

$V_{RRM} = 1200 \text{ V}$

$I_F = 150 \text{ A}$

Diode-Die

5SLY 12J1200



Die size: 10 x 10 mm

Doc. No. 5SYA 1684-03 12 14

- Ultra low losses
- Fast and soft reverse-recovery
- Highly rugged SPT+ design
- Passivation: Silicon Nitride plus Polyimide

Maximum rated values ¹⁾

| Parameter | Symbol | Conditions | min | max | Unit |
|---------------------------------|--------------|------------------------|-----|------|------|
| Repetitive peak reverse voltage | V_{RRM} | | | 1200 | V |
| Continuous forward current | I_F | | | 150 | A |
| Repetitive peak forward current | I_{FRM} | Limited by T_{vjmax} | | 300 | A |
| Junction temperature | T_{vj} | | | 175 | °C |
| | $T_{vj(op)}$ | | -40 | 150 | |

¹⁾ Maximum rated values indicate limits beyond which damage to the device may occur per IEC 60747 - 2

Diode characteristic values ²⁾

| Parameter | Symbol | Conditions | min | typ | max | Unit | |
|-------------------------------|-----------|--|---------------------------|-----|------|------|----|
| Continuous forward voltage | V_F | $I_F = 150 \text{ A}$ | $T_{vj} = 25 \text{ °C}$ | | 1.8 | 2.1 | V |
| | | | $T_{vj} = 125 \text{ °C}$ | | 1.85 | | V |
| Continuous reverse current | I_R | $V_R = 1200 \text{ V}$ | $T_{vj} = 25 \text{ °C}$ | | | 100 | μA |
| | | | $T_{vj} = 125 \text{ °C}$ | | 1.5 | | mA |
| Peak reverse recovery current | I_{rr} | $I_F = 150 \text{ A},$ $V_R = 600 \text{ V},$ $di/dt = 3200 \text{ A}/\mu\text{s},$ $L_\sigma = 60 \text{ nH},$ Inductive load, Switch: | $T_{vj} = 25 \text{ °C}$ | | 124 | | A |
| | | | $T_{vj} = 125 \text{ °C}$ | | 164 | | A |
| Recovered charge | Q_{rr} | $I_F = 150 \text{ A},$ $V_R = 600 \text{ V},$ $di/dt = 3200 \text{ A}/\mu\text{s},$ $L_\sigma = 60 \text{ nH},$ Inductive load, Switch: | $T_{vj} = 25 \text{ °C}$ | | 19.4 | | μC |
| | | | $T_{vj} = 125 \text{ °C}$ | | 33 | | μC |
| Reverse recovery time | t_{rr} | $I_F = 150 \text{ A},$ $V_R = 600 \text{ V},$ $di/dt = 3200 \text{ A}/\mu\text{s},$ $L_\sigma = 60 \text{ nH},$ Inductive load, Switch: | $T_{vj} = 25 \text{ °C}$ | | 250 | | ns |
| | | | $T_{vj} = 125 \text{ °C}$ | | 360 | | ns |
| Reverse recovery energy | E_{rec} | 1x 5SMY 12M1280 | $T_{vj} = 25 \text{ °C}$ | | 7.2 | | mJ |
| | | | $T_{vj} = 125 \text{ °C}$ | | 15 | | mJ |

²⁾ Characteristic values according to IEC 60747 - 2

ABB Switzerland Ltd, Semiconductors reserves the right to change specifications without notice.



