

## 10A,200V Ultrafast Recovery Rectifier

### Features

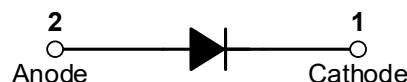
- FRED Wafer Construction
- Low forward drop voltage, low power loss
- High Surge Current Capability
- Plastic package has underwriters Laboratory Flammability Classification 94V-0
- Halogen-free according to IEC 61249-2-21



TO-220AC

### Applications

- SMPS
- Lighting
- UPS



### Mechanical Data

- Case: Epoxy, Molded
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 sec
- Shipped 50 units per plastic tube

| Maximum Ratings & Electrical Characteristics (T <sub>A</sub> =25°C unless otherwise noted) |                    |             |      |
|--|--------------------|-------------|------|
| Parameter  | Symbol             | MUR1020     | Unit |
| Maximum repetitive peak reverse voltage  | V <sub>RRM</sub>   | 200         | V    |
| Working peak reverse voltage   | V <sub>RWM</sub>   | 200         | V    |
| Maximum DC blocking voltage  | V <sub>DC</sub>    | 200         | V    |
| Maximum average forward rectified current  | I <sub>F(AV)</sub> | 10          | A    |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load         | I <sub>FSM</sub>   | 125         | A    |
| Voltage rate of change (rated V <sub>R</sub> )   | dv/dt              | 10000       | V/uS |
| Operating junction temperature range   | T <sub>J</sub>     | -55 to +150 | °C   |
| Storage temperature range  | T <sub>STG</sub>   | -55 to +150 | °C   |

| <b>Electrical Specifications</b> ( $T_A=25^{\circ}\text{C}$ unless otherwise noted) |          |  |      |      |               |
|---|----------|--|------|------|---------------|
| Parameter   | Symbol   | Test Conditions  | Typ  | Max  | Unit          |
| Forward drop voltage <sup>(Note1)</sup>   | $V_F$    | $I_F=10\text{A}, T_J=25^{\circ}\text{C}$                     | 0.96 | 1.10 | V             |
|   |          | $I_F=10\text{A}, T_J=125^{\circ}\text{C}$                    | -    | 1.00 |               |
| Reverse leakage current @ $V_R$ <sup>(Note2)</sup>                                  | $I_R$    | $T_J=25^{\circ}\text{C}$                                     | -    | 10   | $\mu\text{A}$ |
|   |          | $T_J=100^{\circ}\text{C}$                                    | -    | 500  |               |
| Reverse recovery time   | $t_{rr}$ | $I_F=0.5\text{A},$<br>$I_R=1.0\text{A}, I_{RR}=0.25\text{A}$ | -    | 35   | ns            |

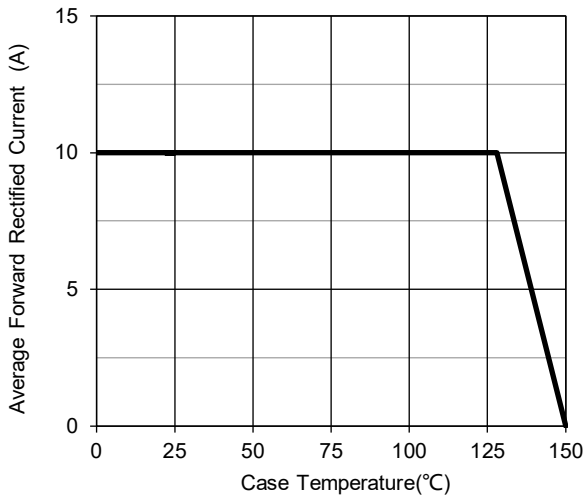
| <b>Thermal-Mechanical Specifications</b> ( $T_A=25^{\circ}\text{C}$ unless otherwise noted) |                 |      |                             |
|---|-----------------|------|-----------------------------|
| Parameter   | Symbol          | Typ  | Unit                        |
| Thermal Resistance, Junction to Case  | $R_{\theta JC}$ | 2.0  | $^{\circ}\text{C}/\text{W}$ |
| Thermal Resistance, Junction to Ambient   | $R_{\theta JA}$ | 62.5 | $^{\circ}\text{C}/\text{W}$ |

Note:

