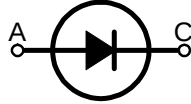
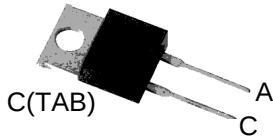


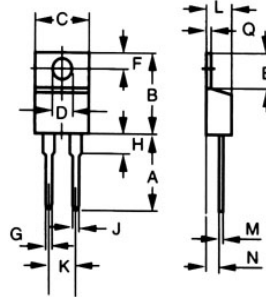
# MUR15100

## Ultra Fast Recovery Diodes



A=Anode, C=Cathode, TAB=Cathode

Dimensions TO-220AC



| Dim. | Inches |       | Milimeter |       |
|------|--------|-------|-----------|-------|
|      | Min.   | Max.  | Min.      | Max.  |
| A    | 0.500  | 0.580 | 12.70     | 14.73 |
| B    | 0.560  | 0.650 | 14.23     | 16.51 |
| C    | 0.380  | 0.420 | 9.66      | 10.66 |
| D    | 0.139  | 0.161 | 3.54      | 4.08  |
| E    | 2.300  | 0.420 | 5.85      | 6.85  |
| F    | 0.100  | 0.135 | 2.54      | 3.42  |
| G    | 0.045  | 0.070 | 1.15      | 1.77  |
| H    | -      | 0.250 | -         | 6.35  |
| J    | 0.025  | 0.035 | 0.64      | 0.89  |
| K    | 0.190  | 0.210 | 4.83      | 5.33  |
| L    | 0.140  | 0.190 | 3.56      | 4.82  |
| M    | 0.015  | 0.022 | 0.38      | 0.56  |
| N    | 0.080  | 0.115 | 2.04      | 2.49  |
| Q    | 0.025  | 0.055 | 0.64      | 1.39  |

|                 | $V_{RSM}$ | $V_{RRM}$ |
|-----------------|-----------|-----------|
|                 | V         | V         |
| <b>MUR15100</b> | 1000      | 1000      |

| Symbol     | Test Conditions                                                 | Maximum Ratings        | Unit        |
|------------|-----------------------------------------------------------------|------------------------|-------------|
| $I_{FRMS}$ | $T_{VJ}=T_{VJM}$                                                | 25                     | A           |
| $I_{FAVM}$ | $T_C=100^{\circ}C$ ; rectangular, $d=0.5$                       | 15                     |             |
| $I_{FRM}$  | $t_p < 10\mu s$ ; rep. rating, pulse width limited by $T_{VJM}$ | 150                    |             |
| $I_{FSM}$  | $T_{VJ}=45^{\circ}C$                                            | $t=10ms$ (50Hz), sine  | A           |
|            |                                                                 | $t=8.3ms$ (60Hz), sine |             |
|            | $T_{VJ}=150^{\circ}C$                                           | $t=10ms$ (50Hz), sine  |             |
|            |                                                                 | $t=8.3ms$ (60Hz), sine |             |
| $I^2t$     | $T_{VJ}=45^{\circ}C$                                            | $t=10ms$ (50Hz), sine  | $A^2s$      |
|            |                                                                 | $t=8.3ms$ (60Hz), sine |             |
|            | $T_{VJ}=150^{\circ}C$                                           | $t=10ms$ (50Hz), sine  |             |
|            |                                                                 | $t=8.3ms$ (60Hz), sine |             |
| $T_{VJ}$   |                                                                 | -40...+150             | $^{\circ}C$ |
| $T_{VJM}$  |                                                                 | 150                    |             |
| $T_{stg}$  |                                                                 | -40...+150             |             |
| $P_{tot}$  | $T_C=25^{\circ}C$                                               | 78                     | W           |
| $M_d$      | Mounting torque                                                 | 0.4...0.6              | Nm          |
| Weight     |                                                                 | 2                      | g           |

