

## SEMPACK® 3 Fast Thyristor/ Diode Modules

### SKFT 150 SKFH 150



|                        |                                       |  |  |
|------------------------|---------------------------------------|--|--|
| $V_{DRM}$<br>$V_{RRM}$ | $t_q$<br>( $T_{vj} = 125\text{ °C}$ ) | $I_{TRMS}$ (maximum values for continuous operation)<br>350 A    |  |
| V                      | $\mu\text{s}$                         | $I_{TAV}$ (sin. 180; $T_{case} = 76\text{ °C}$ ; 50 Hz)<br>150 A |  |
| 800                    | 15                                    | <b>SKFT 150/08 DS</b><br><b>SKFT 150/08 DT</b>                   | <b>SKFH 150/08 DS</b><br><b>SKFH 150/08 DT</b> |
| 1000                   | 15                                    | <b>SKFT 150/10 DS</b> <sup>1)</sup>                              | –  |

### Thyristor data

| Symbol         | Conditions  | SKFT 150<br>SKFH 150 | Units  |
|----------------|---|----------------------|--|
| $I_{TM}$       | sin. 180; $T_{case} = 60\text{ °C}$ ; 500 Hz  | 610                  | A  |
| $I_{TSM}$      | $T_{vj} = 25\text{ °C}$ ; 10 ms<br>$T_{vj} = 125\text{ °C}$ ; 10 ms                 | 6 500<br>5 500       | A  |
| $i^2t$         | $T_{vj} = 25\text{ °C}$ ; 8,3 ... 10 ms<br>$T_{vj} = 125\text{ °C}$ ; 8,3 ... 10 ms | 211 000<br>151 000   | $\text{A}^2\text{ s}$<br>$\text{A}^2\text{ s}$ |
| $t_{gd}$       | $T_{vj} = 25\text{ °C}$ ; $I_g = 1\text{ A}$ ; $di_g/dt = 1\text{ A}/\mu\text{s}$   | 1                    | $\mu\text{s}$                                  |
| $t_{gr}$       | $V_D = 0,67 \cdot V_{DRM}$  | 1                    | $\mu\text{s}$                                  |
| $(di/dt)_{cr}$ | non-repetitive/ $f = 50 \dots 60\text{ Hz}$   | 1000 / 400           | $\text{A}/\mu\text{s}$                         |
| $(dv/dt)_{cr}$ | $T_{vj} = 125\text{ °C}$  | 500                  | $\text{V}/\mu\text{s}$                         |
| $I_H$          | $T_{vj} = 25\text{ °C}$ ; typ./max.   | 200 / 400            | mA   |
| $I_L$          | $T_{vj} = 25\text{ °C}$ ; $R_G = 33\ \Omega$ ; typ./max.                            | 1 / 2                | A  |
| $V_T$          | $T_{vj} = 125\text{ °C}$ ; $I_T = 1200\text{ A}$ ; max.                             | 2,45                 | V  |
| $V_{T(TO)}$    | $T_{vj} = 125\text{ °C}$  | 1,9                  | V  |
| $r_T$          | $T_{vj} = 125\text{ °C}$  | 0,4                  | $\text{m}\Omega$                               |
| $I_D$ ; $I_R$  | $T_{vj} = 125\text{ °C}$ ; $V_{DRM}$ ; $V_{RRM}$                                    | 80                   | mA   |
| $V_{GT}$       | $T_{vj} = 25\text{ °C}$   | 4                    | V  |
| $I_{GT}$       | $T_{vj} = 25\text{ °C}$   | 250                  | mA   |
| $V_{GD}$       | $T_{vj} = 125\text{ °C}$  | 0,25                 | V  |
| $I_{GD}$       | $T_{vj} = 125\text{ °C}$  | 10                   | mA   |



SKFT

SKFH

### Features

- Heat transfer through ceramic isolated metal baseplate
- Interdigitated amplifying gates
- Precious metal pressure contacts
- UL recognition, file no. E63 532

### Typical Applications

- Self-commutated inverters
- DC choppers
- AC motor speed control
- Inductive heating
- Uninterruptible power supplies
- Electronic welders
- General power switching applications

