

## Surface Mount Super Fast Recovery Rectifier

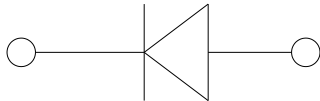


### Features

- 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

### Typical Applications

For use in high frequency rectification of power supplies, inverters, converters, and freewheeling diodes for consumer, and telecommunication.



### Mechanical Data

- **Package:** SMAF  
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<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                                                                     | SYMBOL           | UNIT             | E1AF       | E1BF | E1CF | E1DF | E1FF | E1GF | E1HF | E1JF | E1KF |
|-----------------------------------------------------------------------------------------------|------------------|------------------|------------|------|------|------|------|------|------|------|------|
| Device marking code                                                                           |                  |                  | E1AF       | E1BF | E1CF | E1DF | E1FF | E1GF | E1HF | E1JF | E1KF |
| Maximum Repetitive Peak Reverse Voltage                                                       | V <sub>RRM</sub> | V                | 50         | 100  | 150  | 200  | 300  | 400  | 500  | 600  | 800  |
| Maximum RMS Voltage                                                                           | V <sub>RMS</sub> | V                | 35         | 70   | 105  | 140  | 210  | 280  | 350  | 420  | 560  |
| Maximum DC blocking Voltage                                                                   | V <sub>DC</sub>  | V                | 50         | 100  | 150  | 200  | 300  | 400  | 500  | 600  | 800  |
| Average rectified output current<br>@60Hz sine wave, resistance load, TL (Fig.1)              | I <sub>O</sub>   | A                | 1.0        |      |      |      |      |      |      |      |      |
| Forward Surge Current (Non-repetitive)<br>@60Hz Half-sine wave, 1 cycle, T <sub>j</sub> =25°C | I <sub>FSM</sub> | A                | 30         |      |      |      |      |      |      |      |      |
| Forward Surge Current (Non-repetitive)<br>@1ms, square wave, 1 cycle, T <sub>j</sub> =25°C    |                  |                  | 60         |      |      |      |      |      |      |      |      |
| Current squared time<br>@1ms≤t≤8.3ms T <sub>j</sub> =25°C                                     | I <sup>2</sup> t | A <sup>2</sup> s | 3.735      |      |      |      |      |      |      |      |      |
| Storage temperature                                                                           | T <sub>stg</sub> | °C               | -55 ~ +150 |      |      |      |      |      |      |      |      |
| Junction temperature                                                                          | T <sub>j</sub>   | °C               | -55 ~ +150 |      |      |      |      |      |      |      |      |



## E1AF THRU E1KF

### ■ Electrical Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                                               | SYMBOL          | UNIT | TEST CONDITIONS                                                    | E1AF | E1BF | E1CF | E1DF | E1FF | E1GF | E1HF | E1JF | E1KF |
|---------------------------------------------------------|-----------------|------|--------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|
| Maximum instantaneous forward voltage                   | V <sub>F</sub>  | V    | I <sub>FM</sub> =1.0A                                              | 1.0  |      |      |      | 1.3  |      | 1.7  |      | 1.85 |
| Maximum reverse recovery time                           | t <sub>rr</sub> | ns   | I <sub>F</sub> =0.5A, I <sub>R</sub> =1.0A, I <sub>rr</sub> =0.25A | 35   |      |      |      |      |      |      |      |      |
| Maximum DC reverse current at rated DC blocking voltage | I <sub>R</sub>  | μA   | T <sub>j</sub> =25°C                                               | 5.0  |      |      |      |      |      |      |      |      |
|                                                         |                 |      | T <sub>j</sub> =125°C                                              | 100  |      |      |      |      |      |      |      |      |
| Typical junction capacitance                            | C <sub>j</sub>  | pF   | Measured at 1MHz and Applied Reverse Voltage of 4.0 V.D.C          | 18   |      |      |      | 12   |      | 8    |      | 10   |