# MUR15100

## Ultra Fast Recovery Diodes

| Symbol                                                                        | Test Conditions                                                                                                         | Characteristic Values |      | Unit          |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-----------------------|------|---------------|
|                                                                               |                                                                                                                         | typ.                  | max. |               |
| <b>I<sub>R</sub></b>                                                          | $T_{VJ}=25^{\circ}\text{C}; V_R=V_{RRM}$                                                                                |                       | 250  | $\mu\text{A}$ |
|                                                                               | $T_{VJ}=25^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$                                                                      |                       | 150  | $\mu\text{A}$ |
|                                                                               | $T_{VJ}=125^{\circ}\text{C}; V_R=0.8 \cdot V_{RRM}$                                                                     |                       | 4    | mA            |
| <b>V<sub>F</sub></b>                                                          | $I_F=15\text{A}; T_{VJ}=150^{\circ}\text{C}$                                                                            |                       | 2.1  | V             |
|                                                                               | $T_{VJ}=25^{\circ}\text{C}$                                                                                             |                       | 2.7  |               |
| <b>V<sub>TO</sub></b>                                                         | For power-loss calculations only                                                                                        |                       | 1.67 | V             |
| <b>r<sub>T</sub></b>                                                          | $T_{VJ}=T_{VJM}$                                                                                                        |                       | 33.6 | m $\Omega$    |
| <b>R<sub>thJC</sub></b><br><b>R<sub>thCK</sub></b><br><b>R<sub>thJA</sub></b> |                                                                                                                         | 0.5                   | 1.6  | K/W           |
|                                                                               |                                                                                                                         |                       | 60   |               |
|                                                                               |                                                                                                                         |                       |      |               |
| <b>t<sub>rr</sub></b>                                                         | $I_F=1\text{A}; -di/dt=50\text{A}/\mu\text{s}; V_R=30\text{V}; T_{VJ}=25^{\circ}\text{C}$                               | 50                    | 60   | ns            |
| <b>I<sub>RM</sub></b>                                                         | $V_R=540\text{V}; I_F=15\text{A}; -di_F/dt=100\text{A}/\mu\text{s}; L \leq 0.05\mu\text{H}; T_{VJ}=100^{\circ}\text{C}$ | 6.5                   | 7.2  | A             |

### FEATURES

- \* International standard package JEDEC TO-220AC
- \* Planar passivated chips
- \* Very short recovery time
- \* Extremely low switching losses
- \* Low I<sub>RM</sub>-values
- \* Soft recovery behaviour

### APPLICATIONS

- \* Antiparallel diode for high frequency switching devices
- \* Antisaturation diode
- \* Snubber diode
- \* Free wheeling diode in converters and motor control circuits
- \* Rectifiers in switch mode power supplies (SMPS)
- \* Inductive heating and melting
- \* Uninterruptible power supplies (UPS)
- \* Ultrasonic cleaners and welders

### ADVANTAGES

- \* High reliability circuit operation
- \* Low voltage peaks for reduced protection circuits
- \* Low noise switching
- \* Low losses
- \* Operating at lower temperature or space saving by reduced cooling

# MUR15100

## Ultra Fast Recovery Diodes

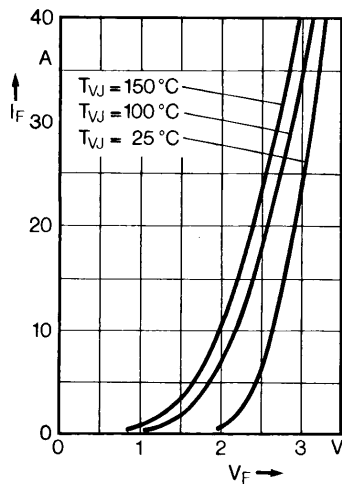


Fig. 1 Forward current versus voltage drop.

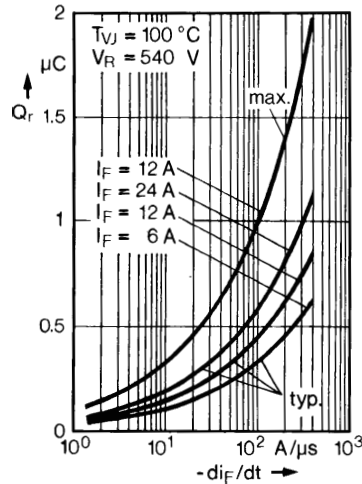


Fig. 2 Recovery charge versus  $-di_F/dt$ .

