

ES1AF THRU ES1JF

Surface Mount Superfast Recovery Rectifiers

Reverse Voltage - 50 to 600 V

Forward Current - 1 A

Features

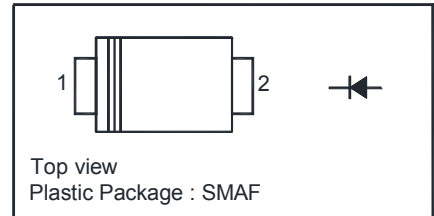
- Glass passivated chip junction
- For surface mounted applications
- Low profile package
- Superfast reverse recovery time

Mechanical Data

- **Case:** SMAF
- **Terminals:** Solder plated, solderable per MIL-STD-750, Method 2026

PINNING

PIN	DESCRIPTION
1	Cathode
2	Anode

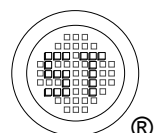


Absolute Maximum Ratings and Characteristics

Ratings at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate current by 20%.

Parameter	Symbols	ES1AF	ES1BF	ES1CF	ES1DF	ES1EF	ES1GF	ES1JF	Units	
Maximum Recurrent Peak Reverse Voltage	V_{RRM}	50	100	150	200	300	400	600	V	
Maximum RMS Voltage	V_{RMS}	35	70	105	140	210	280	420	V	
Maximum DC Blocking Voltage	V_{DC}	50	100	150	200	300	400	600	V	
Maximum Average Forward Rectified Current $T_C = 125^\circ\text{C}$	$I_{F(AV)}$	1							A	
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method)	I_{FSM}	30							A	
Maximum Forward Voltage at 1 A	V_F	1				1.25		1.65	V	
Maximum Reverse Current at $T_J = 25^\circ\text{C}$ at Rated DC Blocking Voltage at $T_J = 125^\circ\text{C}$	I_R	5					100			μA
Typical Junction Capacitance at $V_R = 4\text{ V}$, $f = 1\text{ MHz}$	C_J	15							pF	
Maximum Reverse Recovery Time at $I_F = 0.5\text{ A}$, $I_R = 1\text{ A}$, $I_{rr} = 0.25\text{ A}$	t_{rr}	35							ns	
Typical Thermal Resistance ¹⁾	$R_{\theta JA}$	85							$^\circ\text{C/W}$	
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150							$^\circ\text{C}$	

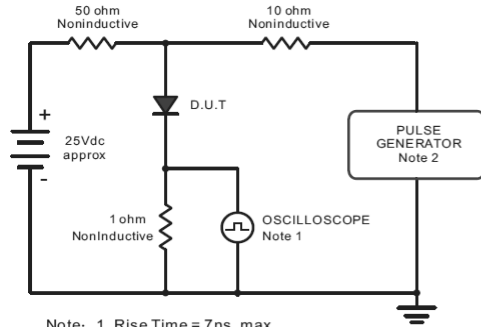
¹⁾ P.C.B. mounted with 2.0" X 2.0" (5 X 5 cm) copper pad areas.



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Electrical Characteristic Curves

Fig.1 Reverse Recovery Time Characteristic And Test Circuit Diagram



Note: 1. Rise Time = 7ns, max.
Input Impedance = 1megohm, 22pF.
2. Rise Time = 10ns, max.
Source Impedance = 50 ohms.

