# MOSPEC

# U15A20

**Single Ultra Fast Recovery Rectifier Diodes**

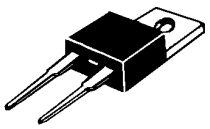
Designed for use in switching power supplies inverters and as free wheeling diodes. These state-of-the-art devices have the following

**ULTRA FAST RECTIFIERS**

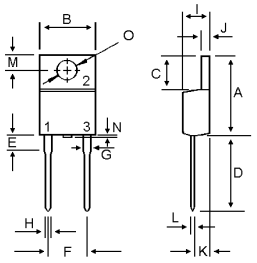
**15 AMPERES 200 VOLTS**

**Features**

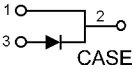
- ∗ High Surge Capacity
- ∗ Low Power Loss, High efficiency
- ∗ 150 $^{O}$C Operating Junction Temperature
- ∗ Low Stored Charge Majority Carrier Conduction
- ∗ Low Forward Voltage, High Current Capability
- ∗ High-Switching Speed 35 Nanosecond Recovery Time
- ∗ Plastic Material used Carries Underwriters Laboratory Flammability Classification 94V-O
- ∗ Pb free
- ∗ In compliance with EU RoHs directives



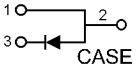
**TO-220A**




| DIM | MILLIMETERS | |
|---|---|---|
| | MIN | MAX |
| A | 14.68 | 16.00 |
| B | 9.78 | 10.42 |
| C | 5.02 | 6.60 |
| D | 13.00 | 14.62 |
| E | 3.10 | 4.19 |
| F | 4.82 | 5.34 |
| G | 1.10 | 1.67 |
| H | 0.69 | 1.01 |
| I | 4.22 | 4.98 |
| J | 1.14 | 1.40 |
| K | 2.20 | 3.30 |
| L | 0.28 | 0.61 |
| M | 2.48 | 3.00 |
| N | --- | 2.00 |
| O | 3.50 | 4.00 |




Case Positive
Suffix "P"




Case Negative
Suffix "R"

## MAXIMUM RATINGS

| Characteristic | Symbol | U15A20 | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 200 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 140 | V |
| Average Rectifier Forward Current | $I_{F(AV)}$ | 15 | A |
| Peak Repetitive Forward Current (Rate $V_R$, Square Wave, 20kHz) | $I_{FM}$ | 15 | A |
| Non-Repetitive Peak Surge Current (Surge applied at rate load conditions half-ware, single phase, 60Hz) | $I_{FSM}$ | 250 | A |
| Operating Junction Temperature Range | $T_J$ | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | -65 to +150 | ℃ |

## ELECTRICAL CHARACTERISTICS

| Characteristic | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Maximum Instantaneous Forward Voltage<br>( $I_F$ =15 Amp $T_C$ = 25℃)<br>( $I_F$ =15 Amp $T_C$ = 125℃) | $V_F$ | ---<br>--- | 0.935<br>0.770 | 0.975<br>--- | V |
| Maximum Instantaneous Reverse Current<br>( Rated DC Voltage, $T_C$ = 25℃)<br>( Rated DC Voltage, $T_C$ = 125℃) | $I_R$ | ---<br>--- | 0.01<br>7 | 10<br>--- | uA |
| Reverse Recovery Time<br>( $I_F$ = 0.5 A, $I_R$ =1.0 , $I_{rr}$ =0.25 A ) | $T_{rr}$ | --- | 17 | 35 | ns |
| Typical Junction Capacitance<br>(Reverse Voltage of 4 volts & f=1 MHz) | $C_P$ | | 150 | | pF |
| Typical Thermal Resistance junction to case | $R_{\theta jc}$ | | 1.6 | | ℃/w |

