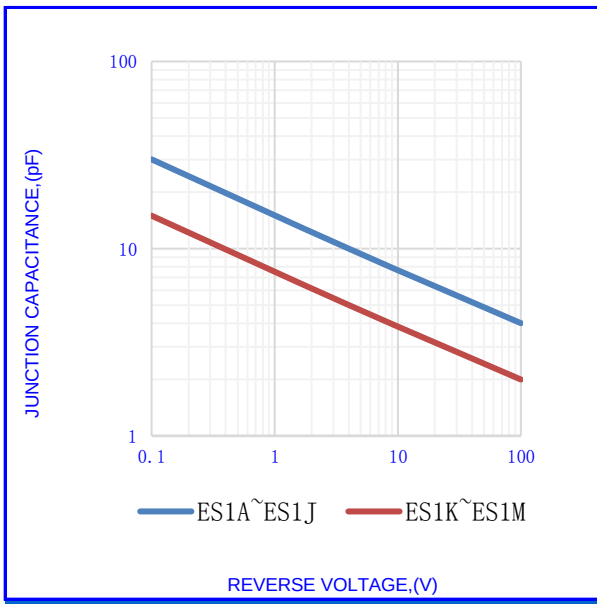

Fig.4- TYPICAL JUNCTION CAPACITANCE

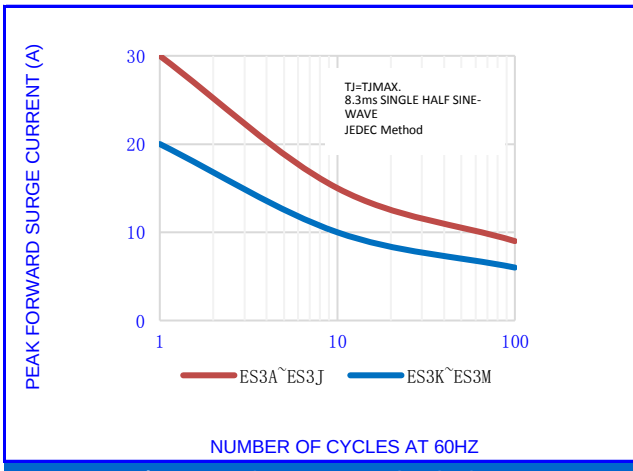

Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

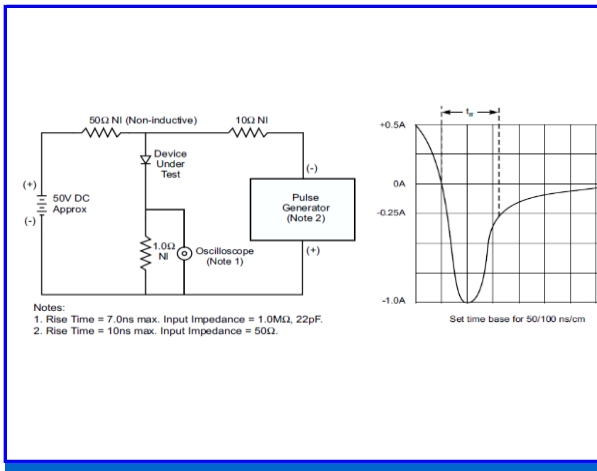

Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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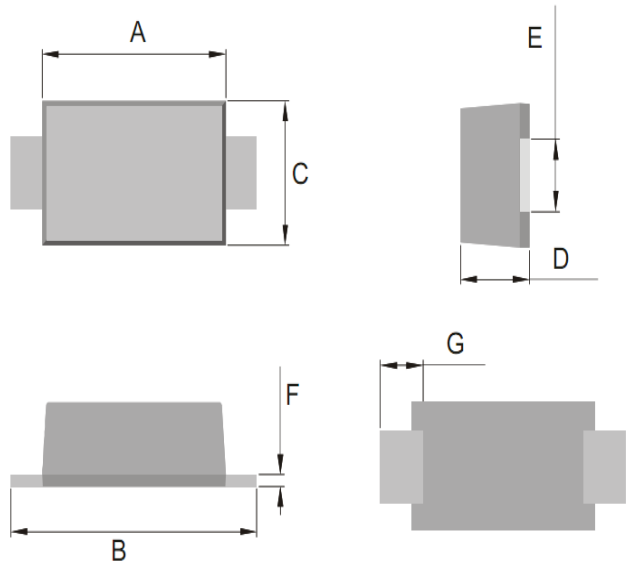
OUTLINE DRAWINGS