### Fast rectifier diode data

|            |  |      |                  |
|------------|--|------|------------------|
| $t_{rr}$   | $T_{vj} = 25\text{ °C}$ ; $I_F = 1\text{ A}$ ;<br>– $di_F/dt = 15\text{ A}/\mu\text{s}$ ; $V_R = 30\text{ V}$        | 2    | $\mu\text{s}$    |
| $Q_{rr}$   | } $T_{vj} = 125\text{ °C}$ ; $I_F = 150\text{ A}$ ;<br>– $di_F/dt = 100\text{ A}/\mu\text{s}$ ; $V_R = 100\text{ V}$ | 250  | $\mu\text{C}$    |
| $I_{RM}$   |  | 175  | A                |
| $I_R$      | $T_{vj} = 125\text{ °C}$ ; $V_R = V_{RRM}$   | 80   | mA               |
| $V_F$      | $T_{vj} = 25\text{ °C}$ ; $I_F = 1200\text{ A}$ ; max.   | 1,85 | V                |
| $V_{(TO)}$ | $T_{vj} = 125\text{ °C}$   | 1,25 | V                |
| $r_T$      | $T_{vj} = 125\text{ °C}$   | 0,5  | $\text{m}\Omega$ |

<sup>1)</sup> Available in limited quantities

**Common data**

| Symbol  | Conditions  | SKFT 150<br>SKFH 150   |
|---|---|--|
| R <sub>thjc</sub><br>R <sub>thch</sub><br>T <sub>vj</sub><br>T <sub>stg</sub> | cont. } per thyristor/per module  | 0,16/0,08 °C/W<br>0,04/0,02 °C/W<br>-40 ... + 125 °C<br>-40 ... + 125 °C       |
| V <sub>isol</sub><br>M <sub>1</sub><br>M <sub>2</sub><br>w                    | a. c. 50 Hz; r. m. s.; 1 s/1 min.<br>Case to heatsink } SI units/<br>Busbars to terminals } US units<br>approx. | 300 V ~ /2500 V ~<br>5 Nm/44 lb. in. ± 15 %<br>9 Nm/80 lb. in. ± 15 %<br>940 g |
| Case  | → page B 2-59   | SKFT<br>SKFH<br>A 25<br>A 32   |

