SEMIKRON

| $V_{RSM}$ | $V_{RRM}$ | (dv/ | $I_{TRMS}$ (maximum values for continuous operation) | | | |
|---|---|---|---|---|---|---|
| | $V_{DRM}$ | $dt)_{cr}$ | 370 A | 420 A | 370 A | 420 A |
| | | | $I_{TAV}$ (sin. 180; $T_{case}$ = 85 °C) | | | |
| V | V | V/µs | 230 A | 253 A | 230 A | 250 A |
| | | | **SKKT** | **SKKT** | **SKKH** | **SKKH** |
| 900 | 800 | 500 | **213/08 D** | **253/08 D** | **–** | **253/08 D** |
| 1300 | 1200 | 1000 | **213/12 E** | **253/12 E** | **213/12 E** | **253/12 E** |
| 1500 | 1400 | 1000 | **213/14 E** | **253/14 E** | **213/14 E** | **253/14 E** |
| 1700 | 1600 | 1000 | **213/16 E** | **253/16 E** | **213/16 E** | **253/16 E** |
| 1900 | 1800 | 1000 | **213/18 E** | **253/18 E** | **213/18 E** | **253/18 E** |
| 2100 | 2000 | 1000 | **213/20 E** | **–** | **213/20 E** | **–** |
| 2300 | 2200 | 1000 | **213/22 E** | **–** | **213/22 E** | **–** |

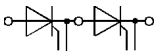
| Symbol | Conditions | SKKT 213 SKKH 213 | SKKT 253 SKKT 253 | Units |
|---|---|---|---|---|
| $I_{TAV}$ | sin. 180; ($T_{case}$ = ...) | 213 (90°C) | 253 (85°C) | A |
| $I_D$ | B2/B6 \| $T_{amb}$ = 35 °C | 354/456 | 387/502 | A |
| $I_{RMS}$ | W1/W3 \| P 16/200 F | 425/3 x 360 | 465/3 x 400 | A |
| $I_{TSM}$ | $T_{vj}$ = 25 °C; 10 ms | 8 500 | 9 000 | A |
| | $T_{vj}$ = 130 °C; 10 ms | 7 500 | 8 000 | A |
| $i^2t$ | $T_{vj}$ = 25 °C; 8,3 ... 10 ms | 361 000 | 405 000 | $A^2s$ |
| | $T_{vj}$ = 130 °C; 8,3 ... 10 ms | 281 000 | 320 000 | $A^2s$ |
| $t_{gd}$ | $T_{vj}$ = 25 °C; $I_G$ = 1 A; $di_G/dt$ = 1 A/µs | 1 | | µs |
| $t_{gr}$ | $V_D = 0{,}67 \cdot V_{DRM}$ | 2 | | µs |
| $(di/dt)_{cr}$ | $T_{vj}$ = 130 °C | 250 | | A/µs |
| $t_q$ | $T_{vj}$ = 130 °C | typ. 50 ... 150 | | µs |
| $I_H$ | $T_{vj}$ = 25 °C; typ. / max. | 150 / 500 | | mA |
| $I_L$ | $T_{vj}$ = 25 °C; $R_G$ = 33 Ω; typ. / max. | 0,3 / 2 | | A |
| $V_T$ | $T_{vj}$ = 25 °C; $I_T$ = 750 A | max. 1,9 | max. 1,7 | V |
| $V_{T(TO)}$ | $T_{vj}$ = 130 °C | 0,95 | 0,85 | V |
| $r_T$ | $T_{vj}$ = 130 °C | 1,3 | 1,1 | mΩ |
| $I_{DD}$; $I_{RD}$ | $T_{vj}$ = 130 °C; $V_{RD} = V_{RRM}$; $V_{DD} = V_{DRM}$ | 50 | 50 | mA |
| $V_{GT}$ | $T_{vj}$ = 25 °C; d.c. | 3 | | V |
| $I_{GT}$ | $T_{vj}$ = 25 °C; d.c. | 200 | | mA |
| $V_{GD}$ | $T_{vj}$ = 130 °C; d.c. | 0,25 | | V |
| $I_{GD}$ | $T_{vj}$ = 130 °C; d.c. | 10 | | mA |
| $R_{thjc}$ | cont. (per thyristor / per module) | 0,11 / 0,055 | | °C/W |
| | sin. 180 (per thyristor / per module) | 0,115 / 0,057 | | °C/W |
| | rec. 120 (per thyristor / per module) | 0,125 / 0,0625 | | °C/W |
| $R_{thch}$ | | 0,08 / 0,04 | | °C/W |
| $T_{vj}$, $T_{stg}$ | | – 40 ... + 130 | | °C |
| $V_{isol}$ | a. c. 50 Hz; r.m.s; 1 s/1 min | 3600 / 3000 | | V~ |
| $M_1$ | to heatsink (SI (US) units) | 5 (44 lb. in.) ± 15 %[1)] | | Nm |
| $M_2$ | to terminals (SI (US) units) | 9 (80 lb. in.) ± 15 %[2)] | | Nm |
| a | | $5 \cdot 9{,}81$ | | $m/s^2$ |
| w | approx. | 430 | | g |
| Case | → page B 1 – 86 | SKKT: A 43 | SKKH: A 56 | |

