



## URF1205 Thru URF1220

### Switchmode Full Plastic Dual Ultrafast Power Rectifiers

...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
- \* Glass Passivated chip junctions
- \* 150 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

#### ULTRA FAST RECTIFIERS

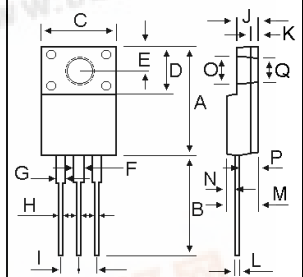
**12 AMPERES  
50-200 VOLTS**



ITO-220AB

### MAXIMUM RATINGS

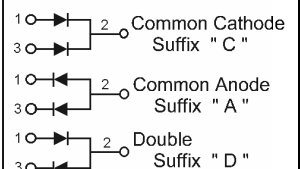
| Characteristic                                                                                                | Symbol                          | URF12       |     |     |     | Unit |
|---------------------------------------------------------------------------------------------------------------|---------------------------------|-------------|-----|-----|-----|------|
|                                                                                                               |                                 | 05          | 10  | 15  | 20  |      |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                        | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50          | 100 | 150 | 200 | V    |
| RMS Reverse Voltage                                                                                           | $V_{R(RMS)}$                    | 35          | 70  | 105 | 140 | V    |
| Average Rectifier Forward Current<br>Total Device (Rated $V_R$ , $T_C=100$ )                                  | $I_{F(AV)}$                     | 6.0<br>12   |     |     |     | A    |
| Peak Repetitive Forward Current<br>(Rate $V_R$ , Square Wave, 20kHz, $T_C=125$ )                              | $I_{FM}$                        | 12          |     |     |     | A    |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rate load conditions<br>half-wave, single phase, 60Hz) | $I_{FSM}$                       | 100         |     |     |     | A    |
| Operating and Storage Junction<br>Temperature Range                                                           | $T_J, T_{stg}$                  | -65 to +150 |     |     |     |      |



| DIM | MILLIMETERS |       |
|-----|-------------|-------|
|     | MIN         | MAX   |
| A   | 15.05       | 15.15 |
| B   | 13.35       | 13.45 |
| C   | 10.00       | 10.10 |
| D   | 6.55        | 6.65  |
| E   | 2.65        | 2.75  |
| F   | 1.55        | 1.65  |
| G   | 1.15        | 1.25  |
| H   | 0.55        | 0.65  |
| I   | 2.50        | 2.60  |
| J   | 3.00        | 3.20  |
| K   | 1.10        | 1.20  |
| L   | 0.55        | 0.65  |
| M   | 4.40        | 4.60  |
| N   | 1.15        | 1.25  |
| P   | 2.65        | 2.75  |
| O   | 3.35        | 3.45  |
| Q   | 3.15        | 3.25  |

### ELECTRIAL CHARACTERISTICS

| Characteristic                                                                                           | Symbol   | URF12          |    |    |    | Unit |
|----------------------------------------------------------------------------------------------------------|----------|----------------|----|----|----|------|
|                                                                                                          |          | 05             | 10 | 15 | 20 |      |
| Maximum Instantaneous Forward Voltage<br>( $I_F=6.0$ Amp $T_C=25$ )<br>( $I_F=6.0$ Amp $T_C=125$ )       | $V_F$    | 0.975<br>0.870 |    |    |    | V    |
| Maximum Instantaneous Reverse Current<br>(Rated DC Voltage, $T_C=25$ )<br>(Rated DC Voltage, $T_C=125$ ) | $I_R$    | 5.0<br>100     |    |    |    | uA   |
| Reverse Recovery Time<br>( $I_F=0.5$ A, $I_R=1.0$ , $t_{rr}=0.25$ A)                                     | $T_{rr}$ | 35             |    |    |    | ns   |
| Typical Junction Capacitance<br>(Reverse Voltage of 4 volts & $f=1$ MHz)                                 | $C_P$    | 55             |    |    |    | pF   |



