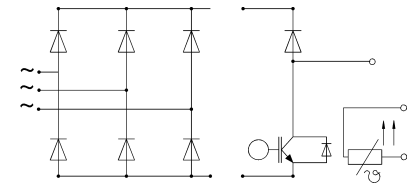


SKiiP 83 ANB 15 T4

MiniSKiiP 8 SEMIKRON integrated intelligent Power SKiiP 83 ANB 15 T4 3-phase bridge rectifier + IGBT braking chopper

Case M8a



UL recognized file no. E63532

- specification of temperature sensor see part A of data book '99
- common characteristics see page B 16 – 4 of data book '99

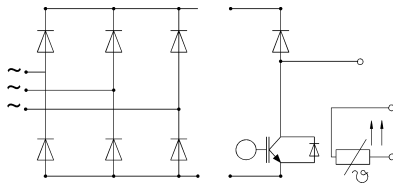
- 1) $T_{\text{heatsink}} = 25\text{ °C}$, unless otherwise specified
 2) CAL = Controlled Axial Lifetime Technology (soft and fast recovery)

| Absolute Maximum Ratings | | Values | Units |
|----------------------------------|--|------------------|------------------|
| Symbol | Conditions ¹⁾ | | |
| Bridge Rectifier | | | |
| V_{RRM} | | 1500 | V |
| I_D | $T_{\text{heatsink}} = 80\text{ °C}$ | 125 | A |
| I_{FSM}/I_{TSM} | $t_p = 10\text{ ms}$; sin. 180 °C , $T_j = 25\text{ °C}$ | 1000 | A |
| $I_{\Delta t}$ | $t_p = 10\text{ ms}$; sin. 180 °C , $T_j = 25\text{ °C}$ | 5000 | A ² s |
| IGBT Chopper | | | |
| V_{CES} | | 1200 | V |
| V_{GES} | | ± 20 | V |
| I_C | $T_{\text{heatsink}} = 25 / 80\text{ °C}$ | 125 / 85 | A |
| I_{CM} | $t_p < 1\text{ ms}$; $T_{\text{heatsink}} = 25 / 80\text{ °C}$ | 250 / 170 | A |
| Freewheeling Diode ²⁾ | | | |
| V_{RRM} | | 1200 | V |
| I_F | $T_{\text{heatsink}} = 25 / 80\text{ °C}$ | 80 / 55 | A |
| I_{FM} | $t_p < 1\text{ ms}$; $T_{\text{heatsink}} = 25 / 80\text{ °C}$ | 160 / 110 | A |
| T_j | Diode & IGBT | $-40 \dots +150$ | °C |
| T_{stg} | | $-40 \dots +125$ | °C |
| V_{isol} | AC, 1 min. | 2500 | V |

| Characteristics | | min. | typ. | max. | Units |
|--------------------|--|------|----------|----------|-------|
| Symbol | Conditions ¹⁾ | | | | |
| Diode - Rectifier | | | | | |
| V_F | $I_F = 100\text{ A}$ $T_j = 125\text{ °C}$ | – | 1,15 | – | V |
| V_{TO} | $T_j = 125\text{ °C}$ | – | 0,8 | – | V |
| r_T | $T_j = 125\text{ °C}$ | – | 3,5 | – | mΩ |
| R_{thjh} | per diode | – | – | 0,7 | K/W |
| IGBT - Chopper | | | | | |
| V_{CESat} | $I_C = 100\text{ A}$ $T_j = 25 (125)\text{ °C}$ | – | 2,5(3,1) | 3,0(3,7) | V |
| $t_{d(on)}$ | $V_{CC} = 600\text{ V}$; $V_{GE} = \pm 15\text{ V}$ | – | 50 | 100 | ns |
| t_r | $I_C = 100\text{ A}$; $T_j = 125\text{ °C}$ | – | 55 | 110 | ns |
| $t_{d(off)}$ | $R_{gon} = R_{goff} = 11\text{ }\Omega$ | – | 400 | 600 | ns |
| t_f | inductive load | – | 70 | 100 | ns |
| $E_{on} + E_{off}$ | | – | 27 | – | mJ |
| C_{ies} | $V_{CE} = 25\text{ V}$; $V_{GE} = 0\text{ V}$, 1 MHz | – | 6,6 | – | nF |
| R_{thjh} | per IGBT | – | – | 0,25 | K/W |

MiniSKiiP 8
SEMIKRON integrated
intelligent Power
SKiiP 83 ANB 15 T4
3-phase bridge rectifier +
IGBT braking chopper

