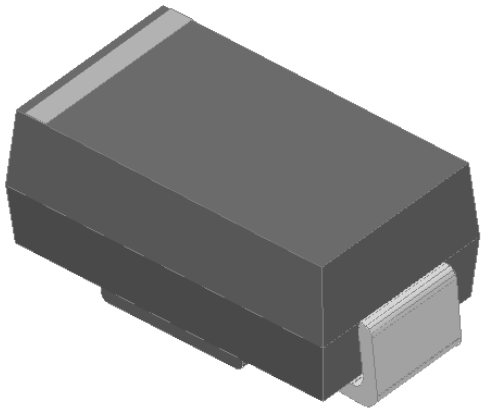
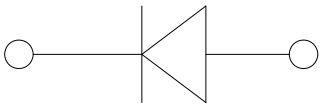
# Surface Mount High Efficient Rectifier





## 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**: DO-214AC (SMA)
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

## ■Maximum Ratings ($T_a$=25℃ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | US1A | US1B | US1D | US1F | US1G | US1J | US1K | US1M |
|---|---|---|---|---|---|---|---|---|---|---|
| Device marking code | | | US1A | US1B | US1D | US1F | US1G | US1J | US1K | US1M |
| Repetitive peak reverse voltage | $V_{RRM}$ | V | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1000 |
| 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, Tj =25℃ | $I_{FSM}$ | A | 30 | | | | | | | |
| Current squared time @1ms≤t≤8.3ms Tj=25℃, Rating of per diode | $I^2t$ | $A^2S$ | 3.7 | | | | | | | |
| Storage temperature | $T_{stg}$ | ℃ | -55 ~ +150 | | | | | | | |
| Junction temperature | $T_j$ | ℃ | -55 ~ +150 | | | | | | | |

## ■Electrical Characteristics ($T_a$=25℃ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | TEST CONDITIONS | US1A | US1B | US1D | US1F | US1G | US1J | US1K | US1M |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum instantaneous forward voltage drop per diode | $V_F$ | V | $I_{FM}$=1.0A | 1.0 | | | 1.3 | | 1.7 | | |
| Maximum reverse recovery time | $T_{RR}$ | ns | $I_F$=0.5A,$I_R$=1.0A, $I_{rr}$=0.25A | 50 | | | | | 75 | | |
| Maximum DC reverse current at rated DC blocking voltage per diode @ VRM=VRRM | $I_{RRM}$ | μA | Ta =25℃ | 5 | | | | | | | |
| | | | Ta=125℃ | 100 | | | | | | | |

## ■Thermal Characteristics ($T_a$=25℃ Unless otherwise specified)

| PARAMETER | SYMBOL | UNIT | US1A | US1B | US1D | US1F | US1G | US1J | US1K | US1M |
|---|---|---|---|---|---|---|---|---|---|---|
| Typical Thermal Resistance | $R_{\theta J-A}$ | ℃/W | 75[1)] | | | | | | | |
| | $R_{\theta J-L}$ | ℃/W | 23[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 Cure