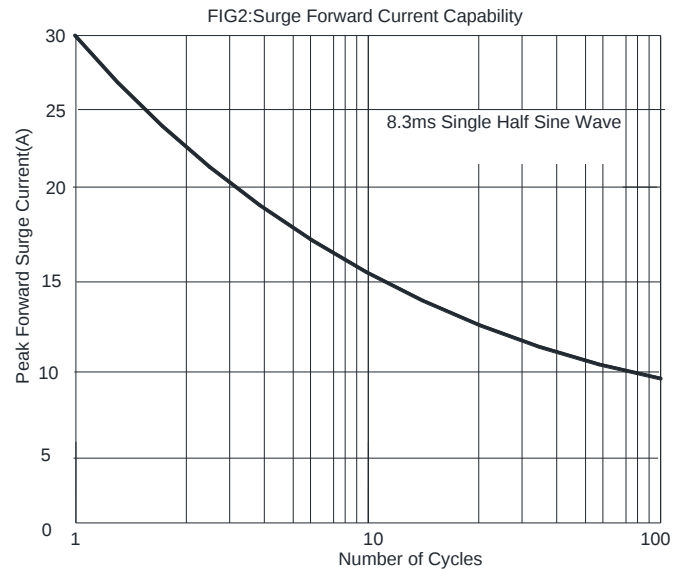
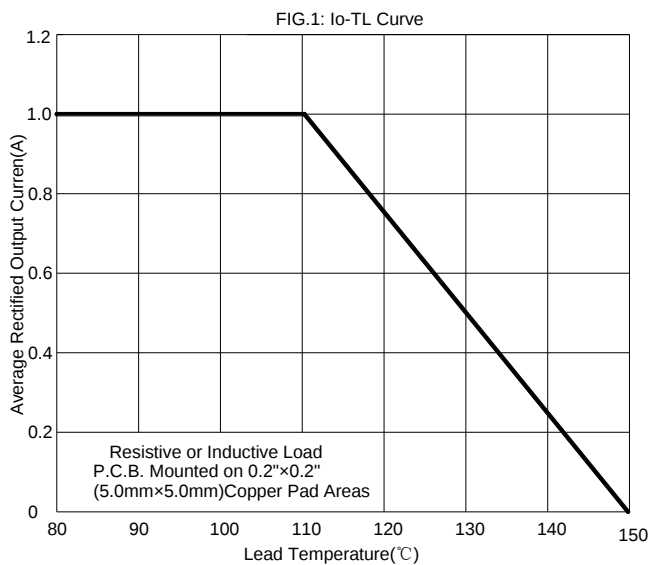
### ■ Thermal Characteristics (T<sub>a</sub>=25°C Unless otherwise specified)

| PARAMETER                  | SYMBOL                           | UNIT | E1AF | E1BF | E1CF | E1DF | E1FF | E1GF | E1HF | E1JF | E1KF |
|----------------------------|----------------------------------|------|------|------|------|------|------|------|------|------|------|
| Typical Thermal resistance | R <sub>θJ-A</sub> <sup>(1)</sup> | °C/W | 60   |      |      |      |      |      |      |      |      |
|                            | R <sub>θJ-L</sub> <sup>(1)</sup> |      | 20   |      |      |      |      |      |      |      |      |
|                            | R <sub>θJ-C</sub> <sup>(1)</sup> |      | 18   |      |      |      |      |      |      |      |      |

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)





