



### Features

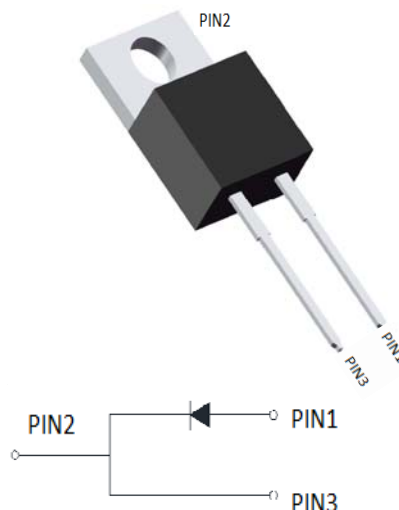
- High frequency operation
- High surge forward current capability
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Solder dip 275 °C max. 7 s, per JESD 22-B106

### Typical Applications

Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

### Mechanical Data

- **Package:** TO-220AC  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** As marked



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

| PARAMETER                                                                                   | SYMBOL           | UNIT             | MSR1520    | MSR1540 | MSR1560 |
|---------------------------------------------------------------------------------------------|------------------|------------------|------------|---------|---------|
| Device marking code                                                                         |                  |                  | MSR1520    | MSR1540 | MSR1560 |
| Repetitive Peak Reverse Voltage                                                             | VRRM             | V                | 200        | 400     | 600     |
| Average Rectified Output Current<br>@60Hz half sine-wave, R-load, T <sub>c</sub> (FIG.1)    | I <sub>o</sub>   | A                | 15         |         |         |
| Surge(Non-repetitive)Forward Current<br>@60Hz half sine-wave, 1 cycle, T <sub>a</sub> =25°C | I <sub>FSM</sub> | A                | 180        |         |         |
| Current Squared Time @1ms≤t<8.3ms T <sub>j</sub> =25°C                                      | I <sup>2</sup> t | A <sup>2</sup> s | 65         |         |         |
| Storage Temperature                                                                         | T <sub>stg</sub> | °C               | -55 ~ +175 |         |         |
| Junction Temperature                                                                        | T <sub>j</sub>   | °C               | -55 ~ +175 |         |         |

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

| PARAMETER                                                         | SYMBOL            | UNIT | TEST CONDITIONS                                                 | MSR1520 | MSR1540 | MSR1560 |
|-------------------------------------------------------------------|-------------------|------|-----------------------------------------------------------------|---------|---------|---------|
| Maximum instantaneous forward voltage drop per diode              | V <sub>FM</sub>   | V    | I <sub>FM</sub> =15.0A                                          | 1.05    | 1.35    | 1.70    |
| Maximum DC reverse current at rated DC blocking voltage per diode | I <sub>RRM1</sub> | μA   | V <sub>RM</sub> =V <sub>RRM</sub><br>T <sub>a</sub> =25°C       | 10      |         |         |
|                                                                   | I <sub>RRM2</sub> |      | V <sub>RM</sub> =V <sub>RRM</sub><br>T <sub>a</sub> =125°C      | 500     |         |         |
| Reverse Recovery Time                                             | T <sub>rr</sub>   | ns   | I <sub>F</sub> =0.5A I <sub>RM</sub> =1A I <sub>RR</sub> =0.25A | 35      |         |         |

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

| PARAMETER          | SYMBOL                    | UNIT              | MSR1520 | MSR1540 | MSR1560 |
|--------------------|---------------------------|-------------------|---------|---------|---------|
| Thermal Resistance | Between junction and case | R <sub>θJ-C</sub> | °C/W    | 2.5     |         |

### ■ Ordering Information (Example)

| PREFERRED P/N |         |         | UNIT WEIGHT(g)   | MINIMUM PACKAGE(pcs) | INNER BOX QUANTITY(pcs) | OUTER CARTON QUANTITY(pcs) | DELIVERY MODE |
|---------------|---------|---------|------------------|----------------------|-------------------------|----------------------------|---------------|
| MSR1520       | MSR1540 | MSR1560 | Approximate 1.39 | 50                   | 1000                    | 5000                       | Tube          |

