



## UFR4060C

Preliminary

FAST RECOVERY EPITAXIAL DIODE

### ULTRAFAST SOFT RECOVERY RECTIFIER DIODE

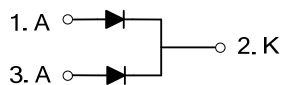
#### DESCRIPTION

The UTC **UFR4060C** utilizes advanced processing techniques to achieve ultrafast recovery times and higher forward current. Its soft recovery characteristics and high reliability suit for wide industrial applications.

#### FEATURES

- \* Ultrafast Recovery Time
- \* Soft Recovery Characteristics
- \* Low Recovery Loss
- \* Low Forward Voltage
- \* High Surge Current Capability
- \* Low Leakage Current

#### SYMBOL



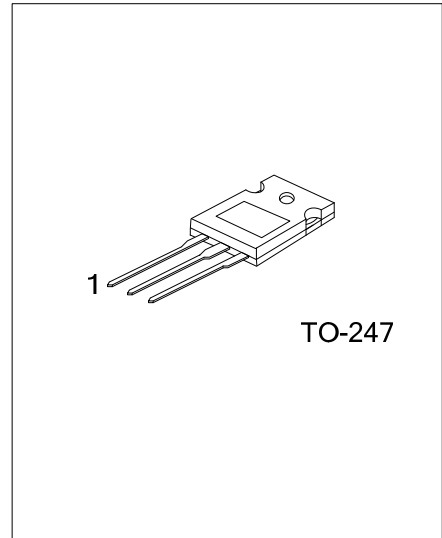
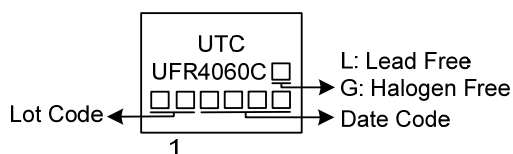
#### ORDERING INFORMATION

| Ordering Number |                 | Package | Pin Assignment |   |   | Packing |
|-----------------|-----------------|---------|----------------|---|---|---------|
| Lead Free       | Halogen Free    |         | 1              | 2 | 3 |         |
| UFR4060CL-T47-T | UFR4060CG-T47-T | TO-247  | A              | K | A | Tube    |

Note: Pin Assignment: A: Anode K: Cathode

|                 |                  |   |
|-----------------|------------------|---|
| UFR4060CG-T47-T | (1)Packing Type  | (1) T: Tube                                     |
|                 | (2)Package Type  | (2) T47: TO-247                                 |
|                 | (3)Green Package | (3) G: Halogen Free and Lead Free, L: Lead Free |

#### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_C=25^{\circ}\text{C}$  unless otherwise specified)

| PARAMETER  | SYMBOL    | RATINGS         | UNIT               |
|--|-----------|-----------------|--------------------|
| Maximum D.C. Reverse Voltage   | $V_R$     | 600             | V                  |
| Maximum Peak Repetitive Reverse Voltage  | $V_{RRM}$ | 600             | V                  |
| Maximum Working Peak Reverse Voltage   | $V_{RWM}$ | 600             | V                  |
| Maximum Average Forward Current<br>( $T_C=110^{\circ}\text{C}$ )                                   | Per Leg   | 20              | A                  |
|  | Total     | 40              | A                  |
| Non-Repetitive Forward Surge Current<br>( $T_J=45^{\circ}\text{C}$ , $t=10\text{ms}$ , 50Hz, Sine) | $I_{FSM}$ | 150             | A                  |
| Operating Temperature Range  | $T_J$     | $-40 \sim +150$ | $^{\circ}\text{C}$ |
| Storage Temperature Range  | $T_{STG}$ | $-40 \sim +150$ | $^{\circ}\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL CHARACTERISTICS

| PARAMETER                  | SYMBOL        | RATINGS | UNIT                 |
|----------------------------|---------------|---------|----------------------|
| Typical Thermal Resistance | $\theta_{JC}$ | 0.8     | $^{\circ}\text{C/W}$ |

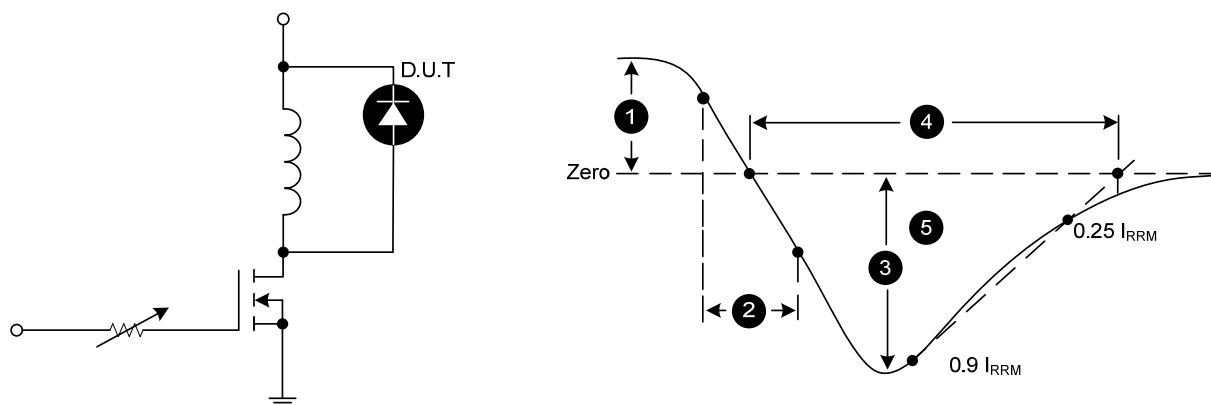
■ STATIC ELECTRICAL CHARACTERISTICS ( $T_J = 25^{\circ}\text{C}$  unless otherwise specified)

| PARAMETER                       | SYMBOL | TEST CONDITIONS                               | MIN | TYP | MAX | UNIT          |
|---------------------------------|--------|---|-----|-----|-----|---------------|
| Forward Voltage                 | $V_F$  | $I_F=20\text{A}$                              |     | 1.3 | 1.6 | V             |
| Maximum Reverse Leakage Current | IRM    | $V_R=600\text{V}$                             |     |     | 10  | $\mu\text{A}$ |
|                                 |        | $V_R=600\text{V}$ , $T_J=125^{\circ}\text{C}$ |     |     | 500 | $\mu\text{A}$ |

■ DYNAMIC CHARACTERISTICS

| PARAMETER             | SYMBOL   | TEST CONDITIONS                                       | MIN | TYP | MAX | UNIT |
|-----------------------|----------|---|-----|-----|-----|------|
| Reverse Recovery Time | $t_{rr}$ | $I_F=40\text{A}$ , $di_F/dt=-100\text{A}/\mu\text{s}$ |     | 48  |     | ns   |

## ■ TEST CIRCUITS AND WAVEFORMS



Diode Reverse Recovery Test Circuit and Waveform

1.  $I_F$  - Forward Conduction Current
2.  $di_F/dt$  - Rate of Diode Current Change Through Zero Crossing.
3.  $I_{RRM}$  - Maximum Reverse Recovery Current.
4.  $t_{rr}$  - Reverse Recovery Time, measured from zero crossing where diode current goes from positive to negative, to the point at which the straight line through  $I_{RRM}$  and  $0.25 \cdot I_{RRM}$  passes through zero.
5.  $Q_{rr}$  - Area Under the Curve Defined by  $I_{RRM}$  and  $t_{rr}$ .

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