# URF1205 Thru URF1220

FIG-1 TYPICAL FORWARD CHARACTERISTICS

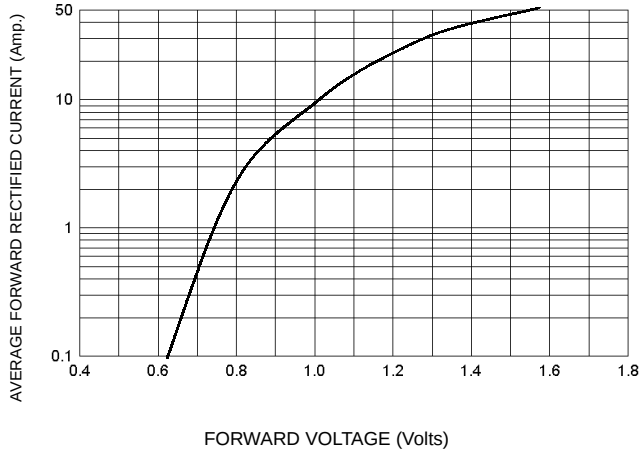


FIG-3 FORWARD CURRENT DERATING CURVE

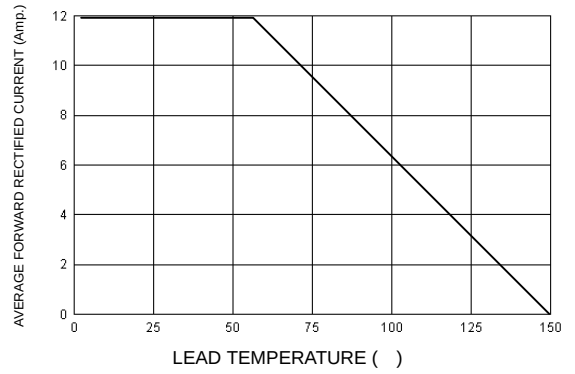


FIG-2 TYPICAL REVERSE CHARACTERISTICS

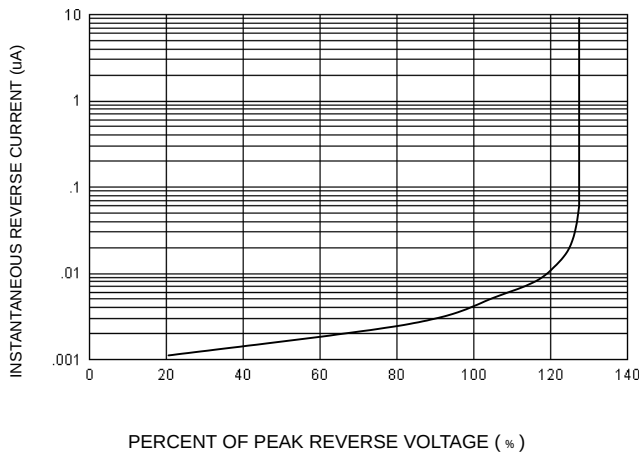


FIG-4 TYPICAL JUNCTION CAPACITANCE

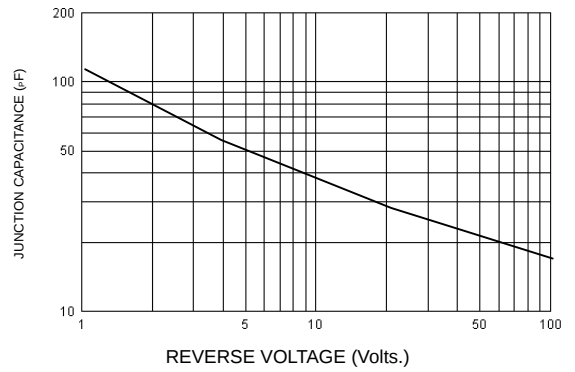
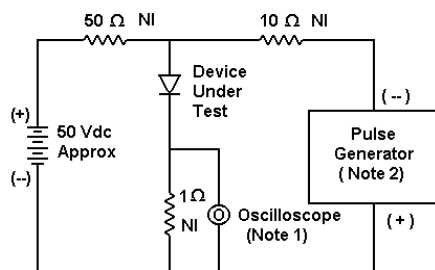
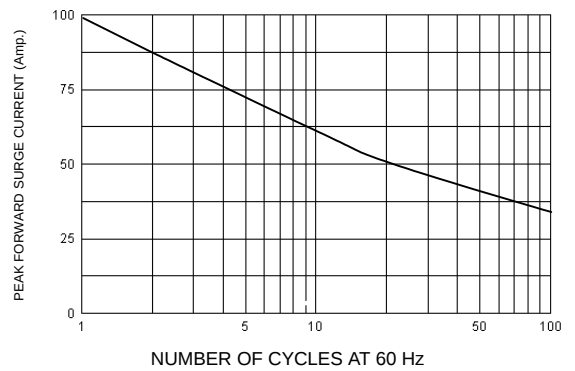
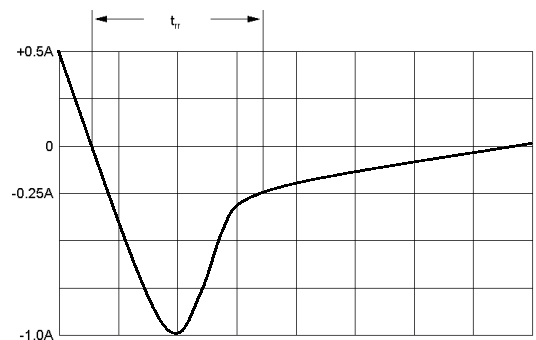


FIG-5 PEAK FORWARD SURGE CURRENT



- Notes:  
 1. Rise Time = 7 ns max. Input Impedance = 1 MΩ, 22 pF  
 2. Rise Time = 10 ns max. Input Impedance = 50 Ω



Set time base for 10/20 ns/cm

FIG-6 Reverse Recovery Time Characteristic and Test Circuit Diagram