



## U20C30 thru U20C60

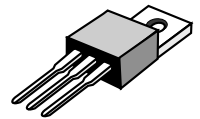
### Switchmode Dual Ultrafast Power Rectifiers

... 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**



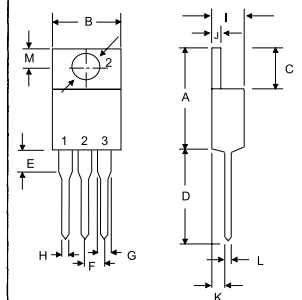
**TO-220AB**

### MAXIMUM RATINGS

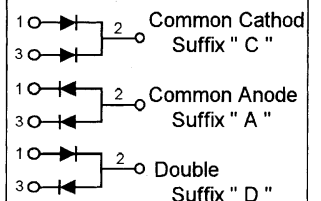
| Characteristic                                                                                                 | Symbol                          | U20C          |     |     |     | Unit |
|----------------------------------------------------------------------------------------------------------------|---------------------------------|---------------|-----|-----|-----|------|
|                                                                                                                |                                 | 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 ) | $I_{FSM}$                       | 175           |     |     |     | A    |
| Operating and Storage Junction<br>Temperature Range                                                            | $T_J, T_{stg}$                  | - 65 to + 150 |     |     |     | °C   |

### ELECTRICAL CHARACTERISTICS

| Characteristic                                                                                                                         | Symbol   | U20C         |    |              |    | 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   |



| DIM | MILLIMETERS |       |
|-----|-------------|-------|
|     | MIN         | MAX   |
| A   | 14.68       | 15.32 |
| B   | 9.78        | 10.42 |
| C   | 6.01        | 6.52  |
| D   | 13.06       | 14.62 |
| E   | 3.57        | 4.07  |
| F   | 2.42        | 2.66  |
| G   | 1.12        | 1.36  |
| H   | 0.72        | 0.96  |
| I   | 4.22        | 4.98  |
| J   | 1.14        | 1.36  |
| K   | 2.20        | 2.97  |
| L   | 0.33        | 0.55  |
| M   | 2.48        | 2.98  |
| O   | 3.70        | 3.90  |



# U20C30 Thru U20C60

FIG-1 TYPICAL FORWARD CHARACTERISTICS

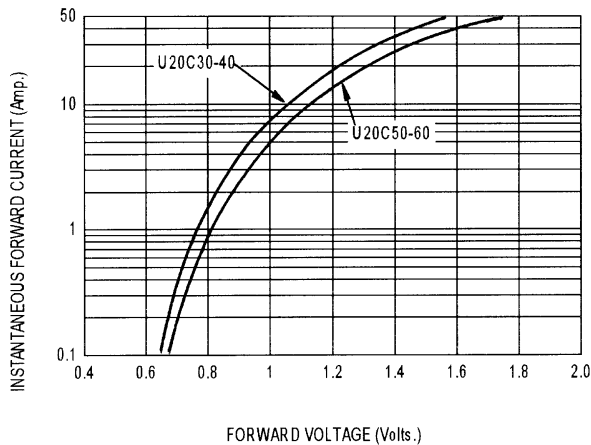


FIG-2 TYPICAL REVERSE CHARACTERISTICS

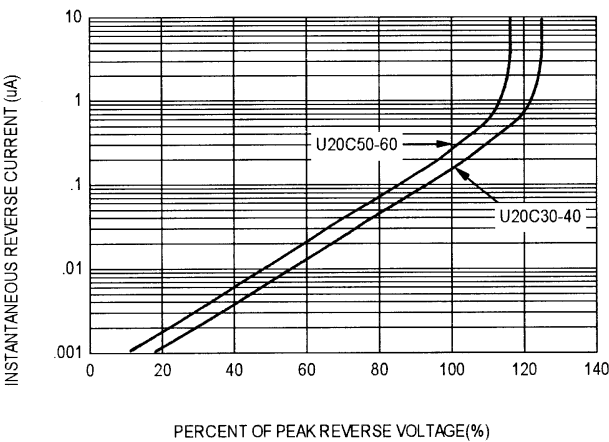


FIG-3 FORWARD CURRENT DERATING CURVE

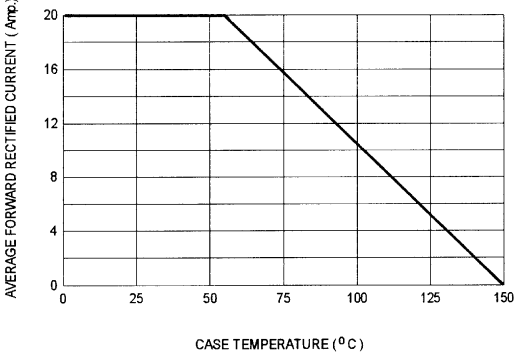


FIG-4 TYPICAL JUNCTION CAPACITANCE

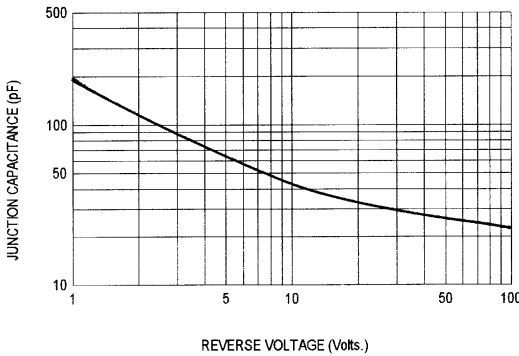
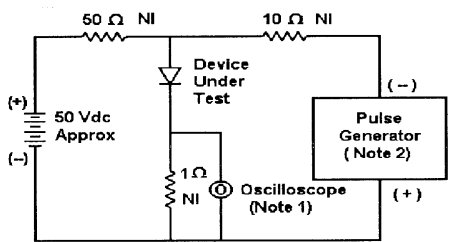
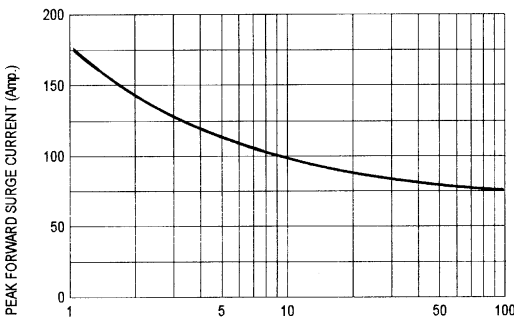


FIG-5 PEAK FORWARD SURGE CURRENT



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

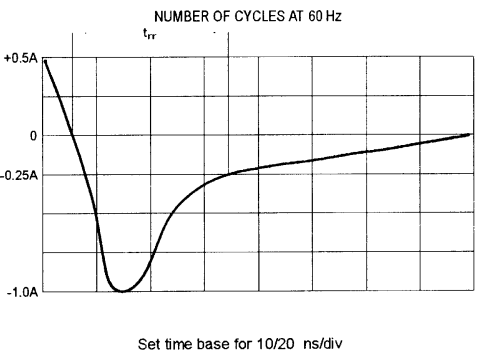


Fig-6 Reverse Recovery Time Characteristic and Test Circuit Diagram