

## Single Ultra Fast Recovery Rectifier Diodes

Designed for use in switching power supplies inverters and as free wheeling diodes. These state-of-the-art devices have the following

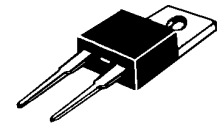
### Features

- \* High Surge Capacity
- \* Low Power Loss, High efficiency
- \* 150 °C Operating Junction Temperature
- \* Low Stored Charge Majority Carrier Conduction
- \* Low Forward Voltage, High Current Capability
- \* High-Switching Speed 35 Nanosecond Recovery Time
- \* Plastic Material used Carries Underwriters Laboratory Flammability Classification 94V-0
- \* *Pb free*
- \* *In compliance with EU RoHs directives*



**ULTRA FAST  
RECTIFIERS**

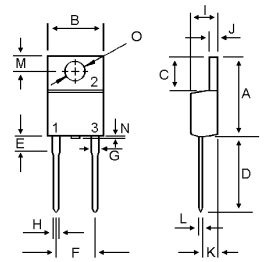
**5 AMPERES  
200 VOLTS**



**TO-220A**

### MAXIMUM RATINGS

| Characteristic   | Symbol                          | UE05A20     | Unit             |
|--|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                 | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 200         | V                |
| RMS Reverse Voltage  | $V_{R(RMS)}$                    | 140         | V                |
| Average Rectifier Forward Current<br>Total Device (Rated $V_R$ ), $T_C=100^\circ\text{C}$              | $I_{F(AV)}$                     | 5           | A                |
| Peak Repetitive Forward Current<br>(Rate $V_R$ , Square Wave, 20kHz)                                   | $I_{FM}$                        | 5           | A                |
| Non-Repetitive Peak Surge Current (Surge applied at rate load conditions halfwave, single phase, 60Hz) | $I_{FSM}$                       | 100         | A                |
| Operating and Storage Junction Temperature Range   | $T_J, T_{stg}$                  | -65 to +150 | $^\circ\text{C}$ |



| DIM | MILLIMETERS |       |
|-----|-------------|-------|
|     | MIN         | MAX   |
| A   | 14.68       | 16.00 |
| B   | 9.78        | 10.42 |
| C   | 5.02        | 6.60  |
| D   | 13.00       | 14.62 |
| E   | 3.10        | 4.19  |
| F   | 4.82        | 5.34  |
| G   | 1.10        | 1.67  |
| H   | 0.69        | 1.01  |
| I   | 4.22        | 4.98  |
| J   | 1.14        | 1.40  |
| K   | 2.20        | 3.30  |
| L   | 0.28        | 0.61  |
| M   | 2.48        | 3.00  |
| N   | ---         | 2.00  |
| O   | 3.50        | 4.00  |

### ELECTRICAL CHARACTERISTICS

| Characteristic   | Symbol   | Min. | Typ.         | Max.         | Unit          |
|--|----------|------|--------------|--------------|---------------|
| Maximum Instantaneous Forward Voltage<br>( $I_F=5$ Amp $T_C=25^\circ\text{C}$ )<br>( $I_F=5$ Amp $T_C=125^\circ\text{C}$ )             | $V_F$    | ---  | 0.90<br>0.77 | 0.975<br>--- | V             |
| Maximum Instantaneous Reverse Current<br>( Rated DC Voltage, $T_C=25^\circ\text{C}$ )<br>( Rated DC Voltage, $T_C=125^\circ\text{C}$ ) | $I_R$    | ---  | 0.01<br>10   | 5<br>---     | $\mu\text{A}$ |
| Reverse Recovery Time<br>( $I_F=0.5$ A, $I_R=1.0$ , $I_{rr}=0.25$ A )  | $T_{rr}$ | ---  | 16           | 35           | ns            |
| Typical Junction Capacitance<br>(Reverse Voltage of 4 volts & $f=1$ MHz)   | $C_P$    |      | 40           |              | pF            |

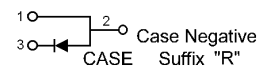
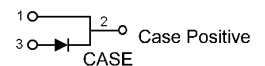