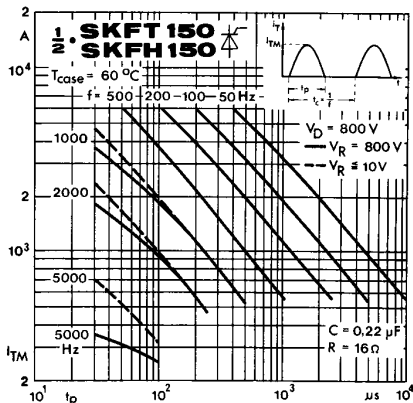


Fig. 1 a Rated peak on-state current vs. pulse duration

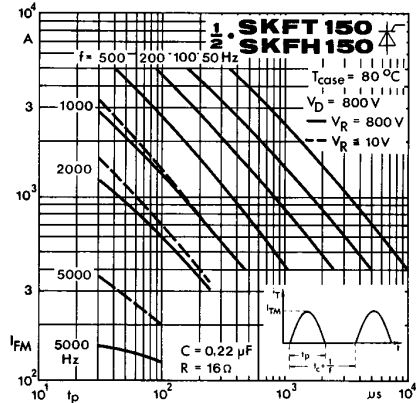


Fig. 1 b Rated peak on-state current vs. pulse duration

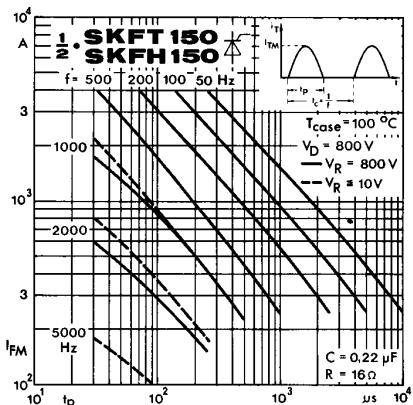


Fig. 1 c Rated peak on-state current vs. pulse duration

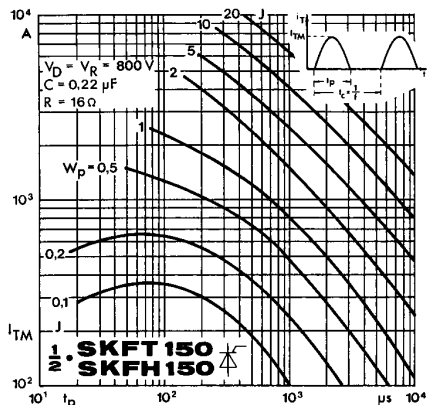


Fig. 2 Energy dissipation per pulse

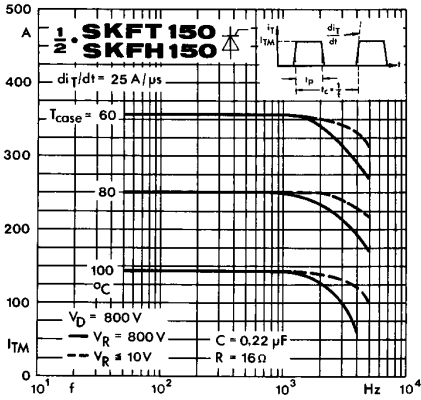


Fig. 3 a Rated peak on-state current vs. pulse duration

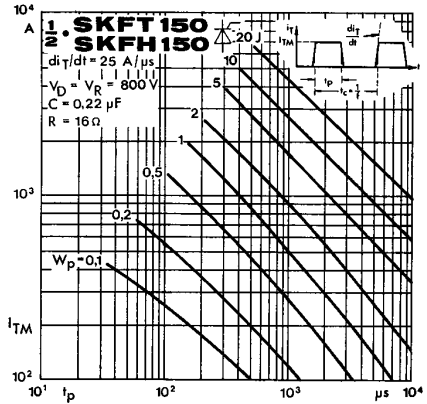


Fig. 4 a Energy dissipation per pulse

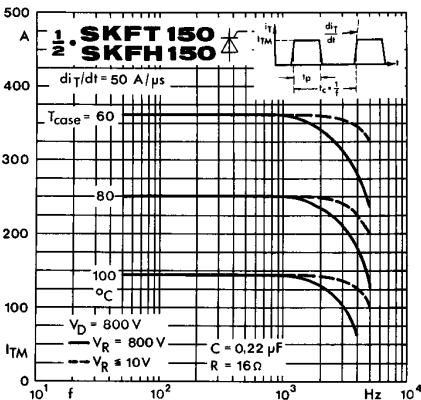


Fig. 3 b Rated peak on-state current vs. pulse duration

