

E1A THRU E1M

Super Fast Recovery Rectifiers



Voltage: 50~600 Volts

Current: 1 Amperes

Package: SOD-123FL

Features

- NH'S Super Fast Recovery Rectifiers Chip Technology
- Low Switching Loss For High Efficiency
- Low Leakage Current For High Reliability
- Super Fast Switching Speed

Mechanical Data

- **Case:** Molded With UL-94 Class V-0 Recognized, RoHS-Compliant
- **Polarity:** Look At The Diagram And Polarity On The Right
- **Terminals:** Tin Plated Leads, Solderable Per J-STD-002 And JESD22-B102

Typical Applications

- Switch Mode Power Supplies (SMPS)
- Fast Chargers
- LED Driver And Monitor Lighting
- Automotive Electronics And Charging Posts

Diagram:



Polarity:



Single Phase, Half Wave, 60Hz, Resistive Or Inductive Load. For Capacitive Load, Derate Current By 20%

Maximum Ratings (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol Mark	E1A EA	E1B EB	E1D ED	E1G EG	E1J EJ	E1K EK	E1M EM	Unit
Maximum Repetitive Peak Reverse Voltage		V_{RRM}	50	100	200	300	400	500	600	V
Maximum RMS Voltag		V_{RMS}	35	70	140	210	280	350	420	V
Maximum DC Blocking Voltage		V_{DC}	50	100	200	300	400	500	600	V
Maximum Average Forward Rectified Current		$I_{F(AV)}$	1							A
Peak Forward Surge Current	8.3ms Single Half Sine-wave Superimposed On Rate Load	I_{FSM}	30							A
Current Squared Time	$t < 8.3ms$	I^2t	3.7							A ² sec

Electrical Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	E1A EA	E1B EB	E1D ED	E1G EG	E1J EJ	E1K EK	E1M EM	Unit
Maximum Instantaneous Forward Voltage	$I_F = 1.0 \text{ A}$	V_F	0.95			1.30		1.70		V
Maximum DC Reverse Current at Rated DC Blocking Voltage	Ta=25°C, $V_R = V_{RRM}$ Ta=125°C, $V_R = V_{RRM} * 80\%$	I_{RRM}	5			200				uA
Typical Junction Capacitance	4 V, 1MHz	C_J	18			12		10		pF
Maximum Reverse Recovery Time	$I_F = 0.5A$, $I_R = 1.0A$, $IRR = 0.25A$	T_{rr}	35							nS

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	E1A EA	E1B EB	E1D ED	E1G EG	E1J EJ	E1K EK	E1M EM	Unit
Operating Junction Temperature Range		T _J	-55~150							℃
Storage Temperature Range		T _{STD}	-55~150							
Thermal Resistance Junction To Ambient With Steady-State	Still Air Environment With Ta=25℃	R _{θJA}	180.0							℃/W
Thermal Resistance Junction-Case With Steady-State	Device Mounted On 1 in2 FR-4 Board With 2oz. Copper	R _{θJC}	20.0							

Notes: 1. Pulse Test: 300 Us Pulse Width, 1% Duty Cycle

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Typical Characteristics Curves

