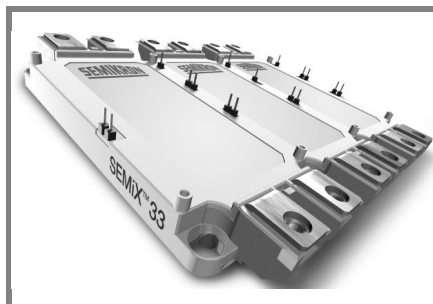


SEMiX 553GD128Dc



SEMiX® 33c

SPT IGBT Modules

SEMiX 553GD128Dc

Preliminary Data

Features

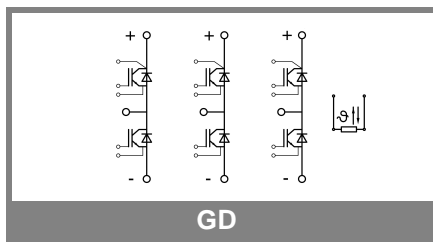
- Homogeneous Si
- SPT = Soft-Punch-Through technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability

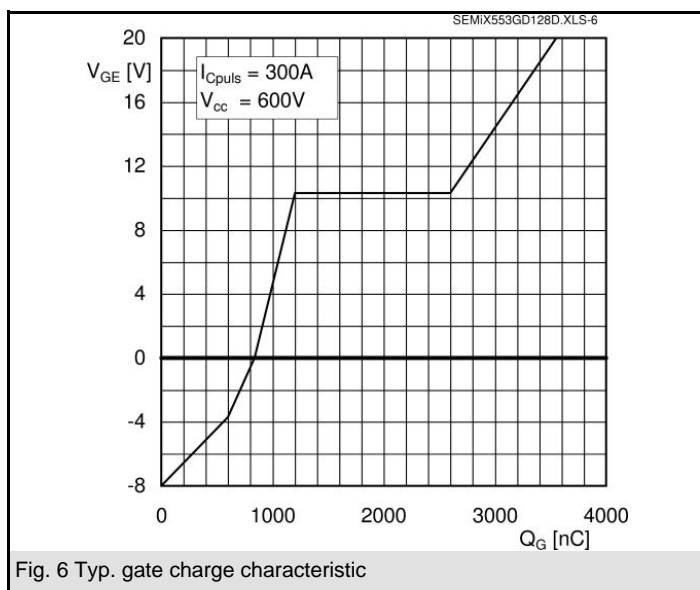
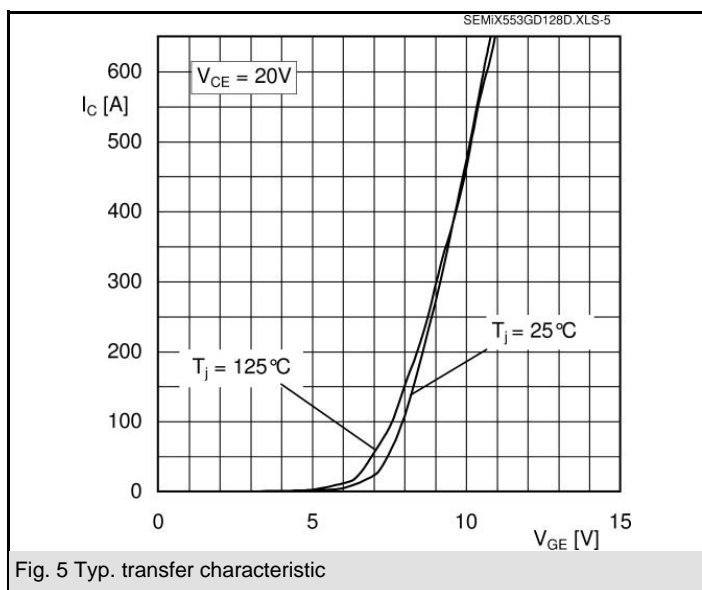
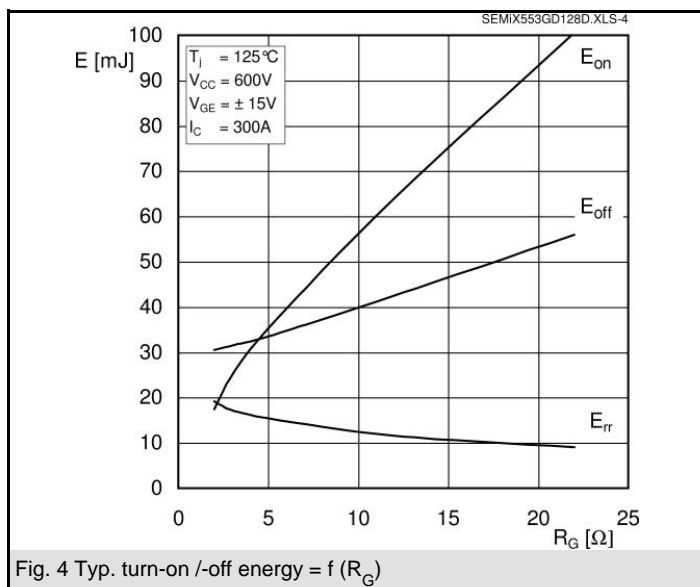
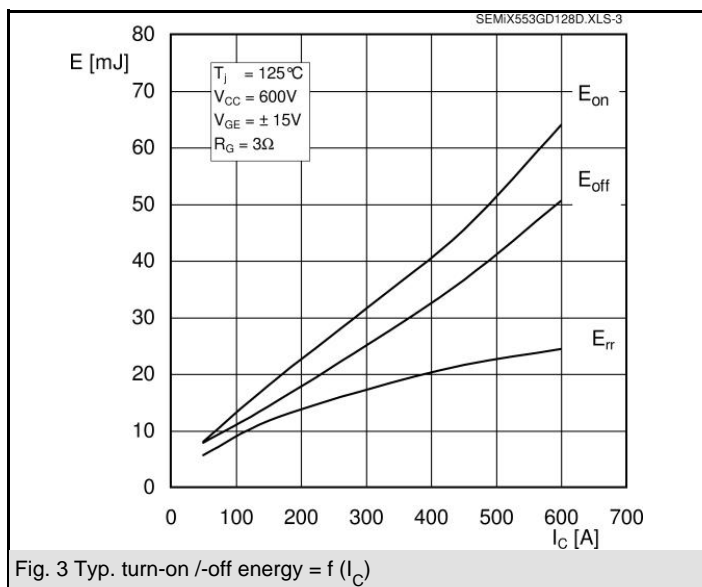
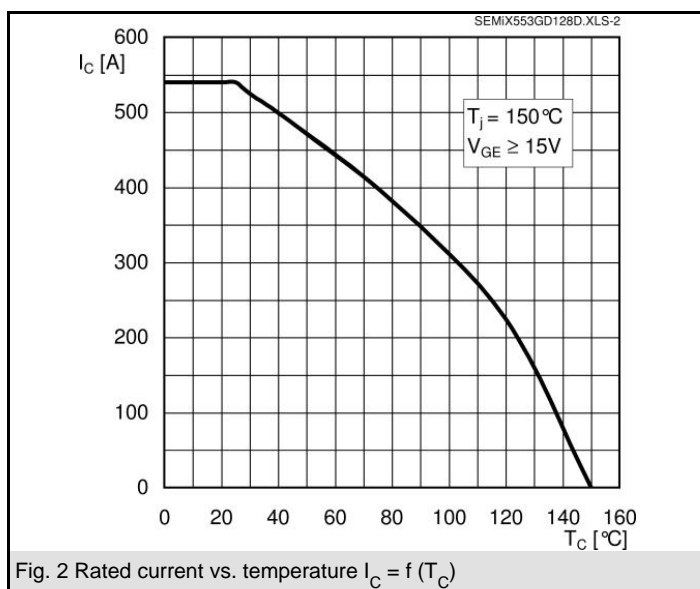
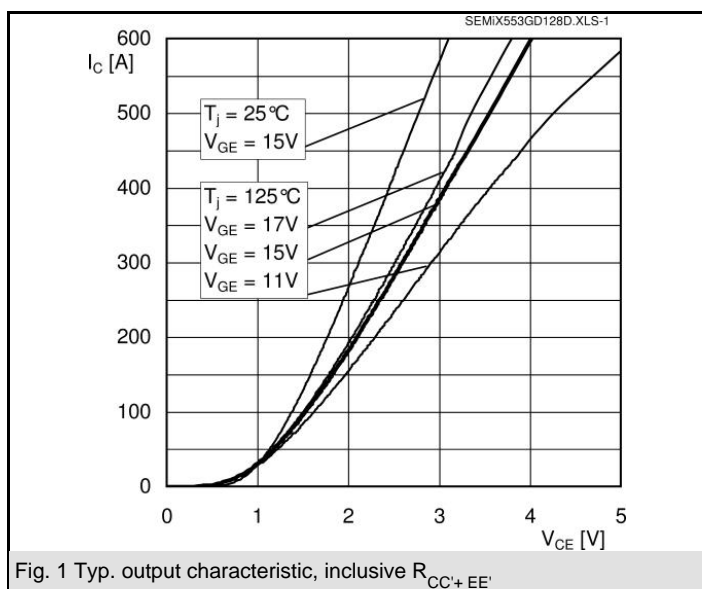
Typical Applications

