



WB30FV60AL

Ultrafast power diode - Bare die

Rev.01 - 28 April 2022

Product data sheet

1. General description

Ultrafast power diode.

2. Features and benefits

- Fast switching
- Very low on-state loss
- Low leakage current

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]	30			A
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	$I_F = 30$ A; $T_j = 25$ °C	[2]	-	1.18	1.55	V
Dynamic characteristics							
t_{rr}	reverse recovery time	$I_F = 1$ A; $V_R = 30$ V; $di_F/dt = 100$ A/ μ s; $T_j = 25$ °C	[2]	-	42	-	ns

4. Ordering information

Table 2. Ordering information

Product type	Orderable part number	Description	Packing method
WB30FV60AL	WB30FV60ALZ	Bare die on wafer	Unsaun 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]	30	A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25 \mu\text{s}$; square-wave pulse	[2]	60	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]	290	A
		$t_p = 8.3 \text{ ms}$; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$; sine-wave pulse	[2]	330	A
T_j	junction temperature			-40 to 175	$^\circ\text{C}$

6. Characteristics

Table 4. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	$I_F = 30 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$	[2]	-	1.18	1.55	V
		$I_F = 30 \text{ A}; T_j = 150 \text{ }^\circ\text{C}$	[2]	-	0.98	-	V
I_R	reverse current	$V_R = 600 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$	[1]	-	2	10	μA
		$V_R = 600 \text{ V}; T_j = 125 \text{ }^\circ\text{C}$	[2]	-	-	500	μA
Dynamic characteristics							
Q_r	recovered charge	$I_F = 30 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A}/\mu\text{s}; T_j = 25 \text{ }^\circ\text{C}$	[2]	-	272	-	nC
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]	-	42	-	ns
		$I_F = 30 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A}/\mu\text{s}; T_j = 25 \text{ }^\circ\text{C}$	[2]	-	65	-	ns

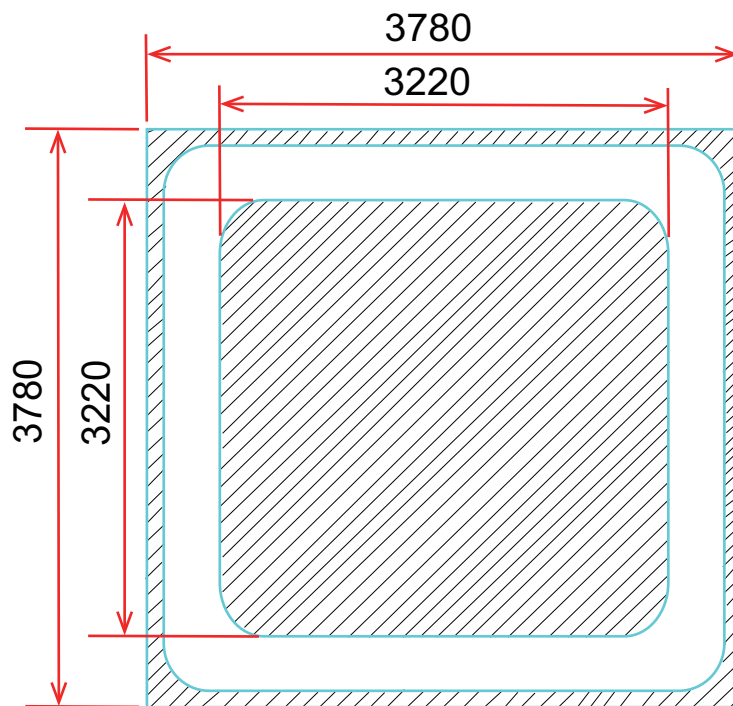
Notes:

[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 devices.

MECHANICAL PARAMETER		
Chip size	3.78 x 3.78	mm ²
Anode pad size	3.22 x 3.22	mm ²
Area total / active	14.29 / 10.37	mm ²
Thickness	300	μm
Wafer size	125	mm
Scribe line	80	μm
Max possible chips per wafer	761	pcs
Passivation	Glass/Trough	
Front metal	Al (5.5)	μm
Back metal	Ti/Ni/Ag (0.1/0.3/0.15)	μm

CHIP LAYOUT



Die size: 3780μm x 3780μm
Bond pad size: 3220μm x 3220μm

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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For sales office addresses, please send an email to: salesaddresses@ween-semi.com
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