

## Fast switching diode chip in Emitter Controlled Technology

### Features:

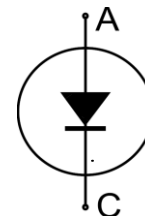
- 1200V Emitter Controlled technology  
120 μm chip
- Soft, fast switching
- Low reverse recovery charge
- Small temperature coefficient
- Qualified according to JEDEC for target applications

### Recommended for:

- Power modules and discrete devices

### Applications:

- SMPS, resonant applications, drives



| Chip Type     | V <sub>R</sub> | I <sub>Fn</sub> | Die Size                   | Package      |
|---------------|----------------|-----------------|----------------------------|--------------|
| SIDC105D120H8 | 1200V          | 200A            | 8.7 x 12.1 mm <sup>2</sup> | sawn on foil |

### Mechanical Parameters

|                               |   |  |
|-------------------------------|---|--|
| Die size                      | 8.7 x 12.1  | mm <sup>2</sup>  |
| Area total                    | 105.27  |  |
| Anode pad size                | 7.746 x 11.146  |  |
| Thickness                     | 120   | μm   |
| Wafer size                    | 200   | mm   |
| Max. possible chips per wafer | 242   |  |
| Passivation frontside         | Photoimide  |  |
| Pad metal                     | 3200 nm AlSiCu  |  |
| Backside metal                | Ni Ag – system<br>To achieve a reliable solder connection it is strongly recommended not to consume the Ni layer completely during production process |  |
| Die bond                      | Electrically conductive epoxy glue and soft solder  |  |
| Wire bond                     | Al, ≤ 500 μm  |  |
| Reject ink dot size           | ∅ 0.65 mm; max 1.2 mm   |  |
| Storage environment           | for original and sealed MBB bags  | Ambient atmosphere air, Temperature 17 °C – 25 °C, < 6 months  |
|                               | for open MBB bags   | Acc. to IEC62258-3: Atmosphere > 99% Nitrogen or inert gas, Humidity < 25% RH, Temperature 17 °C – 25 °C, < 6 months |

## Maximum Ratings

| Parameter  | Symbol    | Condition                | Value         | Unit |
|--|-----------|--------------------------|---------------|------|
| Repetitive peak reverse voltage                  | $V_{RRM}$ | $T_{vj} = 25\text{ °C}$  | 1200          | V    |
| Continuous forward current                       | $I_F$     | $T_{vj} < 150\text{ °C}$ | <sup>1)</sup> | A    |
| Maximum repetitive forward current <sup>2)</sup> | $I_{FRM}$ | $T_{vj} < 150\text{ °C}$ | 400           |      |
| Junction temperature range                       | $T_{vj}$  |                          | -40...+175    | °C   |
| Operating junction temperature                   | $T_{vj}$  |                          | -40...+150    | °C   |

<sup>1)</sup> depending on thermal properties of assembly

<sup>2)</sup> not subject to production test - verified by design/characterisation

## Static Characteristics (tested on wafer), $T_{vj} = 25\text{ °C}$

| Parameter                       | Symbol   | Condition              | Value |      |      | Unit |
|---------------------------------|----------|------------------------|-------|------|------|------|
|                                 |          |                        | min.  | typ. | max. |      |
| Reverse leakage current         | $I_R$    | $V_R = 1200\text{V}$   |       |      | 27   | µA   |
| Cathode-Anode breakdown voltage | $V_{BR}$ | $I_R = 0.25\text{ mA}$ | 1200  |      |      | V    |
| Forward voltage drop            | $V_F$    | $I_F = 60\text{A}$     | 1.06  | 1.29 | 1.41 |      |

## Electrical Characteristics (not subject to production test - verified by design / characterization)

| Parameter            | Symbol | Condition           | Value                   |      |      | Unit |
|----------------------|--------|---------------------|-------------------------|------|------|------|
|                      |        |                     | min.                    | typ. | max. |      |
| Forward voltage drop | $V_F$  | $I_F = 200\text{A}$ |                         | 1.7  | 2.2  | V    |
|                      |        |                     | $T_{vj} = 25\text{ °C}$ |      |      |      |
|                      |        |                     |                         | 1.65 |      |      |