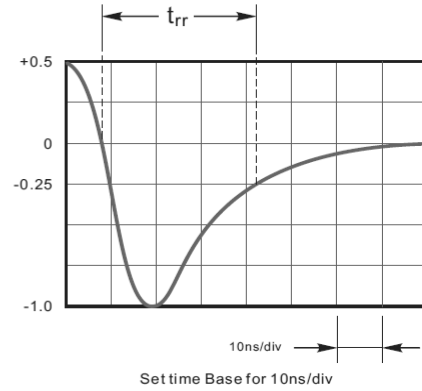


Fig.2 Maximum Average Forward Current Rating

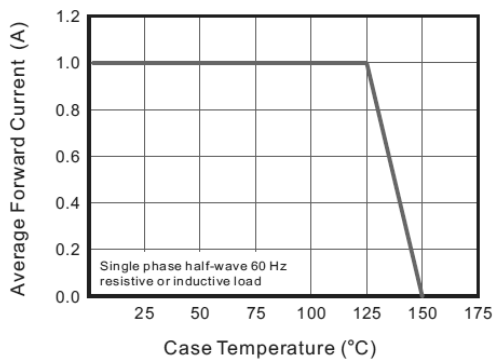


Fig.3 Typical Reverse Characteristics

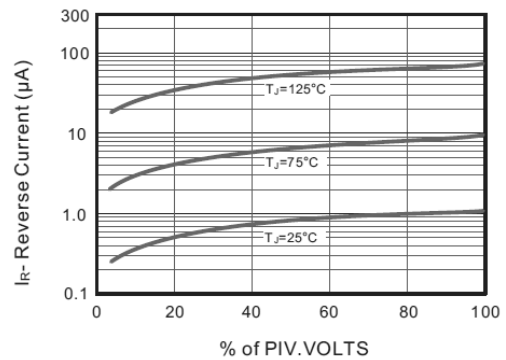


Fig.4 Typical Forward Characteristics

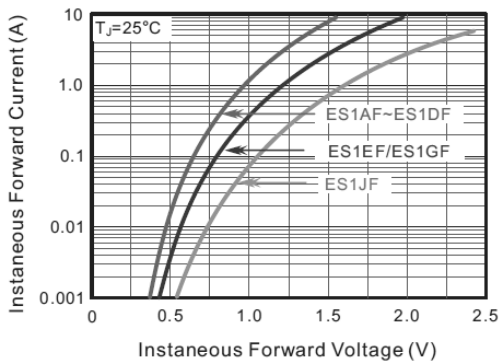


Fig.5 Typical Junction Capacitance

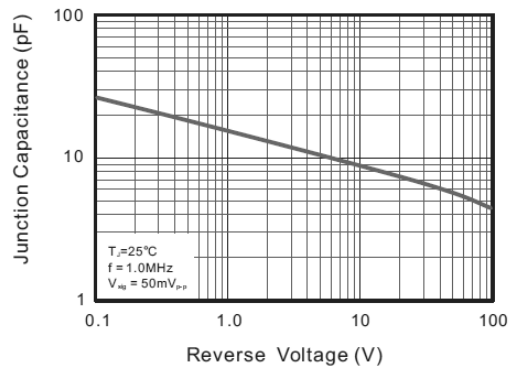


Fig.6 Maximum Non-Repetitive Peak Forward Surge Current

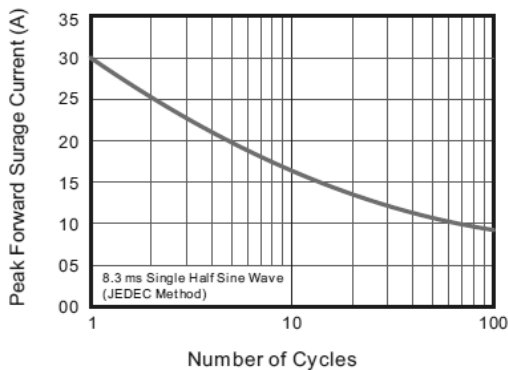
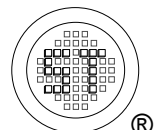
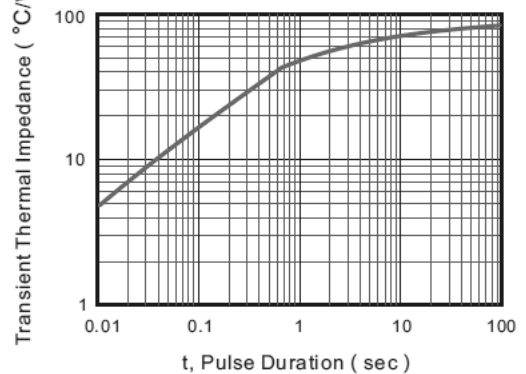


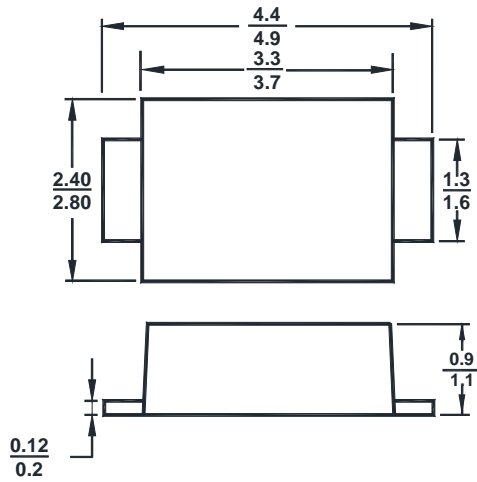
Fig.7- Typical Transient Thermal Impedance



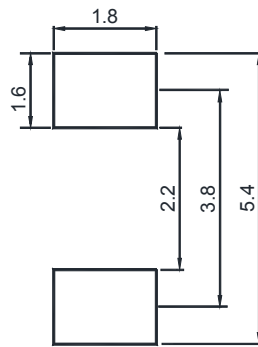
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Package Outline Dimensions (Units: mm)

SMAF



Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SMAF	12	4 ± 0.1	(0.157 ± 0.004)	178	7	3,000

Marking information

"ES1*" = Part No.

Type	Marking	Type	Marking	Type	Marking	Type	Marking
ES1AF	ES1A	ES1BF	ES1B	ES1CF	ES1C	ES1DF	ES1D
ES1EF	ES1E	ES1GF	ES1G	ES1JF	ES1J		

"III" = Cathode line

"YYWW" = Date Code Marking

"Y" = Year

"W" = Week

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