FIG-1 TYPICAL FORWARD CHARACTERISTICS

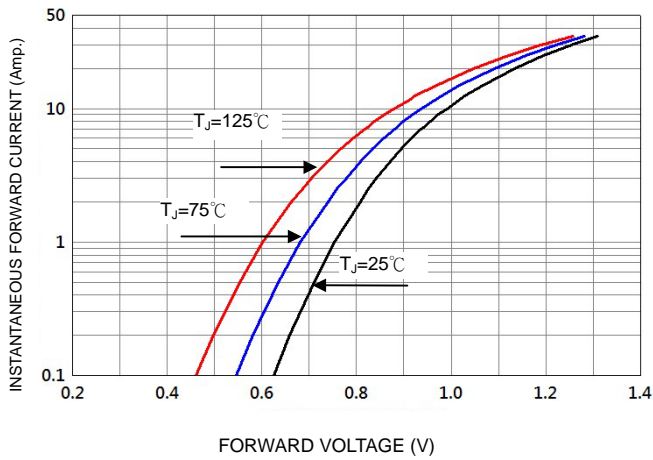


FIG-3 FORWARD CURRENT DERATING CURVE

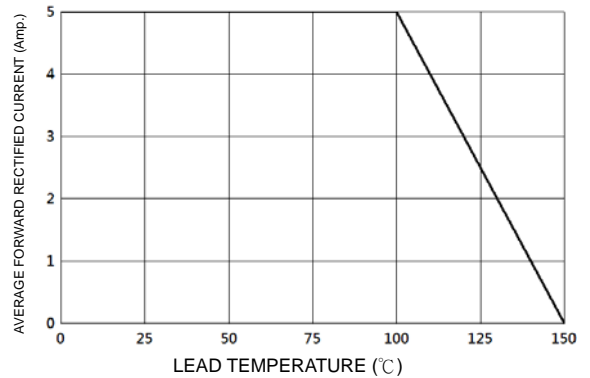


FIG-2 TYPICAL REVERSE CHARACTERISTICS

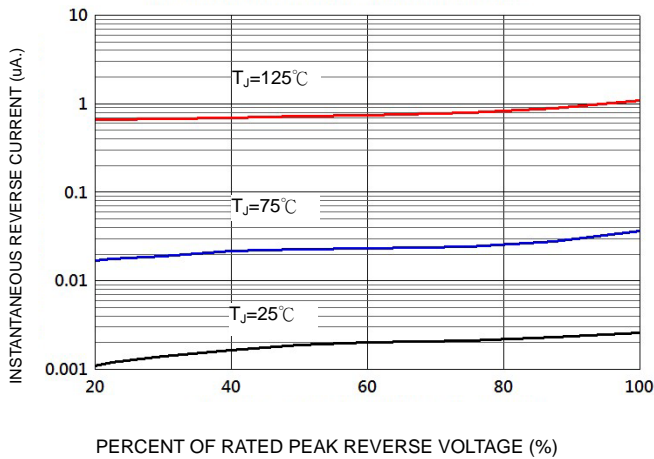


FIG-4 TYPICAL JUNCTION CAPACITANCE

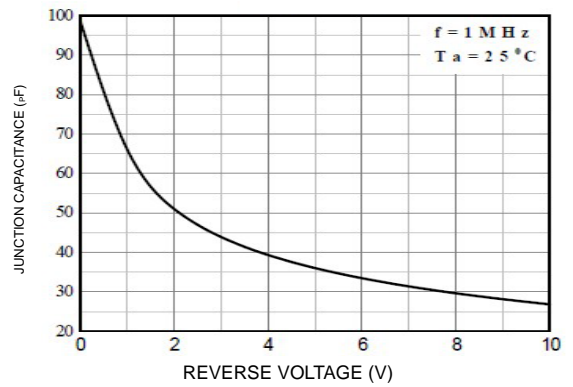
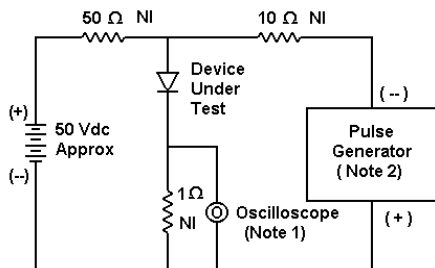
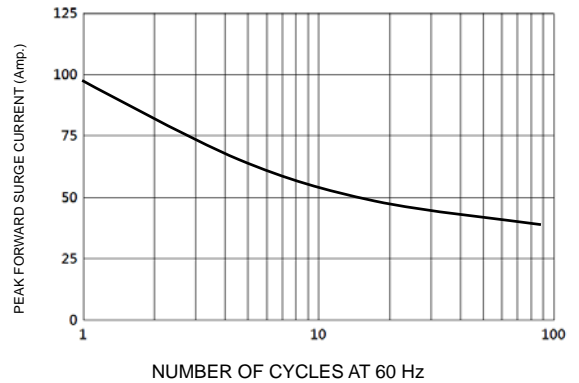
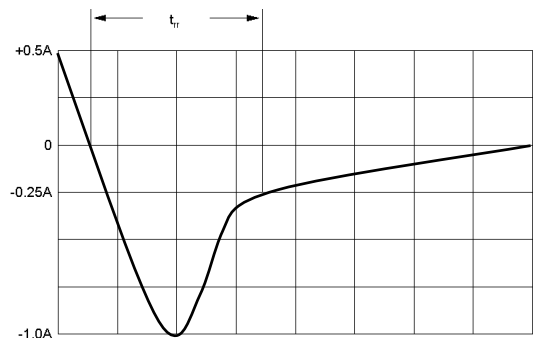


FIG-5 PEAK FORWARD SURGE CURRENT



- Notes:  
 1. Rise Time = 7 ns max. Input Impedance = 1 M  $\Omega$ , 22 pF  
 2. Rise Time = 10 ns max. Input Impedance = 50  $\Omega$



Set time base for 10/20 ns/cm

FIG-6 Reverse Recovery Time Characteristic and Test Circuit Diagram

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