[1)] See the assembly instructions

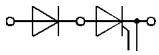
[2)] The screws must be lubricated

# SEMIPACK® 3
# Thyristor / Diode Modules

## SKKT 213 SKKH 213
## SKKT 253 SKKH 253



**SKKT**



**SKKH**

### Features

- Heat transfer through aluminium oxide ceramic isolated metal baseplate
- Chip soldered on direct copper bonded $Al_2O_3$ ceramic
- Thyristor with amplifying gate
- UL recognized, file no. E 63 532

### Typical Applications

- DC motor control (e.g. for machine tools)
- Temperature control (e.g. for ovens, chemical processes)
- Professional light dimming (studios, theaters)

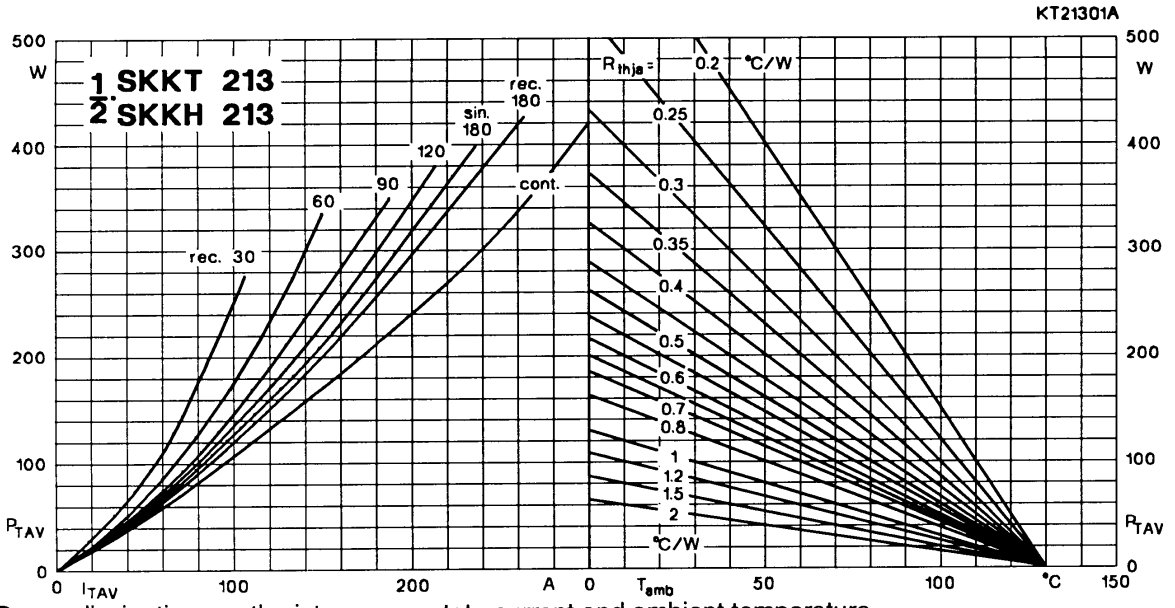



Fig. 1 a Power dissipation per thyristor vs. on-state current and ambient temperature

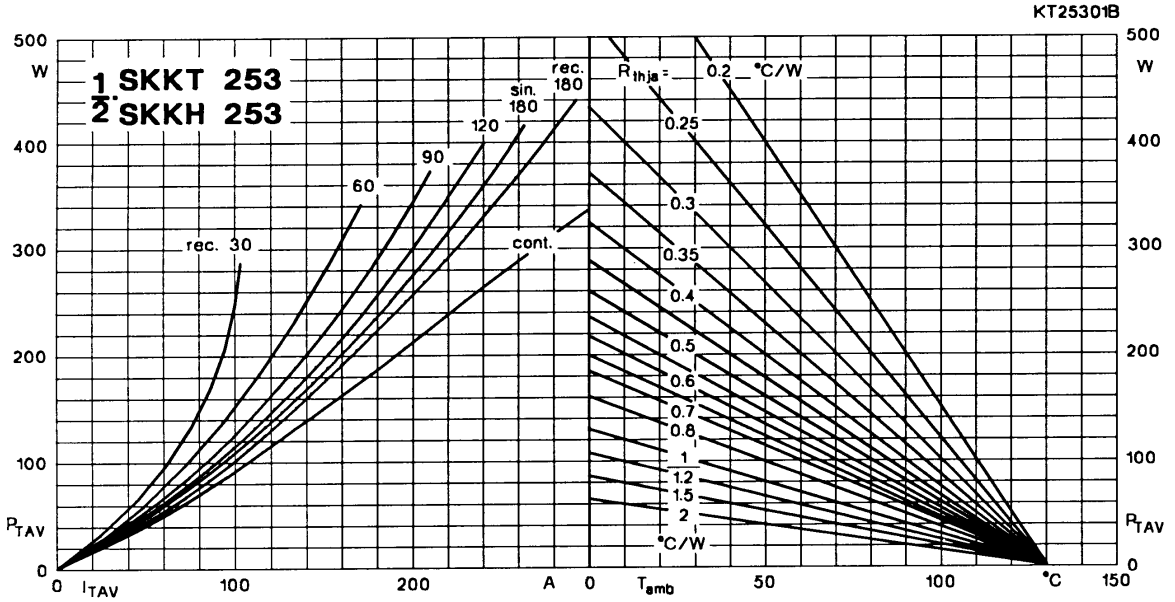



Fig. 1 b Power dissipation per thyristor vs. on-state current and ambient temperature

