

查询"SEMIX603GAL066HD"供应商



SEMiX® 3

## Trench IGBT Modules

SEMiX 603GB066HD

SEMiX 603GAL066HD

SEMiX 603GAR066HD

Target Data

## Features

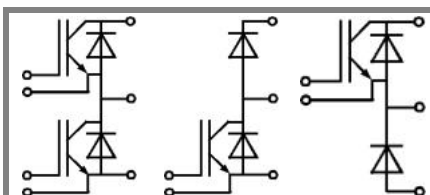
- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$  with positive temperature coefficient

## Typical Applications

- Matrix Converter
- Resonant Inverter
- Current Source Inverter

## Remarks

- Case temperature limited to  $T_C = 125^\circ\text{C}$  max.
- Product reliability results are valid for  $T_J = 150^\circ\text{C}$
- SC data:  $t_p \leq 6 \mu\text{s}$ ;  $V_{GE} \leq 15 \text{ V}$ ;  $T_J = 150^\circ\text{C}$ ;  $V_{CC} = 360 \text{ V}$
- 



GB

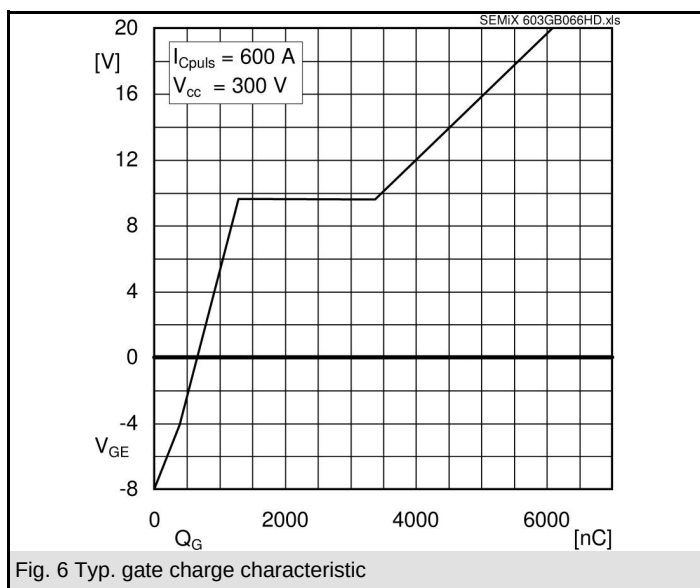
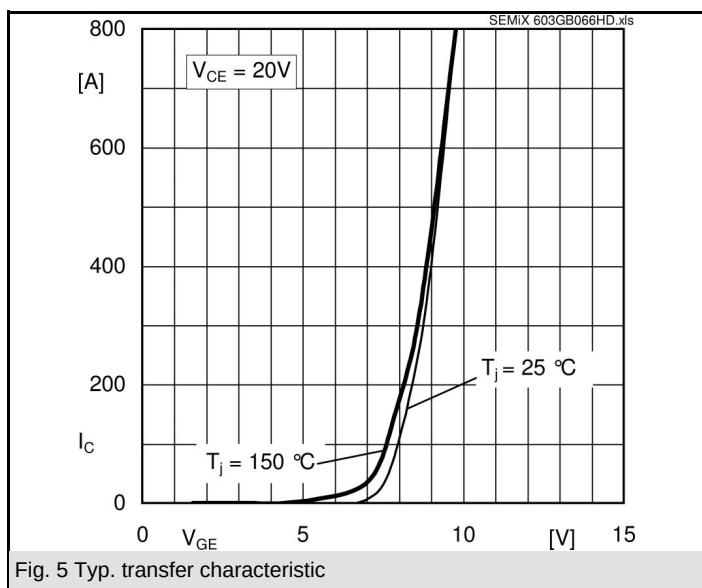
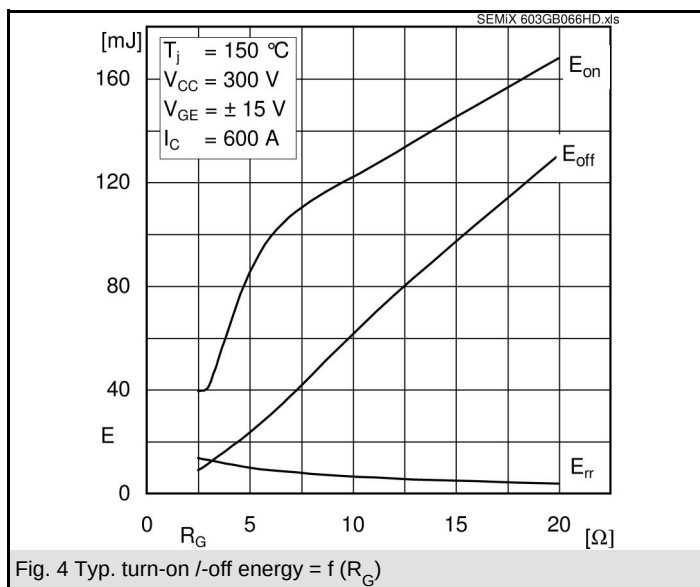
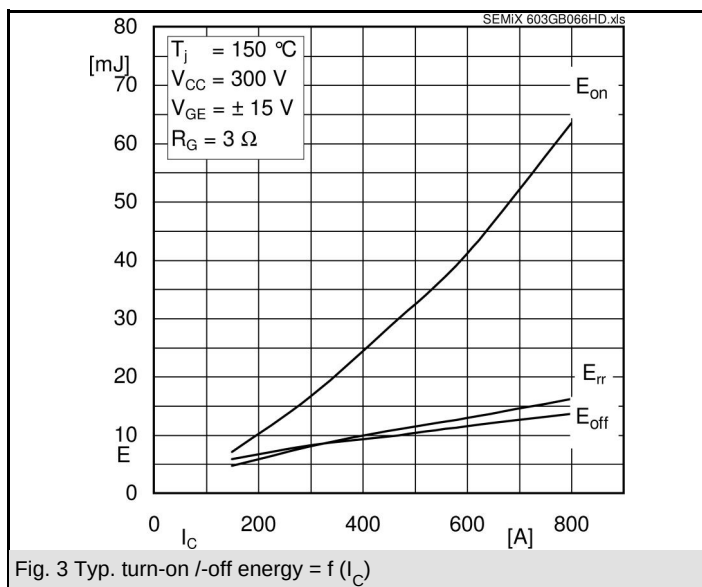
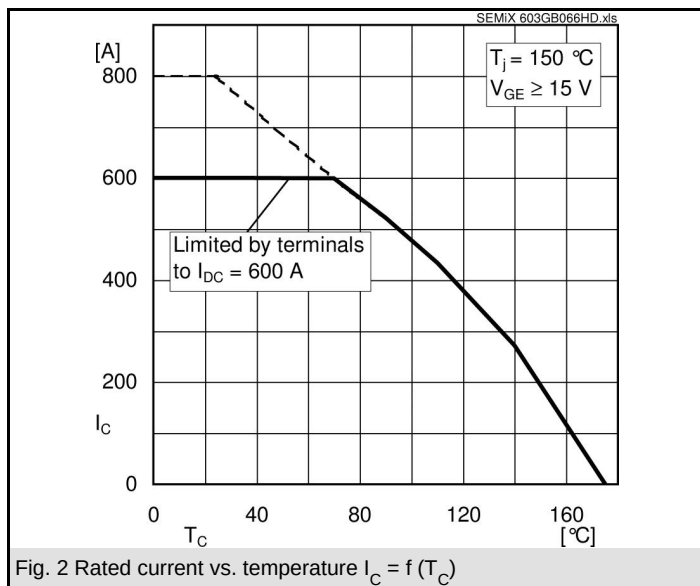
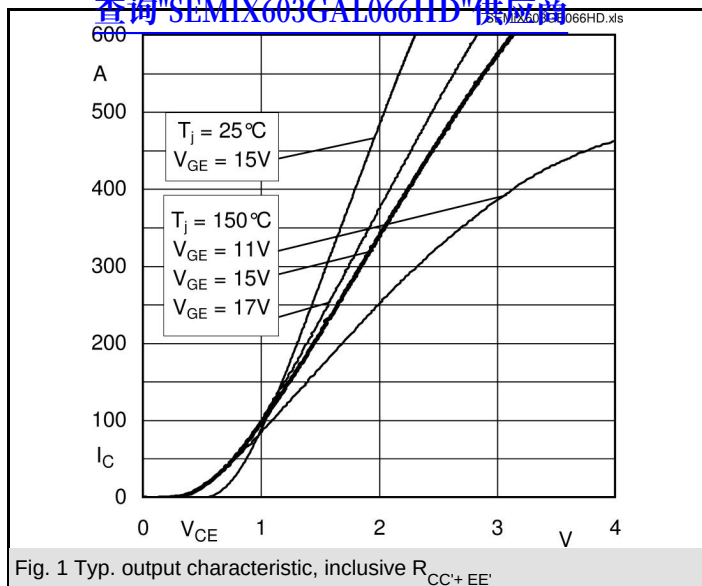
GAL