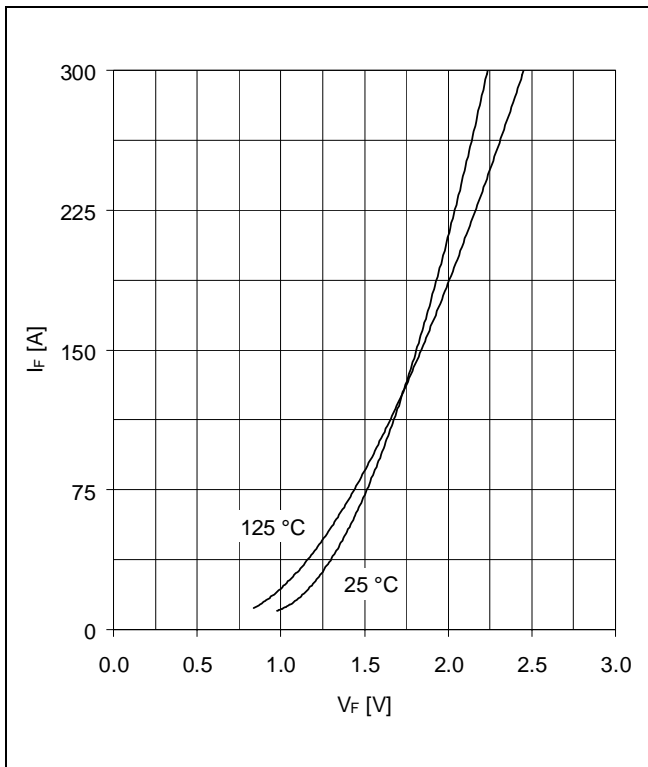


Fig. 1 Typical diode forward characteristics

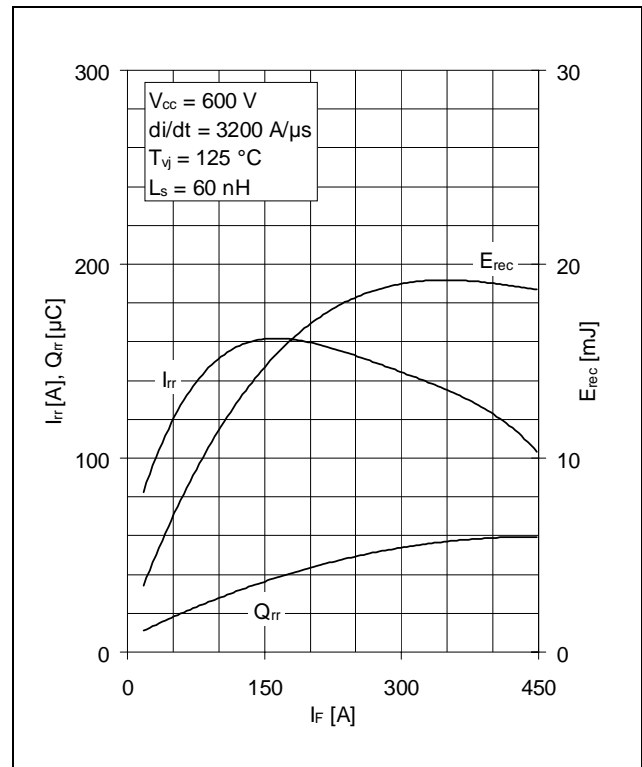


Fig. 2 Typical reverse recovery characteristics vs. forward current

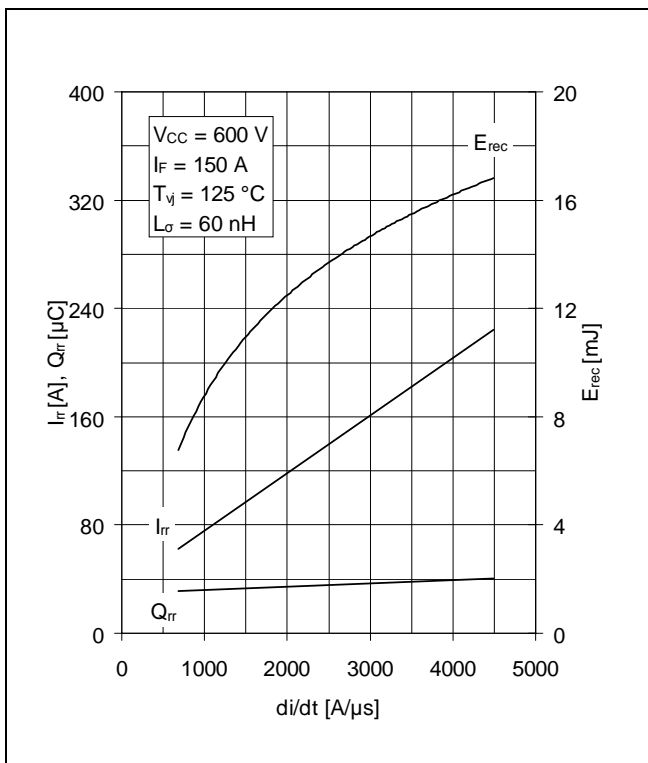


Fig. 3 Typical reverse recovery vs. di/dt

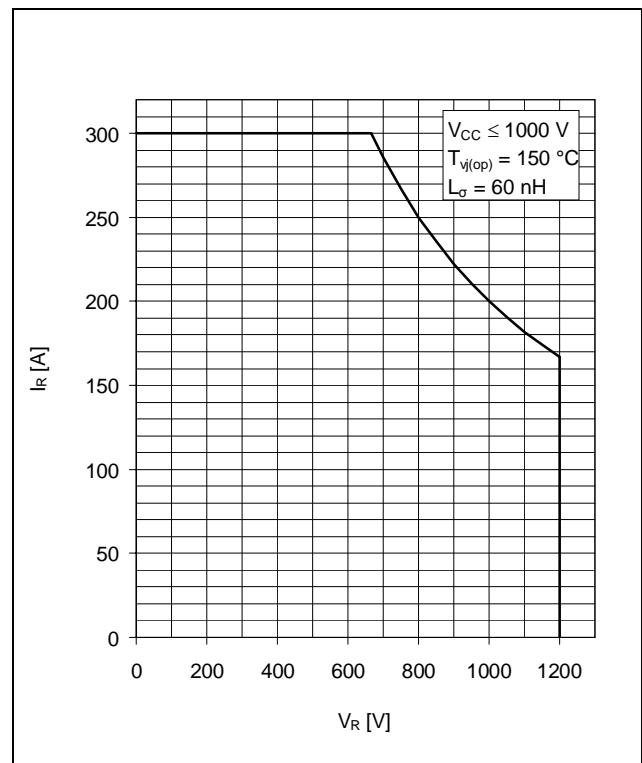


Fig. 4 Safe operating area (FBSOA)

