

## ES1A-ES1M SURFACE MOUNT SUPER FAST RECTIFIER


**SMA**

### Features

- Glass Passivated Die Construction
- Ideally Suited for Automatic Assembly
- Low Forward Overload Drop, High Efficiency
- Low Power Loss
- Super-Fast Recovery Time
- Plastic Case Material has UL Flammability Classification Rating 94V-O
- This is a Pb - Free Device
- All SMC parts are traceable to the wafer lot
- Additional testing can be offered upon request

### Circuit Diagram



### Mechanical Data

- Case: Low Profile Molded Plastic
- Terminals: Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity: Cathode Band or Cathode Notch
- Marking: Type Number
- Weight: 0.06 grams(approx)

### Maximum Ratings and Electrical Characteristics @ $T_A=25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	ES1A	ES1B	ES1C	ES1D	ES1E	ES1G	ES1J	ES1K	ES1M	Units
Peak Repetitive Reverse Voltage	$V_{RRM}$	50	100	150	200	300	400	600	800	1000	V
RMS Reverse Voltage	$V_{R(RMS)}$	34	70	105	140	210	280	420	560	700	
Average Rectified Output Current @ $T_L = 120^\circ\text{C}$	$I_o$										A
Peak Forward Surge Current 8.3ms Single half sine-wave superimposed on rated load (JEDEC Method)	$I_{FSM}$										A
Forward voltage @ $I_F = 1.0\text{A}$	$V_F$					0.95		1.3	1.7		V
Peak Reverse Current @ $T_A = 25^\circ\text{C}$ At Rated DC Blocking Voltage @ $T_A = 100^\circ\text{C}$	$I_R$						5	50			$\mu\text{A}$
Typical junction capacitance (Note 1)	$C_J$						45.0				pF
Reverse Recovery Time (Note 2)	$T_{rr}$					35			75		ns
Electro-Static Discharge	$ESD$						2000				V
Typical thermal resistance (Note 3)	$R_{\theta JL}$					35					K/W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$						-55 to +150				°C