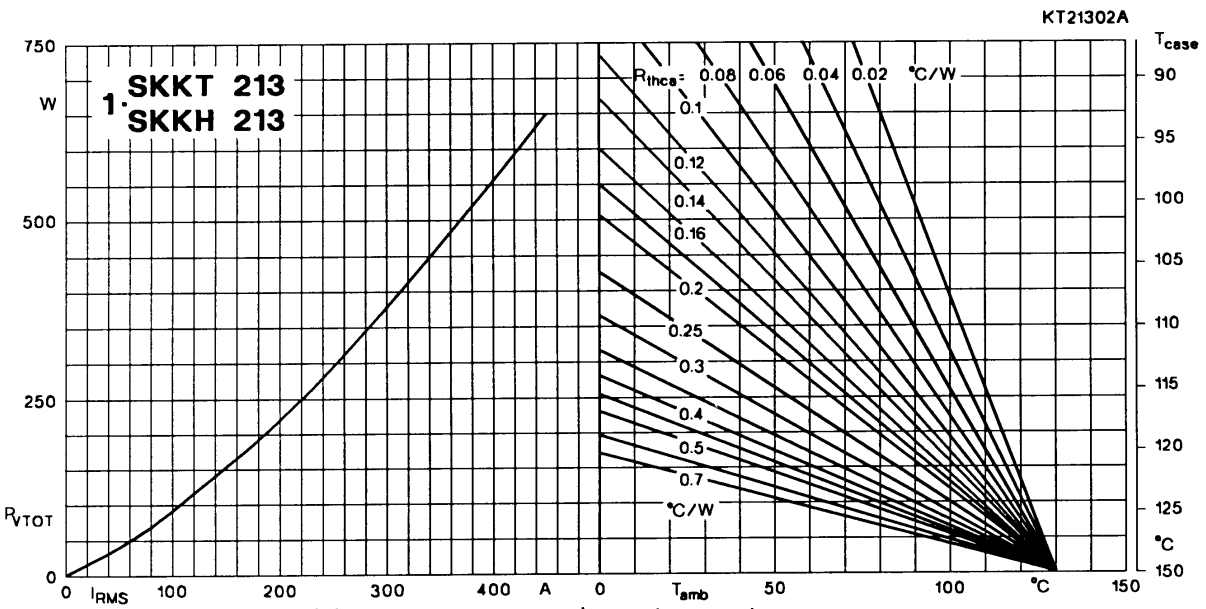



Fig. 2 a Power dissipation per module vs. rms current and case temperature

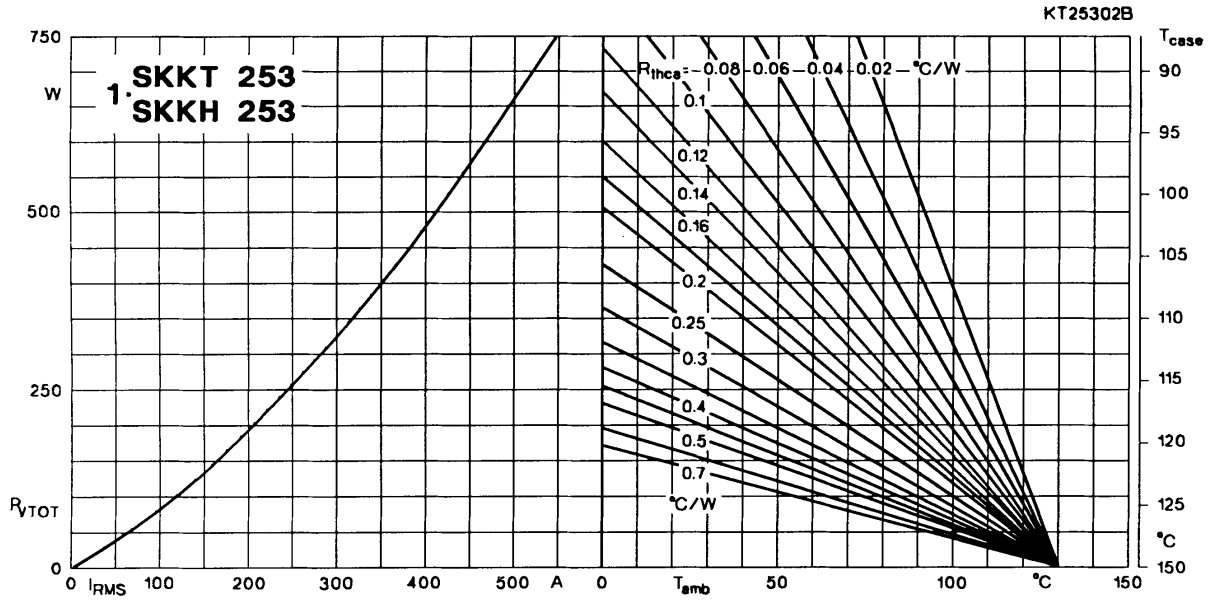



Fig. 2 b Power dissipation per module vs. rms current and case temperature