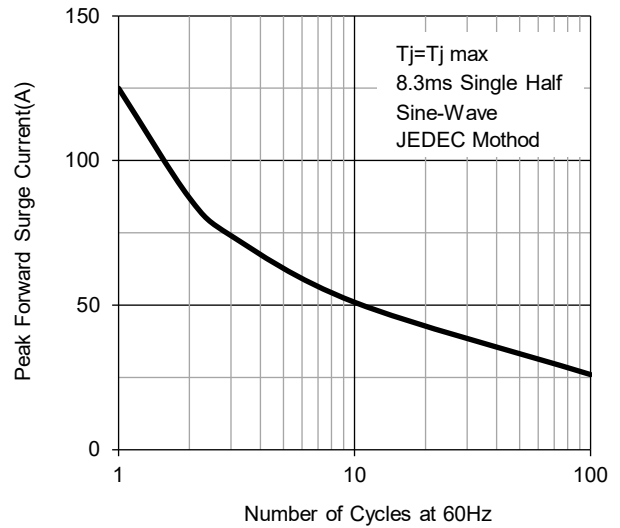
1. Pulse test with  $PW=0.3\text{ms}$ , duty cycle=2%
2. Pulse test with  $PW=30\text{ms}$

## Ratings and Characteristics Curves

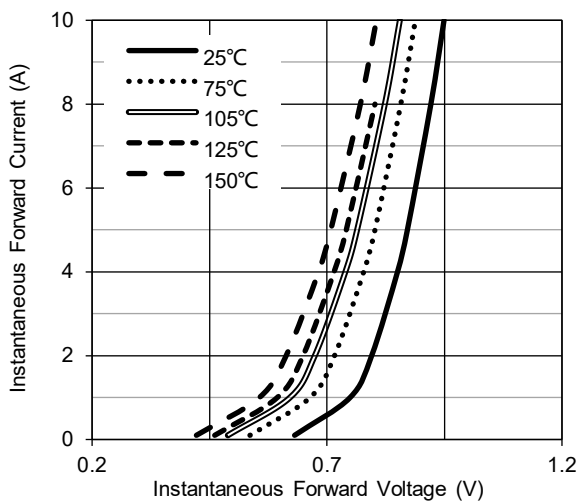
( $T_A = 25^\circ\text{C}$  unless otherwise noted)



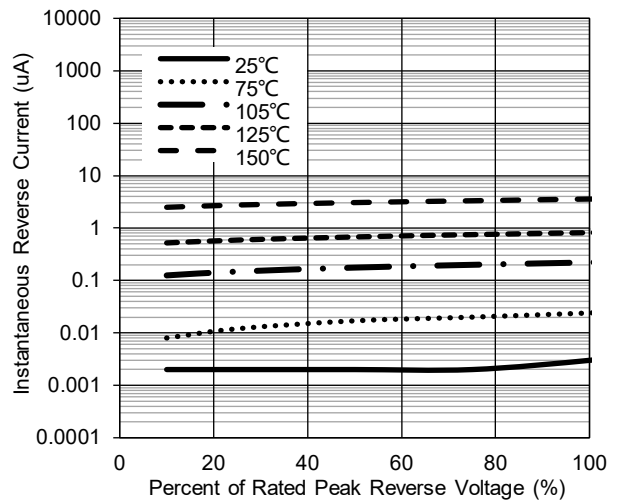
**Fig.1 – Forward Current Derating Curve**



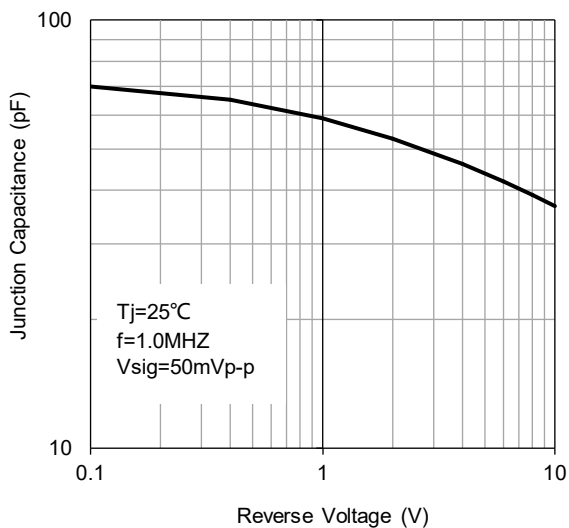
**Fig.2 – Maximum Non-Repetitive Surge Current**