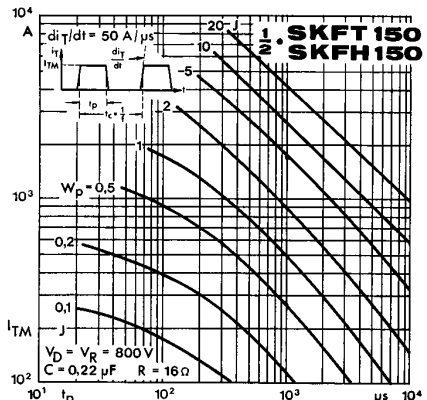


Fig. 4 b Energy dissipation per pulse

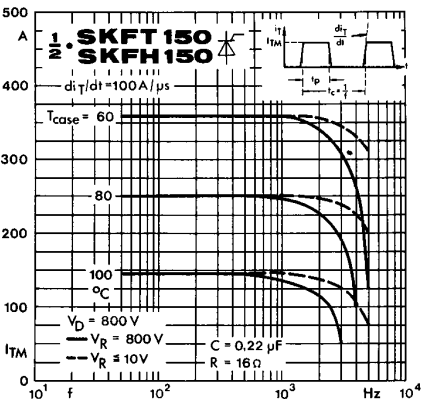


Fig. 3 c Rated peak on-state current vs. pulse duration

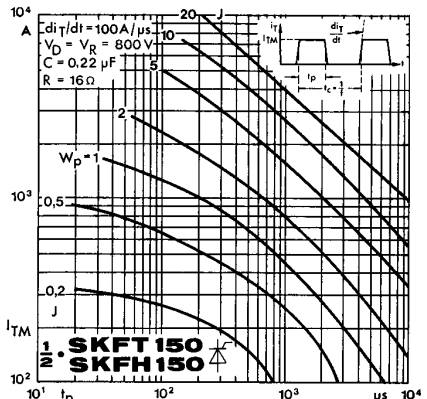


Fig. 4 c Energy dissipation per pulse

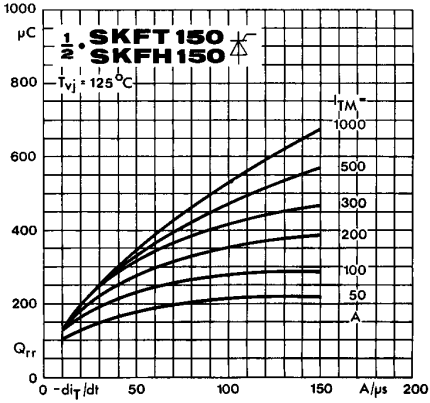


Fig. 5 Recovered charge vs. current decrease

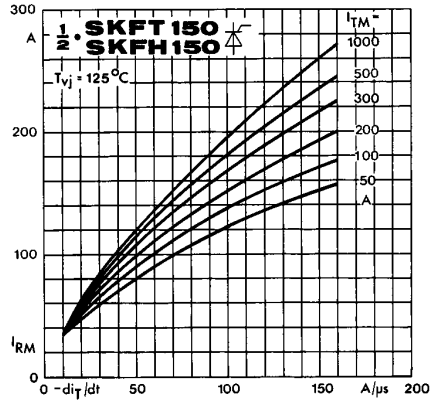


Fig. 6 Peak recovery current vs. current decrease

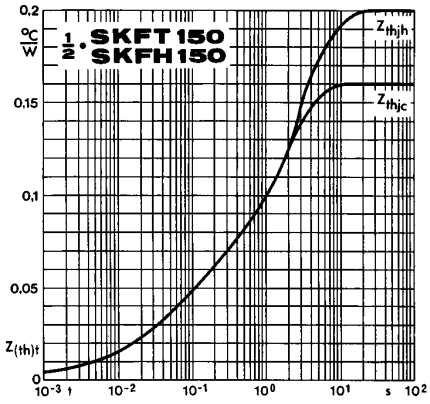


Fig. 7 Transient thermal impedance vs. time

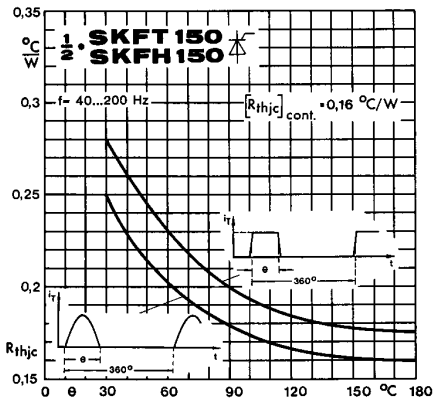


