



## U60D05 thru U60D20

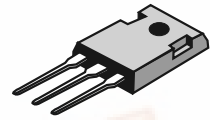
### Switchmode Dual Ultrafast Power Rectifiers

... 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

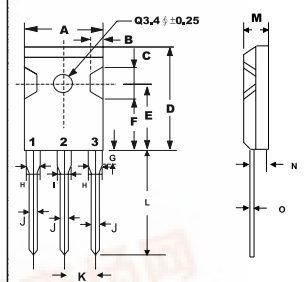
60 AMPERES  
50 -- 200 VOLTS



TO-247 (3P)

#### MAXIMUM RATINGS

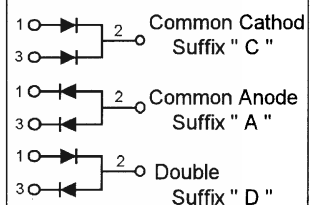
| Characteristic                                                                                                 | Symbol                          | U60D          |     |     |     | Unit |
|----------------------------------------------------------------------------------------------------------------|---------------------------------|---------------|-----|-----|-----|------|
|                                                                                                                |                                 | 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>Per Leg<br>Per Total Device                                               | $I_{F(AV)}$                     | 30<br>60      |     |     |     | A    |
| Peak Repetitive Forward Current<br>( Rate $V_R$ , Square Wave, 20kHz, $T_c=125^\circ\text{C}$ )                | $I_{FM}$                        | 60            |     |     |     | A    |
| Non-Repetitive Peak Surge Current<br>( Surge applied at rate load conditions<br>halfwave, single phase, 60Hz ) | $I_{FSM}$                       | 500           |     |     |     | 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   | U60D         |    |    |    | Unit     |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|----|----|----|----------|
|                                                                                                                                            |          | 05           | 10 | 15 | 20 |          |
| Maximum Instantaneous Forward Voltage<br>( $I_F=30$ Amp, $T_c = 25^\circ\text{C}$ )<br>( $I_F=30$ Amp, $T_c = 100^\circ\text{C}$ )         | $V_F$    | 1.00<br>0.85 |    |    |    | V        |
| Maximum Instantaneous Reverse Current<br>( Rated DC Voltage, $T_c = 25^\circ\text{C}$ )<br>( Rated DC Voltage, $T_c = 125^\circ\text{C}$ ) | $I_R$    | 15<br>1.5    |    |    |    | uA<br>mA |
| Reverse Recovery Time<br>( $I_F = 0.5$ A, $I_R = 1.0$ , $I_{rr} = 0.25$ A )                                                                | $T_{rr}$ | 50           |    |    |    | ns       |
| Typical Junction Capacitance<br>( Reverse Voltage of 4 volts & $f=1$ MHz)                                                                  | $C_p$    | 620          |    |    |    | pF       |



