# SK300MB080

**SEMITOP® 3**

## MOSFET Module

**Engineering Sample**

**SK300MB080**

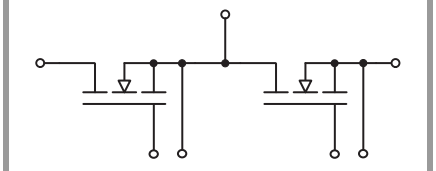
Target Data

### Features

- **Single leg of inverter**
- **Compact design**
- **One screw mounting module**
- **Improved thermal performance by aluminum oxide substrate**
- **Trench technology**
- **Short internal connections and low inductance case**
- **UL recognized, file no. E 63 532**

### Typical Applications*

- **Low switched mode power supplies**
- **DC servo drives**
- **UPS**



**MB**

**Absolute Maximum Ratings**

| Symbol | Conditions | | Values | Unit |
|---|---|---|---|---|
| **MOSFET** | | | | |
| $V_{DSS}$ | | | 80 | V |
| $I_D$ | $T_j$ = 175 °C | $T_s$ = 25 °C | 309 | A |
| | | $T_s$ = 70 °C | 259 | A |
| $I_{DM}$ | | | 960 | A |
| $I_{DRM}$ | | | t.b.d. | A |
| $V_{GS}$ | | | -20 ... 20 | V |
| $T_j$ | | | -40 ... 175 | °C |
| **Integrated body diode** | | | | |
| $I_{FM}$ | | | 960 | A |
| $I_{FRM}$ | | | t.b.d. | A |

**Absolute Maximum Ratings**

| Symbol | Conditions | Values | Unit |
|---|---|---|---|
| **Module** | | | |
| $I_{t(RMS)}$ | | t.b.d. | A |
| $T_{stg}$ | | -40 ... 125 | °C |
| $V_{isol}$ | AC, sinusoidal, t = 1 min | 2500 | V |

**Characteristics**

| Symbol | Conditions | | min. | typ. | max. | Unit |
|---|---|---|---|---|---|---|
| **MOSFET** | | | | | | |
| $V_{(BR)DSS}$ | $V_{GS}$ = 0 V, $I_D$ = 2 mA | | 80 | | | V |
| $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 0.54 mA | | 2 | 2.8 | 3.5 | V |
| $I_{DSS}$ | $V_{GS}$ = 0 V, $V_{DS}$ = 80 V, $T_j$ = 25 °C | | | | 0.2 | mA |
| $I_{GSS}$ | $V_{DS}$ = 0 V, $V_{GS}$ = 20 V, $T_j$ = 25 °C | | | | 200 | nA |
| $R_{DS(on)}$ | $V_{GS}$ = 10 V | $T_j$ = 25 °C | | 1.00 | 1.25 | mΩ |
| | $I_D$ = 200 A | $T_j$ = 150 °C | | 1.61 | 2.1 | mΩ |
| $C_{iss}$ | $V_{GS}$ = 0 V, $V_{DS}$ = 40 V, f = 1 MHz | | | 21400 | | pF |
| $C_{oss}$ | $V_{GS}$ = 0 V, $V_{DS}$ = 40 V, f = 1 MHz | | | 5780 | | pF |
| $C_{rss}$ | $V_{GS}$ = 0 V, $V_{DS}$ = 40 V, f = 1 MHz | | | 200 | | pF |
| $R_{Gint}$ | $T_j$ = 25 °C | | | 0.0 | | Ω |
| $Q_G$ | $V_{GS}$ = 0…+10 V, $V_{DD}$ = 40 V, $I_D$ = 200 A | | | 310 | | nC |
| $t_{d(on)}$ | $V_{DD}$ = 40 V<br>$V_{GS}$ = 10 V<br>$I_D$ = 200 A | $T_j$ = 150 °C | | | | ns |
| $t_{d(off)}$ | | $T_j$ = 150 °C | | | | ns |
| $t_r$ | | $T_j$ = 150 °C | | | | ns |
| $t_f$ | | $T_j$ = 150 °C | | | | ns |
| $E_{on}$ | | $T_j$ = 150 °C | | 0.35 | | mJ |
| $E_{off}$ | | $T_j$ = 150 °C | | 0.16 | | mJ |
| $R_{th(j-s)}$ | per MOSFET | | | 0.69 | | K/W |
| **Integrated body diode** | | | | | | |
| $V_F = V_{SD}$ | $-I_D$ = 200 A<br>$V_{GS}$ = 0 V<br>chiplevel | $T_j$ = 25 °C | | 0.91 | | V |
| | | $T_j$ = 150 °C | | 0.81 | | V |
| $V_{F0} = V_{SD0}$ | chiplevel | $T_j$ = 25 °C | | 0.77 | | V |
| | | $T_j$ = 150 °C | | 0.59 | | V |
| $r_F = r_{SD}$ | chiplevel | $T_j$ = 25 °C | | 0.70 | | mΩ |
| | | $T_j$ = 150 °C | | 1.10 | | mΩ |
| $t_{rr}$ | $V_{DD}$ = 40 V<br>$-I_D$ = 200 A<br>$V_{GS}$ = 10 V | | | | | ns |
| $Q_{rr}$ | | | | | | µC |
| $I_{rr}$ | | | | | | A |
| $E_{rr}$ | | | | 0.034 | | mJ |