FIG-1 TYPICAL FORWARD CHARACTERISTICS

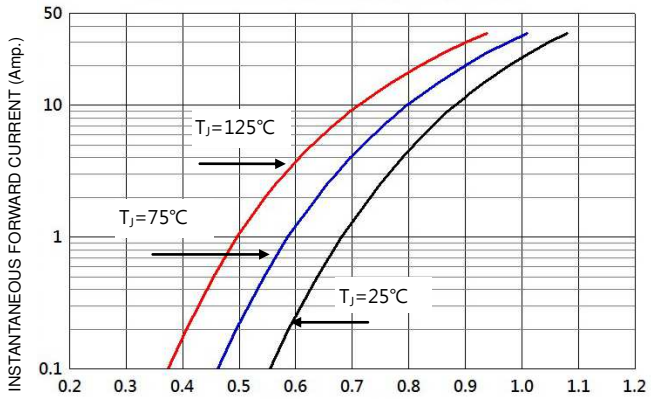



FIG-2 TYPICAL REVERSE CHARACTERISTICS

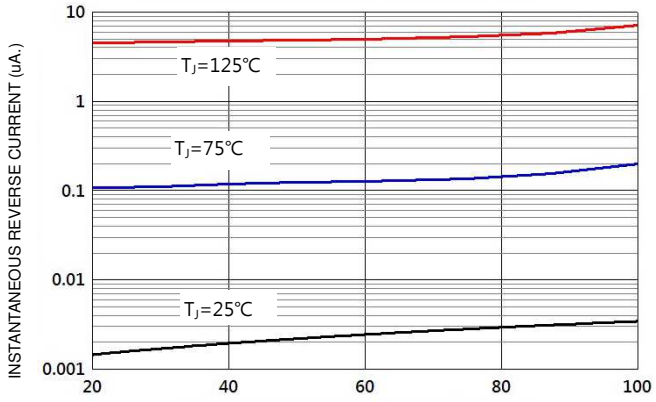



FIG-3 FORWARD CURRENT DERATING CURVE

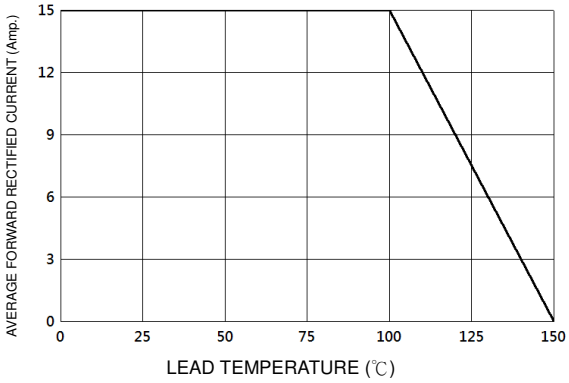



FIG-4TYPICAL JUNCTION CAPACITANCE

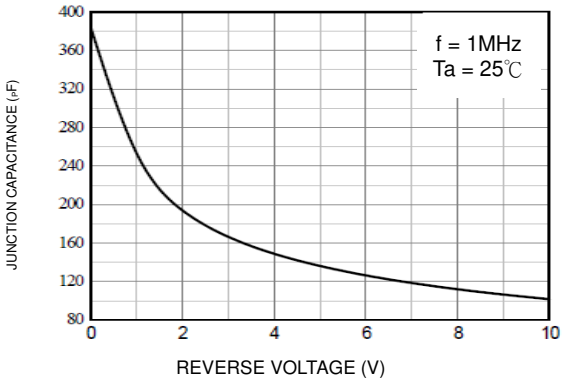
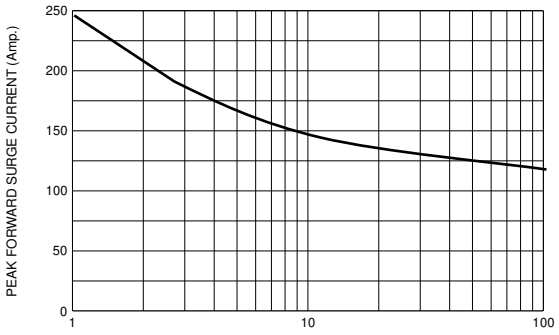
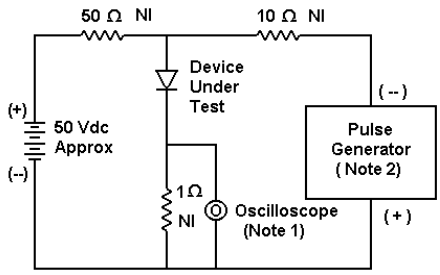
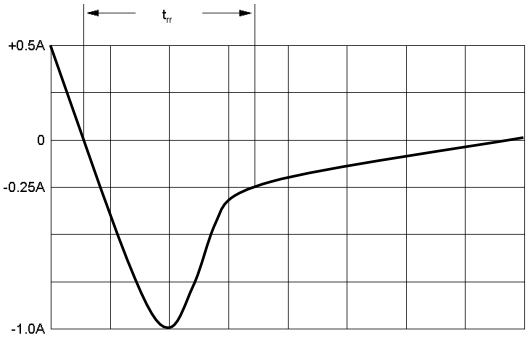



FIG-5PEAK FORWARD SURGE CURRENT




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/cm

FIG-6 Reverse Recovery Time Characteristic and Test Circuit Diagram

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