### ■ Characteristics (Typical)

FIG1:  $I_o$  -  $T_c$  Curve

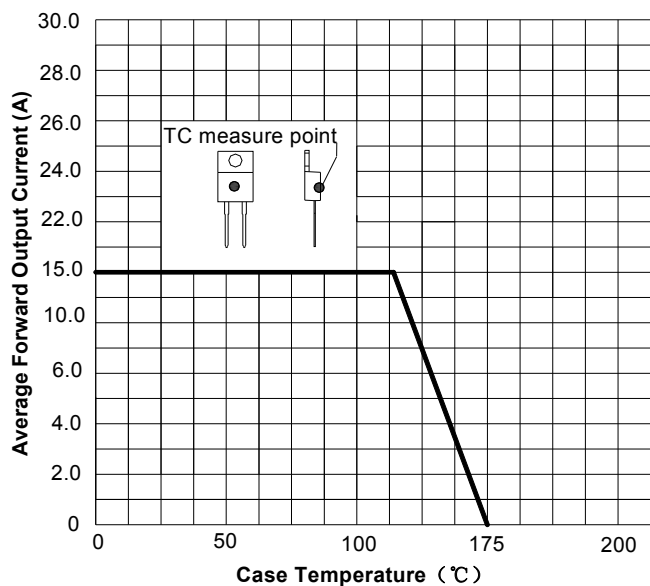


FIG2: Surge Forward Current Capability

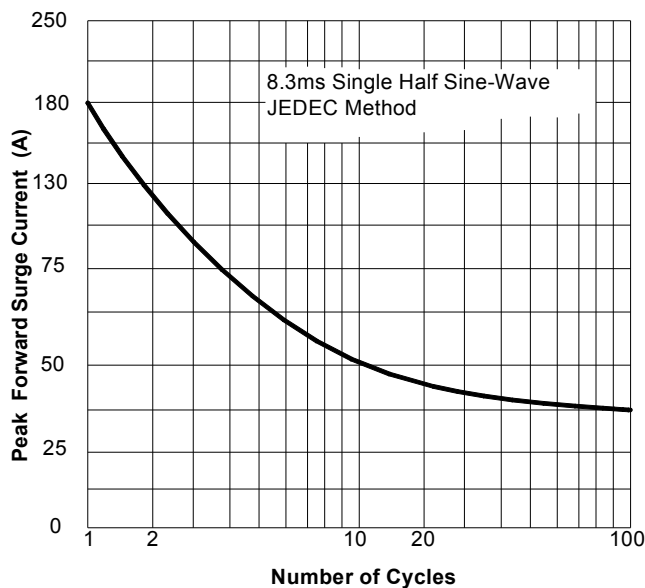


FIG3: Forward Voltage

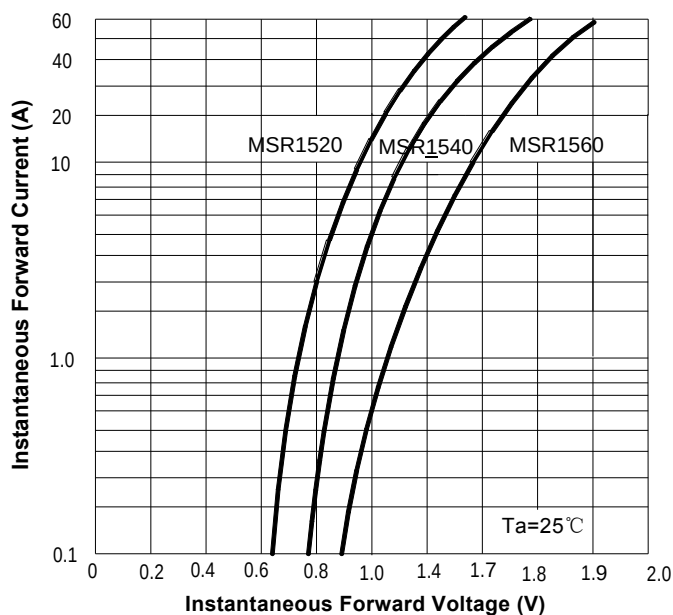


FIG4: Typical Reverse Characteristics

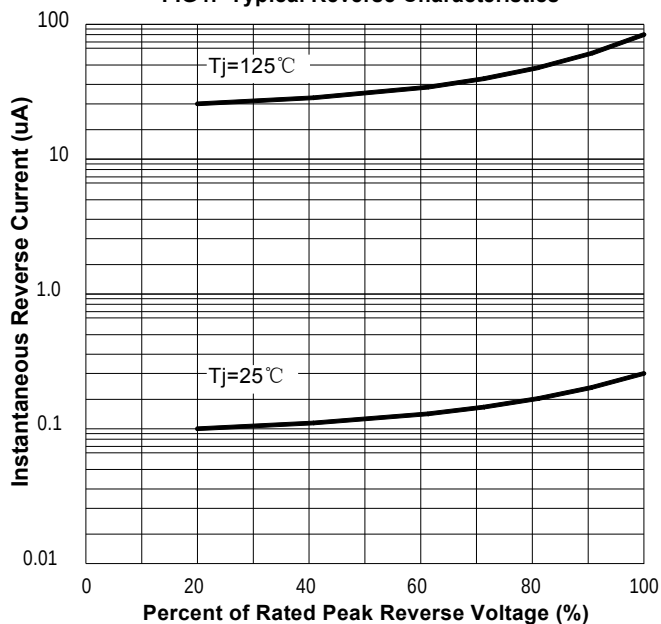
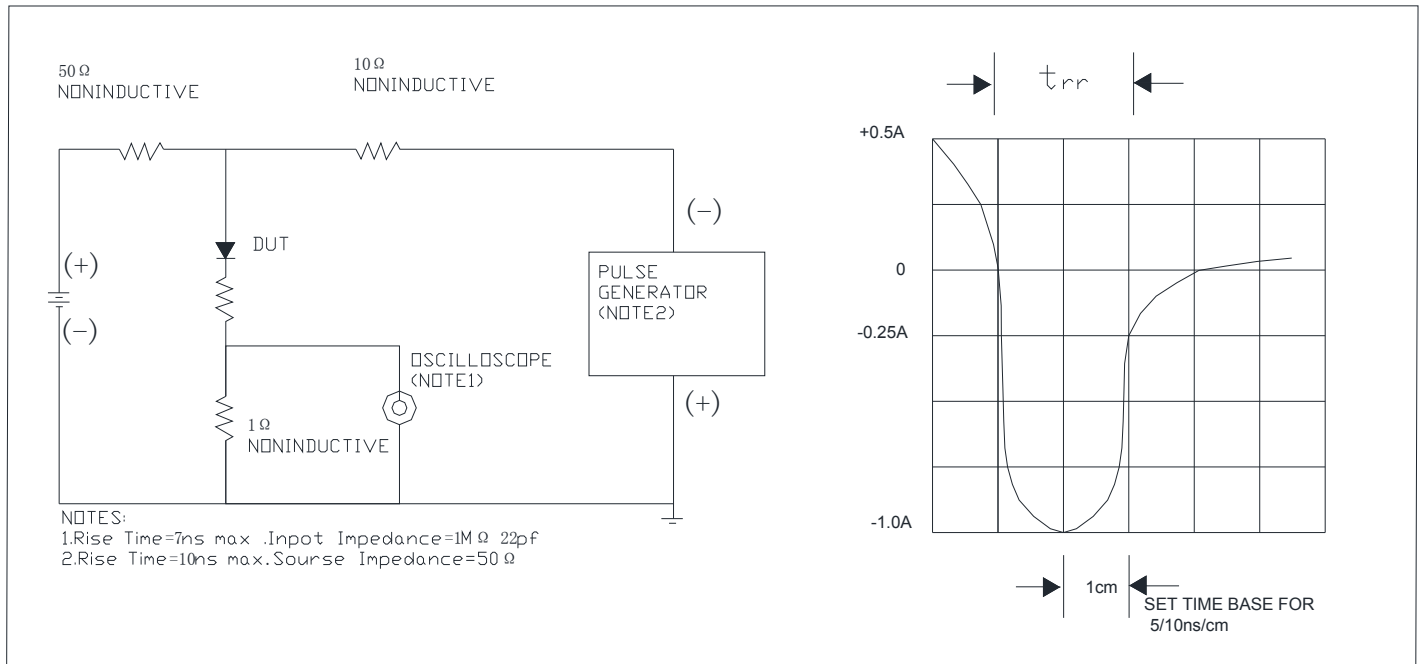
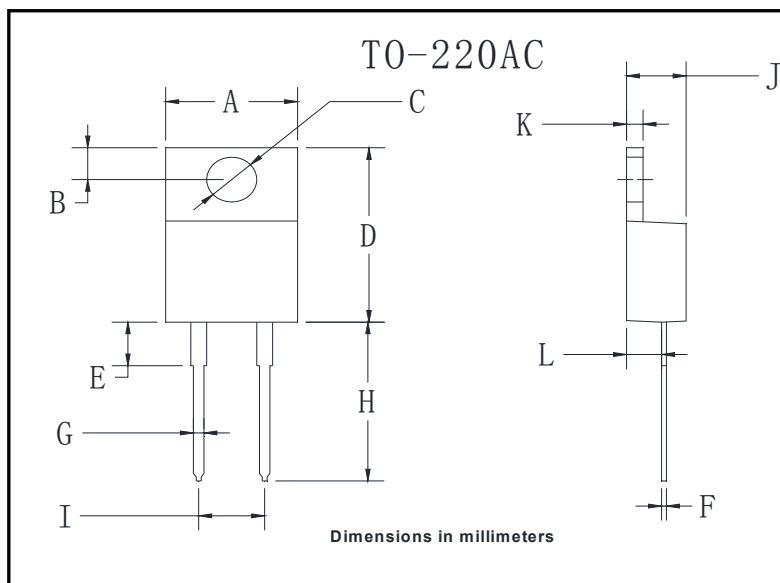


FIG.5 Diagram of circuit and Testing wave form of reverse recovery time



### Outline Dimensions



| TO-220AC |       |       |
|----------|-------|-------|
| Dim      | Min   | Max   |
| A        | 9.5   | 10.9  |
| B        | 2.22  | 3.27  |
| C        | 3.34  | 4.31  |
| D        | 14.5  | 15.5  |
| E        | 3.16  | 4.46  |
| F        | 0.28  | 0.64  |
| G        | 0.68  | 0.94  |
| H        | 13.06 | 14.62 |
| I        | 4.55  | 5.60  |
| J        | 4.04  | 5.1   |
| K        | 1.14  | 1.4   |
| L        | 2.14  | 3.19  |

| Package | Packing    | Box Size<br>L×W×H(mm) | Quantity(pcs/box) | Carton Size<br>L×W×H(mm) | Quantity(pcs/carton) |
|---------|------------|-----------------------|-------------------|--------------------------|----------------------|
| TO-220  | 50pcs/Tube | 558×148×38            | 1000              | 565×225×175              | 5000                 |