GAR

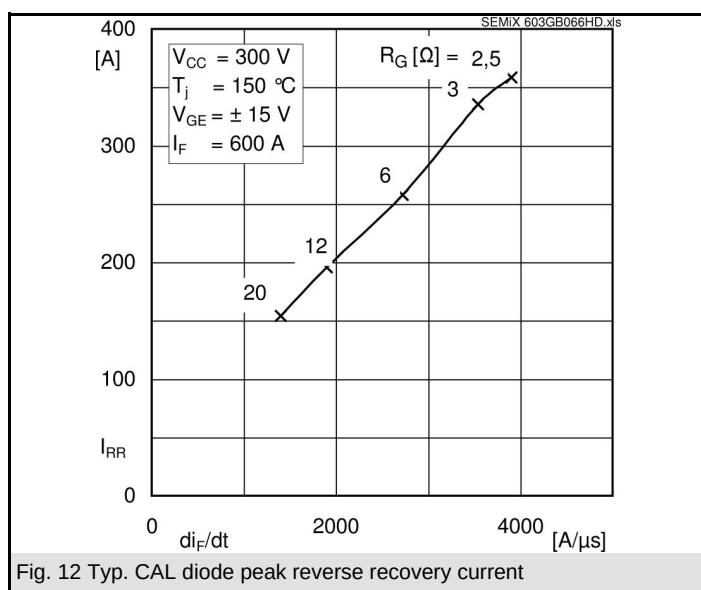
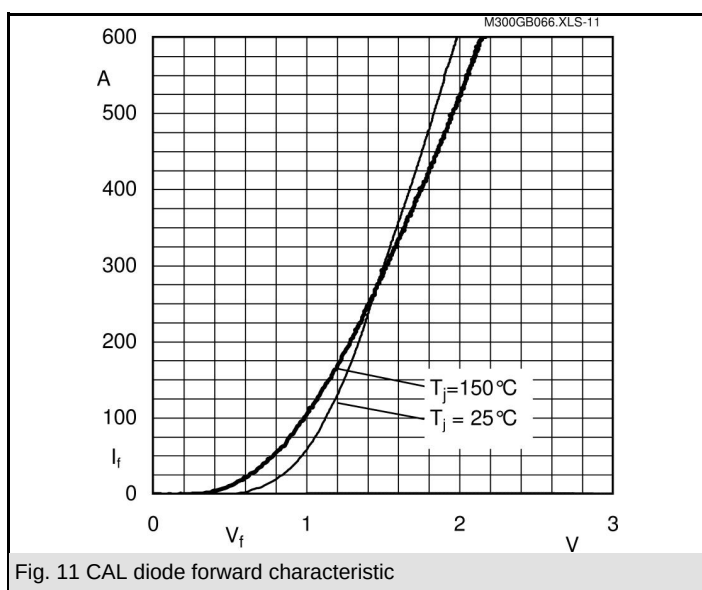
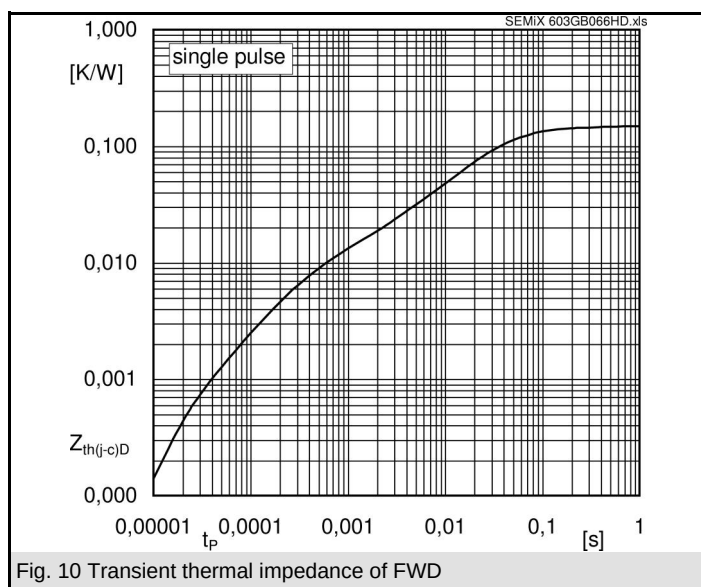
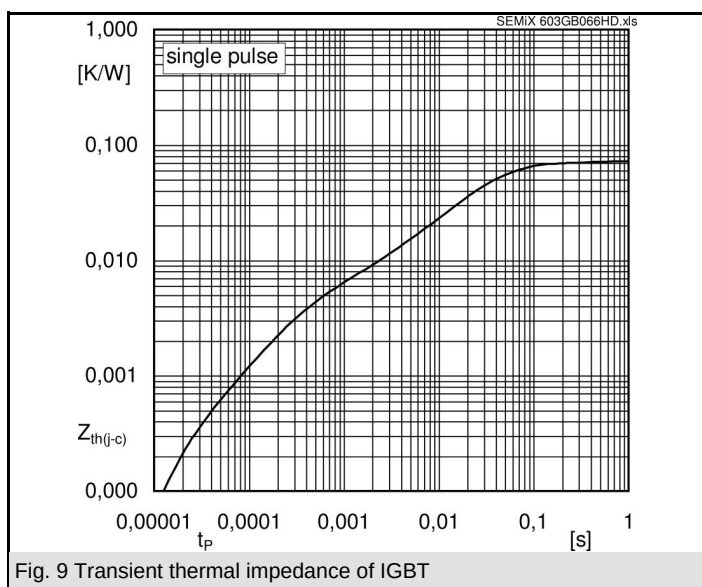
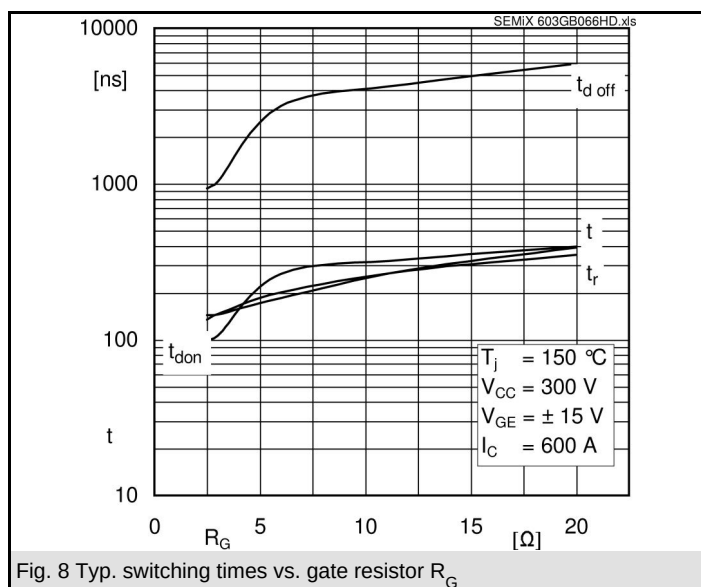
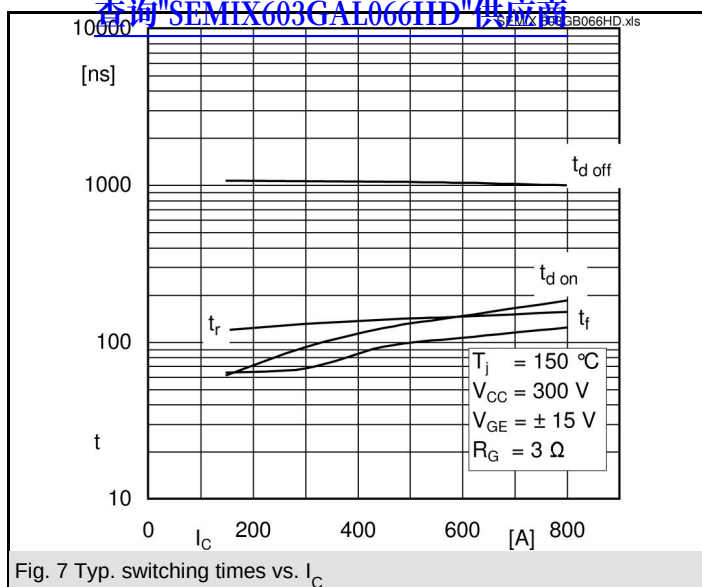
| Absolute Maximum Ratings  |                                                           | $T_{case} = 25^\circ\text{C}$ , unless otherwise specified |                  |
|---------------------------|-----------------------------------------------------------|------------------------------------------------------------|------------------|
| Symbol                    | Conditions                                                | Values                                                     | Units            |
| <b>IGBT</b>               |                                                           |                                                            |                  |
| $V_{CES}$                 |                                                           | 600                                                        | V                |
| $I_C$                     | $T_C = 25 (80)^\circ\text{C}$ , $T_J = 150^\circ\text{C}$ | 730 (520)                                                  | A                |
