

# FR810F-FR860F

Fast Recovery Rectifiers

**VOLTAGE RANGE: 10 --- 600 V**

**CURRENT: 8.0 A**

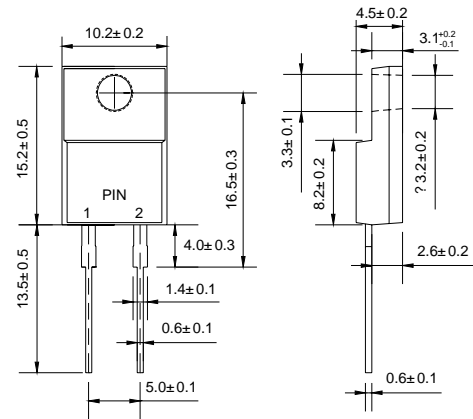
**ITO-220AC**

## Features

- ◇ Low cost
- ◇ Diffused junction
- ◇ Low leakage
- ◇ Low forward voltage drop
- ◇ High current capability
- ◇ Easily cleaned with Freon, Alcohol, Isopropanol and similar solvents
- ◇ The plastic material carries U/L recognition 94V-0

## Mechanical Data

- ◇ Case: JEDEC ITO-220AC, molded plastic
- ◇ Weight: 0.056 ounces, 1.587 gram
- ◇ Mounting position: Any



Dimensions in millimeters

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60 Hz, resistive or inductive load. For capacitive load, derate by 20%.

|   |                 | FR 810F        | FR 820F | FR 840F | FR 860F | UNITS              |
|---|-----------------|----------------|---------|---------|---------|--------------------|
| Maximum recurrent peak reverse voltage  | $V_{RRM}$       | 100            | 200     | 400     | 600     | V                  |
| Maximum RMS voltage   | $V_{RMS}$       | 70             | 140     | 280     | 420     | V                  |
| Maximum DC blocking voltage   | $V_{DC}$        | 100            | 200     | 400     | 600     | V                  |
| Maximum average forward rectified current<br>@ $T_C=100^\circ\text{C}$  | $I_{F(AV)}$     | 8.0            |         |         |         | A                  |
| Peak forward surge current<br>8.3ms single half-sine-wave<br>superimposed on rated load @ $T_J=125^\circ\text{C}$ | $I_{FSM}$       | 200            |         |         |         | A                  |
| Maximum instantaneous forward voltage<br>@ 8.0 A  | $V_F$           | 1.3            |         |         |         | V                  |
| Maximum reverse current @ $T_A=25^\circ\text{C}$<br>at rated DC blocking voltage @ $T_A=100^\circ\text{C}$        | $I_R$           | 10<br>150      |         |         |         | $\mu\text{A}$      |
| Maximum reverse recovery time (Note1)   | $t_{rr}$        | 150            |         |         | 250     | ns                 |
| Typical junction capacitance (Note2)  | $C_J$           | 70             |         |         |         | pF                 |
| Typical thermal resistance (Note3)  | $R_{\theta JA}$ | 22             |         |         |         | $^\circ\text{C/W}$ |
| Operating junction temperature range  | $T_J$           | - 55---- +150  |         |         |         | $^\circ\text{C}$   |
| Storage temperature range   | $T_{STG}$       | - 55---- + 150 |         |         |         | $^\circ\text{C}$   |

NOTE:1. Measured with  $I_F=0.5\text{A}$ ,  $I_R=1\text{A}$ ,  $I_{rr}=0.25\text{A}$ .

