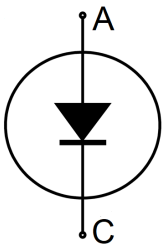
SIDC81D120H8

Fast switching emitter controlled 3 diode chip

Features

- V_{RRM} = 1200 V
- I_{Fn} = 150 A
- 1200 V emitter controlled technology
- Soft, fast switching
- Low reverse recovery charge
- Small temperature coefficient



Potential applications

- SMPS
- Resonant applications
- Drives

Description

Recommended for:

• Power modules

• Discrete devices

Type	Die size	Delivery form
SIDC81D120H8	9 mm x 9 mm	Sawn on foil

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1 Mechanical parameters

Table 1 Mechanical parameters

Parameter	Values
Die size	9 mm x 9 mm
Area total	81.00 mm^2
Anode pad size	See chip drawing
Silicon thickness	120 µm
Wafer size	200 mm
Maximum possible chips per wafer	315
Passivation frontside	Photoimide
Pad metal	3.2 µm AlSiCu
Backside metal	Ni Ag – system; To achieve a reliable solder connection it is strongly recommended not to consume the Ni layer completely during production process
Die attach	Electrically conductive epoxy glue and soft solder
Frontside interconnect	Wire bond: Al ≤ 500 µm
Reject ink dot size (valid for inked delivery form only)	Ø 0.65 mm; max. 1.2 mm
Storage environment (<6 months) for original and sealed MBB bags	Ambient atmosphere air, temperature 17°C – 25°C
Storage environment (<6 months) for open MBB bags	Acc. IEC 62258-3; Section 9.4 Storage Environment

2 Characteristics

Table 2 Maximum ratings

Parameter	Symbol	Note or test condition		Values	Unit
Repetitive peak reverse voltage	V_{RRM}		T_{vj} = 25 °C	1200	V
Continuous forward current, limited by $T_{vj,max}$ [1)]	I_F			-	A
Maximum repetitive forward current, tp limited by $T_{vj, max}$	I_{FRM}			300	A
Junction temperature range	T_{vj}			-40...175	°C
Operating junction temperature	T_{vjop}			-40...150	°C

1) Depending on thermal properties of assembly

Table 3 Static characteristics (tested on wafer), Tvj = 25°C

Parameter	Symbol	Note or test condition	Values			Unit
			Min.	Typ.	Max.	
Diode forward voltage	V_F	I_F = 45 A	1.06	1.29	1.41	V
Reverse leakage current	I_R	V_R = 1200 V			27	µA
Cathode-anode breakdown voltage	V_{BR}	I_R = 0.25 mA	1200			V

Table 4 Electrical characteristics

Parameter	Symbol	Note or test condition		Values			Unit
				Min.	Typ.	Max.	
Diode forward voltage	V_F	I_F = 150 A	T_{vj} = 25 °C		1.65	2.15	V
			T_{vj} = 150 °C		1.65		

Note: In general, from reliability and lifetime point of view, the lower the operation junction temperature and/or the applied voltage, the greater the expected lifetime of any semiconductor device.

For "Maximum ratings" and "Electrical characteristics": Not subject to production test, specified by design.