Case M8a



SKiiP 83 ANB 15 T4

| Characteristics | | min. | typ. | max. | Units |
|---|--|-------------|-------------|-------------|---------------|
| Symbol | Conditions ¹⁾ | | | | |
| Diode ²⁾ - Freewheeling | | | | | |
| $V_F = V_{EC}$ | $I_F = 75 \text{ A}$ $T_j = 25 \text{ (125) } ^\circ\text{C}$ | – | 2,0(1,8) | 2,5(2,3) | V |
| V_{TO} | $T_j = 125 ^\circ\text{C}$ | – | 1,0 | 1,2 | V |
| r_T | $T_j = 125 ^\circ\text{C}$ | – | 11 | 15 | m Ω |
| I_{RRM} | $I_F = 75 \text{ A}; V_R = -600 \text{ V}$ $di_F/dt = -800 \text{ A}/\mu\text{s}$ $V_{GE} = 0 \text{ V}, T_j = 125 ^\circ\text{C}$ | – | 45 | – | A |
| Q_{rr} | | – | 11 | – | μC |
| E_{off} | | – | 3,0 | – | mJ |
| R_{thjh} | | per diode | – | – | 0,8 |
| Diode ²⁾ - Antiparallel | | | | | |
| $V_F = V_{EC}$ | $I_F = 15 \text{ A}$ $T_j = 25 \text{ (125) } ^\circ\text{C}$ | – | 2,0(1,8) | 2,5(2,3) | V |
| V_{TO} | $T_j = 125 ^\circ\text{C}$ | – | 1,0 | 1,2 | V |
| r_T | $T_j = 125 ^\circ\text{C}$ | – | 53 | 73 | m Ω |
| I_{RRM} | $I_F = 15 \text{ A}; V_R = -600 \text{ V}$ $di_F/dt = -400 \text{ A}/\mu\text{s}$ $V_{GE} = 0 \text{ V}, T_j = 125 ^\circ\text{C}$ | – | 16 | – | A |
| Q_{rr} | | – | 2,7 | – | μC |
| E_{off} | | – | 0,6 | – | mJ |
| R_{thjh} | | per diode | – | – | 1,7 |
| Temperature Sensor | | | | | |
| R_{TS} | $T = 25 / 100 ^\circ\text{C}$ | | 1000 / 1670 | | Ω |
| Mechanical Data | | | | | |
| M_1 | case to heatsink, SI Units | 2,5 | – | 3,5 | Nm |
| Case | mechanical outline see pages B 16 –13 and B 16 – 14 | | M8a | | |

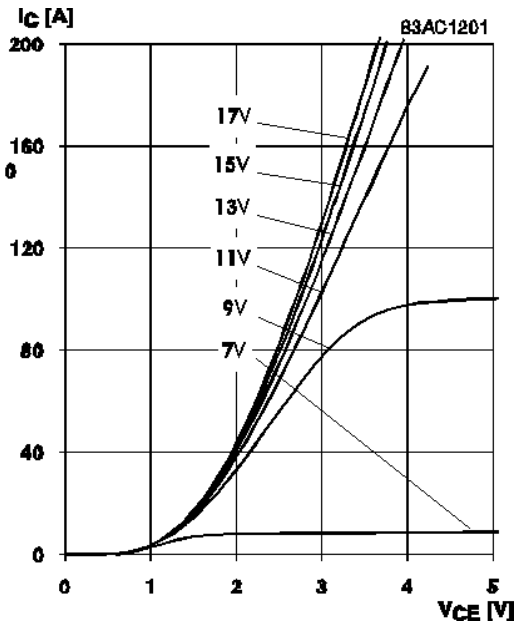


Fig. 1 Typ. output characteristic, $t_p = 80 \mu s$; $25 \text{ }^\circ\text{C}$

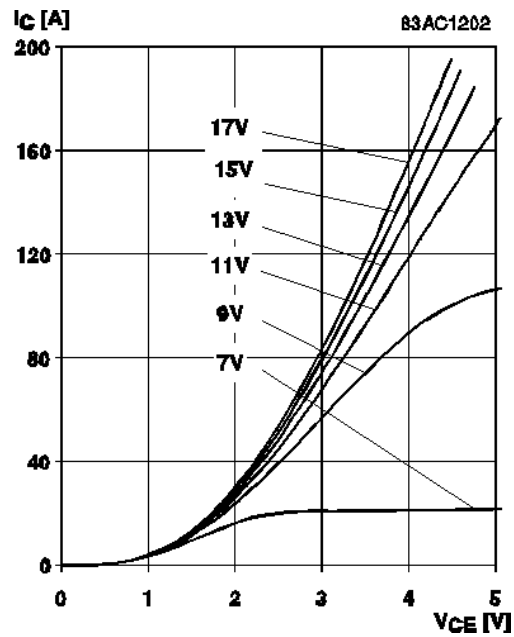


Fig. 2 Typ. output characteristic, $t_p = 80 \mu s$; $125 \text{ }^\circ\text{C}$