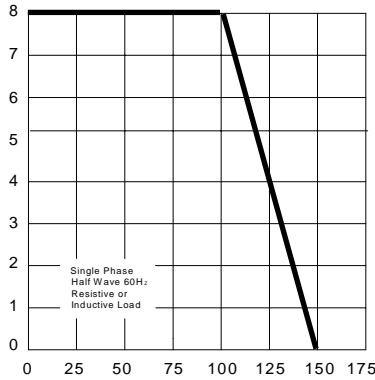
2. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

3. Thermal resistance from junction to ambient.

### Ratings AND Characteristic Curves

AVERAGE FORWARD RECTIFIED CURRENT  
AMPERES

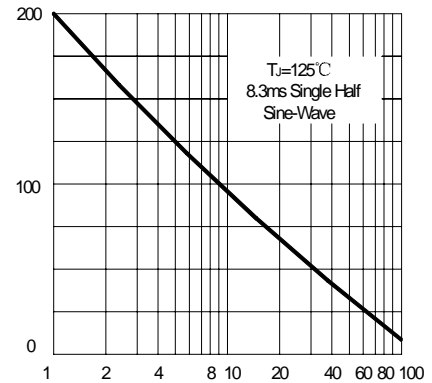
**FIG.1 – FORWARD DERATING CURVE**



CASE TEMPERATURE, °C

PEAK FORWARD SURGE CURRENT  
AMPERES

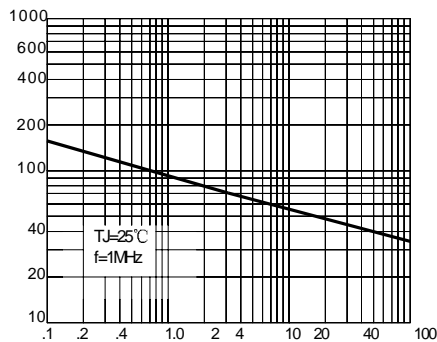
**FIG.2-PEAK FORWARD SURGE CURRENT**



NUMBER OF CYCLES AT 60 Hz

**FIG.3-TYPICAL JUNCTION CAPACITANCE**

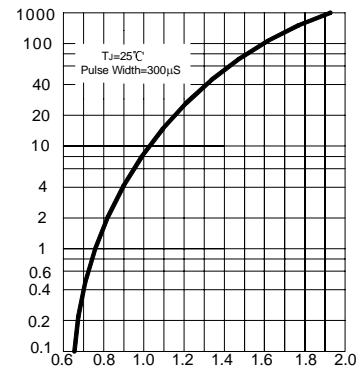
JUNCTION CAPACITANCE, pF



REVERSE VOLTAGE, VOLTS

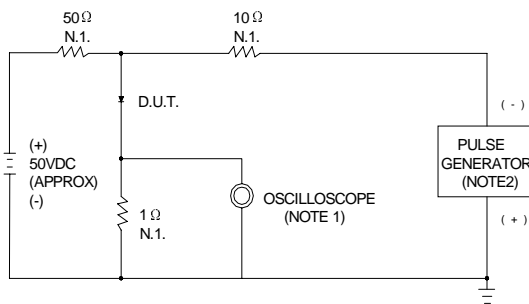
**FIG.4 – TYPICAL FORWARD CHARACTERISTIC**

INSTANTANEOUS FORWARD CURRENT  
AMPERES



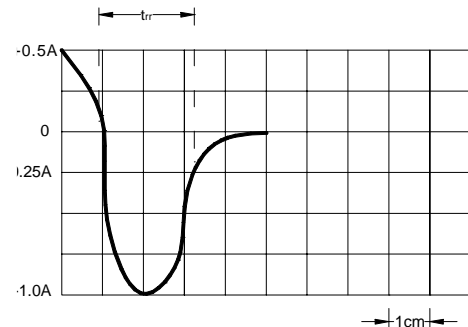
INSTANTANEOUS FORWARD VOLTAGE, VOLTS

**FIG.5 – REVERSE RECOVERY TIME CHARACTERISTIC AND TEST CIRCUIT DIAGRAM**



NOTES: 1. RISE TIME=7ns MAX. INPUT IMPEDANCE=1MΩ, 22pF

2. RISE TIME=10ns MAX. SOURCE IMPEDANCE=50Ω



SET TIME BASE FOR 50/100 ns/cm