

1. General description

Hyperfast power diode (Bare die without sawn).

2. Features and benefits

- Low Forward Voltage Drop
- Low leakage current
- Fast reverse recovery
- Bare die

3. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Notes	Values			Unit
V_{RRM}	repetitive peak reverse voltage		[1]	1200			V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse	[2]	40			A
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	$I_F = 40$ A; $T_j = 25$ °C	[2]	-	2.80	3.30	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]	-	52	-	ns

4. Ordering information

Table 2. Ordering information

Product type	Orderable part number	Description	Packing method
WB40FC120AL	WB40FC120ALZ	Bare die on wafer	Unsaawn 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]	1200	V
V_{RWM}	crest working reverse voltage		[1]	1200	V
V_R	reverse voltage	DC	[1]	1200	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse	[2]	40	A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25 \mu\text{s}$; square-wave pulse	[2]	80	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]	300	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 7. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V_F	forward voltage	$I_F = 40 \text{ A}; T_J = 25 \text{ }^\circ\text{C}$	[2]	-	2.80	3.30	V
		$I_F = 40 \text{ A}; T_J = 150 \text{ }^\circ\text{C}$	[2]	-	2.20	-	V
I_R	reverse current	$V_R = 1200 \text{ V}; T_J = 25 \text{ }^\circ\text{C}$	[1]	-	-	250	μA
		$V_R = 1200 \text{ V}; T_J = 150 \text{ }^\circ\text{C}$	[2]	-	-	2	mA
Dynamic characteristics							
t_{rr}	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A}/\mu\text{s}; T_J = 25 \text{ }^\circ\text{C}$	[2]	-	52	-	ns
		$I_F = 40 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 500 \text{ A}/\mu\text{s}; T_J = 25 \text{ }^\circ\text{C}$	[2]	-	91	-	ns

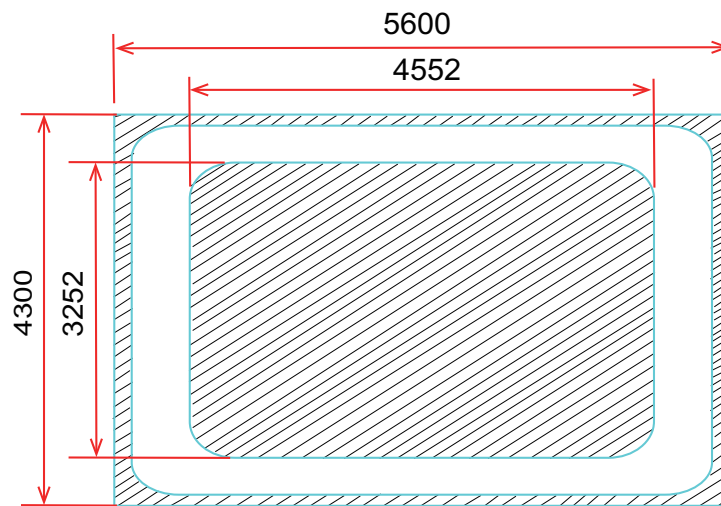
Notes:

[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 PATAMETER		
Chip size	5.6 x 4.3	mm ²
Anode pad size	4.552 x 3.252	mm ²
Area total / active	24.08 / 14.8	mm ²
Thickness	300	µm
Wafer size	125	mm
Max possible chips per wafer	426	pcs
Passivation	P.E.C.V.D / Planar	
Front metal	Al	
Back metal	Ti Ni Ag	

CHIP LAYOUT



Die size: 5600µm x 4300µm
Bond pad size: 4552µm x 3252µm

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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