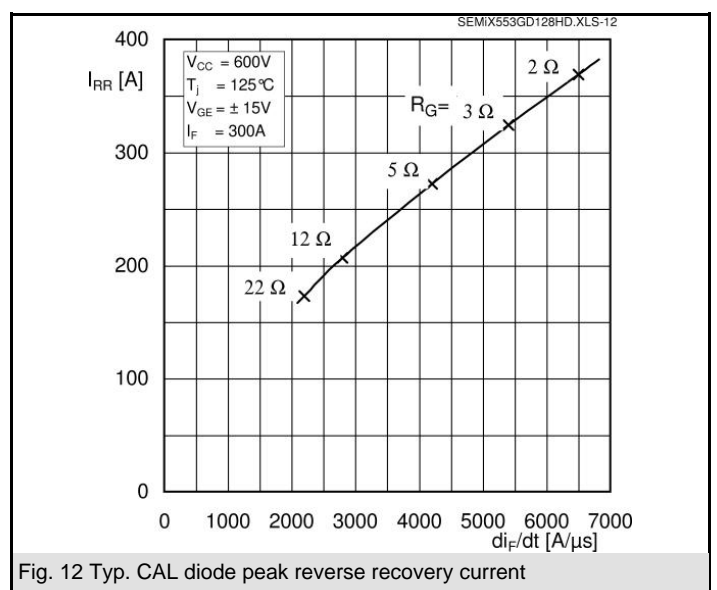
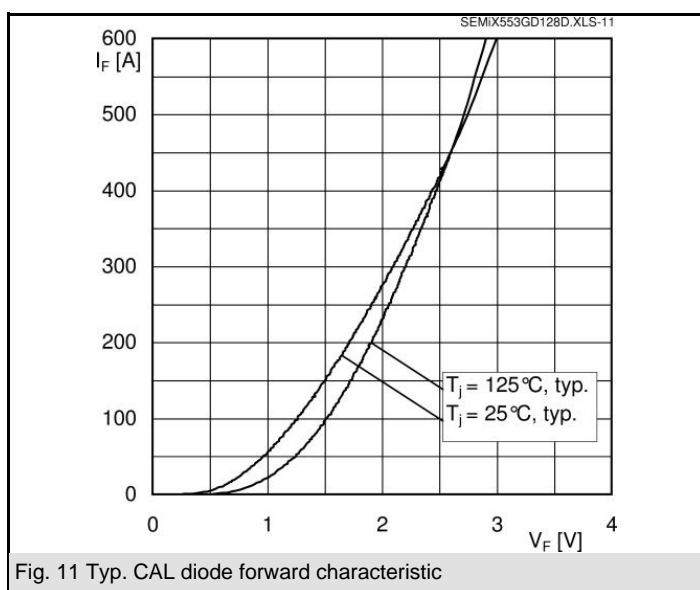
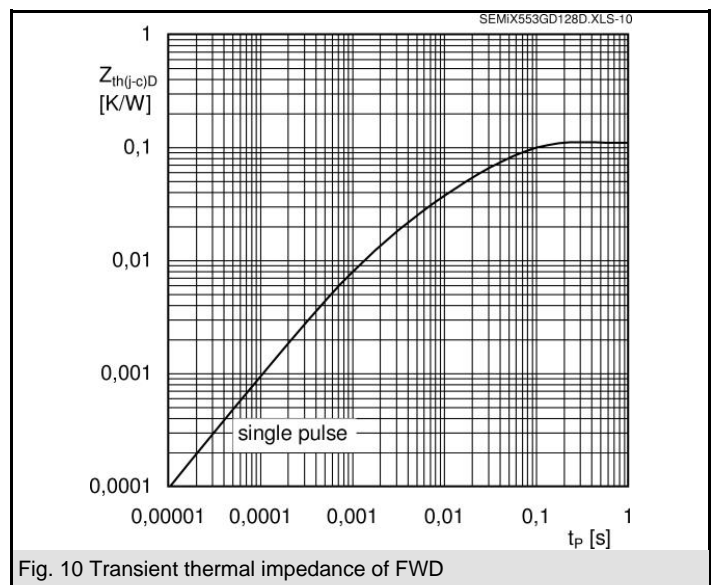
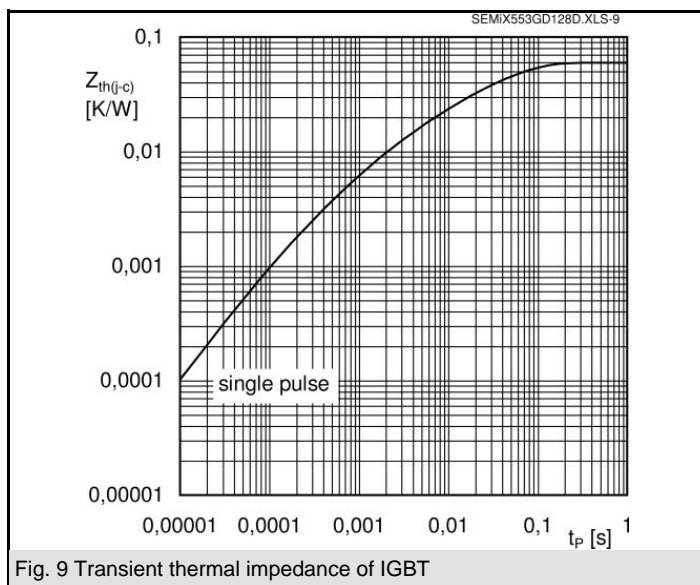