## E1AF THRU E1KF

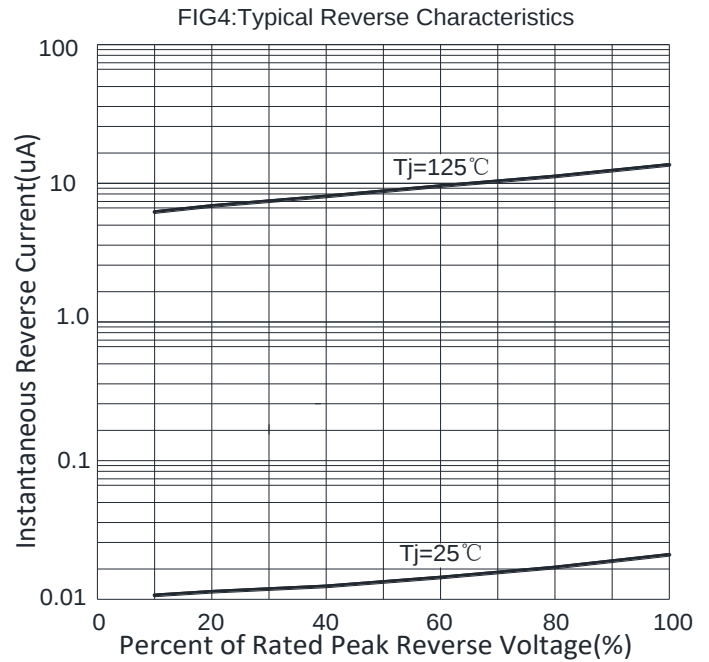
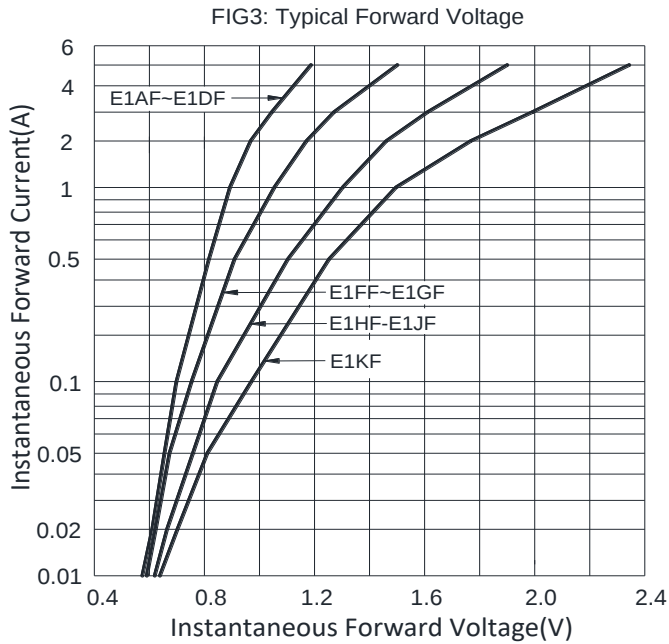
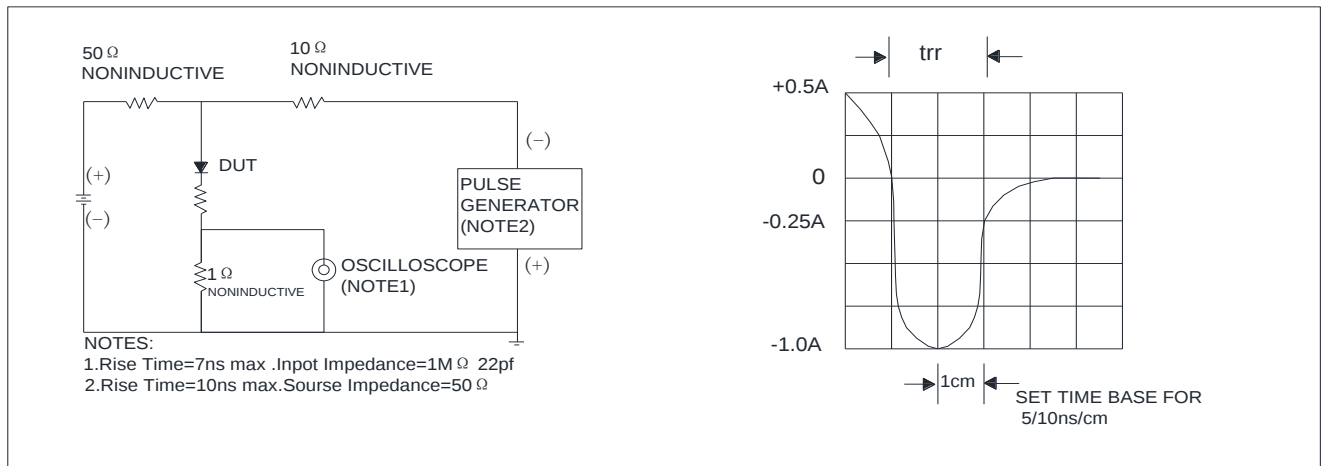