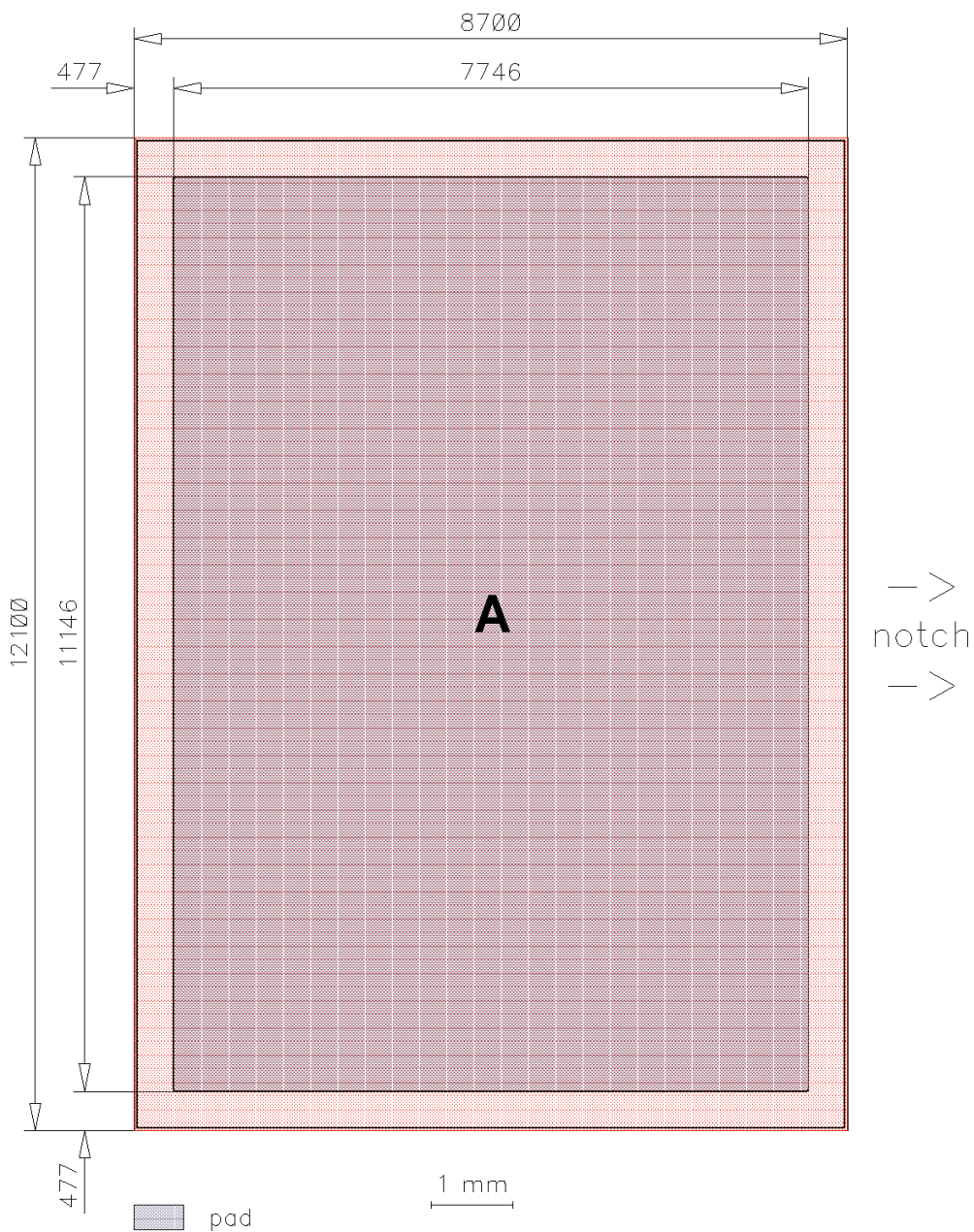
## Further Electrical Characteristics

Switching characteristics and thermal properties are depending strongly on module design and mounting technology and can therefore not be specified for a bare die.

|  |              |                      |
|--|--------------|----------------------|
| This chip data sheet refers to the device data sheet | FS200R12KT4R | Rev. 2.0, 05.11.2013 |
|--|--------------|----------------------|

## Chip Drawing

Die-Size 8700 um x 12100 um



A: Anode pad



# SIDC105D120H8

## Bare Die Product Specifics

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.

## Description

AQL 0.65 for visual inspection according to failure catalogue

Electrostatic Discharge Sensitive Device according to MIL-STD 883

## Revision History

| Version | Subject (major changes since last revision) | Date       |
|---------|---|------------|
| 2.0     | Final data sheet                            | 30.12.2014 |
| 2.1     | Editorial changes                           | 14.10.2015 |
|         |   |            |



# SIDC105D120H8

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