| $I_C$                     | $T_C = 25 (80)^\circ\text{C}$ , $T_J = 175^\circ\text{C}$ | 800 (610)                                                  | A                |
| $I_{CRM}$                 | $t_p = 1 \text{ ms}$                                      | 1200                                                       | A                |
| $V_{GES}$                 |                                                           | $\pm 20$                                                   | V                |
| $T_J, (T_{stg})$          |                                                           | - 40 ... + 175 (125)                                       | $^\circ\text{C}$ |
| $V_{isol}$                | AC, 1 min.                                                | 4000                                                       | V                |
| <b>Inverse diode</b>      |                                                           |                                                            |                  |
| $I_F$                     | $T_C = 25 (80)^\circ\text{C}$ , $T_J = 150^\circ\text{C}$ | 530 (350)                                                  | A                |
| $I_F$                     | $T_C = 25 (80)^\circ\text{C}$ , $T_J = 175^\circ\text{C}$ | 590 (430)                                                  | A                |
| $I_{FRM}$                 | $t_p = 1 \text{ ms}$                                      | 1200                                                       | A                |
| $I_{FSM}$                 | $t_p = 10 \text{ ms}$ ; sin.; $T_J = 25^\circ\text{C}$    | 2700                                                       | A                |
| <b>Freewheeling diode</b> |                                                           |                                                            |                  |
| $I_F$                     | $T_C = 25 (80)^\circ\text{C}$ , $T_J = 150^\circ\text{C}$ | 640 (430)                                                  | A                |
| $I_F$                     | $T_C = 25 (80)^\circ\text{C}$ , $T_J = 150^\circ\text{C}$ | 710 (520)                                                  | A                |
| $I_{FSM}$                 | $t_p = 10 \text{ ms}$ ; ; $T_J = 175^\circ\text{C}$       |                                                            | A                |

