



**THE DATASHEET OF  
WB60FV60ALZ**



## 1. General description

Ultrafast power diode (Bare die without sawn).

## 2. Features and benefits

- Fast switching and soft reverse recovery characteristics
- Low forward voltage drop
- Low leakage current
- Low reverse recovery current
- Reduces switching losses in associated MOSFET or IGBT
- High operating temperature capability ( $T_{j(max)} = 175^{\circ}\text{C}$ )
- Bare die

## 3. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Notes	Values			Unit
$V_{RRM}$	repetitive peak reverse voltage		[1]	600			V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse	[2]	60			A
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
<b>Static characteristics</b>							
$V_F$	forward voltage	$I_F = 60\text{ A}$ ; $T_j = 25^{\circ}\text{C}$	[2]	-	1.55	2.00	V
<b>Dynamic characteristics</b>							
$t_{rr}$	reverse recovery time	$I_F = 1\text{ A}$ ; $V_R = 30\text{ V}$ ; $di_F/dt = 50\text{ A}/\mu\text{s}$ ; $T_j = 25^{\circ}\text{C}$	[2]	-	-	55	ns

## 4. Ordering information

Table 2. Ordering information

Product type	Orderable part number	Description	Packing method
WB60FV60AL	WB60FV60ALZ	Bare die on wafer	Unsawn wafer, Vacuum packing

## 5. Limiting values

**Table 3. Limiting values**

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Notes	Values	Unit
$V_{RRM}$	repetitive peak reverse voltage		[1]	600	V
$V_{RWM}$	crest working reverse voltage		[1]	600	V
$V_R$	reverse voltage	DC	[1]	600	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse	[2]	60	A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25 \mu s$ ; square-wave pulse	[2]	120	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse	[2]	600	A
		$t_p = 8.3 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse	[2]	660	A
$T_j$	junction temperature			-40 to 175	$^\circ\text{C}$

## 6. Characteristics

Table 4. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
<b>Static characteristics</b>							
$V_F$	forward voltage	$I_F = 60 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$	[2]	-	1.55	2.00	V
		$I_F = 60 \text{ A}; T_j = 150 \text{ }^\circ\text{C}$	[2]	-	1.20	1.60	V
$I_R$	reverse current	$V_R = 600 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$	[1]	-	-	10	$\mu\text{A}$
		$V_R = 600 \text{ V}; T_j = 125 \text{ }^\circ\text{C}$	[2]	-	-	500	$\mu\text{A}$
<b>Dynamic characteristics</b>							
$t_{rr}$	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 50 \text{ A}/\mu\text{s}; T_j = 25 \text{ }^\circ\text{C}$	[2]	-	-	55	ns
		$I_F = 60 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A}/\mu\text{s}; T_j = 25 \text{ }^\circ\text{C}$	[2]	-	53	-	ns

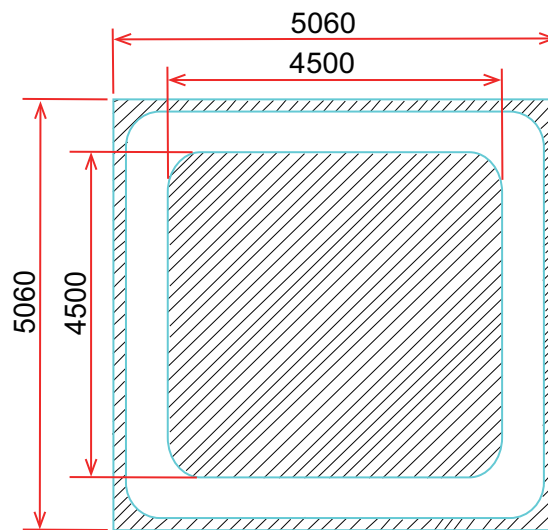
Notes:

[1] means that parameter are 100% test at  $T_{amb} = 25^\circ\text{C}$ .

[2] means that the guaranteed ratings and parameter limits will depend on the assembled structure. When correctly assembled with suitable die bonding and wire bonding, the device will have ratings and characteristics guaranteed in this data sheet, similar to the assembled device.

MECHANICAL SPECIFICATIONS		
Chip size	5.06 x 5.06	mm <sup>2</sup>
Anode pad size	4.5 x 4.5	mm <sup>2</sup>
Area total / active	25.6 / 20.25	mm <sup>2</sup>
Thickness	300	μm
Wafer size	125	mm
Max possible chips per wafer	418	pcs
Passivation	Glass	
Front metal	Al	
Back metal	Ti Ni Ag	

## CHIP LAYOUT



**Die size: 5060μm x 5060μm**  
**Bond pad size: 4500μm x 4500μm**

## 7. Legal information

### Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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