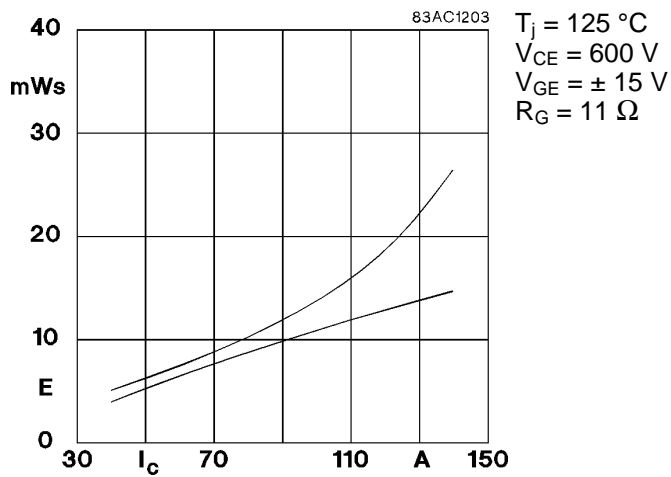


Fig. 3 Turn-on /-off energy = $f(I_C)$

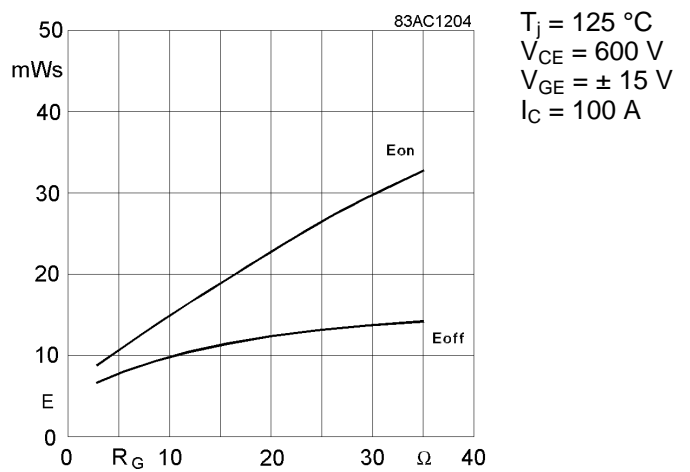


Fig. 4 Turn-on /-off energy = $f(R_G)$

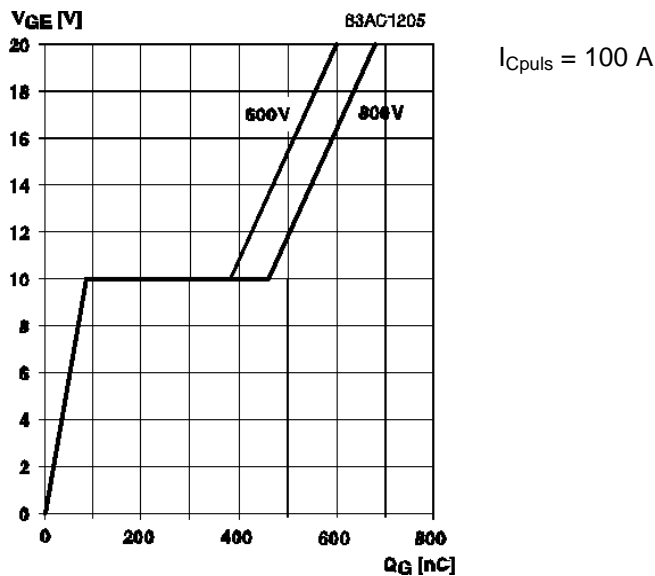


Fig. 5 Typ. gate charge characteristic

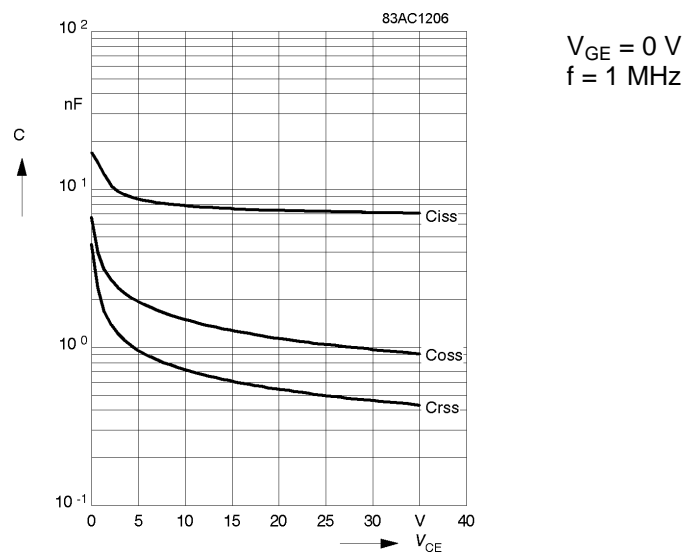


Fig. 6 Typ. capacitances vs. V_{CE}