**Fig.3 – Typical Forward Voltage Characteristics**



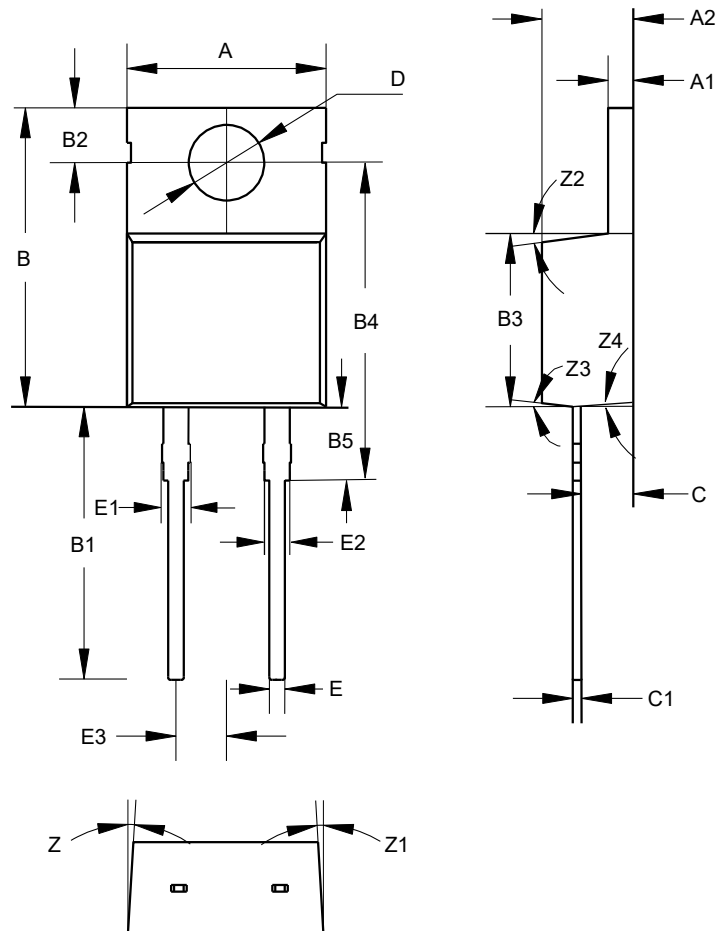
**Fig.4 – Typical Reverse Current Characteristics**



**Fig.5 – Typical Junction Capacitance**

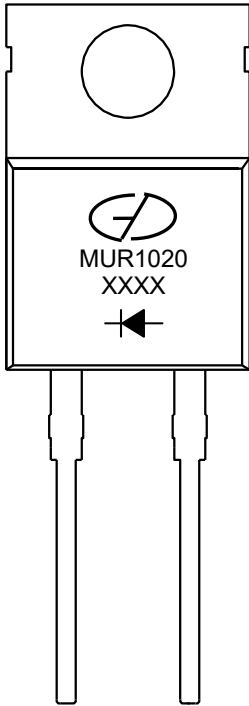
**Package Outline Dimensions** (Unit: millimeters)

**TO-220AC**



| TO-220AC |      |      |      |    |      |      |      |
|----------|------|------|------|----|------|------|------|
|          | Min. | Nom. | Max. |    | Min. | Nom. | Max. |
| A        | 9.8  | 10   | 10.2 | D  | 3.7  | 3.8  | 3.9  |
| A1       | 1.17 | 1.27 | 1.37 | E  | 0.68 | 0.78 | 0.88 |
| A2       | 4.5  | 4.6  | 4.7  | E1 | 1.2  | 1.4  | 1.6  |
| B        | 14.5 | 15   | 15.5 | E2 | 1.17 | 1.27 | 1.37 |
| B1       | 13.2 | 13.7 | 14.2 | E3 | 2.44 | 2.54 | 2.64 |
| B2       | 2.65 | 2.75 | 2.85 | Z  |      | 3°   |      |
| B3       | 8.5  | 8.7  | 8.9  | Z1 |      | 3°   |      |
| B4       | 15.5 | 16   | 16.5 | Z2 |      | 7°   |      |
| B5       | 3.4  | 3.7  | 4.0  | Z3 |      | 7°   |      |
| C        | 2.3  | 2.6  | 2.9  | Z4 |      | 1.5° |      |
| C1       | 0.28 | 0.38 | 0.48 |    |      |      |      |

## Marking Outline



1. Logo Mark: 
2. Part Name: MUR1020
3. Date Code: XXXX
4. Polarity : 

## Revision History

| Document Version | Date of release | Description of changes                    |
|------------------|-----------------|---|
| Rev.A            | 2013.12.15      | Released Datasheet                        |
| Rev.B            | 2021.01.22      | Modify document format                    |
| Rev.C            | 2022.04.12      | Update ratings and characteristics curves |

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