# U60D05 Thru U60D20

FIG-1 TYPICAL FORWARD CHARACTERISTICS

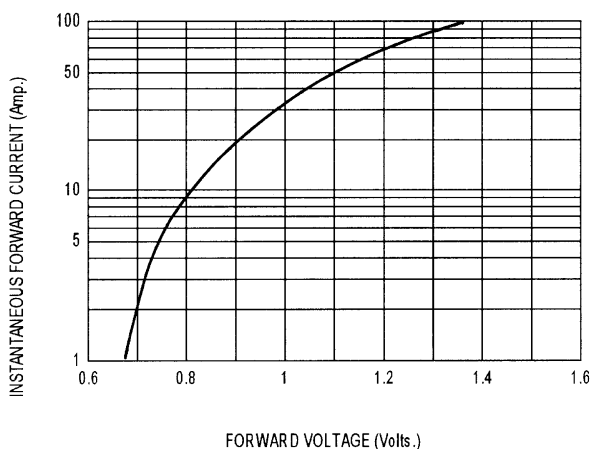
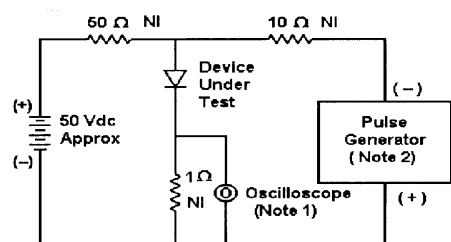
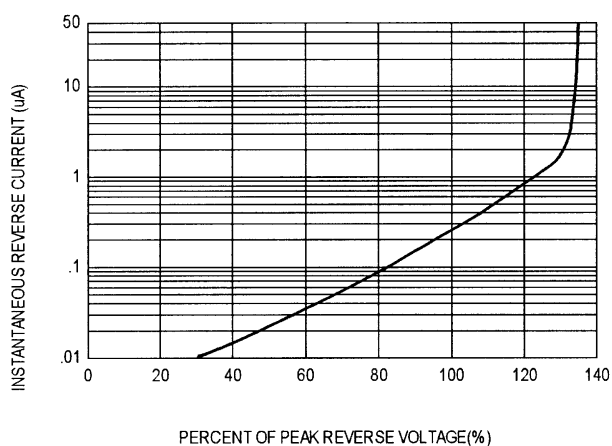


FIG-2 TYPICAL REVERSE CHARACTERISTICS



- 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

FIG-3 FORWARD CURRENT DERATING CURVE

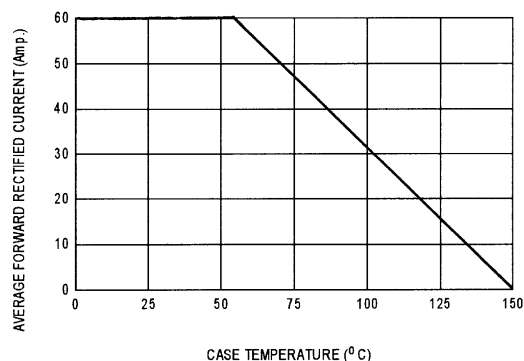


FIG-4 TYPICAL JUNCTION CAPACITANCE

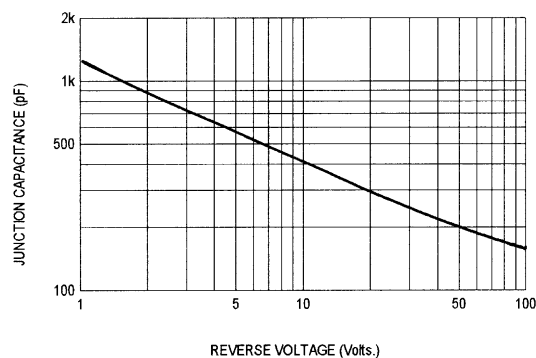
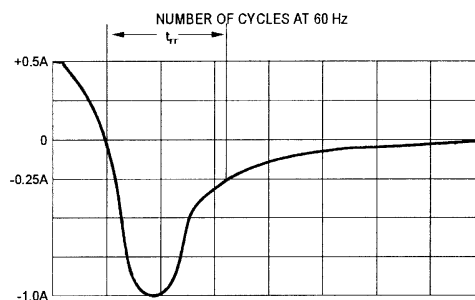
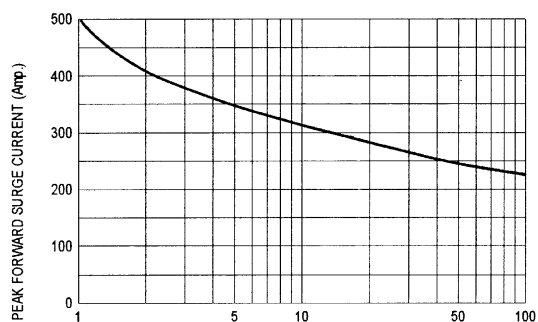


FIG-5 PEAK FORWARD SURGE CURRENT



Set time base for 20 ns/div