

## Silicon Fast Recovery Diode

$V_{RRM} = 100\text{ V} - 600\text{ V}$

$I_F = 12\text{ A}$

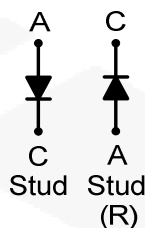
### Features

- High Surge Capability
- Types from 100 V to 600 V  $V_{RRM}$
- Not ESD Sensitive

### Note:

1. Standard polarity: Stud is cathode.
2. Reverse polarity (R): Stud is anode.
3. Stud is base.

DO-4 Package



Maximum ratings, at  $T_j = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified ("R" devices have leads reversed)

| Parameter                                            | Symbol     | Conditions                                                 | FR12B(R)02 | FR12D(R)02 | FR12G(R)02 | FR12J(R)02 | Unit               |
|------------------------------------------------------|------------|------------------------------------------------------------|------------|------------|------------|------------|--------------------|
| Repetitive peak reverse voltage                      | $V_{RRM}$  |                                                            | 100        | 200        | 400        | 600        | V                  |
| RMS reverse voltage                                  | $V_{RMS}$  |                                                            | 70         | 140        | 280        | 420        | V                  |
| DC blocking voltage                                  | $V_{DC}$   |                                                            | 100        | 200        | 400        | 600        | V                  |
| Continuous forward current                           | $I_F$      | $T_C \leq 100\text{ }^{\circ}\text{C}$                     | 12         | 12         | 12         | 12         | A                  |
| Surge non-repetitive forward current, Half Sine Wave | $I_{F,SM}$ | $T_C = 25\text{ }^{\circ}\text{C}$ , $t_p = 8.3\text{ ms}$ | 180        | 180        | 180        | 180        | A                  |
| Operating temperature                                | $T_j$      |                                                            | -55 to 150 | -55 to 150 | -55 to 150 | -55 to 150 | $^{\circ}\text{C}$ |
| Storage temperature                                  | $T_{stg}$  |                                                            | -55 to 150 | -55 to 150 | -55 to 150 | -55 to 150 | $^{\circ}\text{C}$ |

Electrical characteristics, at  $T_j = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

| Parameter             | Symbol | Conditions                                                 | FR12B(R)02 | FR12D(R)02 | FR12G(R)02 | FR12J(R)02 | Unit          |
|-----------------------|--------|------------------------------------------------------------|------------|------------|------------|------------|---------------|
| Diode forward voltage | $V_F$  | $I_F = 12\text{ A}$ , $T_j = 25\text{ }^{\circ}\text{C}$   | 0.8        | 0.8        | 0.8        | 0.8        | V             |
| Reverse current       | $I_R$  | $V_R = 100\text{ V}$ , $T_j = 25\text{ }^{\circ}\text{C}$  | 25         | 25         | 25         | 25         | $\mu\text{A}$ |
|                       |        | $V_R = 100\text{ V}$ , $T_j = 150\text{ }^{\circ}\text{C}$ | 6          | 6          | 6          | 6          | mA            |

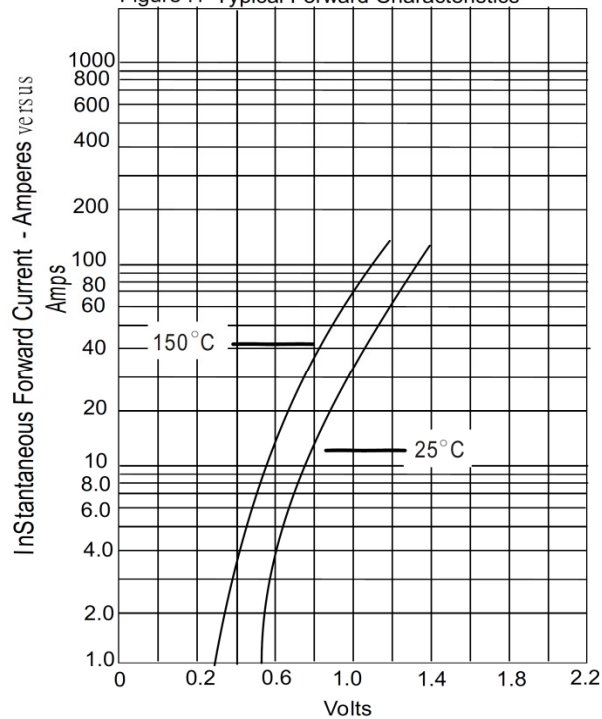
### Recovery Time

|                               |          |                                                                           |     |     |     |     |    |
|-------------------------------|----------|---------------------------------------------------------------------------|-----|-----|-----|-----|----|
| Maximum reverse recovery time | $T_{RR}$ | $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ ,<br>$I_{RR} = 0.25\text{ A}$ | 200 | 200 | 200 | 250 | nS |
|-------------------------------|----------|---------------------------------------------------------------------------|-----|-----|-----|-----|----|