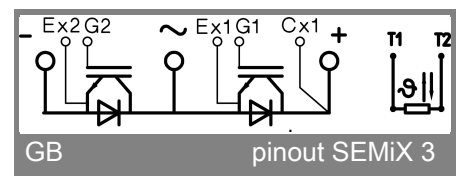
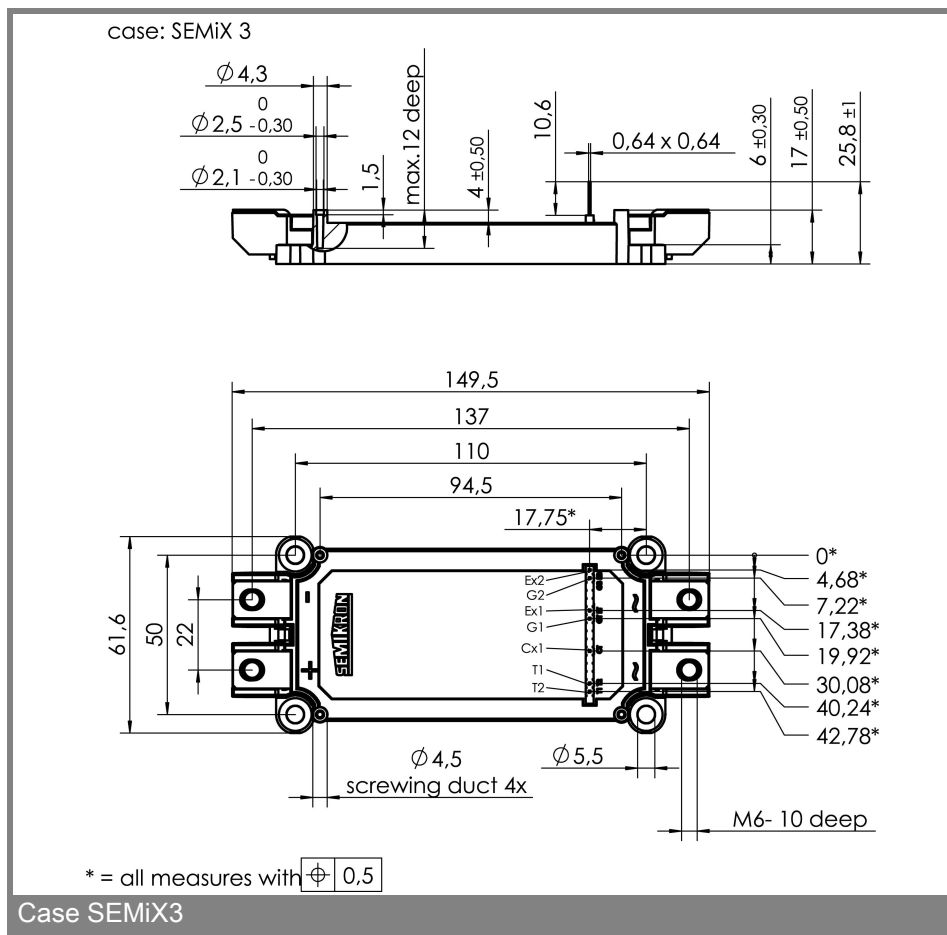
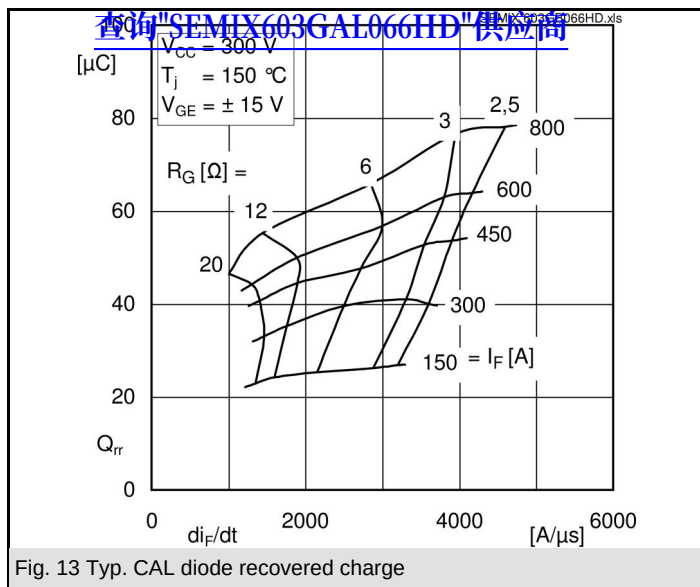
| Characteristics                     |                                                                                                | T <sub>case</sub> = 25°C, unless otherwise specified |            |           |       |
|-------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------|------------|-----------|-------|
| Symbol                              | Conditions                                                                                     | min.                                                 | typ.       | max.      | Units |
| IGBT                                |                                                                                                |                                                      |            |           |       |
| V <sub>GE(th)</sub>                 | V <sub>GE</sub> = V <sub>CE</sub> , I <sub>C</sub> = 4 mA                                      |                                                      | 5,8        |           | V     |
| I <sub>CES</sub>                    | V <sub>GE</sub> = 0, V <sub>CE</sub> = V <sub>CES</sub> , T <sub>j</sub> = 25 ( ) °C           |                                                      |            | 0,1       | mA    |
| V <sub>CE(TO)</sub>                 | T <sub>j</sub> = 25 (150) °C                                                                   |                                                      | 0,9 (0,85) | 1 (0,9)   | V     |
| r <sub>CE</sub>                     | V <sub>GE</sub> = 15 V, T <sub>j</sub> = 25 (150) °C                                           |                                                      | 0,9 (1,4)  | 1,5 (2)   | mΩ    |
| V <sub>CE(sat)</sub>                | I <sub>Cnom</sub> = 600 A, V <sub>GE</sub> = 15 V,<br>T <sub>j</sub> = 25 (150) °C, chip level |                                                      | 1,45 (1,7) | 1,9 (2,1) | V     |
| C <sub>ies</sub>                    | under following conditions                                                                     |                                                      | 37         |           | nF    |
| C <sub>oes</sub>                    | V <sub>GE</sub> = 0, V <sub>CE</sub> = 25 V, f = 1 MHz                                         |                                                      | 2,3        |           | nF    |
| C <sub>res</sub>                    |                                                                                                |                                                      | 1,1        |           | nF    |
| L <sub>CE</sub>                     |                                                                                                |                                                      | 20         |           | nH    |
| R <sub>CC'+EE'</sub>                | terminal-chip, T <sub>c</sub> = 25 (125) °C                                                    |                                                      | 0,7 (1)    |           | mΩ    |
| t <sub>d(on)/t<sub>r</sub></sub>    | V <sub>CC</sub> = 300 V, I <sub>Cnom</sub> = 600 A                                             |                                                      | 145 / 145  |           | ns    |
| t <sub>d(off)/t<sub>f</sub></sub>   | V <sub>GE</sub> = ±15V                                                                         |                                                      | 1030 / 105 |           | ns    |
| E <sub>on</sub> (E <sub>off</sub> ) | R <sub>Gon</sub> = R <sub>Goff</sub> = 3 Ω, T <sub>j</sub> = 150 °C                            |                                                      | 11 (41)    |           | mJ    |
| Inverse diode, Freewheeling diode   |                                                                                                |                                                      |            |           |       |