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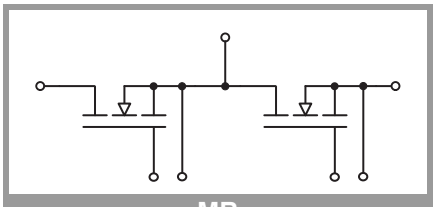

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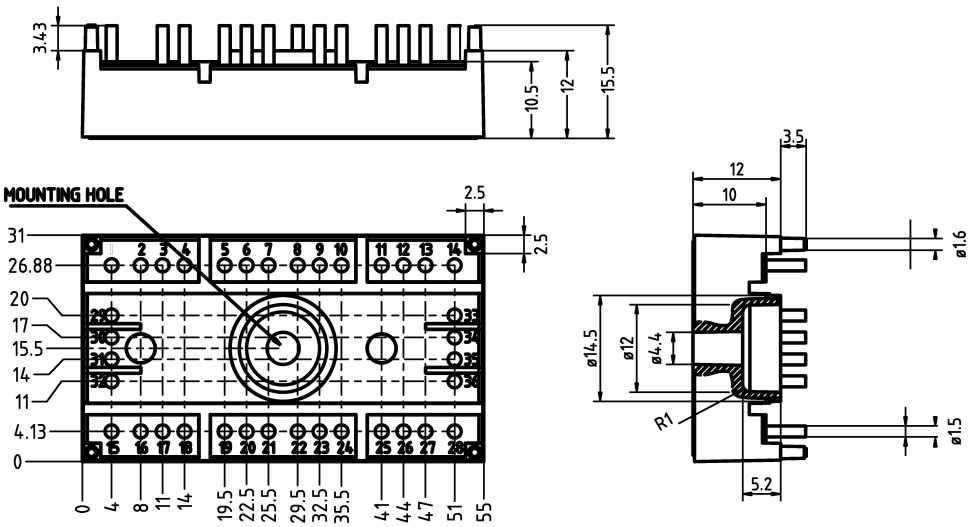
**Characteristics**

| Symbol | Conditions | min. | typ. | max. | Unit |
|---|---|---|---|---|---|
| **Module** | | | | | |
| $L_{CE}$ | | | t.b.d. | | nH |
| $M_s$ | to heatsink | 2.25 | | 2.5 | Nm |
| w | weight | | 29 | | g |

dimensions in mm
tolerance system: ISO 2768-m




Suggested hole diameter, in the PCB, for solder pins and mounting plastic pins: 2mm



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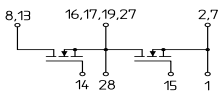


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This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, chapter IX.

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