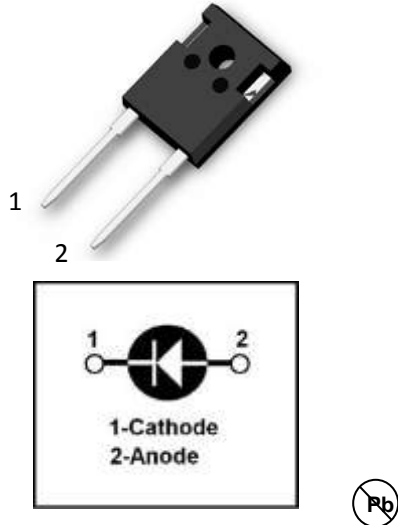


600V 60A Ultra-Fast Recovery Diode

<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, Snubber, Clamp ◆ Inversion Welder ◆ PFC ◆ Plating Power Supply ◆ Ultrasonic Cleaner and Welder ◆ Converter & Chopper ◆ UPS 	<p>Product Summary 600V 60A FRED</p> <p>TO-247 Pin Configuration</p> 
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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 _{RRM}	600	V
Average Forward Current(T _c = 110°C)	I _{F(AV)}	60	A
RMS Forward Current(T _c = 110°C)	I _{F(RMS)}	90	A
Non-Repetitive Surge Forward Current(T _J = 45°C, t=10ms, 50Hz, Sine)	I _{FSM}	600	A
Power Dissipation	P _D	250	W
Junction Temperature Range	T _J	-40 to +150	°C
Storage Temperature Range	T _{STG}	-40 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 _{θJC}	0.5	°C/W

Package Marking and Ordering Information

Device	Device Package	Marking
LDB60U60W4	TO-247	LDB60U60W4

Electrical Characteristics

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{RM}	Reverse Leakage Current	$V_R=600\text{V}$	--	--	10	μA
		$V_R=600\text{V}, T_J=125^\circ\text{C}$	--	--	1000	μA
V_F	Forward Voltage	$I_F=60\text{A}$	--	1.9	2.4	V
		$I_F=60\text{A}, T_J=125^\circ\text{C}$	--	1.7	--	V
t_{rr}	Reverse Recovery Time	$I_F=1\text{A}, V_R=30\text{V},$ $di_F/dt=-200\text{A}/\mu\text{s}$	--	25	--	ns
t_{rr}	Reverse Recovery Time	$V_R=300\text{V}, I_F=60\text{A}$	--	45	--	ns
I_{RRM}	Max. Reverse Recovery Current	$di_F/dt=-200\text{A}/\mu\text{s}, T_J=25^\circ\text{C}$	--	2.5	--	A
t_{rr}	Reverse Recovery Time	$V_R=300\text{V}, I_F=60\text{A}$	--	125	--	ns
I_{RRM}	Max. Reverse Recovery Current	$di_F/dt=-200\text{A}/\mu\text{s}, T_J=125^\circ\text{C}$	--	6.5	--	A

