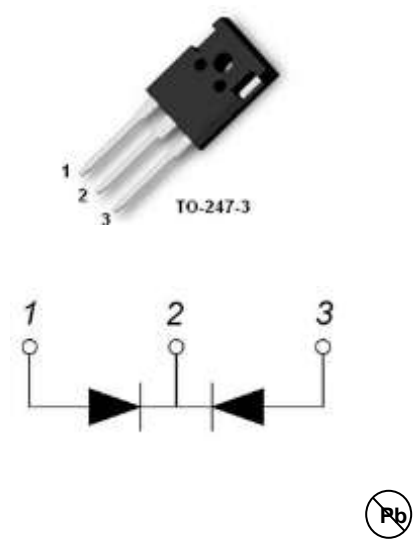



600V 60A Ultrafast Recovery Diode

| | |
|---|--|
| <p>Description FRED from Lonten utilizes advanced processing techniques to achieve ultra-fast recovery times and higher forward current. Its soft recovery characteristics and high reliability suit for wide industrial applications.</p> <p>Features</p> <ul style="list-style-type: none"> ◆ Ultra-fast Recovery Time ◆ Soft Recovery Characteristics ◆ Low Recovery Loss ◆ Low Forward Voltage ◆ High Surge Current Capability ◆ Low Leakage Current <p>Applications</p> <ul style="list-style-type: none"> ◆ Freewheeling, Clamp ◆ Inversion Welder ◆ PFC ◆ Plating Power Supply ◆ Ultrasonic Cleaner and Welder ◆ Converter & Chopper ◆ UPS | <p>Product Summary</p> <p>600V 60A FRED</p> <p>TO-247 Pin Configuration</p> <div style="text-align: center;">  </div> <div style="text-align: right; margin-top: 10px;">  </div> |
|---|--|

Absolute Maximum Ratings T_C = 25°C unless otherwise noted

| Parameter | Symbol | Value | Unit |
|--|---------------------|-------------|------|
| Maximum D.C. Reverse Voltage | V _R | 600 | V |
| Maximum Repetitive Reverse Voltage | V _{R(RM)} | 600 | V |
| Average Forward Current(T _c = 110°C,Per Diode) | I _{F(AV)} | 30 | A |
| Average Forward Current(T _c = 110°C,Per Package) | | 60 | A |
| RMS Forward Current(T _c = 110°C) | I _{F(RMS)} | 42 | A |
| Non-Repetitive Surge Forward Current(T _J = 45°C, t=10ms,50Hz, Sine) | I _{FSM} | 260 | A |
| Power Dissipation | P _D | 156 | W |
| Junction Temperature Range | T _J | -55 to +150 | °C |
| Storage Temperature Range | T _{STG} | -55 to +150 | °C |
| Module-to-Sink(Recommended M3) | Torque | 1.1 | Nm |
| | Weight | 6.0 | g |

Thermal Characteristics

| Parameter | Symbol | Value | Unit |
|--------------------------------------|-----------------|-------|---------------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | 0.8 | $^{\circ}C/W$ |

Package Marking and Ordering Information

| Device | Device Package | Marking |
|------------|----------------|------------|
| LMB60U60W4 | TO-247 | LMB60U60W4 |

Electrical Characteristics $T_J = 25^{\circ}C$ unless otherwise noted

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------|-------------------------------|--|------|------|------|---------|
| I_{RM} | Reverse Leakage Current | $V_R=600V$ | -- | -- | 10 | μA |
| | | $V_R=600V, T_J=125^{\circ}C$ | -- | -- | 10 | mA |
| V_F | Forward Voltage | $I_F=30A$ | -- | 2.0 | 2.4 | V |
| | | $I_F=30A, T_J=125^{\circ}C$ | -- | 1.7 | | V |
| t_{rr} | Reverse Recovery Time | $I_F=1A, V_R=30V,$ $di_F/dt=-200A/\mu s$ | -- | 20 | 25 | ns |
| t_{rr} | Reverse Recovery Time | $V_R=300V, I_F=30A$ | -- | 35 | -- | ns |
| I_{RRM} | Max. Reverse Recovery Current | $di_F/dt=-200A/\mu s, T_J=25^{\circ}C$ | -- | 3 | -- | A |
| t_{rr} | Reverse Recovery Time | $V_R=300V, I_F=30A$ $di_F/dt=-200A/\mu s, T_J=125^{\circ}C$ | -- | 125 | -- | ns |
| I_{RRM} | Max. Reverse Recovery Current | | -- | 6 | -- | A |
| S | | | -- | 1.9 | -- | -- |