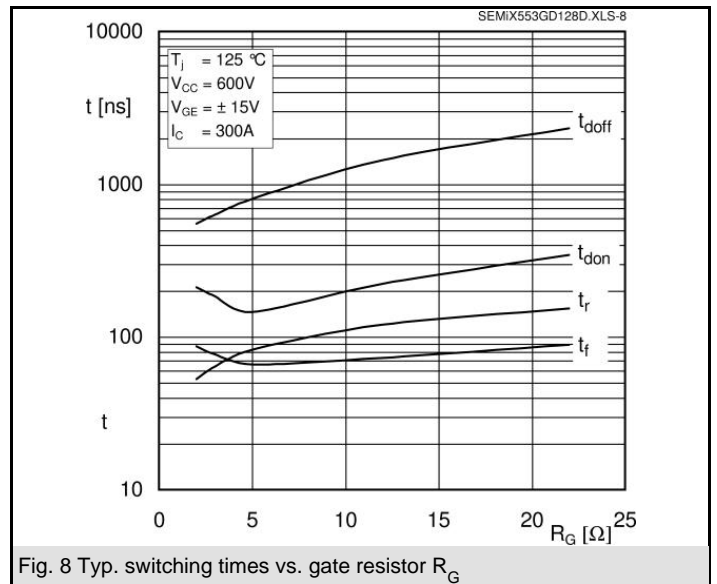
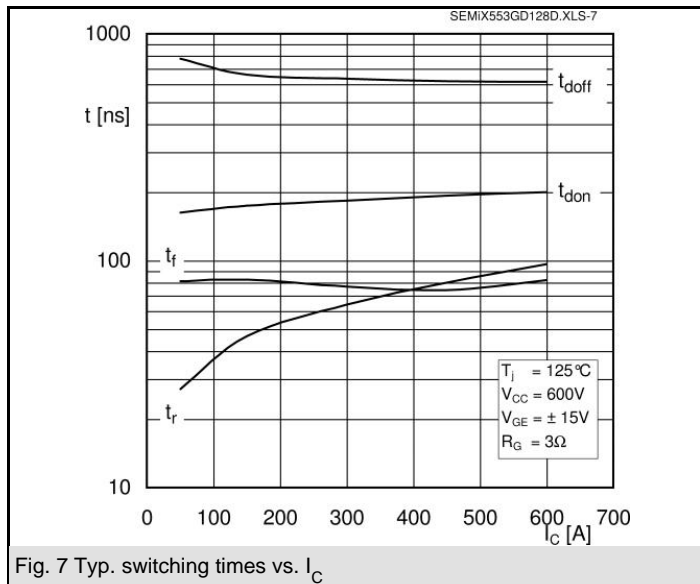
- AC inverter drives
- UPS
- Electronic welders up to 20 kHz