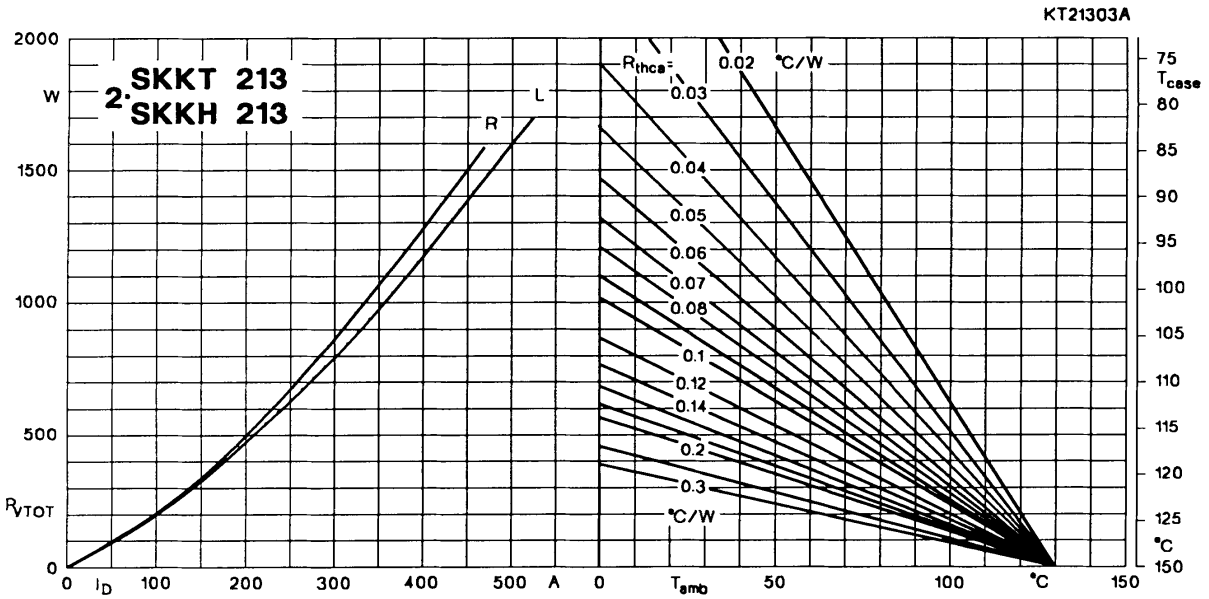



Fig. 3 a Power dissipation of two modules vs. direct current and case temperature

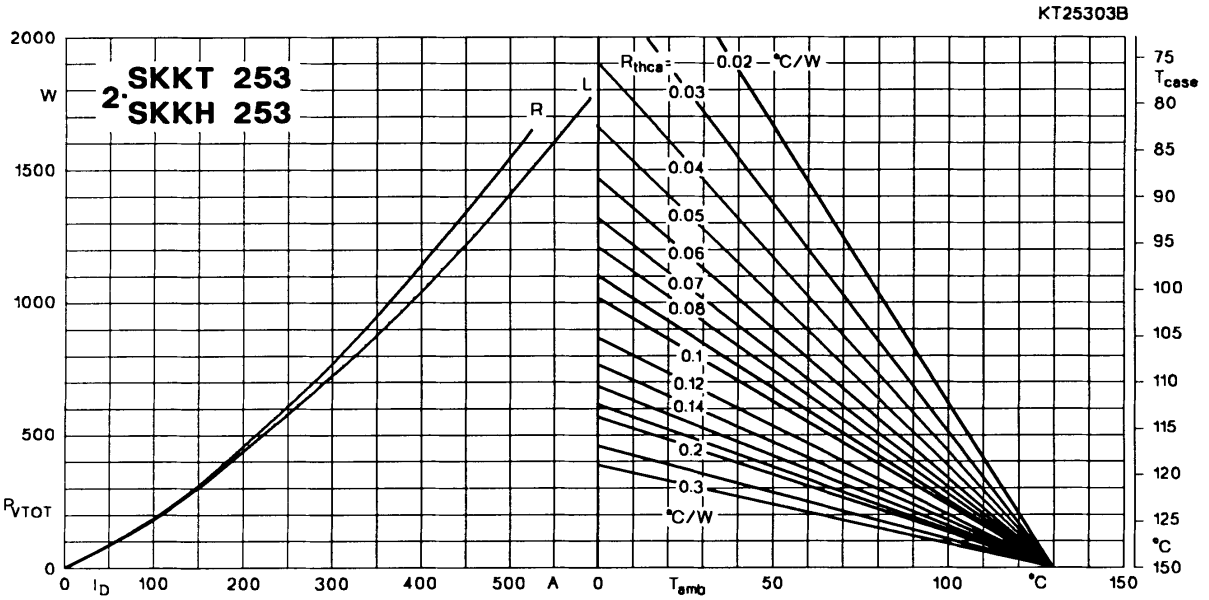



Fig. 3 b Power dissipation of two modules vs. direct current and case temperature