FIG.5: Diagram of circuit and Testing wave form of reverse recovery time



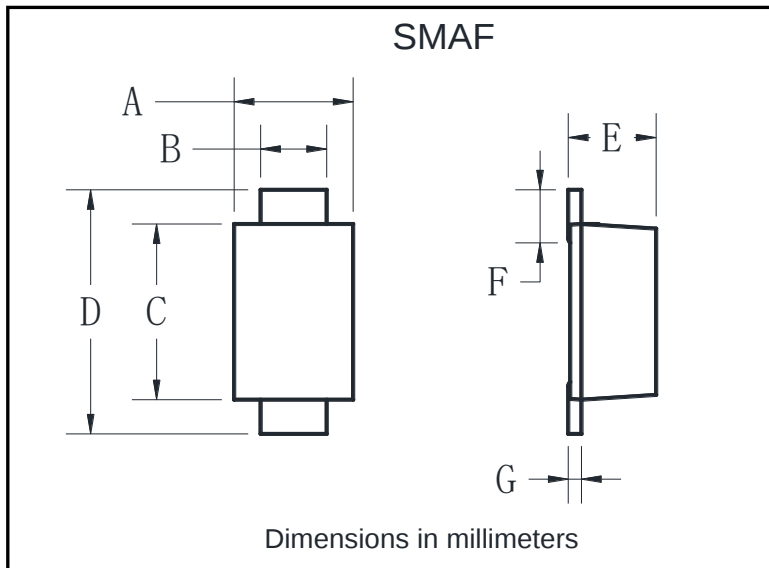
### ■ Ordering Information (Example)

| PREFERRED P/N | PACKING CODE | UNIT WEIGHT(g)    | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|--------------|-------------------|----------------------|-------------------------|----------------------------|---------------|
| E1AF-E1KF     | F1           | Approximate 0.034 | 3000                 | 24000                   | 96000                      | 7" reel       |
| E1AF-E1KF     | F2           | Approximate 0.034 | 10000                | /                       | 160000                     | 13" reel      |
| E1AF-E1KF     | F3           | Approximate 0.034 | 10000                | /                       | 120000                     | 13" reel      |
| E1AF-E1KF     | F4           | Approximate 0.034 | 7500                 | /                       | 120000                     | 13" reel      |



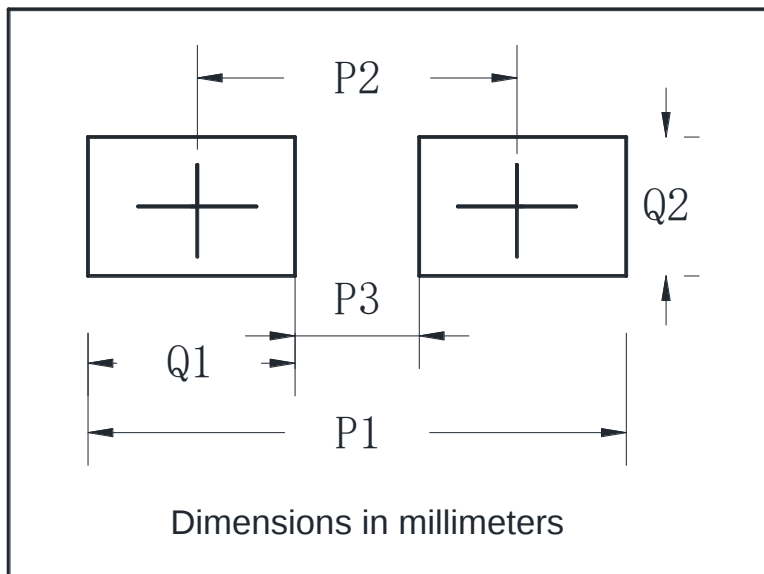
## E1AF THRU E1KF

### ■ Outline Dimensions



| SMAF |      |      |
|------|------|------|
| Dim  | Min  | Max  |
| A    | 2.40 | 2.80 |
| B    | 1.35 | 1.45 |
| C    | 3.40 | 3.60 |
| D    | 4.40 | 4.80 |
| E    | 1.05 | 1.25 |
| F    | 0.50 | 1.00 |
| G    | 0.15 | 0.25 |

### ■ Suggested pad layout



| SMAF |             |
|------|-------------|
| Dim  | Millimeters |
| P1   | 6.50        |
| P2   | 4.00        |
| P3   | 1.50        |
| Q1   | 2.50        |
| Q2   | 1.70        |



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