WB60FV60AL

Ultrafast power diode - Bare die

Rev.01 - 13 April 2022 Product data sheet

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°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	δ = 0.5; square-wave pulse	[2]	60			A
Symbol	**Parameter**	**Conditions**	**Notes**	**Min**	**Typ**	**Max**	**Unit**
Static characteristics							
V_F	forward voltage	I_F = 60 A; T_j = 25 °C	[2]	-	1.55	2.00	V
Dynamic characteristics							
t_{rr}	reverse recovery time	I_F = 1 A; V_R = 30 V; dI_F/dt = 50 A/µs; T_j = 25 °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	δ = 0.5; square-wave pulse	[2]	60	A
I_{FRM}	repetitive peak forward current	δ = 0.5; t_p = 25 µs; square-wave pulse	[2]	120	A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	[2]	600	A
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	[2]	660	A
T_j	junction temperature			-40 to 175	°C

6. Characteristics

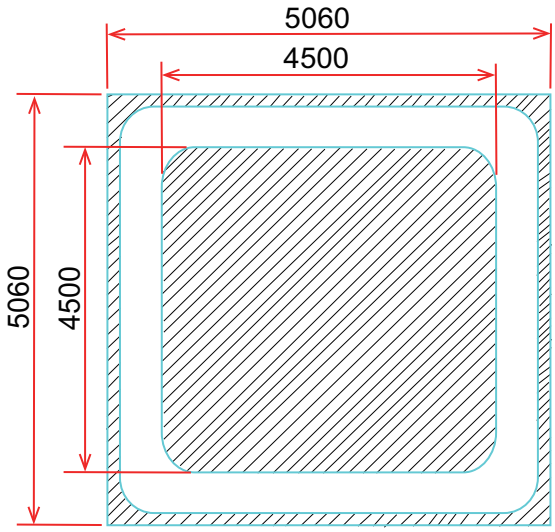
Table 4. Characteristics

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

Notes:
[1] means that parameter are 100% test at T_{amb} = 25°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^2
Anode pad size	4.5 x 4.5	mm^2
Area total / active	25.6 / 20.25	mm^2
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.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
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8. Contents

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