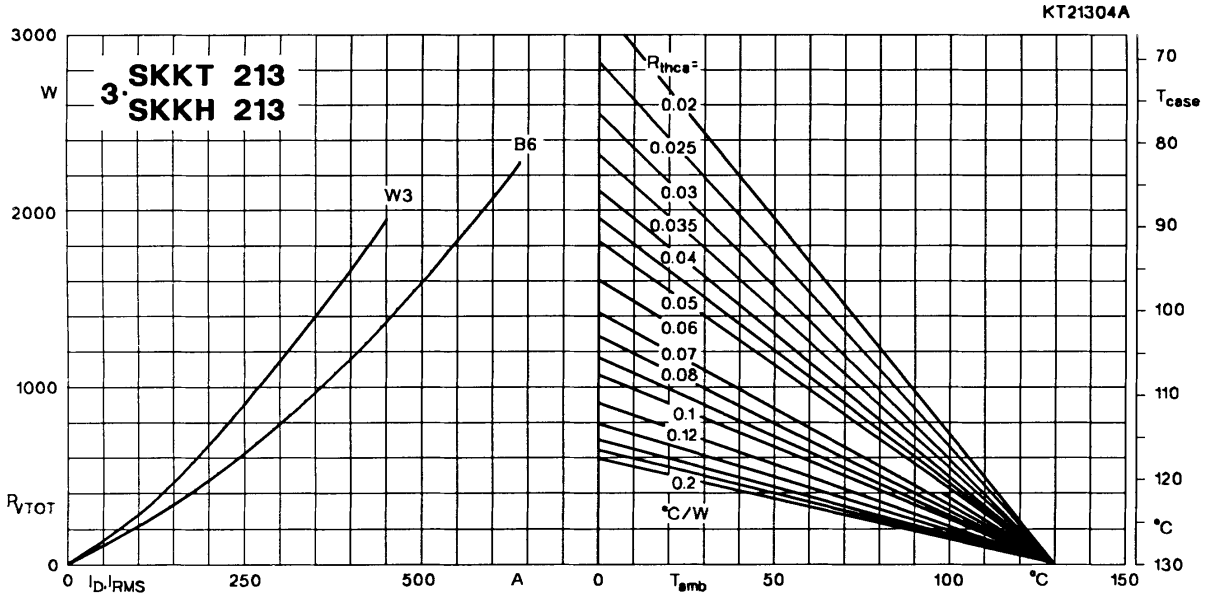



Fig. 4 a Power dissipation of three modules vs. direct and rms current and case temperature

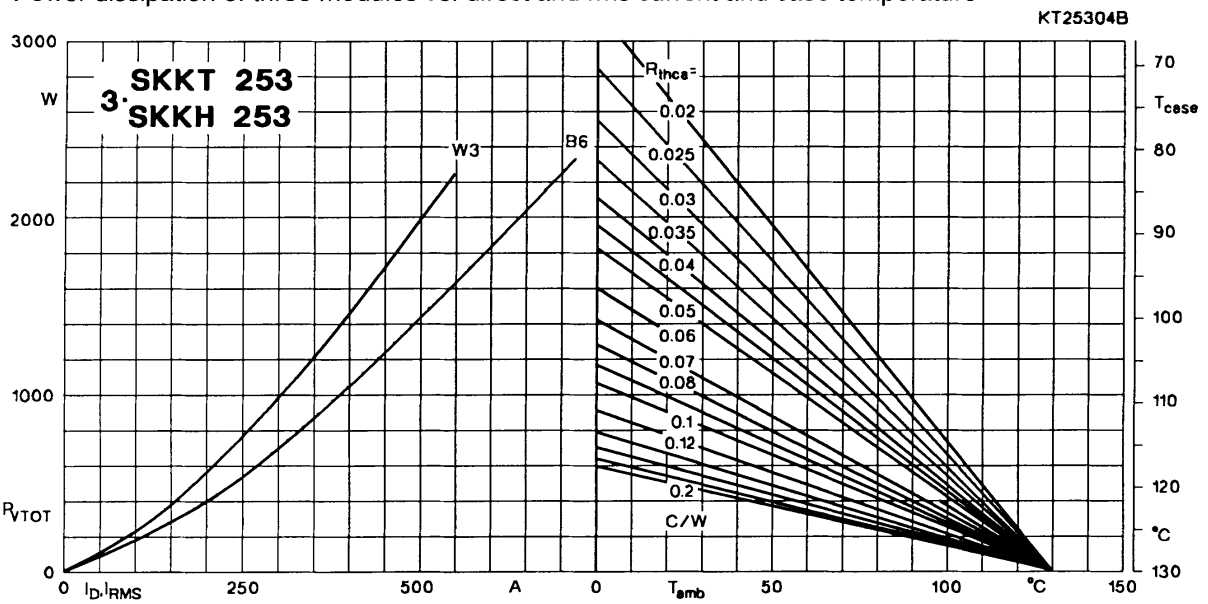



Fig. 4 b Power dissipation of three modules vs. direct and rms current and case temperature

