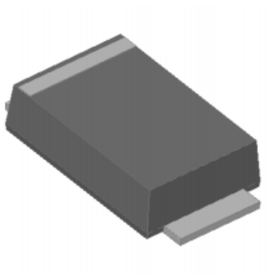
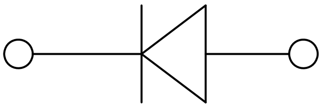
# *Surface Mount Super Fast Recovery Rectifier*
# *E1AF Through E1KF SMAF*





## ■ 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 (Ta=25℃ 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 |
| Repetitive peak reverse voltage | $V_{RRM}$ | V | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 | 800 |
| Average rectified output current @60Hz sine wave, resistance load, TL (Fig.1) | $I_O$ | A | 1.0 | | | | | | | | |
| Surge(non-repetitive)forward current @ 60Hz half-sine wave,1 cycle, Ta=25℃ | $I_{FSM}$ | A | 30 | | | | | | | | |
| Storage temperature | $T_{stg}$ | ℃ | -55~+150 | | | | | | | | |
| Junction temperature | $T_j$ | ℃ | -55~+150 | | | | | | | | |

## ■ ELECTRICAL CHARACTERISTICS (Ta=25℃ Unless otherwise specified）

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | E1AF | E1BF | E1CF | E1DF | E1FF | E1GF | E1HF | E1JF | E1KF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum instantaneous forward voltage drop per diode | $V_F$ | V | $I_{FM}$=1.0A | 1.0 | | | | 1.3 | | 1.7 | | 1.85 |
| Maximum reverse recovery time | $t_{rr}$ | ns | $I_F$=0.5A,$I_R$=1.0A, $I_{rr}$=0.25A | 35 | | | | | | | | |
| Maximum DC reverse current at rated DC blocking voltage per diode @ VRM=VRRM | $I_{RRM}$ | μA | $T_a$ =25℃ | 5.0 | | | | | | | | |
| | | | $T_a$ =125℃ | 100 | | | | | | | | |

## ■ THERMAL CHARACTERISTICS (Ta=25℃ Unless otherwise specified）

| PARAMETER | SYMBOL | UNIT | E1AF | E1BF | E1CF | E1DF | E1FF | E1GF | E1HF | E1JF | E1KF |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thermal resistance | $R_{\theta J\text{-}A}$ | ℃/W | $60^{1)}$ | | | | | | | | |
| | $R_{\theta J\text{-}L}$ | | $20^{1)}$ | | | | | | | | |

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)