Electrical Characteristics Diagrams

Figure 1. Forward Voltage Drop vs Forward Current

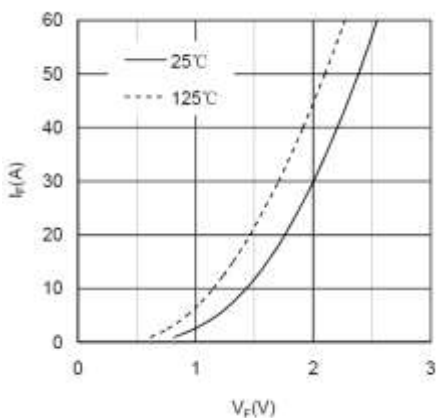


Figure 2. Reverse Recovery Time vs diF/dt

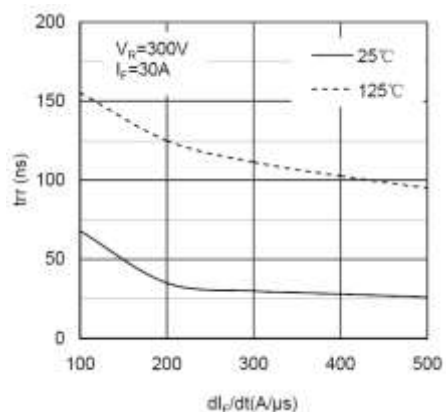


Figure 3. Reverse Recovery Current vs diF/dt

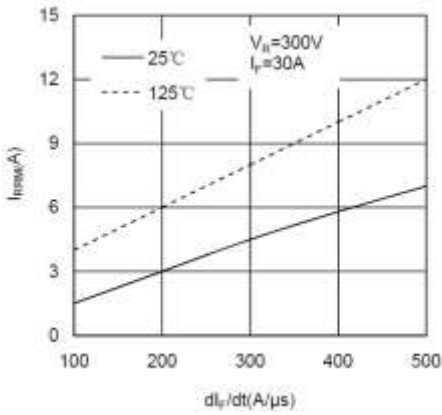


Figure 4. Reverse Recovery Charge vs diF/dt

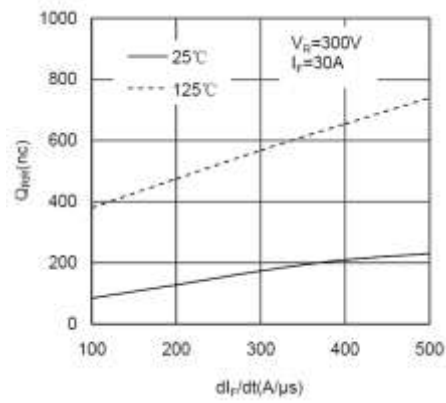


Figure 5. Forward current vs Case temperature

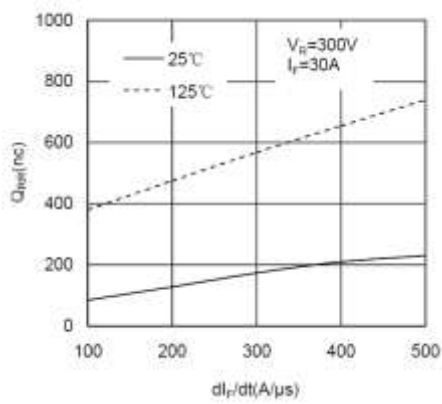


Figure 6. Transient Thermal Impedance

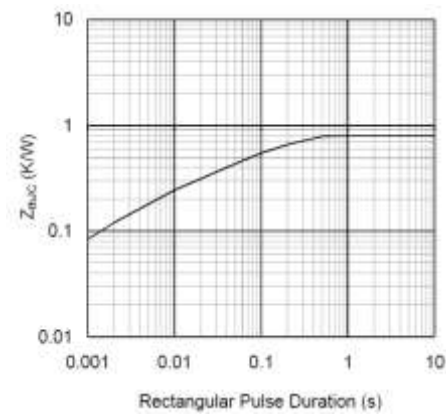


Figure 7. Diode Reverse Recovery Test Circuit and Waveform

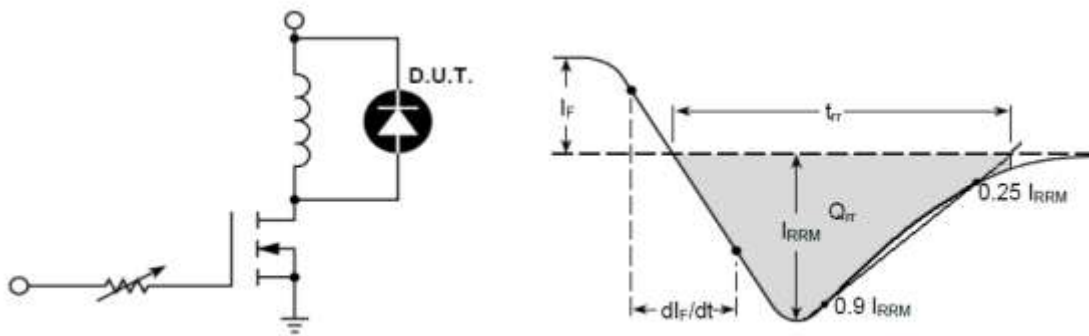
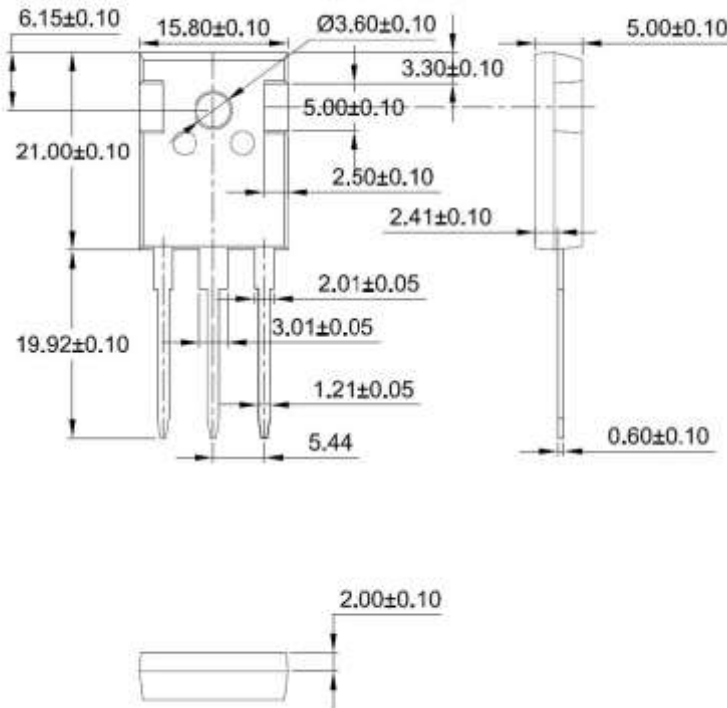
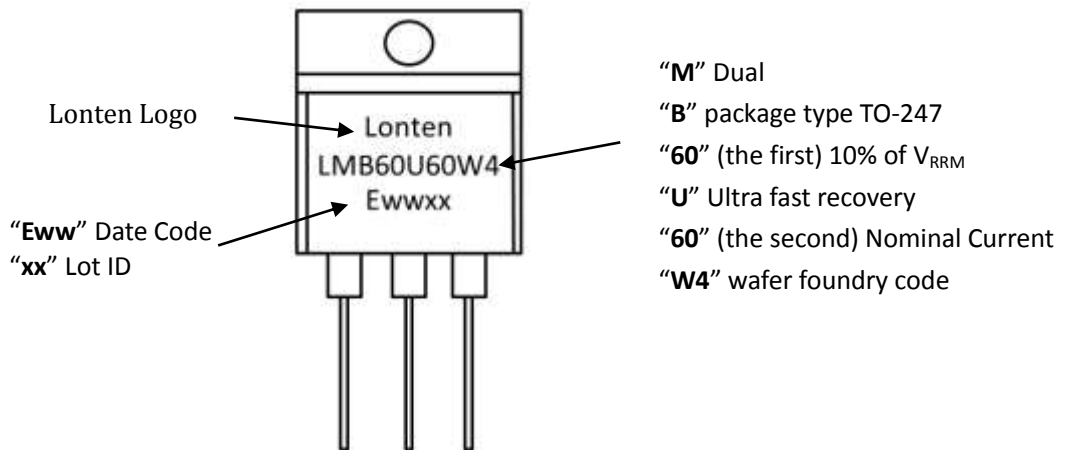


Figure8. Package Outline

Dimensions in Millimeters



Marking Information



Disclaimer

The content specified herein is for the purpose of introducing LONTEN's products (hereinafter "Products"). The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

LONTEN does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of the Products or technical information described in this document.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). LONTEN shall bear no responsibility in any way for use of any of the Products for the above special purposes.

Although LONTEN endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a LONTEN product.

The content specified herein is subject to change for improvement without notice. When using a LONTEN product, be sure to obtain the latest specifications.