

$$V_{CE} = 1700 \text{ V}$$

$$I_C = 100 \text{ A}$$

IGBT-Die

5SMX12M1700

PRELIMINARY



Die size: 13.6 x 13.6 mm

Doc. No. 5SYA1614-01 Aug 02

- Low loss thin IGBT die
- Highly rugged SPT design
- Large front bondable area

Maximum Rated Values

($T_j = 25^\circ\text{C}$, unless specified otherwise)

| Parameter | Symbol | Conditions | Values | Unit |
|---------------------------|-----------|-----------------------|--------------|------------------|
| Collector-Emitter Voltage | V_{CES} | | 1700 | V |
| DC Collector Current | I_C | | 100 | A |
| Maximum Collector Current | I_{CM} | Limited by T_{jmax} | 200 | A |
| Operating Temperature | T_j | | -40 ... +150 | $^\circ\text{C}$ |

Characteristic Values

($T_j = 25^\circ\text{C}$, unless specified otherwise)

| Parameter | Symbol | Conditions | min. | typ. | max. | Unit | |
|--------------------------------------|---------------|--|--|------|-----------|---------------|----------|
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 100 \text{ A}$, $T_j = 25^\circ\text{C}$ | 2.1 | 2.3 | 2.7 | V | |
| | | $V_{GE} = 15 \text{ V}$, $T_j = 125^\circ\text{C}$ | | 2.6 | | V | |
| Collector-Emitter leakage Current | I_{CES} | $V_{CE} = 1700 \text{ V}$, $T_j = 25^\circ\text{C}$ | | | 100 | μA | |
| | | $V_{GE} = 0 \text{ V}$, $T_j = 125^\circ\text{C}$ | | 1000 | | μA | |
| Gate-Emitter leakage Current | I_{GES} | $V_{CE} = 0 \text{ V}$, $V_{GE} = \pm 20 \text{ V}$ | | | ± 500 | nA | |
| Gate-Emitter Threshold Voltage | $V_{GE(TO)}$ | $I_C = 10 \text{ mA}$, $V_{CE} = V_{GE}$ | 4.5 | | 6.5 | V | |
| Turn-on delay time | $t_{d(on)}$ | $I_C = 100 \text{ A}$, $V_{CC} = 900 \text{ V}$, $R_G = 10 \Omega$, $V_{GE} = \pm 15 \text{ V}$, $T_j = 125^\circ\text{C}$, $L_\sigma = 160 \text{ nH}$, Inductive load, FWD : 5SLX12H1700 | | 180 | | ns | |
| Rise time | t_r | | | 110 | | ns | |
| Turn-on switching energy | E_{on} | | | | 33 | | mJ |
| Turn-off delay time | $t_{d(off)}$ | | | | 500 | | ns |
| Fall time | t_f | | | | 110 | | ns |
| Turn-off switching energy | E_{off} | | | | 27 | | mJ |
| Internal gate resistance | R_{Gint} | | | | 4 | | Ω |
| Input capacitance | C_{ies} | | $V_{ce} = 25 \text{ V}$, $V_{ge} = 0 \text{ V}$, $f = 1 \text{ MHz}$ | | 11 | | nF |
| Total gate charge | Q_{ge} | | $V_{ge} = -15 \dots +15 \text{ V}$ | | 860 | | nC |

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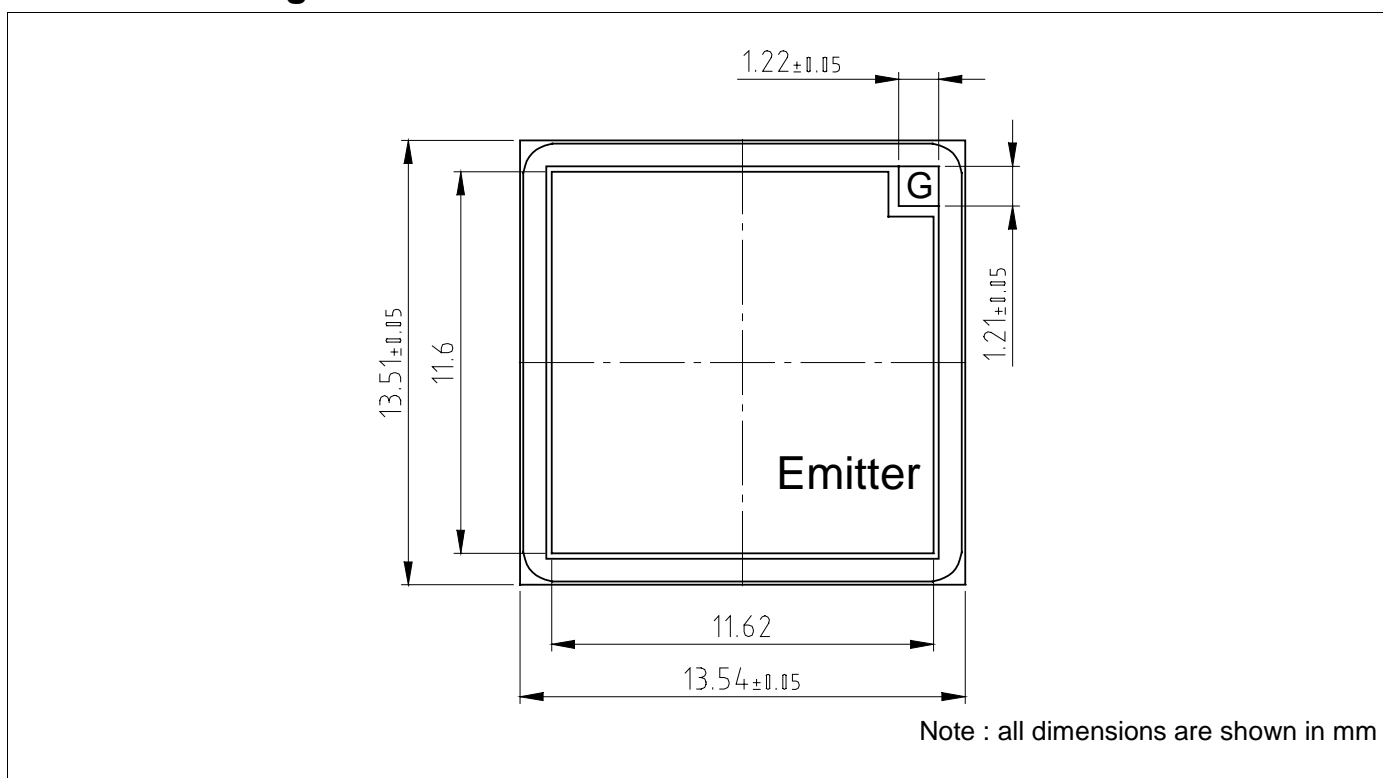


Mechanical Characteristics

| Parameter | | | | Unit |
|---------------|---------------------|-------------------------|-------------|------|
| Dimensions | Overall die | L x W | 13.6 x 13.6 | mm |
| | Exposed Front metal | L x W (except gate pad) | 11.6 x 11.6 | mm |
| | Gate pad | L x W | 1.2 x 1.2 | mm |
| | Thickness | | 210 ± 15 | µm |
| Metallization | Front | AlSi1 | 4 | µm |
| | Back ¹⁾ | Al / Ti / Ni / Ag | 1.2 | µm |

¹⁾ For assembly instructions refer to : IGBT and Diode chips from ABB Switzerland Ltd, Semiconductors, Doc. No. 5SYA2033-01 April 02.

Outline Drawing



Note : device is sensitive to electrostatic discharge

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