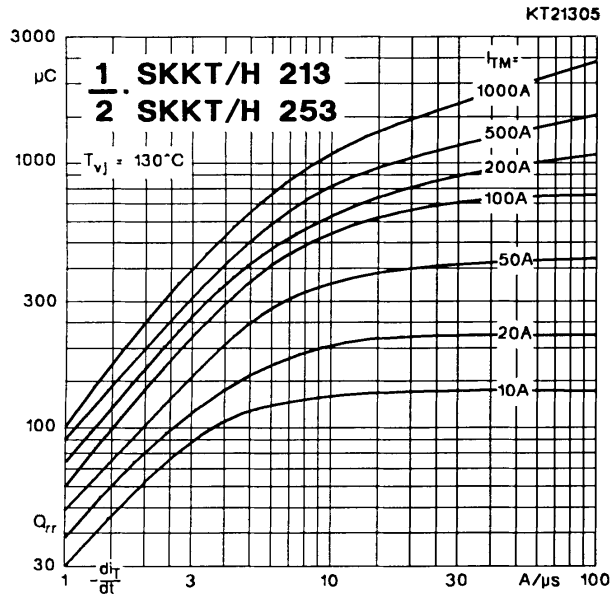



Fig. 5 Recovered charge vs. current decrease

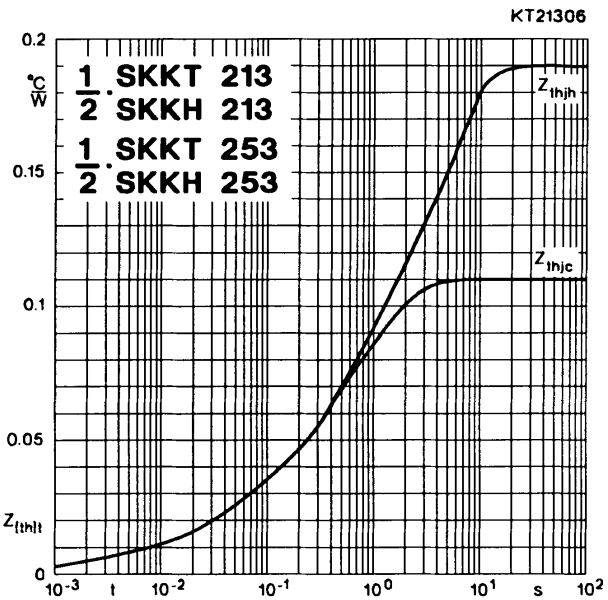



Fig. 6 Transient thermal impedance vs. time

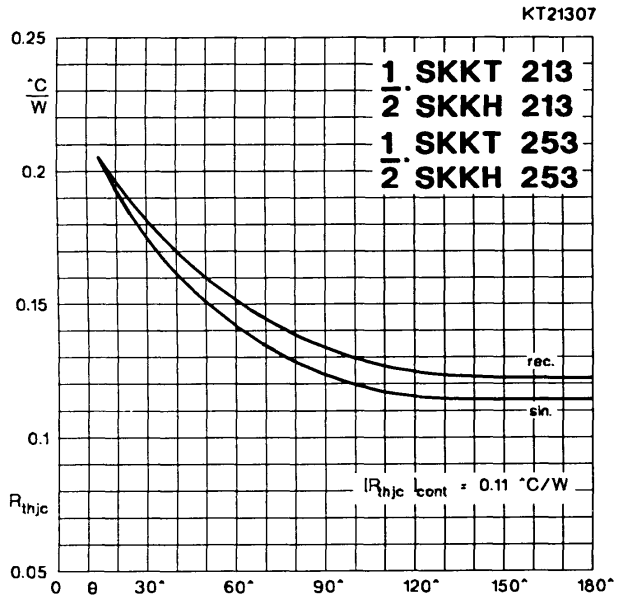



Fig. 7 Thermal resistance vs. conduction angle

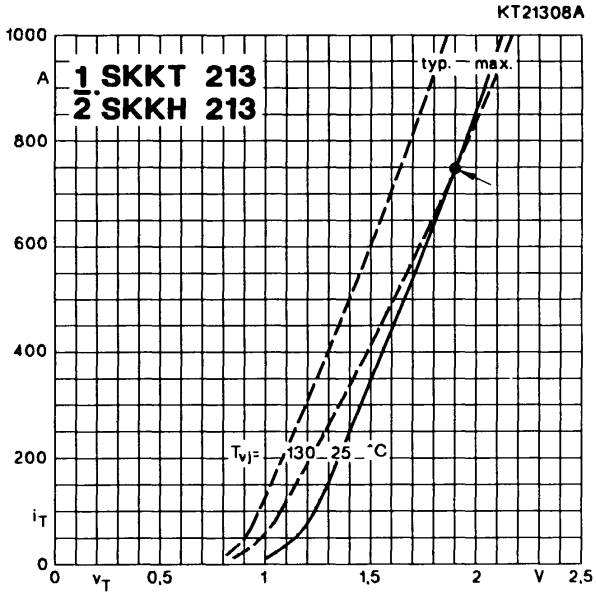



