# MOSPEC

# URAF2040

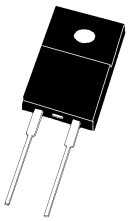
## Switchmode
## Full Plastic Single Ultra-fast Power Rectifiers

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

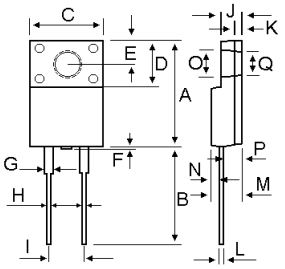
- ∗High Surge Capacity
- ∗Low Power Loss, High efficiency
- ∗Glass Passivated chip junctions
- ∗150℃ Operating Junction Temperature
- ∗Low Stored Charge Majority Carrier Conduction
- ∗Low Forward Voltage , High Current Capability
- ∗High-Switching Speed 50 Nanosecond Recovery Time
- ∗Plastic Material used Carries Underwriters Laboratory
- ∗Flammability Classification 94V-O
- ∗*Pb free*
- ∗*In compliance with EU RoHs directives*

**ULTRA FAST RECTIFIERS**

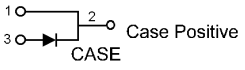
**20 AMPERES 400 VOLTS**

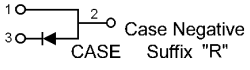


**ITO-220AC**




| DIM | MILLIMETERS | |
|---|---|---|
| | MIN | MAX |
| A | 14.80 | 16.10 |
| B | 12.65 | 13.80 |
| C | 9.85 | 10.36 |
| D | 4.60 | 6.80 |
| E | 2.50 | 3.50 |
| F | --- | 2.00 |
| G | 1.00 | 1.45 |
| H | 0.30 | 0.90 |
| I | 4.80 | 5.40 |
| J | 2.34 | 3.30 |
| K | 0.55 | 1.30 |
| L | 0.36 | 0.80 |
| M | 4.20 | 4.90 |
| N | 1.10 | 1.80 |
| O | 2.90 | 3.50 |
| P | 2.50 | 3.15 |
| Q | 2.90 | 3.50 |




## MAXIMUM RATINGS

| Characteristic | Symbol | URAF2040 | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 400 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 280 | V |
| Average Rectifier Forward Current | $I_{F(AV)}$ | 20 | A |
| Peak Repetitive Forward Current<br>(Rate $V_R$, Square Wave, 20kHz) | $I_{FM}$ | 20 | A |
| Non-Repetitive Peak Surge Current (Surge applied at rate load conditions halfware, single phase, 60Hz) | $I_{FSM}$ | 200 | A |
| Operating and Storage Junction Temperature Range | $T_J$ , $T_{stg}$ | -65 to +150 | ℃ |

## ELECTRICAL CHARACTERISTICS

| Characteristic | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Maximum Instantaneous Forward Voltage<br>( $I_F$ =20 Amp $T_C$ = 25℃)<br>( $I_F$ =20 Amp $T_C$ = 125℃) | $V_F$ | ---<br>--- | 1.12<br>0.96 | 1.50<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>8 | 10<br>--- | uA |
| Reverse Recovery Time<br>( $I_F$ = 0.5 A, $I_R$ =1.0 , $I_{rr}$ =0.25 A ) | $T_{rr}$ | --- | 31 | 50 | ns |
| Typical Junction Capacitance<br>(Reverse Voltage of 4 volts & f=1 MHz) | $C_P$ | | 130 | | pF |

