



## U20D30 thru U20D60

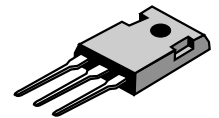
### Switchmode Dual Ultrafast Power Rectifiers

... 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°C Operating Junction Temperature
- \* Low Stored Charge Majority Carrier Conduction
- \* Low Forward Voltage, High Current Capability
- \* High-Switching Speed 50 Nanosecond Recovery Time
- \* Plastic Material used Carries Underwriters Laboratory

**ULTRA FAST  
RECTIFIERS**

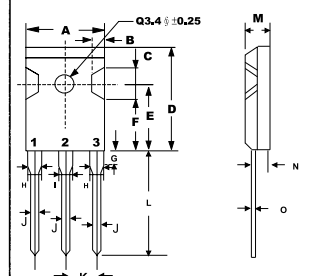
**20 AMPERES  
300 -- 600 VOLTS**



**TO-247 (3P)**

### MAXIMUM RATINGS

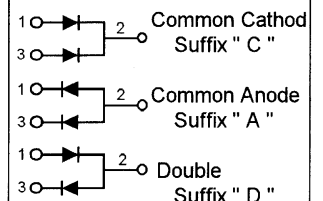
| Characteristic                                                                                               | Symbol                          | U20D          |     |     |     | Unit |
|--------------------------------------------------------------------------------------------------------------|---------------------------------|---------------|-----|-----|-----|------|
|                                                                                                              |                                 | 30            | 40  | 50  | 60  |      |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                       | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 300           | 400 | 500 | 600 | V    |
| RMS Reverse Voltage                                                                                          | $V_{R(RMS)}$                    | 210           | 280 | 350 | 420 | V    |
| Average Rectifier Forward Current<br>Per Leg $T_c=125^\circ\text{C}$<br>Per Total Device                     | $I_{F(AV)}$                     | 10<br>20      |     |     |     | A    |
| Peak Repetitive Forward Current<br>(Rate $V_R$ , Square Wave, 20kHz, $T_c=125^\circ\text{C}$ )               | $I_{FM}$                        | 20            |     |     |     | A    |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rate load conditions<br>halfwave, single phase, 60Hz) | $I_{FSM}$                       | 200           |     |     |     | A    |
| Operating and Storage Junction<br>Temperature Range                                                          | $T_J, T_{stg}$                  | - 65 to + 150 |     |     |     | °C   |



| DIM | MILLIMETERS |      |
|-----|-------------|------|
|     | MIN         | MAX  |
| A   | --          | 16.2 |
| B   | 1.7         | 2.7  |
| C   | 5.0         | 6.0  |
| D   | --          | 23.0 |
| E   | 14.8        | 15.2 |
| F   | 11.7        | 12.7 |
| G   | --          | 4.5  |
| H   | --          | 2.5  |
| I   | --          | 3.5  |
| J   | 1.1         | 1.4  |
| K   | 5.25        | 5.65 |
| L   | 19          | --   |
| M   | 4.7         | 5.3  |
| N   | 2.8         | 3.2  |
| O   | 0.45        | 0.85 |

### ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                                                       | Symbol   | U20D         |    |              |    | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|----|--------------|----|------|
|                                                                                                                                      |          | 30           | 40 | 50           | 60 |      |
| Maximum Instantaneous Forward Voltage<br>( $I_F=10$ Amp, $T_c=25^\circ\text{C}$ )<br>( $I_F=10$ Amp, $T_c=100^\circ\text{C}$ )       | $V_F$    | 1.30<br>1.15 |    | 1.50<br>1.36 |    | V    |
| Maximum Instantaneous Reverse Current<br>(Rated DC Voltage, $T_c=25^\circ\text{C}$ )<br>(Rated DC Voltage, $T_c=125^\circ\text{C}$ ) | $I_R$    | 10<br>500    |    |              |    | uA   |
| Reverse Recovery Time<br>( $I_F=0.5$ A, $I_R=1.0$ , $t_{rr}=0.25$ A)                                                                 | $T_{rr}$ | 50           |    |              |    | ns   |
| Typical Junction Capacitance<br>(Reverse Voltage of 4 volts & $f=1$ MHz)                                                             | $C_P$    | 70           |    |              |    | pF   |