Fig. 8 a On-state characteristics

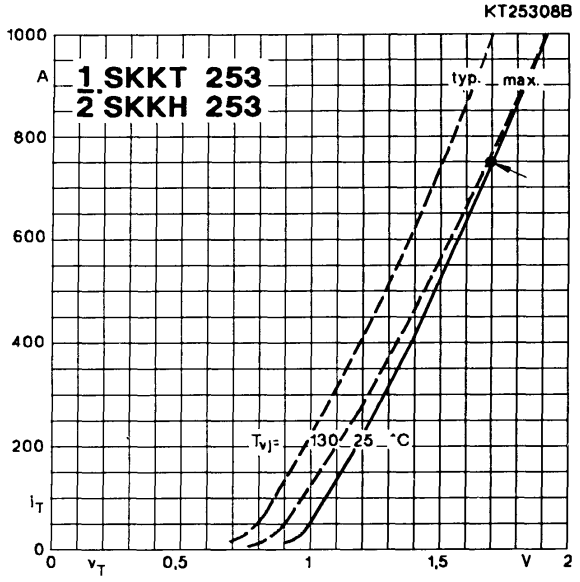



Fig. 8 b On-state characteristics

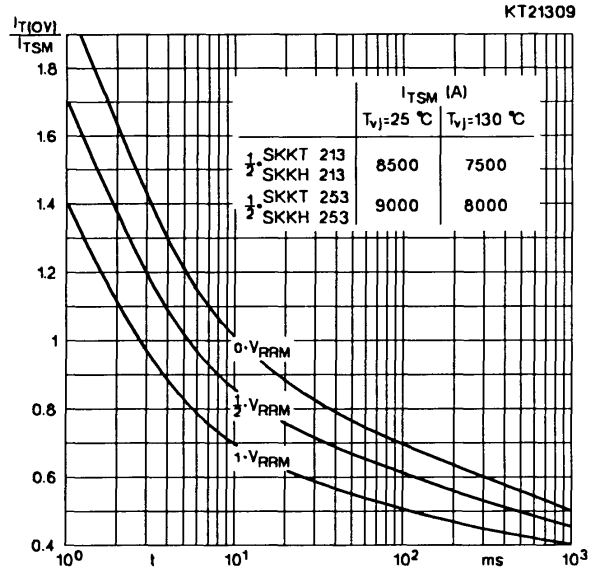



Fig. 9 Surge overload current vs. time

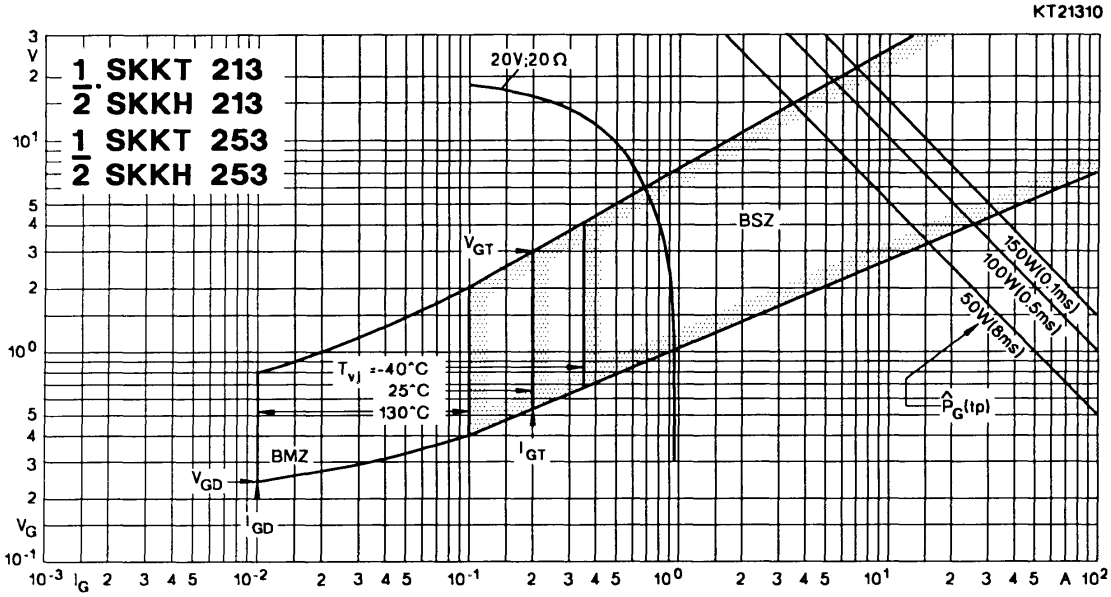
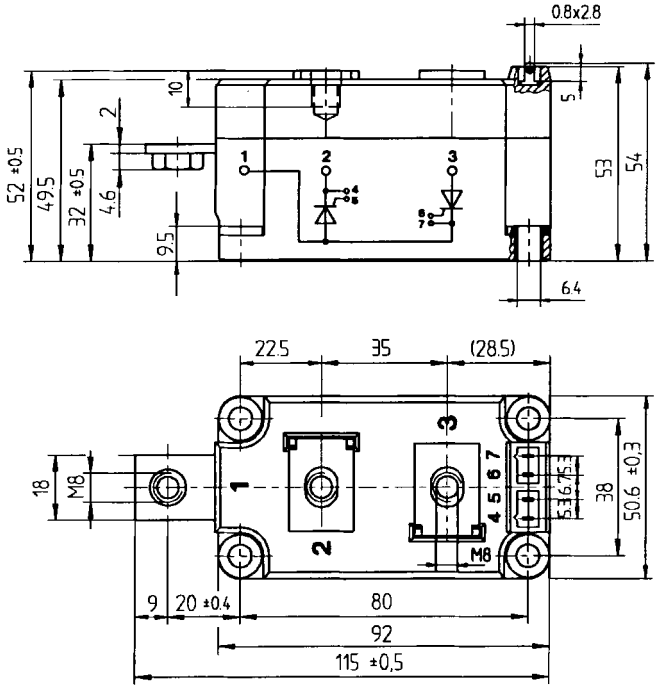