Mechanical properties

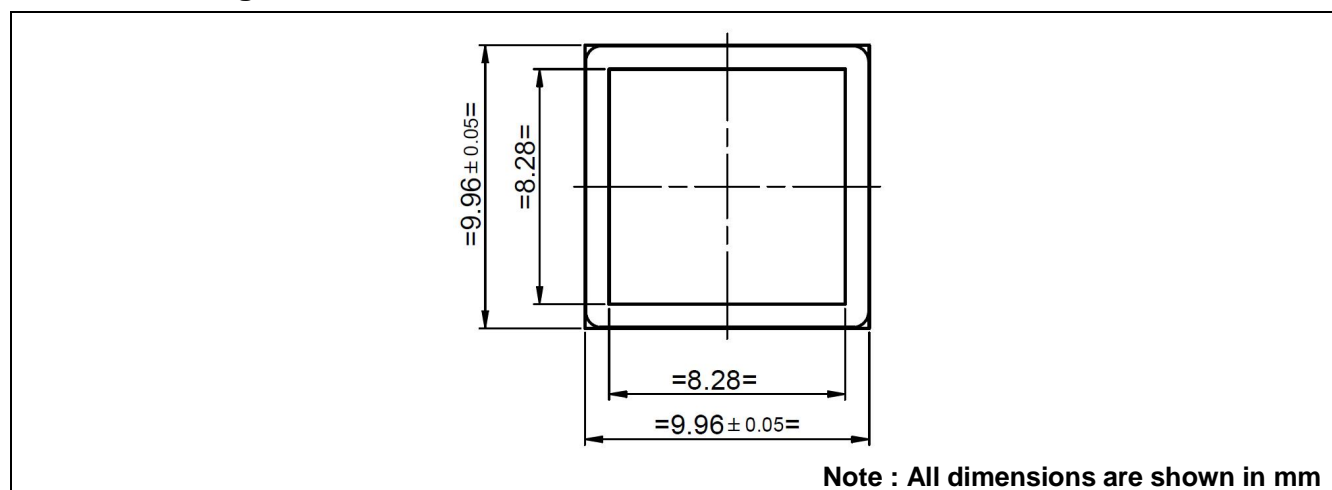
| Parameter | | | | Unit |
|-----------------------------|---------------------|-------------------|--------------|---------------|
| Dimensions | Overall die | L x W | 10 x 10 | mm |
| | exposed front metal | L x W | 8.3 x 8.3 | mm |
| | thickness | | 350 ± 15 | μm |
| Metallization ³⁾ | front (A) | AlSi1 | 4 | μm |
| | back (K) | Al / Ti / Ni / Ag | 1.2 | μm |

³⁾ For assembly instructions refer to: IGBT and Diode chips from ABB Switzerland Ltd, Semiconductors, Doc. No. 5SYA 2033.

Form of delivery

| Description | Part number |
|----------------------------------|--------------|
| Unsawn 6" wafer die | 5SLY 76J1200 |
| Sawn 6" wafer die (on blue tape) | 5SLY 86J1200 |

Outline Drawing



This is an electrostatic sensitive device, please observe the international standard IEC 60747-1, chap. IX.
This product has been designed and qualified for Industrial Level.

Related documents:

5SYA 2045 Thermal runaway during blocking
5SYA 2059 Applying IGBT and Diode dies
5SYA 2093-00 Thermal design of IGBT Modules

We reserve the right to make technical changes or to modify the contents of this document without prior notice. We reserve all rights in this document and the information contained therein. Any reproduction or utilisation of this document or parts thereof for commercial purposes without our prior written consent is forbidden. Any liability for use of our products contrary to the instructions in this document is excluded.

ABB Switzerland Ltd, Semiconductors reserves the right to change specifications without notice.



**ABB Switzerland Ltd
Semiconductors**
Fabrikstrasse 3
CH-5600 Lenzburg, Switzerland

Doc. No. 5SYA 1684-03 12 14

Telephone +41 (0)58 586 1419
Fax +41 (0)58 586 1306
Email abbsem@ch.abb.com
Internet www.abb.com/semiconductors