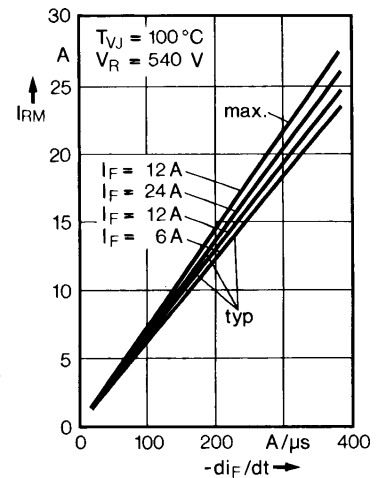


Fig. 3 Peak reverse current versus  $-di_F/dt$ .

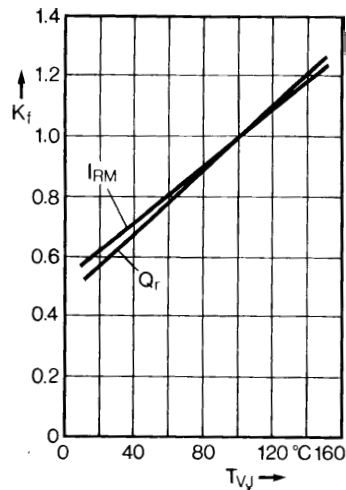


Fig. 4 Dynamic parameters versus junction temperature.

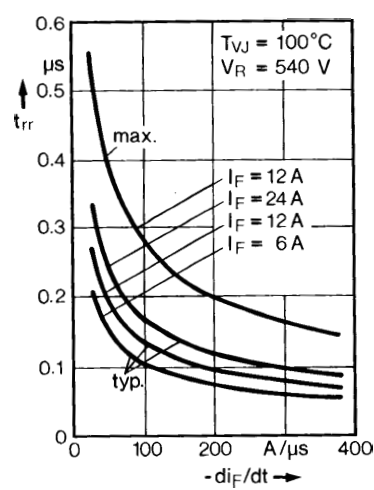


Fig. 5 Recovery time versus  $-di_F/dt$ .

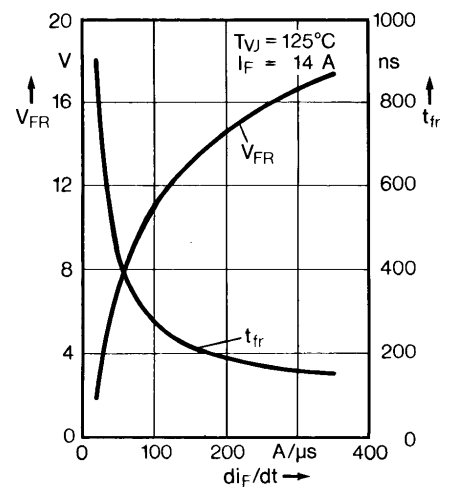


Fig. 6 Peak forward voltage versus  $di_F/dt$ .

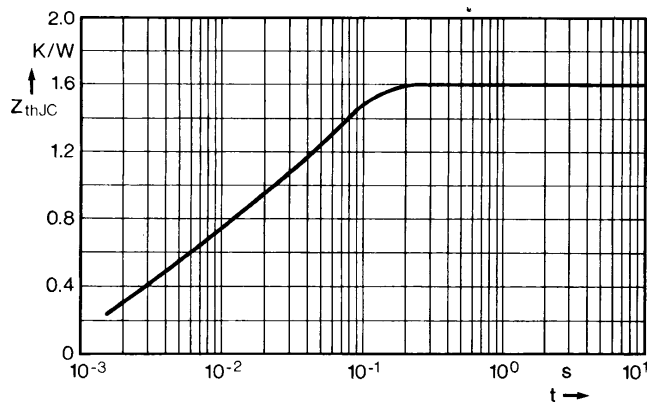


Fig. 7 Transient thermal impedance junction to case.