Fig. 10 Gate trigger characteristics

**SKKT 213, SKKT 253**

Case A 43

SEMIPACK® 3

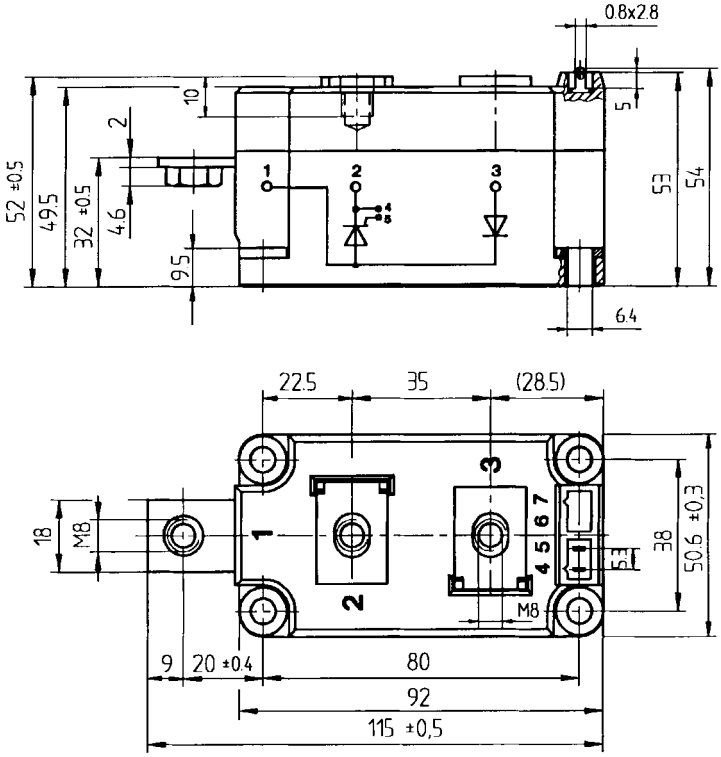



Dimensions in mm

**SKKH 213, SKKH 253**

Case A 56

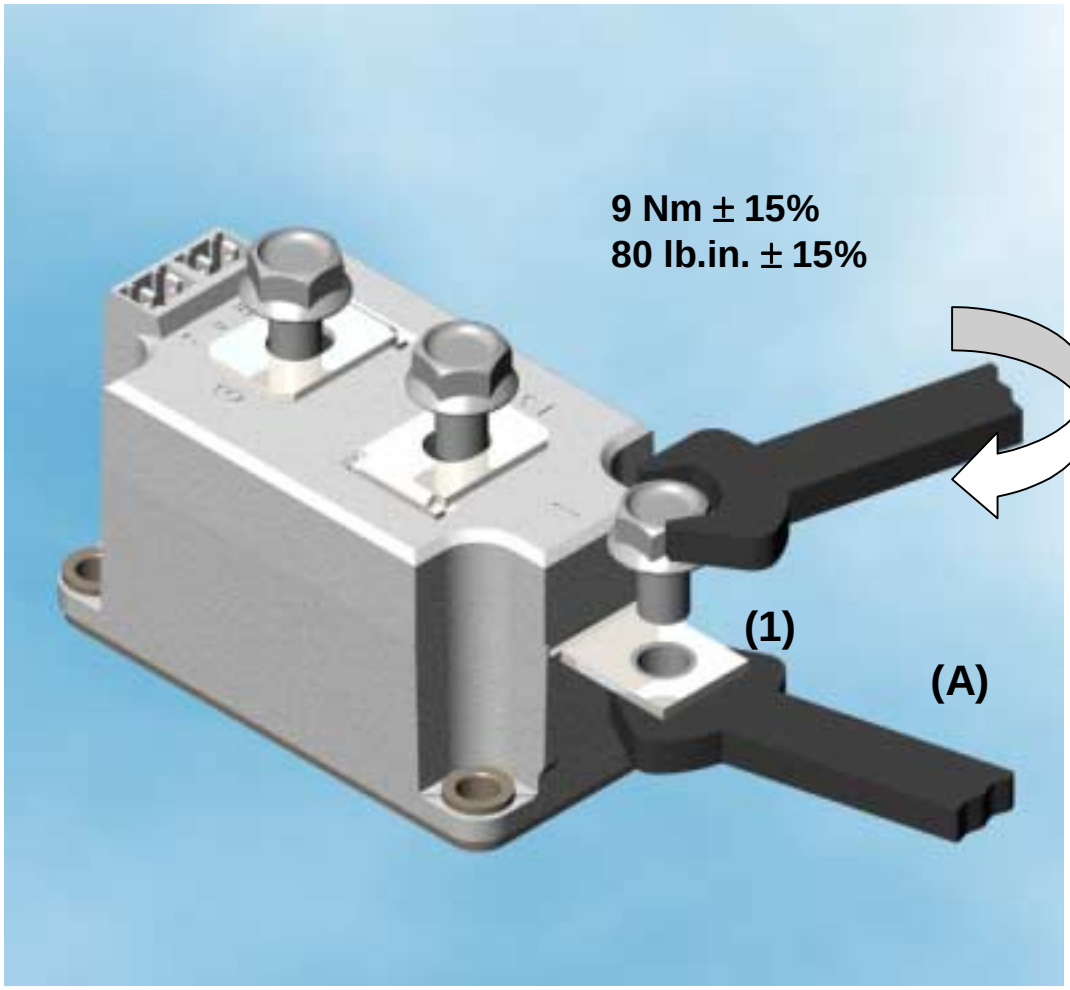
SEMIPACK® 3




Dimensions in mm

## Ergänzung zu den Montagehinweisen im SEMIKRON Datenbuch

Bitte beachten Sie, daß beim Befestigen der Stromzuführung an Anschluß **(1)** – zur Vermeidung von Schäden am Gehäuse – die Mutter mit einem Maulschlüssel **(A)**, gegengehalten werden muß.




## Supplement to the Assembly Instructions in the SEMIKRON Data Book

Please note that when connecting the power supply conductor to terminal **(1),** a wrench (spanner) **(A)** should be used to restrain the nut on terminal **(1)** to avoid damage to the housing.