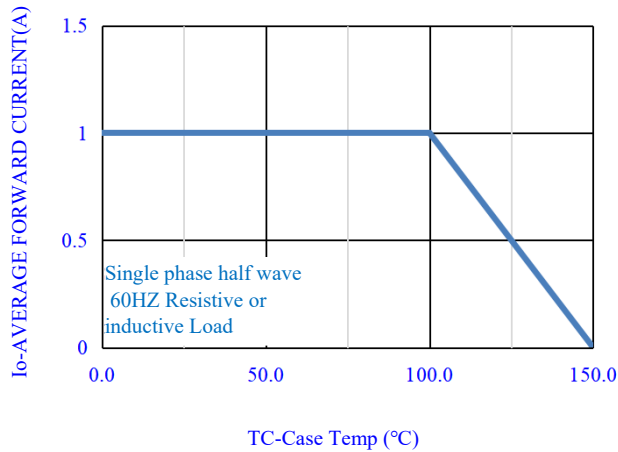


Fig.1-FORWARD CURRENT DERATING CURVE

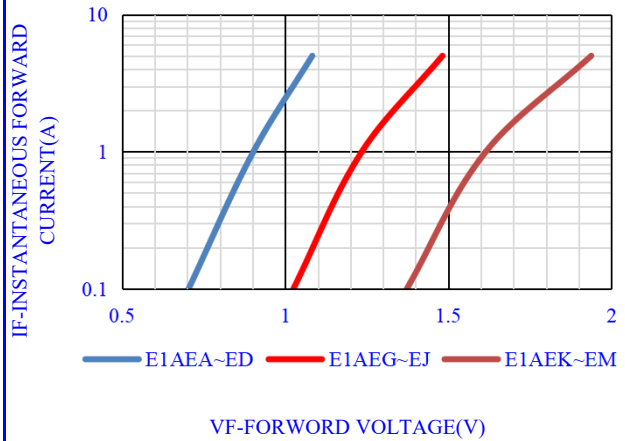


Fig.2- TYPICAL INSTANTANEOUS FORWARD

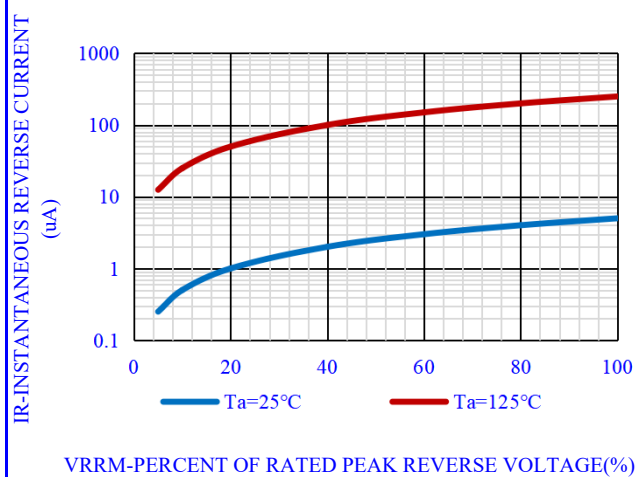


Fig.3- TYPICAL REVERSE CHARACTERISTICS

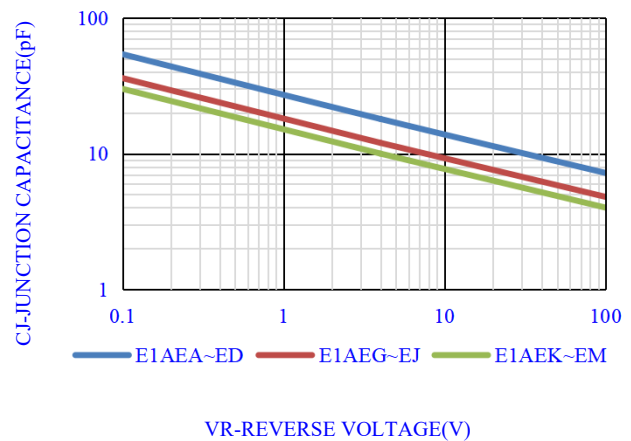


Fig.4- TYPICAL JUNCTION CAPACITANCE

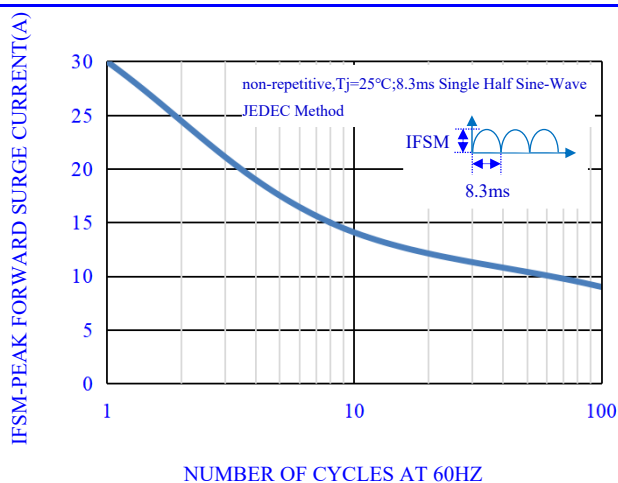


Fig.5-MAX. NON-REPETITIVE SURGE CURRENT

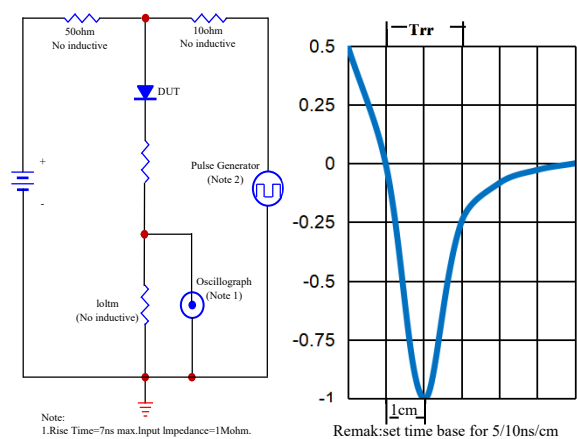


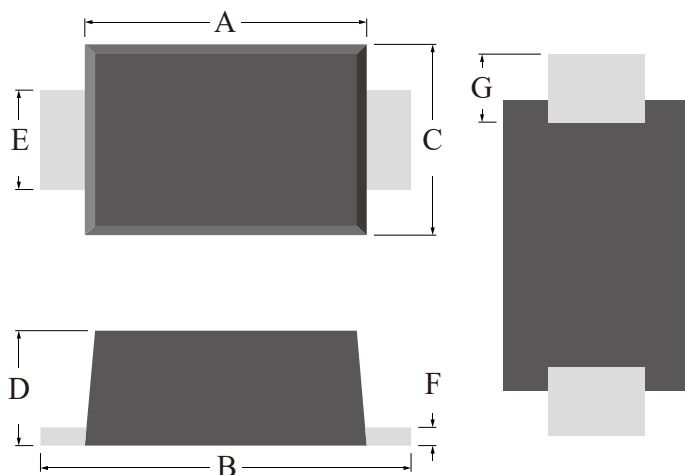
Fig.6-REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT

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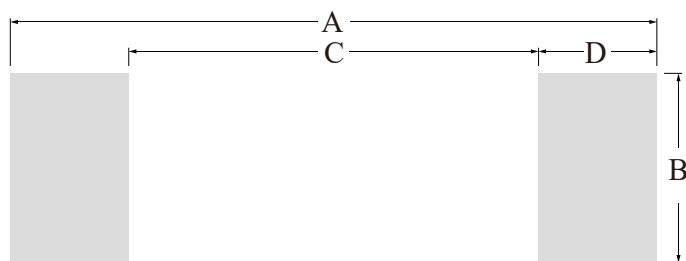
OUTLINE DRAWINGS



SOD-123FL

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.65	-	2.90	0.1043	-	0.1142
B	3.50	-	3.80	0.1378	-	0.1496
C	1.70	-	1.95	0.0669	-	0.0768
D	0.90	-	1.30	0.0354	-	0.0512
E	0.80	-	1.10	0.0315	-	0.0433