Electrical Characteristics Diagrams

Figure 1. Forward Voltage Drop vs Forward Current

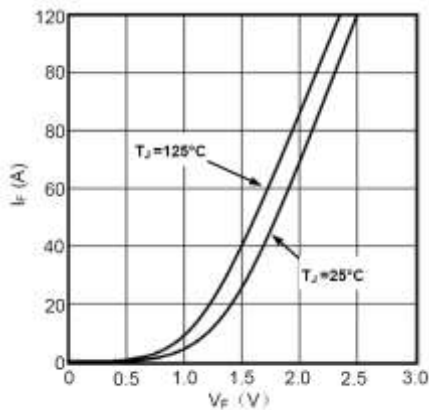


Figure 2. Reverse Recovery Time vs diF/dt

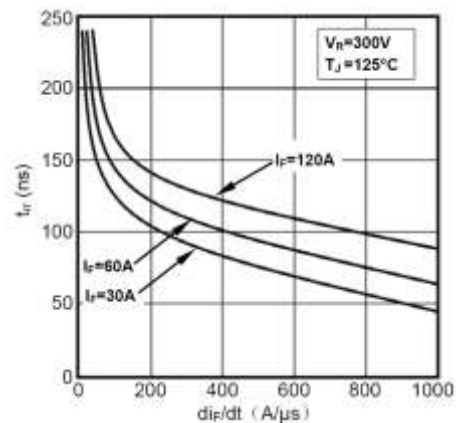


Figure 3. Reverse Recovery Current vs diF/dt

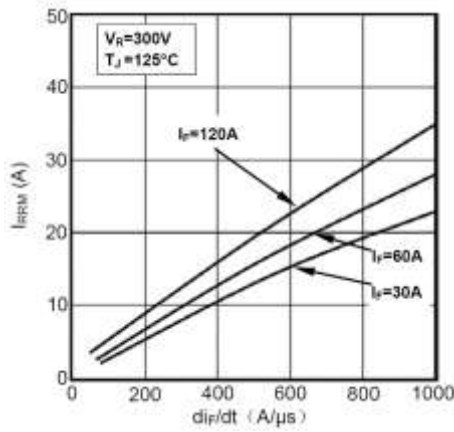


Figure 4. Reverse Recovery Charge vs diF/dt

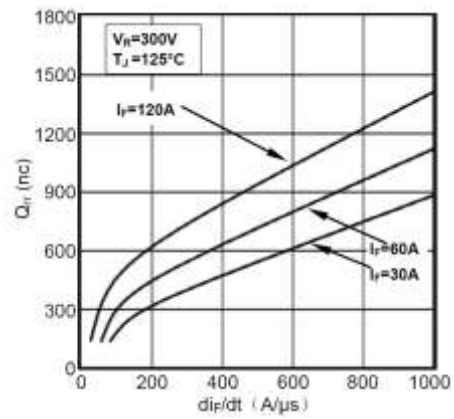


Figure 5. Dynamic Parameters vs Junction Temperature