FIG-1 TYPICAL FORWARD CHARACTERISTICS

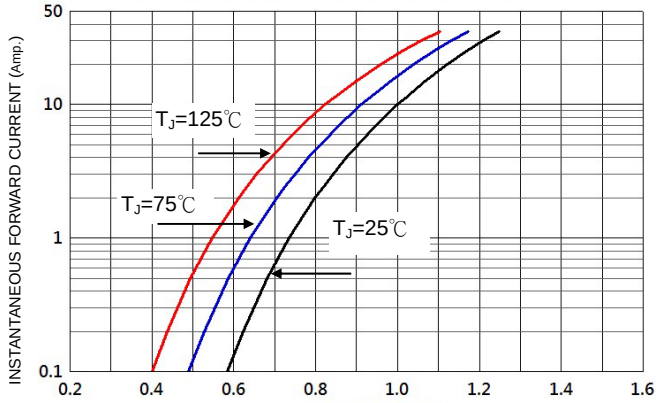



FIG-2 TYPICAL REVERSE CHARACTERISTICS

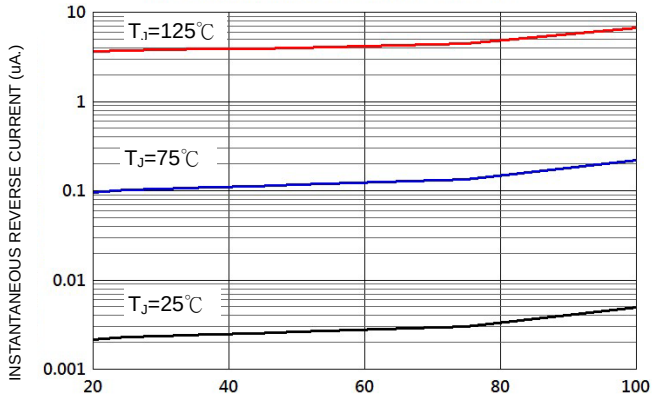



FIG-3 FORWARD CURRENT DERATING CURVE

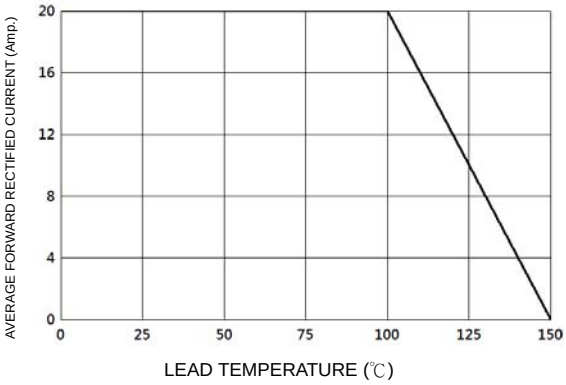



FIG-4TYPICAL JUNCTION CAPACITANCE

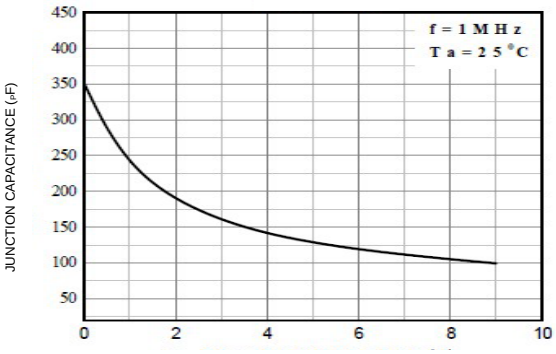
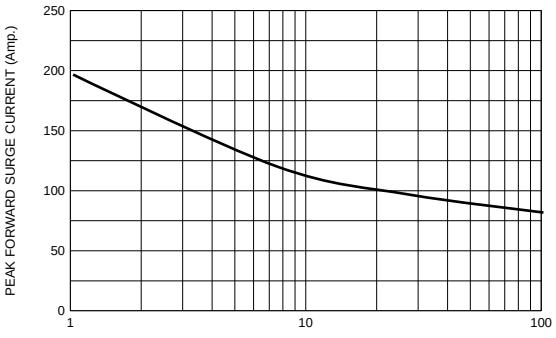
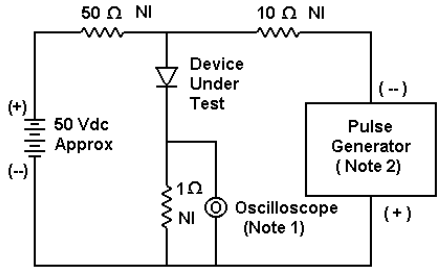
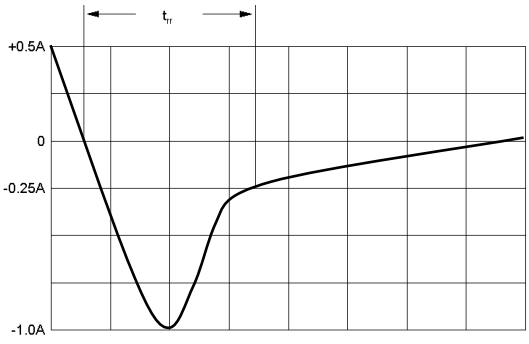



FIG-5PEAK FORWARD SURGE CURRENT




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




Set time base for 10/20 ns/cm

FIG-6 Reverse Recovery Time Characteristic and Test Circuit Diagram

# Notice

MOSPEC reserves the rights to make changes of the content herein the document anytime without notification. MOSPEC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies. Please refer to MOSPEC website for the last document.

MOSPEC disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially incurred.

Application shown on the herein document are examples of standard use and operation. Customers are responsible for comprehending suitable use in particular applications. MOSPEC makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by MOSPEC for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of MOSPEC or others.

These MOSPEC products are intended for usage in general electronic equipment. Please make sure to consult with MOSPEC before you use these MOSPEC products in equipment which require specialized quality and/or reliability, and in equipment which could have major impact to the welfare of human life ( atomic energy control, aeronautics , traffic control, combustion control, safety devices etc.)