3 Chip drawing

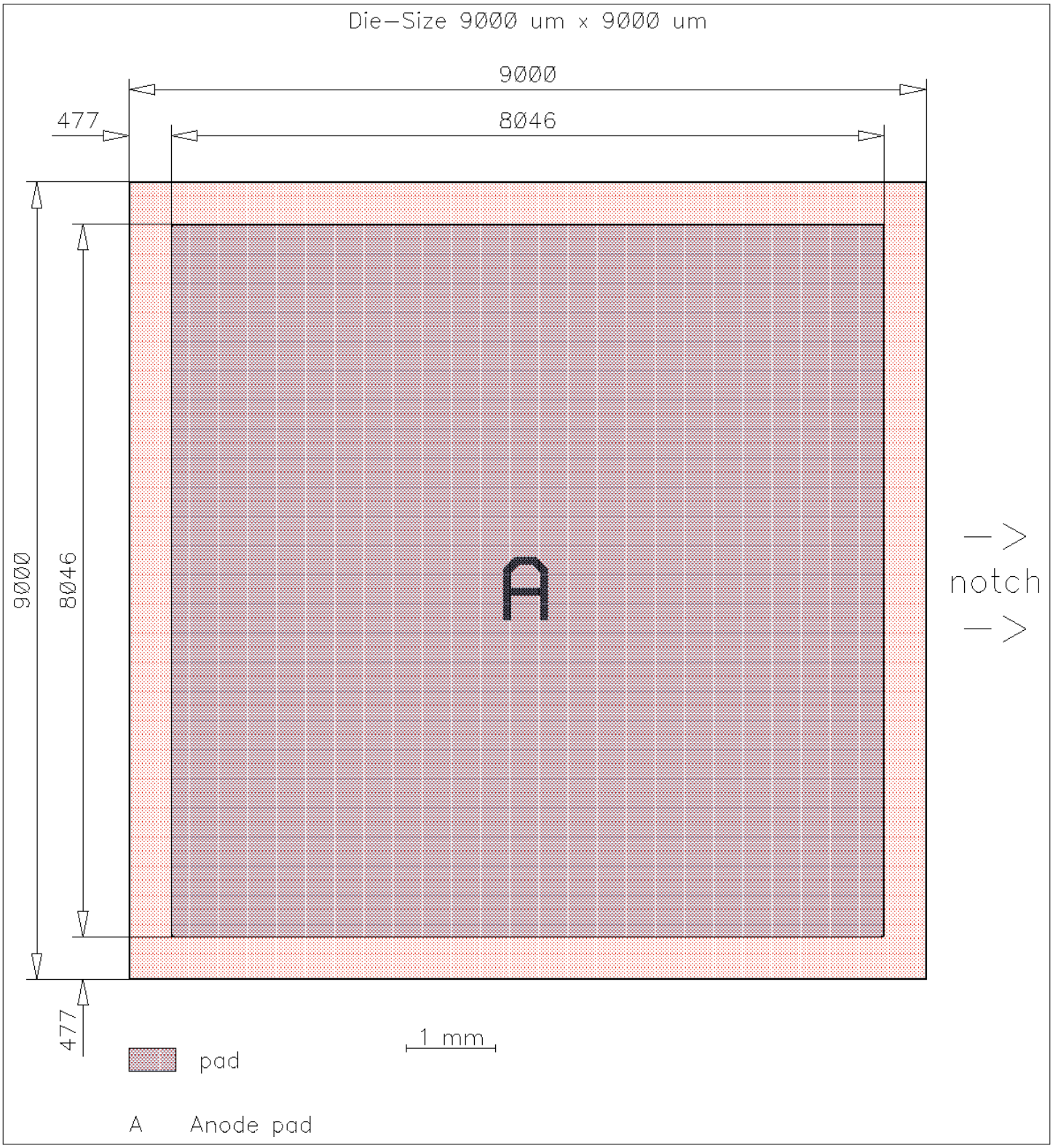

Figure 1

4 Bare die product specifics

- Switching characteristics and thermal properties are dependent on module design and mounting technology and can therefore not be specified for a bare die.
- Test coverage at wafer level cannot cover all application conditions. Therefore it is recommended to test all characteristics, which are relevant for the application at package level, including RBSOA and SCSOA.
- AQL 0.65 for visual inspection according to failure catalogue
- Electrostatic discharge sensitive device according to MIL-STD 883
- The example application may be subject to change without prior notice. It is intended for information purposes only, and should not be interpreted as a commitment.
- Example application: FS150R12KE3

Revision history

Document revision	Date of release	Description of changes
1.00	2022-03-16	Datasheet migrated to a new system ***Legacy Revisions*** 2.0 Final data sheet 30.12.2014 2.1 Editorial changes 14.10.2015 2.2 I_F + I_{FRM} conditions changed, T_{vj} increased to 175°C, editorial changes 23.12.2021
1.10	2022-04-01	T_{vj} and T_{vjop} updated

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