Fig. 8 Thermal resistance vs. conduction angle, 40...200 Hz

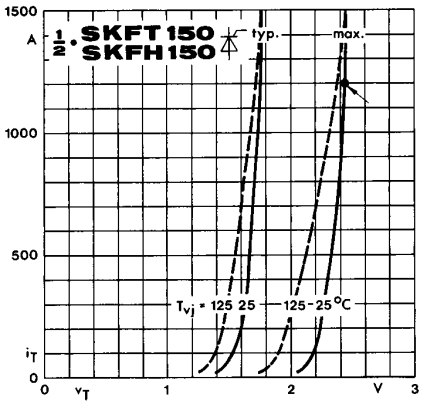


Fig. 9 On-state characteristics

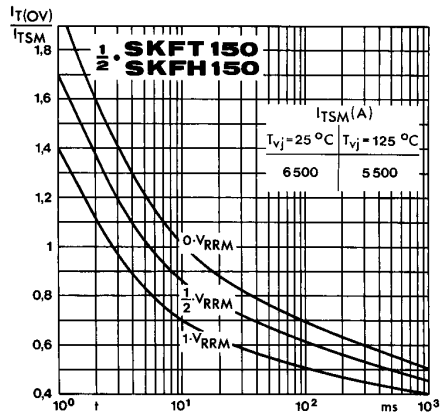


Fig. 10 Surge overload current vs. time

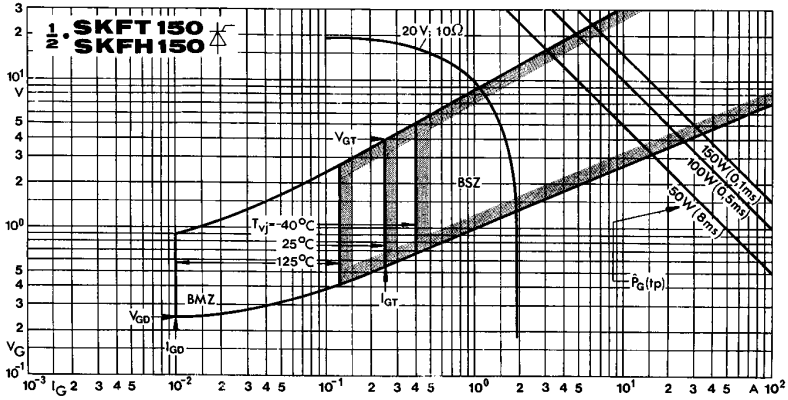


Fig. 11 Gate trigger characteristics

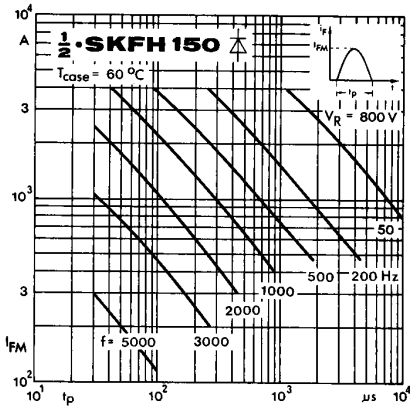


Fig. 12 a Rated sinusoidal peak forward current

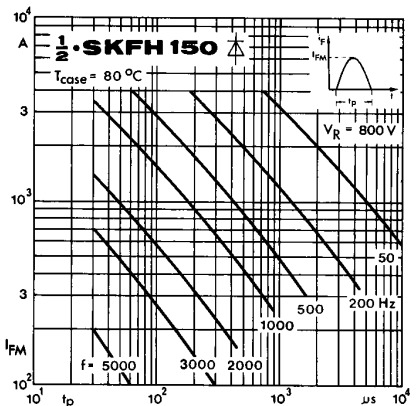


Fig. 12 b Rated sinusoidal peak forward current

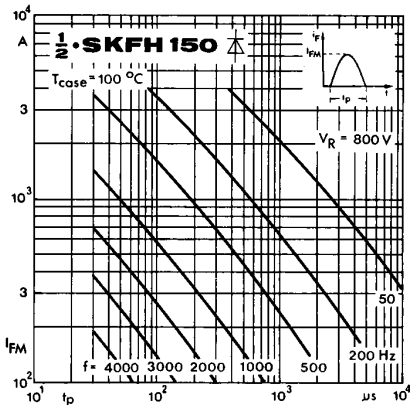


Fig. 12 c Rated sinusoidal peak forward current

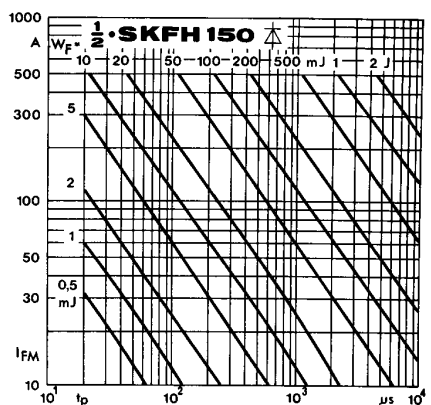


Fig. 13 Forward energy dissipation, sinusoidal