### Thermal characteristics

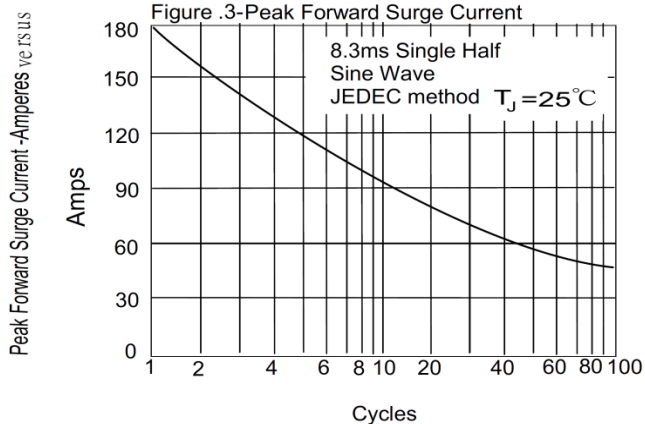
|                                     |            |  |     |     |     |     |                      |
|-------------------------------------|------------|--|-----|-----|-----|-----|----------------------|
| Thermal resistance, junction - case | $R_{thJC}$ |  | 2.5 | 2.5 | 2.5 | 2.5 | $^{\circ}\text{C/W}$ |
|-------------------------------------|------------|--|-----|-----|-----|-----|----------------------|