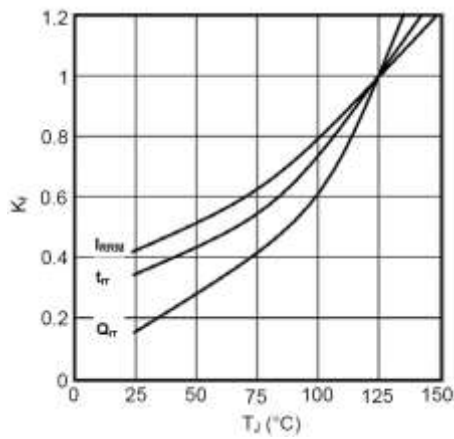


Figure 6. Transient Thermal Impedance

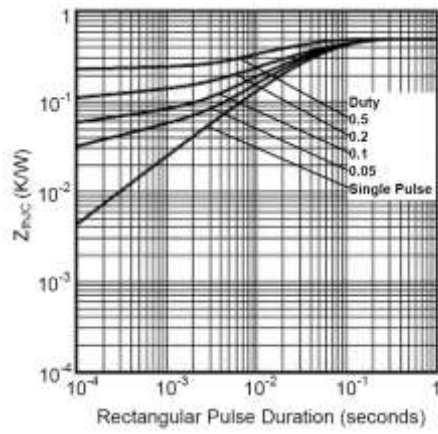


Figure 7. Diode Reverse Recovery Test Circuit and Waveform

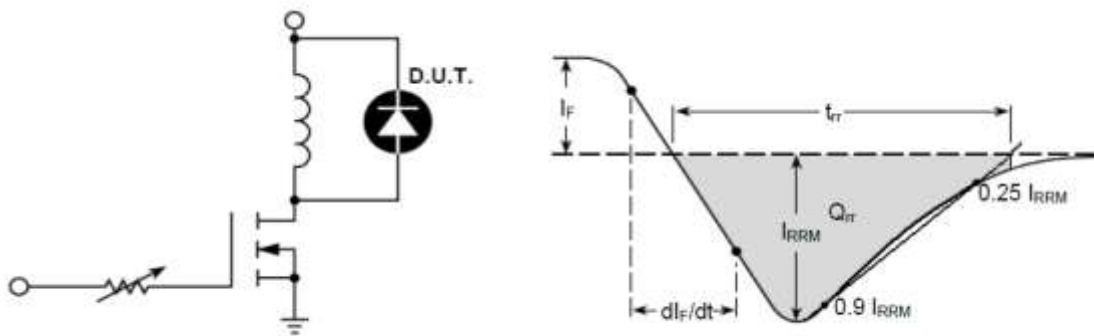
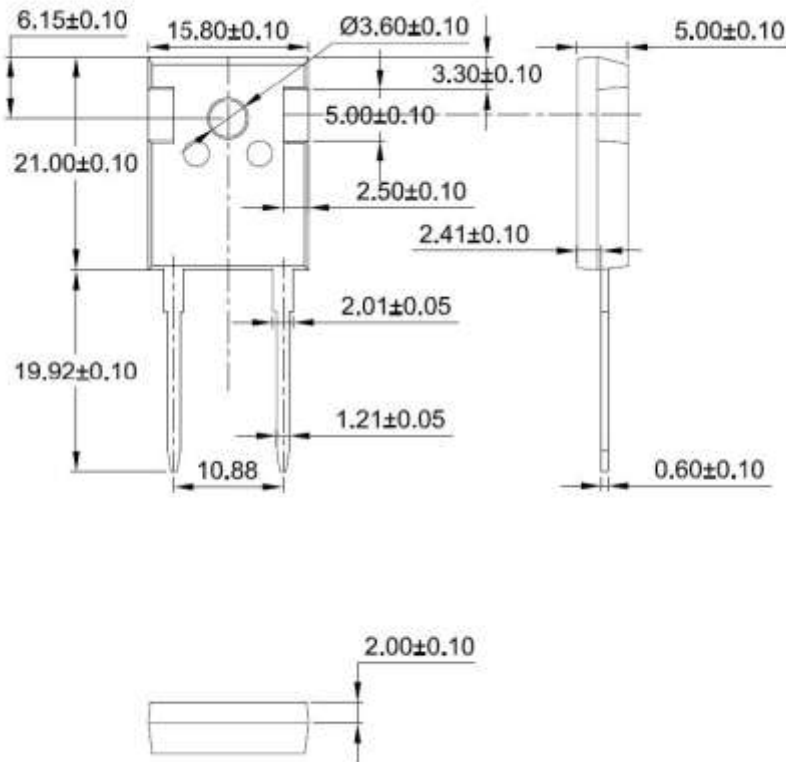
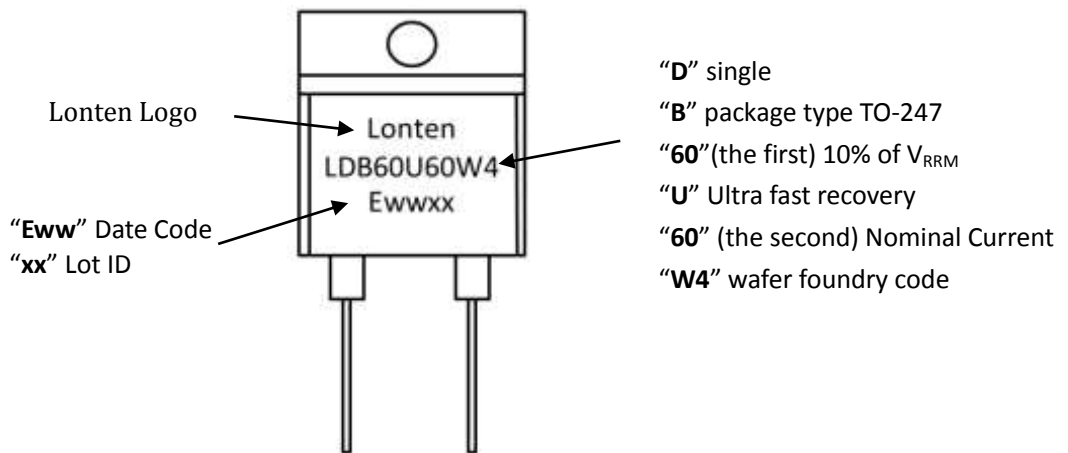


Figure 8. Package Outline

Dimensions in Millimeters



Marking Information



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