FIG.1: Io-TL Curve

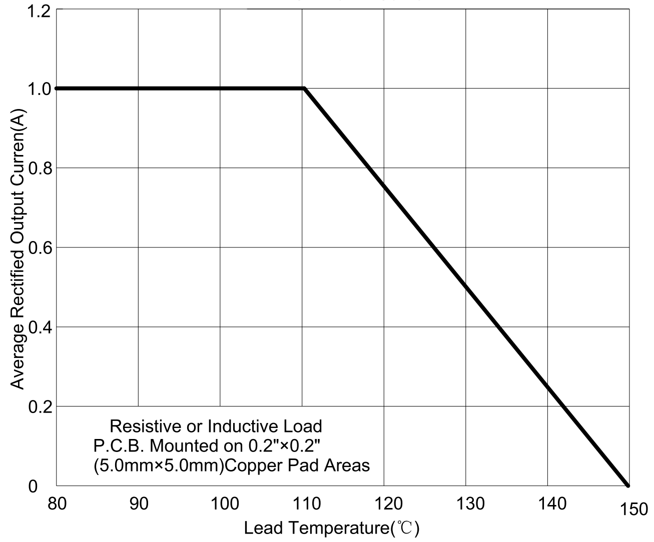


FIG2:Surge Forward Current Capability

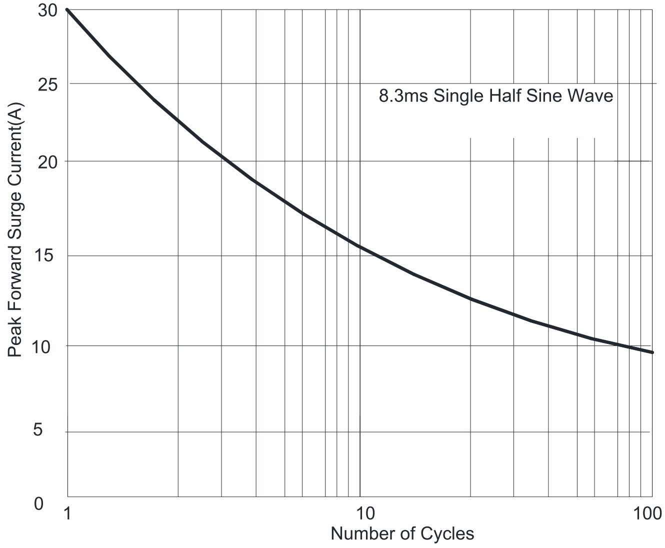


FIG3: Forward Voltage

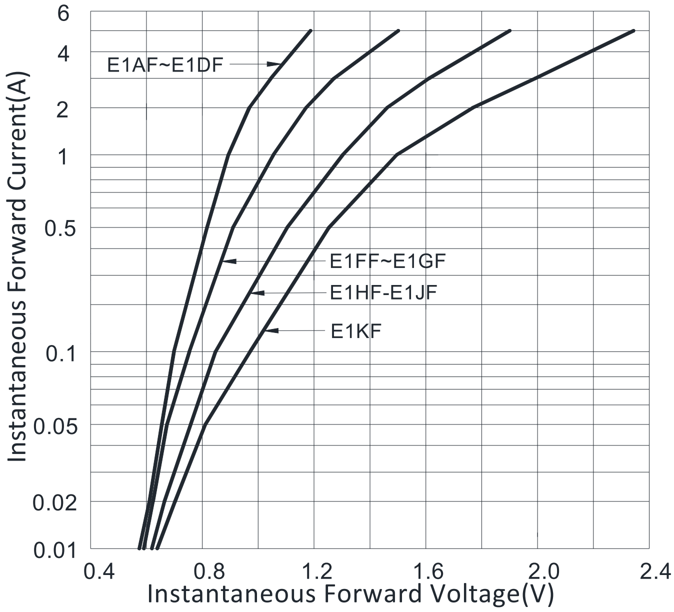


FIG4:Typical Reverse Characteristics

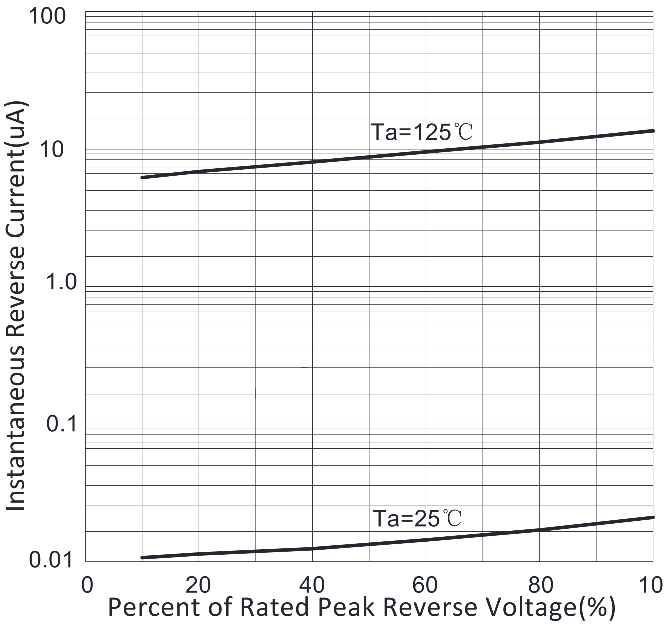
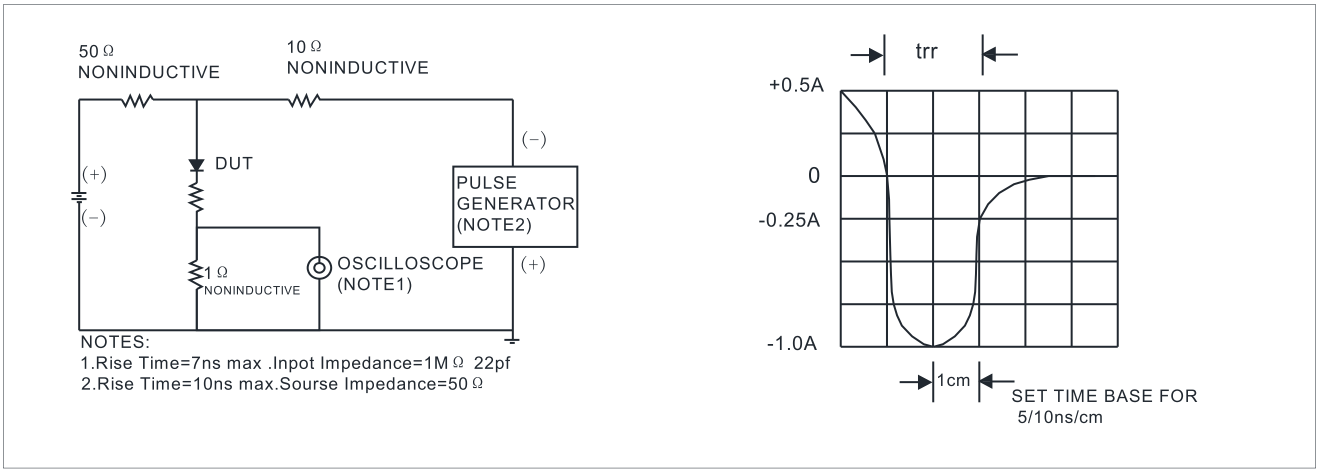