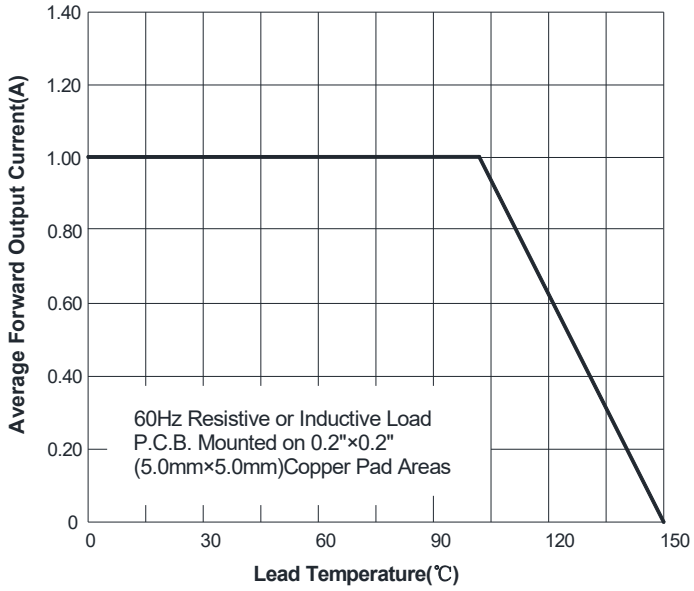



FIG.2: Forward Surge Current Capability

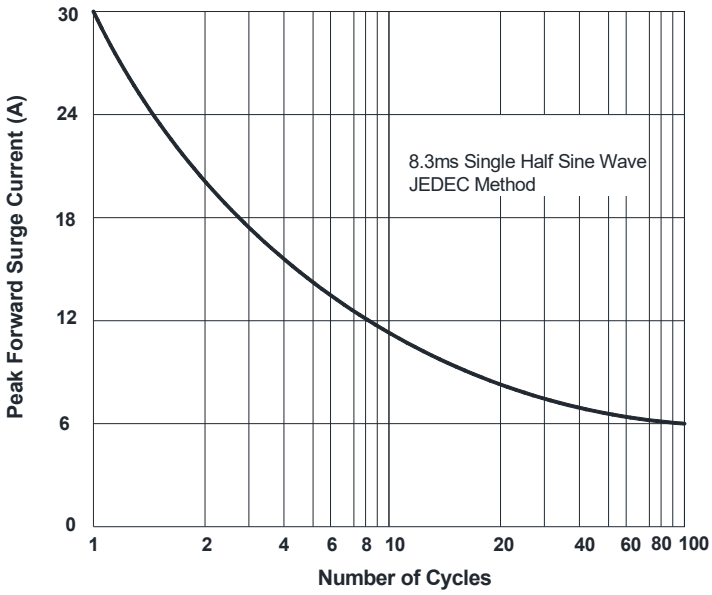



FIG.3: Typical Forward Characteristics

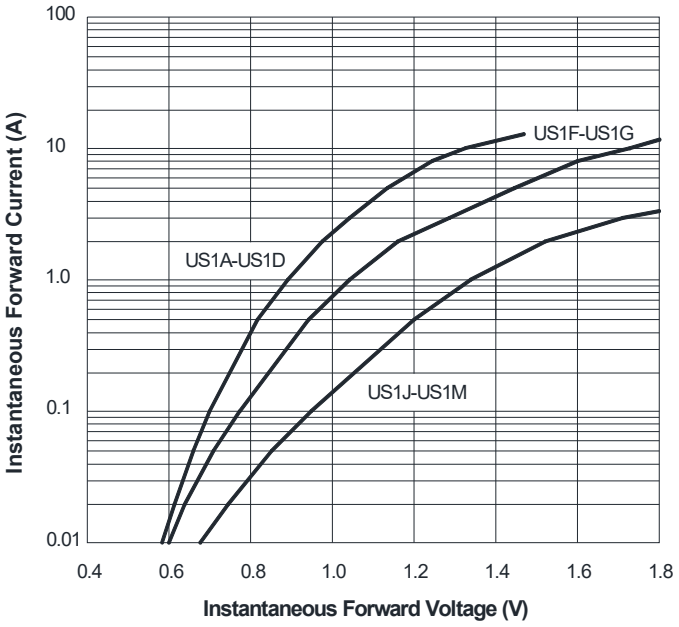



FIG.4: Typical Reverse Characteristics

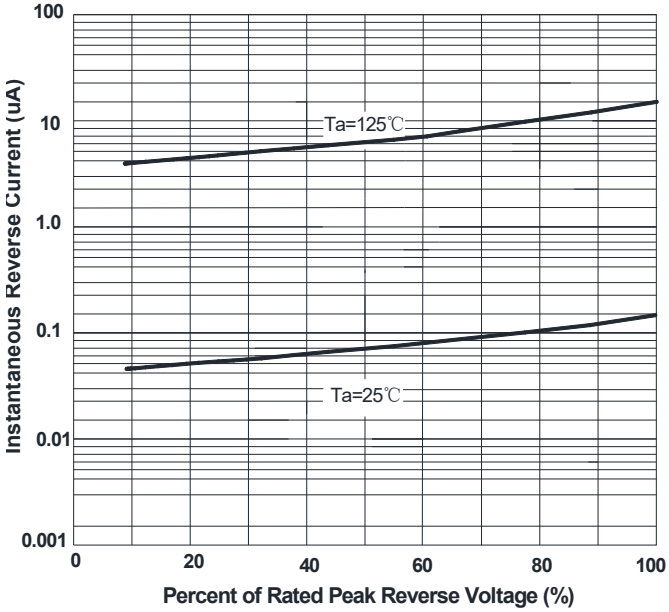
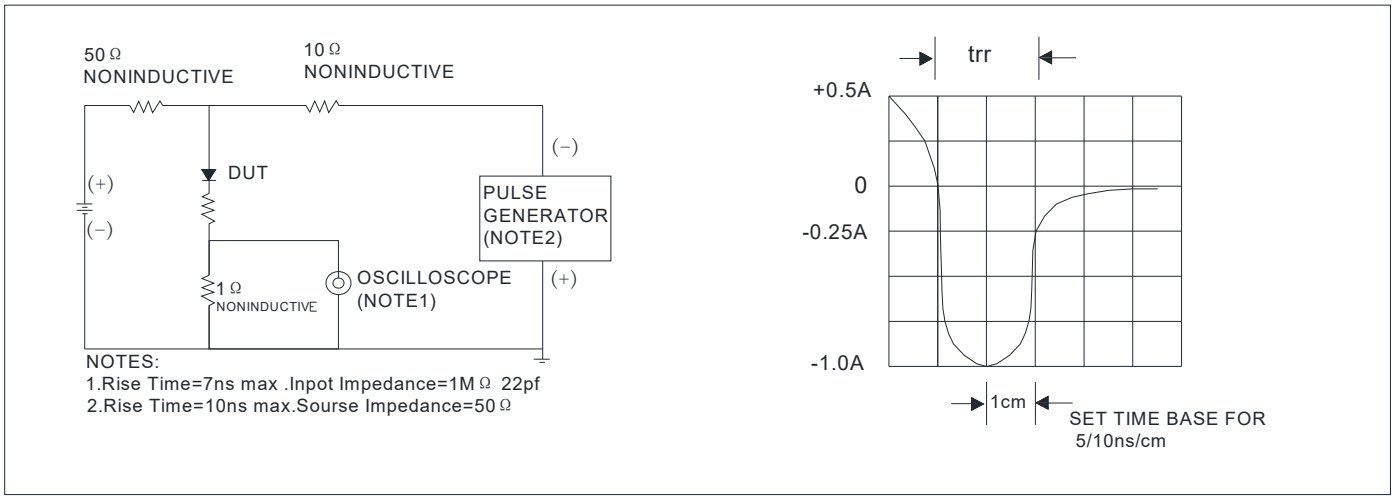