Figure .1-Typical Forward Characteristics



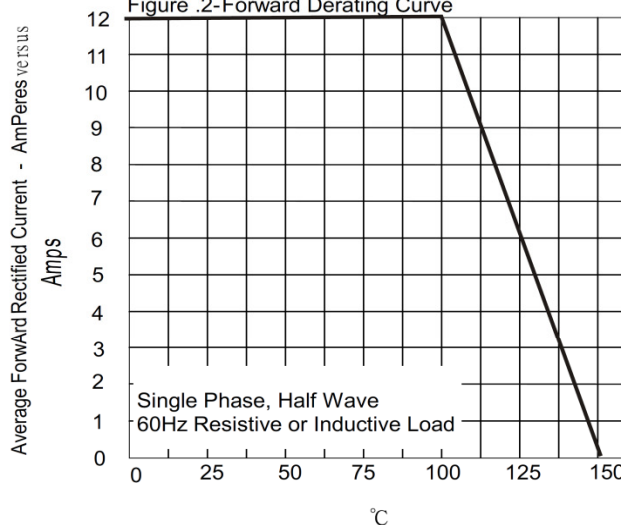
Instantaneous Forward Voltage - Volts

Figure .3-Peak Forward Surge Current



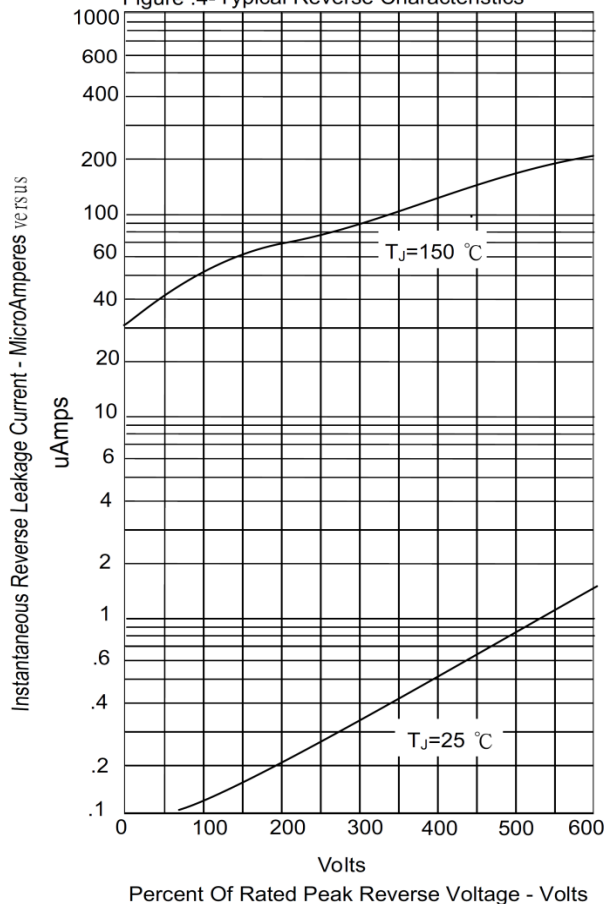
Number Of Cycles At 60Hz - Cycles

Figure .2-Forward Derating Curve



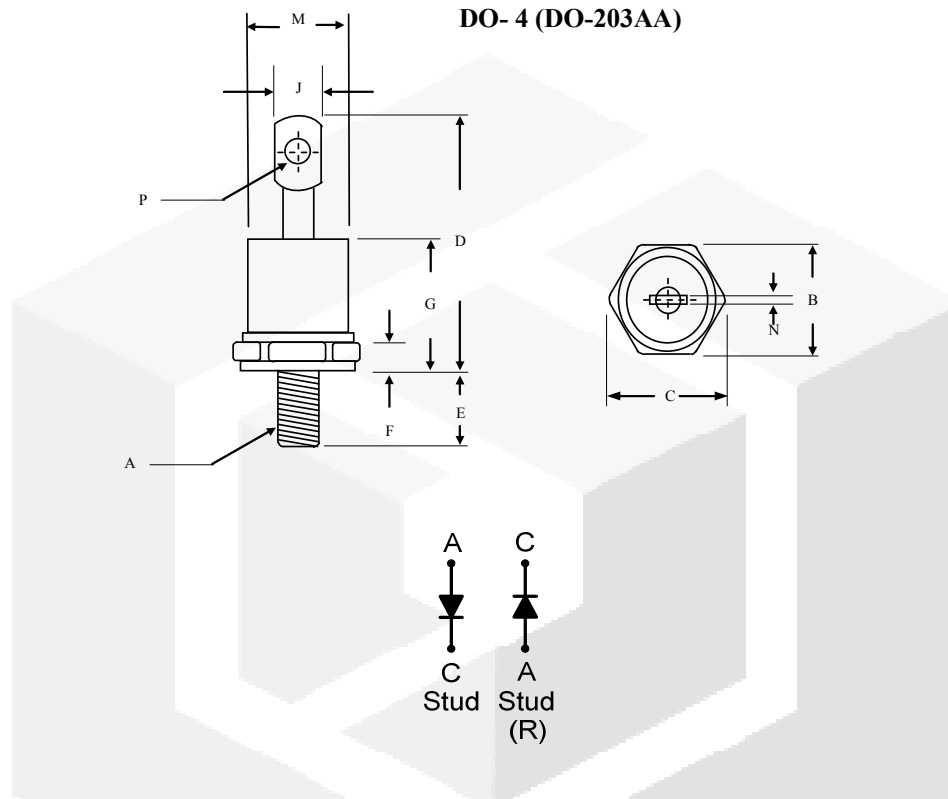
Case Temperature - °C

Figure .4-Typical Reverse Characteristics



## Package dimensions and terminal configuration

Product is marked with part number and terminal configuration.



|   | Inches    |        | Millimeters |       |
|---|-----------|--------|-------------|-------|
|   | Min       | Max    | Min         | Max   |
| A | 10-32 UNF |        |             |       |
| B | 0.424     | 0.437  | 10.77       | 11.10 |
| C | -----     | 0.505  | -----       | 12.82 |
| D | -----     | 0.800  | -----       | 20.30 |
| E | 0.453     | 0.492  | 11.50       | 12.50 |
| F | 0.114     | 0.140  | 2.90        | 3.50  |
| G | -----     | 0.405  | -----       | 10.29 |
| J | -----     | 0.216  | -----       | 5.50  |
| M | -----     | φ0.302 | -----       | φ7.68 |
| N | 0.031     | 0.045  | 0.80        | 1.15  |
| P | 0.070     | 0.79   | 1.80        | 2.00  |