SOD-123FL

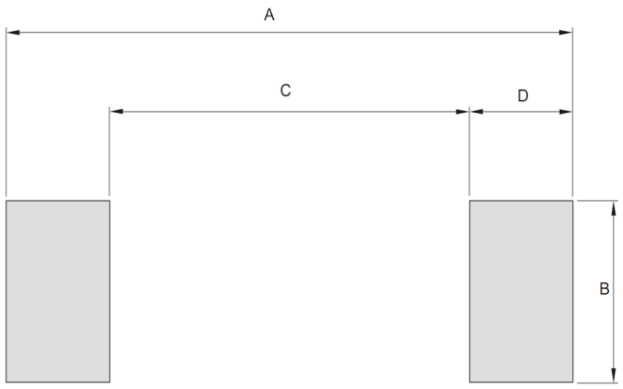


OUTLINE DIMENSIONS

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.650	-	2.900	0.106	-	0.115
B	3.500	-	3.700	0.137	-	0.145
C	1.700	-	1.900	0.067	-	0.075
D	0.900	-	1.100	0.035	-	0.043
E	0.900	-	1.100	0.035	-	0.043
F	0.100	-	0.250	0.004	-	0.100
G	0.450	-	0.750	0.017	-	0.030

RECOMMEDNED LAYOUT DRAWINGS

SOD-123FL



RECOMMEDNED MOUNTING PAD DIMENSIONS

Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	4.250	-	-	0.167	-
B	-	1.220	-	-	0.048	-
C	-	2.700	-	-	0.106	-
D	-	0.780	-	-	0.031	-

PACKING INFORMATION

SOD-123FL

Package Method	Reel Size (mm)	Quantity (pcs/reel)	Inner Box Size L×W×H(mm)	Quantity (pcs/Inner Box)	Carton Size L×W×H(mm)	Quantity (pcs/carton)
Tape Reel	Φ180	3000	185×185×90	21000	400×400×300	252000

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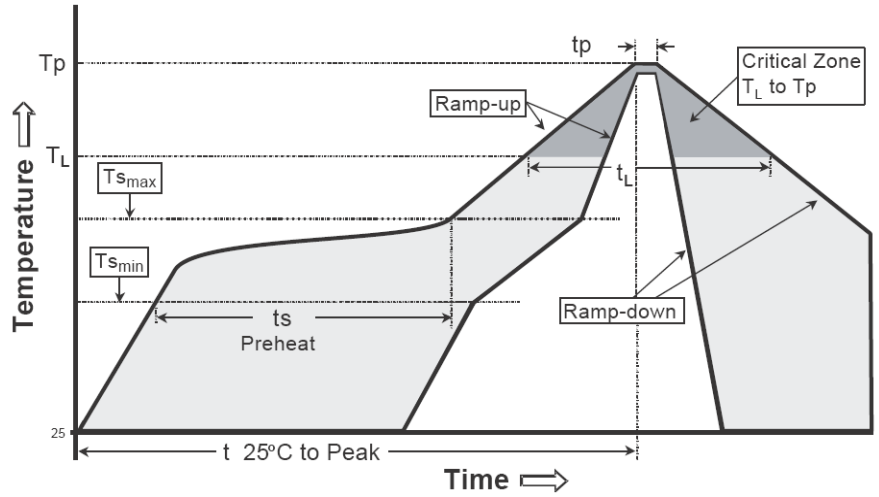
Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(TS min) −Temperature Max(TS max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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