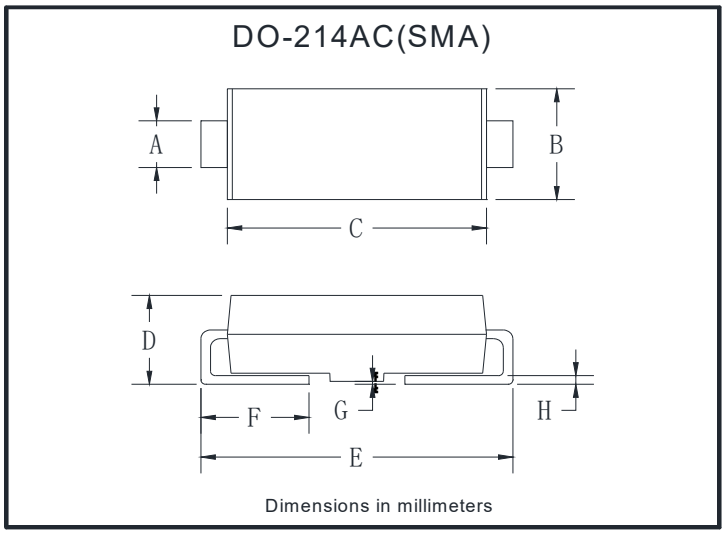
**FIG.5: Diagram of circuit and Testing wave form of reverse recovery time**




## ■Ordering Information (Example)

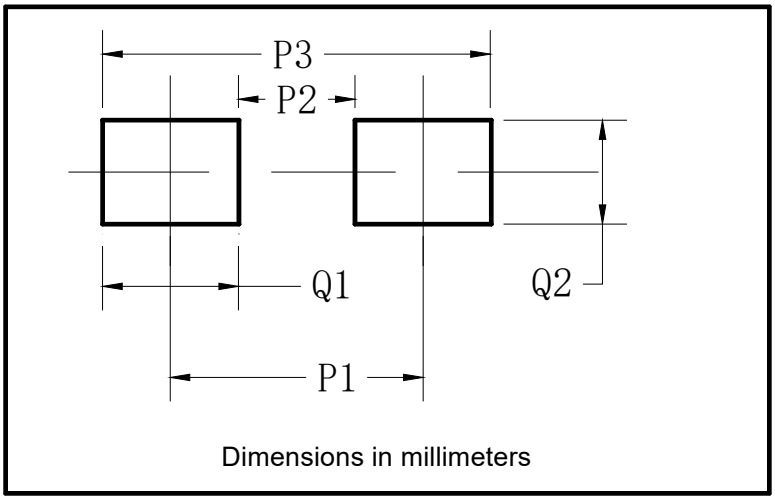
| PREFERED P/N | PACKAGE CODE | UNIT WEIGHT(g) | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---|---|---|---|---|---|---|
| US1A-US1M | F1 | Approximate 0.059 | 5000 | 10000 | 80000 | 13” reel |
| US1A-US1M | F2 | Approximate 0.059 | 7500 | 15000 | 120000 | 13” reel |
| US1A-US1M | F3 | Approximate 0.059 | 7500 | 15000 | 60000 | 13” reel |
| US1A-US1M | F4 | Approximate 0.059 | 1800 | 7200 | 57600 | 7” reel |
| US1A-US1M | F5 | Approximate 0.059 | 2000 | 8000 | 64000 | 7” reel |
| US1A-US1M | F6 | Approximate 0.059 | 5000 | 10000 | 100000 | 13” reel |

## ■ Outline Dimensions




| DO-214AC(SMA) | | |
|---|---|---|
| Dim | Min | Max |
| A | 1.25 | 1.58 |
| B | 2.40 | 2.83 |
| C | 4.25 | 4.75 |
| D | 1.90 | 2.30 |
| E | 4.93 | 5.28 |
| F | 0.76 | 1.41 |
| G | 0.08 | 0.20 |
| H | 0.15 | 0.31 |

## ■ Suggested Pad Layout




| DO-214AC(SMA) | |
|---|---|
| **Dim** | **Millimeters** |
| P1 | 4.00 |
| P2 | 1.50 |
| P3 | 6.50 |
| Q1 | 2.50 |
| Q2 | 1.70 |

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