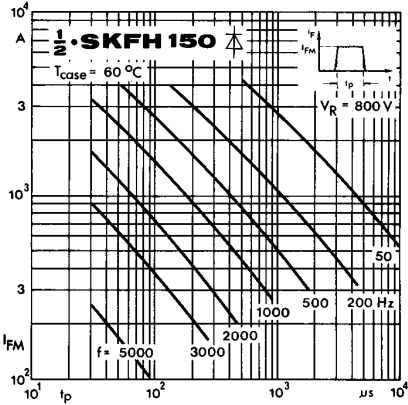


Fig. 14 a Rated rectangular peak forward current

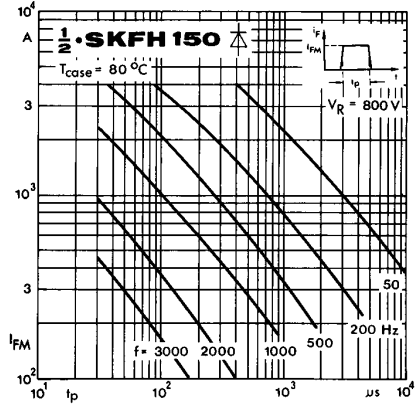


Fig. 14 b Rated rectangular peak forward current

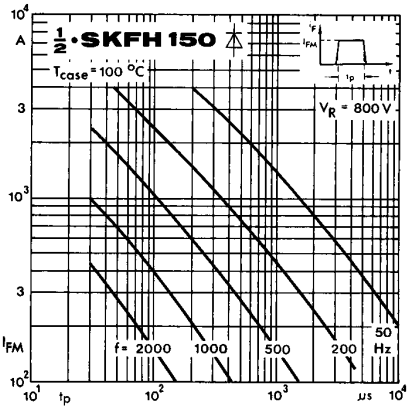


Fig. 14 c Rated rectangular peak forward current

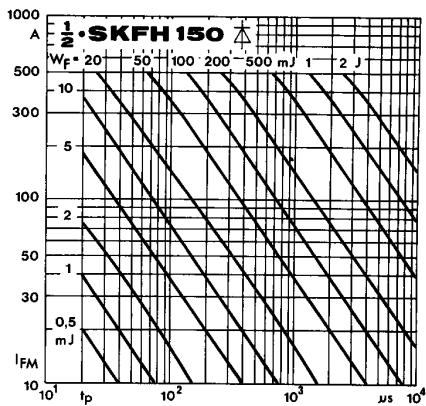


Fig. 15 Forward energy dissipation, rectangular

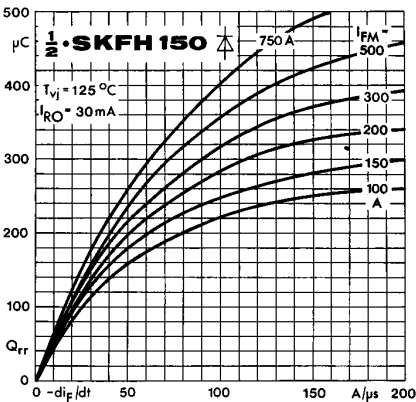


Fig. 16 Recovered charge vs. current decrease

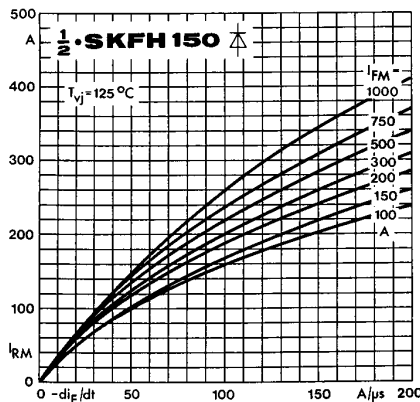


Fig. 17 Peak recovery current vs. current decrease

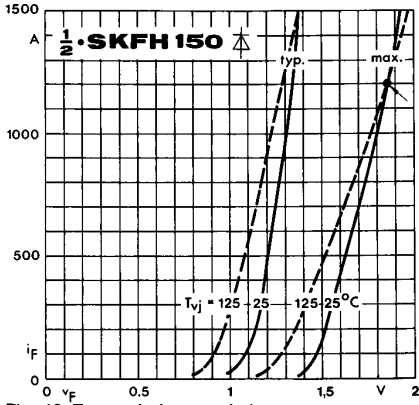


Fig. 19 Forward characteristics