| V <sub>F</sub> = V <sub>EC</sub>    | I <sub>Fnom</sub> = 600 A; V <sub>GE</sub> = 0 V; T <sub>j</sub> = 25 (150) °C, chip level     |                                                      | 1,4 (1,4)  | 1,6       | V     |
| V <sub>(TO)</sub>                   | T <sub>j</sub> = 25 (150) °C                                                                   |                                                      | 1 (0,85)   | 1,1       | V     |
| r <sub>T</sub>                      | T <sub>j</sub> = 25 (150) °C                                                                   |                                                      | 0,7 (0,9)  | 0,83      | mΩ    |
| I <sub>RRM</sub>                    | I <sub>Fnom</sub> = 600 A; T <sub>j</sub> = 25 (150) °C                                        |                                                      | 352        |           | A     |
| Q <sub>rr</sub>                     | di/dt = 3800 A/μs                                                                              |                                                      | 63         |           | μC    |
| E <sub>rr</sub>                     | V <sub>GE</sub> = -15 V                                                                        |                                                      | 13         |           | mJ    |
| Thermal characteristics             |                                                                                                |                                                      |            |           |       |
| R <sub>th(j-c)</sub>                | per IGBT                                                                                       |                                                      |            | 0,073     | K/W   |
| R <sub>th(j-c)D</sub>               | per Inverse Diode                                                                              |                                                      |            | 0,15      | K/W   |
| R <sub>th(j-c)FD</sub>              | per FWD                                                                                        |                                                      |            |           | K/W   |
| R <sub>th(c-s)</sub>                | per module                                                                                     |                                                      | 0,04       |           | K/W   |
| Temperature sensor                  |                                                                                                |                                                      |            |           |       |
| R <sub>25</sub>                     | T <sub>c</sub> = 25 °C                                                                         |                                                      | 5 ±5%      |           | kΩ    |
| B <sub>25/85</sub>                  | R <sub>2</sub> =R <sub>1</sub> exp[B(1/T <sub>2</sub> -1/T <sub>1</sub> )] ; T[K];B            |                                                      | 3420       |           | K     |
| Mechanical data                     |                                                                                                |                                                      |            |           |       |
| M <sub>s</sub> /M <sub>t</sub>      | to heatsink (M5) / for terminals (M6)                                                          | 3/2,5                                                |            | 5 /5      | Nm    |
| w                                   |                                                                                                |                                                      | 289        |           | g     |

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

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