**FIG.5: Diagram of circuit and Testing wave form of reverse recovery time**



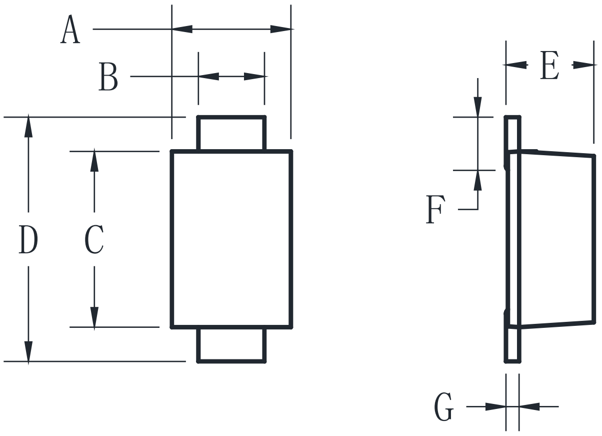
NOTES:
1.Rise Time=7ns max .Inpot Impedance=1MΩ 22pf
2.Rise Time=10ns max.Sourse Impedance=50Ω

## PACKAGING INFORMATION

| PREFERED P/N | PACKING CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| E1AF-E1KF | T07 | Approximate 0.034 | 3000 | 12000 | 96000 | 7” reel |
| E1AF-E1KF | Omit for Standard | Approximate 0.034 | 10000 | 20000 | 160000 | 13” reel |

## OUTLINE DIMENSIONS

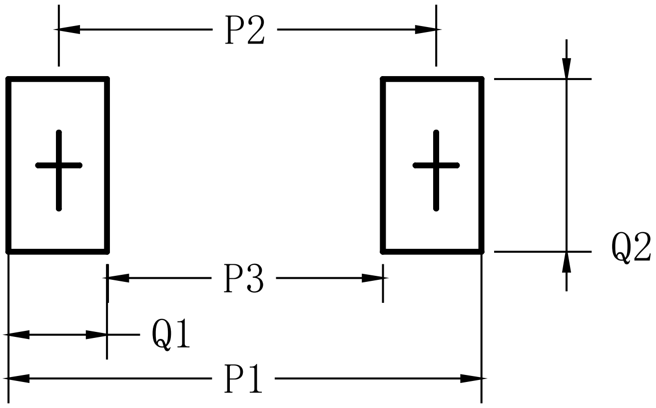
SMAF



Dimensions in millimeters

| 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 | 0.22 |

## SUGGESTED PAD LAYOUT



Dimensions in millimeters

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