**Note:** 1. Measured at 1.0 MHZ and applied reverse voltage of 4.0 V<sub>DC</sub>

2. Measured with  $I_F=0.5\text{A}$ ,  $I_R=1.0\text{A}$ ,  $I_r=0.25\text{A}$

3. Mounted on P.C. Board with 8.0mm<sup>2</sup>lead area

## Ratings and Characteristics Curves

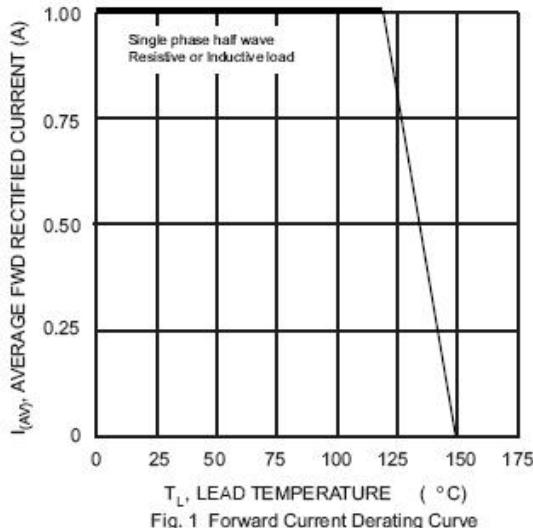


Fig. 1 Forward Current Derating Curve

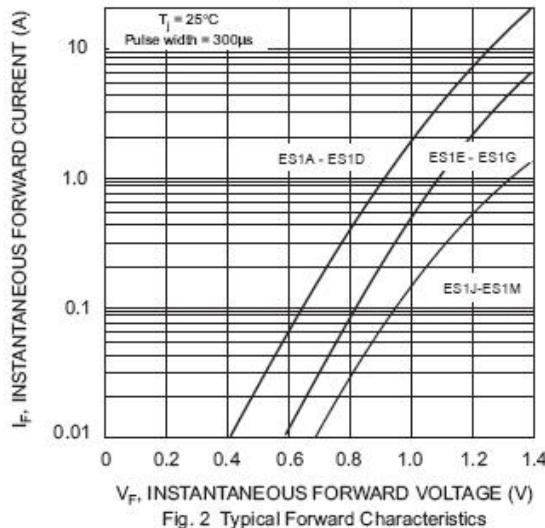


Fig. 2 Typical Forward Characteristics

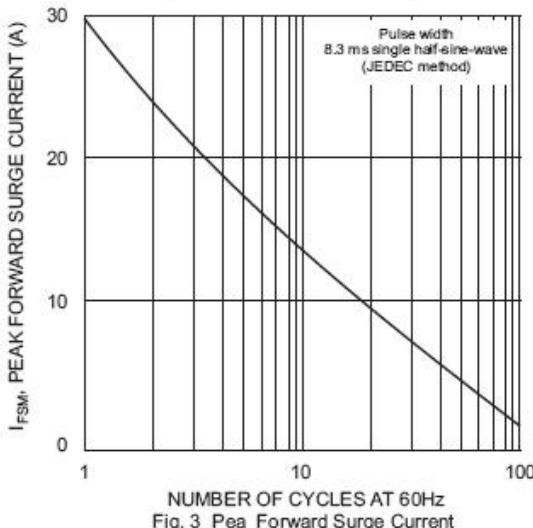


Fig. 3 Peak Forward Surge Current

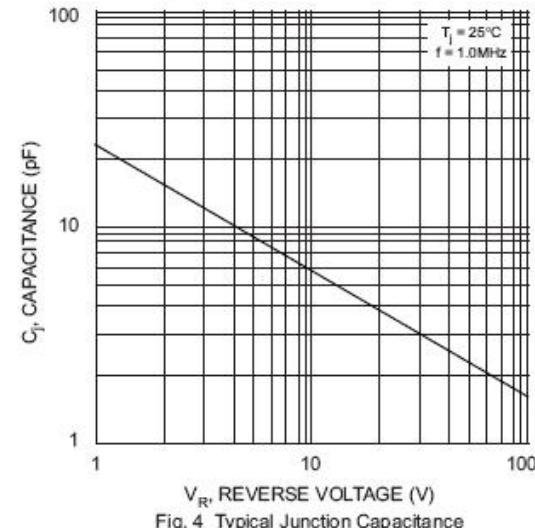
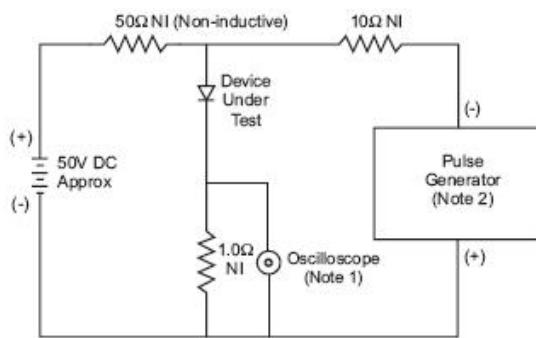


Fig. 4 Typical Junction Capacitance



Notes:

1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.