F	0.10	-	0.25	0.0039	-	0.0098
G	0.45	-	0.85	0.0177	-	0.0335

RECOMMENDED LAYOUT DRAWINGS



SOD-123FL

OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	-	4.26	-	-	0.1677	-
B	-	1.22	-	-	0.0480	-
C	-	2.70	-	-	0.1063	-
D	-	0.78	-	-	0.0307	-

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MARKING

MARKING INSTRUCTION



E1x=Make,x=A,B,D,G,J,K,M

White band denotes cathode

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
SOD-123FL	P1	0.0161	7" Reel	3000	15000	120000
SOD-123FL	P2	0.0161	7" Reel	3000	21000	252000

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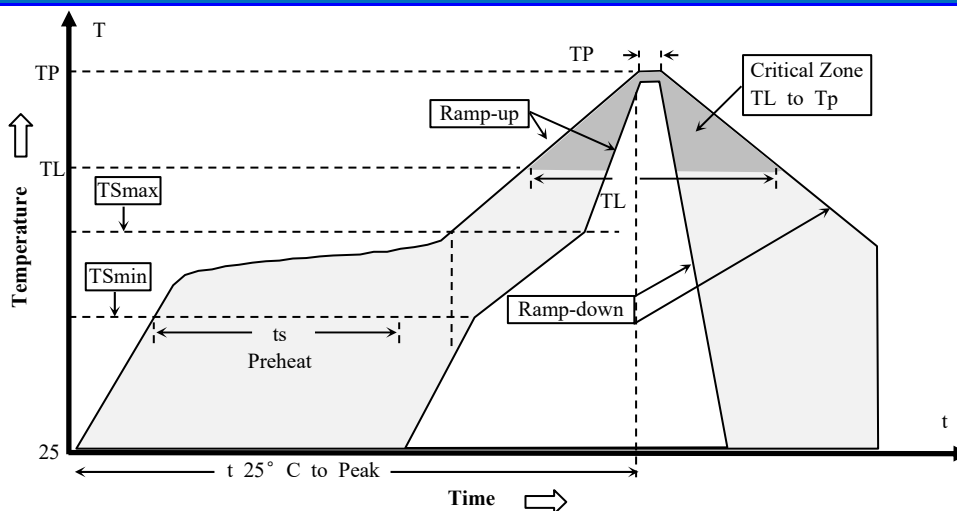
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Recommended wave soldering condition

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 (T _{smax} to T _p)	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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