| Absolute Maximum Ratings | | $T_{case} = 25^{\circ}C$, unless otherwise specified | |
|--------------------------|---|---|-------------|
| Symbol | Conditions | Values | Units |
| IGBT | | | |
| V_{CES} | | 1200 | V |
| I_C | $T_c = 25 (80)^{\circ}C$ | 540 (380) | A |
| I_{CRM} | $t_p = 1 \text{ ms}$ | 600 | A |
| V_{GES} | | ± 20 | V |
| T_{vj} , (T_{stg}) | $T_{OPERATION} \leq T_{stg}$ | - 40 ... + 150 (125) | $^{\circ}C$ |
| V_{isol} | AC, 1 min. | 4000 | V |
| Inverse diode | | | |
| I_F | $T_c = 25 (80)^{\circ}C$ | 420 (280) | A |
| I_{FRM} | $t_p = 1 \text{ ms}$ | 600 | A |
| I_{FSM} | $t_p = 10 \text{ ms}$; sin.; $T_j = 25^{\circ}C$ | 2300 | A |

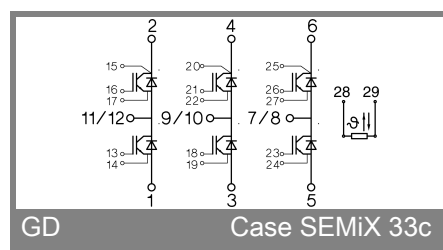
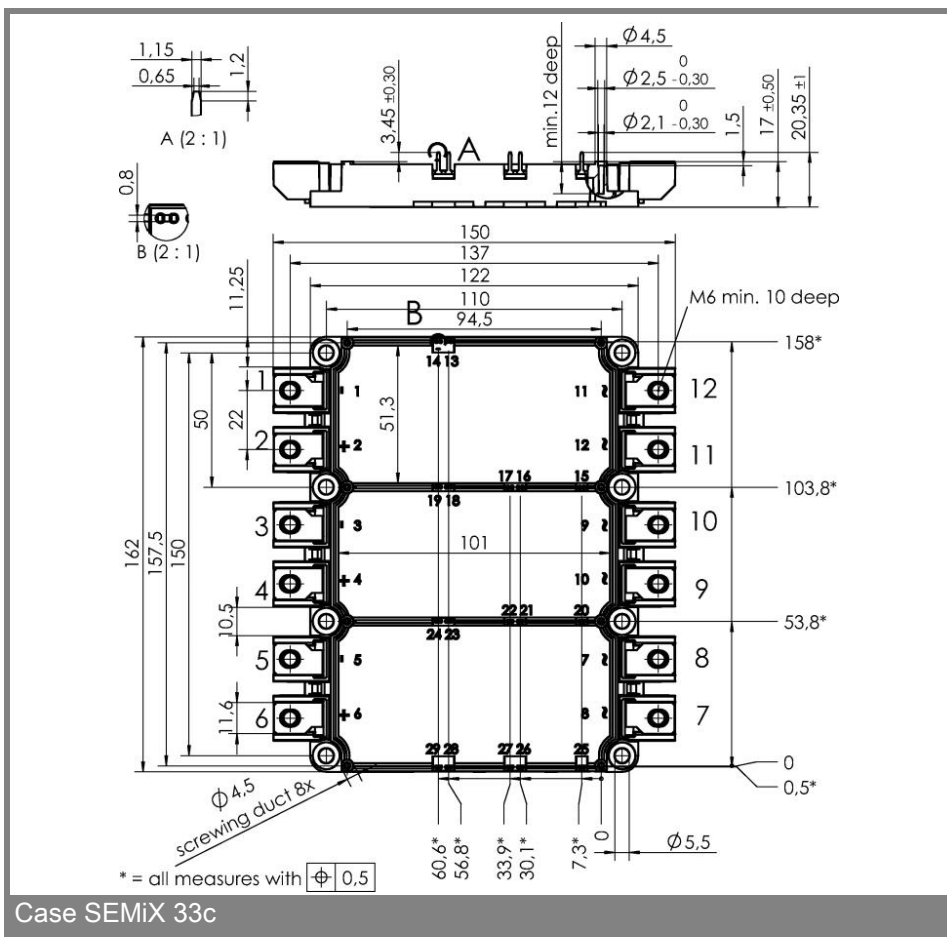
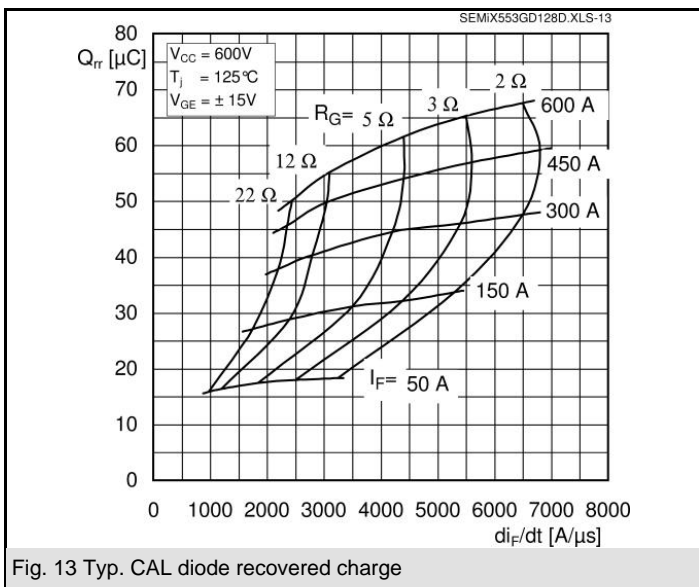
| Characteristics | | T _{case} = 25 °C, unless otherwise specified | | | |
|-------------------------------------|--|---|-----------|-------------|-------|
| Symbol | Conditions | min. | typ. | max. | Units |
| IGBT | | | | | |
| V _{GE(th)} | V _{GE} = V _{CE} , I _C = 12 mA | 4,5 | 5 | 6,5 | V |
| I _{CES} | V _{GE} = 0, V _{CE} = V _{CES} , T _j = 25 (125) °C | | | 0,3 | mA |
| V _{CE(TO)} | T _j = 25 (125) °C | | 1 (0,9) | 1,15 (1,05) | V |
| r _{CE} | V _{GE} = 15 V, T _j = 25 (125) °C | | 3 (4,7) | 4 (5) | mΩ |
| V _{CE(sat)} | I _{Cnom} = 300 A, V _{GE} = 15 V, T _j = 25 (125) °C, chip level | | 1,9 (2,3) | 2,35 (2,55) | V |
| C _{ies} | under following conditions | | 27 | | nF |