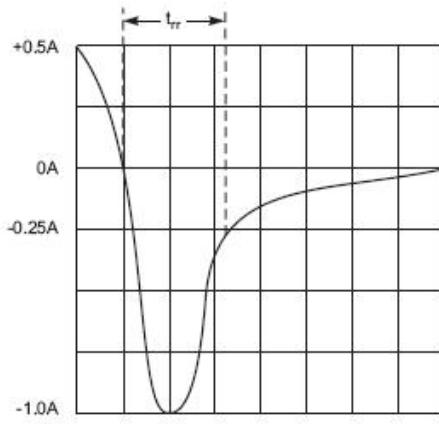
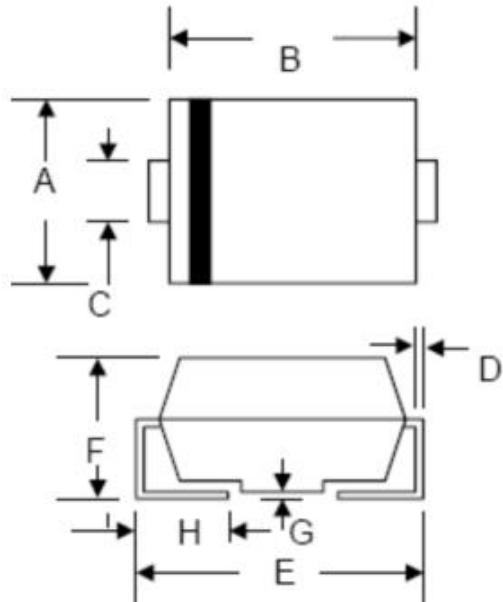


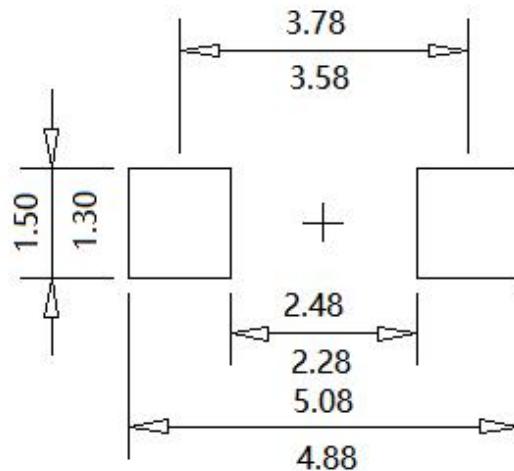
Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

### Mechanical Dimensions SMA



SYMBOL	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.40	2.84	0.094	0.112
B	3.99	4.75	0.157	0.187
C	1.05	1.70	0.041	0.067
D	0.15	0.51	0.006	0.020
E	4.80	5.66	0.189	0.223
F	1.90	2.95	0.075	0.116
G	0.05	0.203	0.002	0.008
H	0.76	1.52	0.030	0.600

### Suggested PCB printfoot layout SMA (MM)



### Ordering Information

Device	Package	Shipping
ES1A-ES1M	SMA (Pb-Free)	5000pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

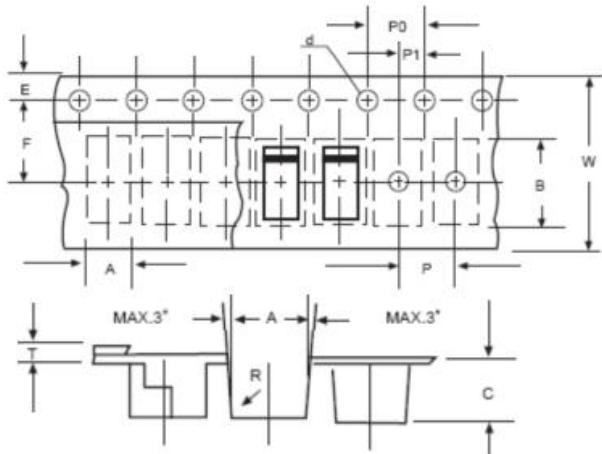
### Marking Diagram



Where XXXXX is YYWWL

ES	= Device Type
1	= Forward Current (1A)
A	= Reverse Voltage (50V)
YY	= Year
WW	= Week
L	= Lot Number

**Cautions:** Molding resin  
Epoxy resin UL:94V-0

**Carrier Tape Specification SMA**


SYMBOL	Millimeters	
	Min.	Max.
A	2.97	3.17
B	5.70	5.90
C	2.32	2.52
d	1.40	1.60
E	1.40	1.60
F	5.60	5.70
P	3.90	4.10
P0	3.90	4.10
P1	1.90	2.10
T	0.25	0.35
W	11.80	12.20

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