# U20D30 Thru U20D60

FIG-1 TYPICAL FORWARD CHARACTERISTICS

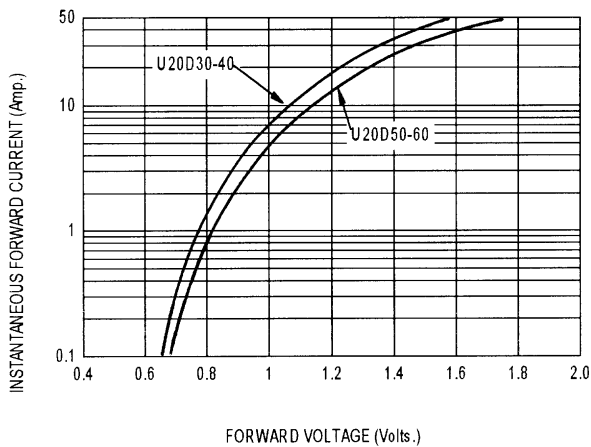


FIG-2 TYPICAL REVERSE CHARACTERISTICS

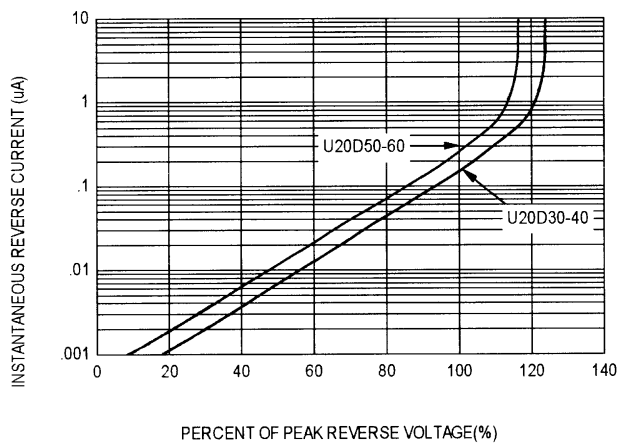


FIG-3 FORWARD CURRENT DERATING CURVE

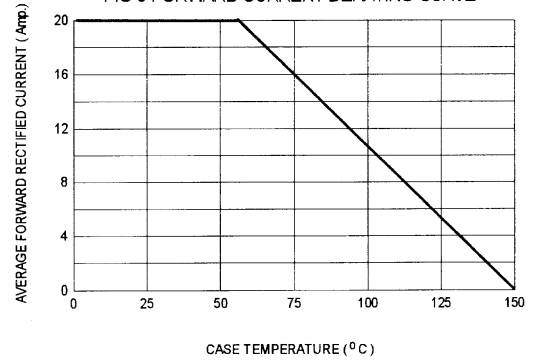


FIG-4 TYPICAL JUNCTION CAPACITANCE

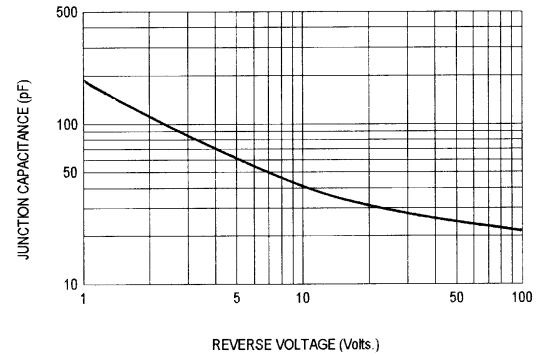
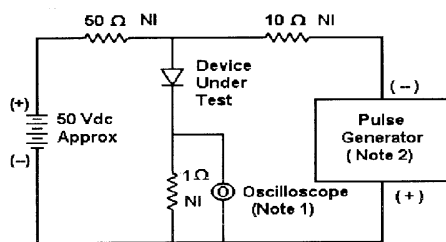
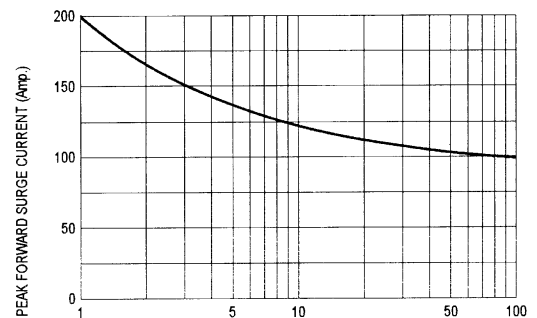
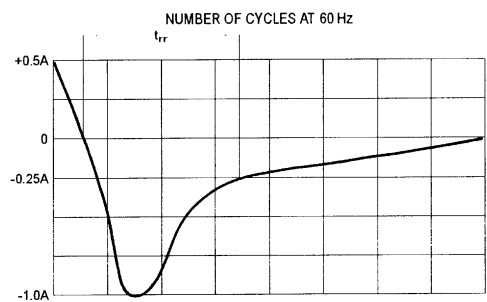


FIG-5 PEAK FORWARD SURGE CURRENT



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



Set time base for 10/20 ns/div

Fig-6 Reverse Recovery Time Characteristic and Test Circuit Diagram