| C _{oes} | V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz | | 2 | | nF |
| C _{res} | | | 1,3 | | nF |
| L _{CE} | | | 20 | | nH |
| R _{CC'+EE'} | terminal-chip, T _c = 25 (125) °C | | 0,7 (1) | | mΩ |
| t _{d(on)} /t _r | V _{CC} = 600 V, I _{Cnom} = 300 A | | 185 / 65 | | ns |
| t _{d(off)} /t _f | V _{GE} = ± 15 V | | 635 / 80 | | ns |
| E _{on} (E _{off}) | R _{Gon} = R _{Goff} = 3 Ω, T _j = 125 °C | | 25 (32) | | mJ |
| Inverse diode | | | | | |
| V _F = V _{EC} | I _{Fnom} = 300 A; V _{GE} = 0 V; T _j = 25 (125) °C, chip level | | 2 (1,8) | 2,5 (2,3) | V |
| V _(TO) | T _j = 25 (125) °C | | 1,1 | 1,45 (1,25) | V |
| r _T | T _j = 25 (125) °C | | 3 | 3,5 (3,5) | mΩ |
| I _{RRM} | I _{Fnom} = 300 A; T _j = 25 (125) °C | | (324) | | A |
| Q _{rr} | di/dt = 5400 A/μs | | (46) | | μC |
| E _{rr} | V _{GE} = -15 V | | (17) | | mJ |
| Thermal characteristics | | | | | |
| R _{th(j-c)} | per IGBT | | | 0,06 | K/W |
| R _{th(j-c)D} | per Inverse Diode | | | 0,11 | K/W |
| R _{th(j-c)FD} | per FWD | | | | K/W |
| R _{th(c-s)} | per module | | 0,014 | | K/W |
| Temperature sensor | | | | | |
| R ₂₅ | T _c = 25 °C | | 5 ±5% | | kΩ |
| B _{25/85} | R ₂ =R ₁ exp[B(1/T ₂ -1/T ₁)] ; T[K];B | | 3420 | | K |
| Mechanical data | | | | | |
| M _s /M _t | to heatsink (M5) / for terminals (M6) | 3/2,5 | | 5 /5 | Nm |
| w | | | 866 | | g |







SEMiX 553GD128Dc



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

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