Low switching losses
Low reverse recovery charge
Distributed amplified gate for high $di_T/dt$

# Fast Thyristor
# Type TFI253-1000-22

| | | | | |
|---|---|---|---|---|
| Mean on-state current | | $I_{TAV}$ | 1000 A | |
| Repetitive peak off-state voltage | | $V_{DRM}$ | 1800...2200 V | |
| Repetitive peak reverse voltage | | $V_{RRM}$ | | |
| Turn-off time | | $t_q$ | 20.0, 25.0, 32.0, 40.0 μs | |
| $V_{DRM}$, $V_{RRM}$, V | 1800 | 2000 | | 2200 |
| Voltage code | 18 | 20 | | 22 |
| $T_j$, °C | –60…+125 | | | |

## MAXIMUM ALLOWABLE RATINGS

| Symbols and parameters | | Units | Values | Test conditions | |
|---|---|---|---|---|---|
| **ON-STATE** | | | | | |
| $I_{TAV}$ | Mean on-state current | A | 909<br>1000<br>1363 | $T_c$= 85 °C; Double side cooled;<br>$T_c$= 79 °C; Double side cooled;<br>$T_c$= 55 °C; Double side cooled;<br>180° half-sine wave; 50 Hz | |
| $I_{TRMS}$ | RMS on-state current | A | 1570 | $T_c$= 79 °C; Double side cooled;<br>180° half-sine wave; 50 Hz | |
| $I_{TSM}$ | Surge on-state current | kA | 22.0<br>25.0 | $T_j=T_{j\,max}$<br>$T_j$=25 °C | 180° half-sine wave;<br>$t_p$=10 ms; single pulse;<br>$V_D=V_R$=0 V;<br>Gate pulse:$I_G=I_{FGM}$; $V_G$=20 V;<br>$t_{GP}$=50 μs; $di_G/dt$=1 A/μs |
| | | | 23.0<br>26.0 | $T_j=T_{j\,max}$<br>$T_j$=25 °C | 180° half-sine wave;<br>$t_p$=8.3 ms; single pulse;<br>$V_D=V_R$=0 V;<br>Gate pulse:$I_G=I_{FGM}$; $V_G$=20 V;<br>$t_{GP}$=50 μs; $di_G/dt$=1 A/μs |
| $I^2t$ | Safety factor | $A^2s\cdot10^3$ | 2400<br>3100 | $T_j=T_{j\,max}$<br>$T_j$=25 °C | 180° half-sine wave;<br>$t_p$=10 ms; single pulse;<br>$V_D=V_R$=0 V;<br>Gate pulse:$I_G=I_{FGM}$; $V_G$=20 V;<br>$t_{GP}$=50 μs; $di_G/dt$=1 A/μs |
| | | | 2100<br>2800 | $T_j=T_{j\,max}$<br>$T_j$=25 °C | 180° half-sine wave;<br>$t_p$=8.3 ms; single pulse;<br>$V_D=V_R$=0 V;<br>Gate pulse:$I_G=I_{FGM}$; $V_G$=20 V;<br>$t_{GP}$=50 μs; $di_G/dt$=1 A/μs |
| **BLOCKING** | | | | | |
| $V_{DRM}$, $V_{RRM}$ | Repetitive peak off-state and<br>Repetitive peak reverse voltages | V | 1800…2200 | $T_{j\,min}< T_j <T_{j\,max}$;<br>180° half-sine wave; 50 Hz;<br>Gate open | |
| $V_{DSM}$, $V_{RSM}$ | Non-repetitive peak off-state and<br>Non-repetitive peak reverse voltages | V | 1900…2300 | $T_{j\,min}< T_j <T_{j\,max}$;<br>180° half-sine wave; single pulse; Gate open | |
| $V_D$, $V_R$ | Direct off-state and<br>Direct reverse voltages | V | $0.6\cdot V_{DRM}$<br>$0.6\cdot V_{RRM}$ | $T_j=T_{j\,max}$;<br>Gate open | |

| | | | | |
|---|---|---|---|---|
| **TRIGGERING** | | | | |
| $I_{FGM}$ | Peak forward gate current | A | 8 | $T_j=T_{j\,max}$ |
| $V_{RGM}$ | Peak reverse gate voltage | V | 5 | |
| $P_G$ | Gate power dissipation | W | 8 | $T_j=T_{j\,max}$ for DC gate current |
| **SWITCHING** | | | | |
| $(di_T/dt)_{crit}$ | Critical rate of rise of on-state current non-repetitive (f=1 Hz) | A/µs | 2000 | $T_j=T_{j\,max}$; $V_D=0.67{\cdot}V_{DRM}$; $I_{TM}$= 2800 A; Gate pulse: $I_G$=2 A; $V_G$=20 V; $t_{GP}$=50 µs; $di_G/dt$=2 A/µs |
| **THERMAL** | | | | |
| $T_{stg}$ | Storage temperature | °C | –60...+50 | |
| $T_j$ | Operating junction temperature | °C | –60...+125 | |
| **MECHANICAL** | | | | |
| F | Mounting force | kN | 24.0...28.0 | |
| a | Acceleration | $m/s^2$ | 50 | Device clamped |

## CHARACTERISTICS

| Symbols and parameters | | Units | Values | Conditions |
|---|---|---|---|---|
| **ON-STATE** | | | | |
| $V_{TM}$ | Peak on-state voltage, max | V | 2.35 | $T_j$=25 °C; $I_{TM}$=3140 A |
| $V_{T(TO)}$ | On-state threshold voltage, max | V | 1.397 | $T_j=T_{j\,max}$; $0.5\,\pi\,I_{TAV} < I_T < 1.5\,\pi\,I_{TAV}$ |
| $r_T$ | On-state slope resistance, max | mΩ | 0.313 | |
| $I_H$ | Holding current, max | mA | 500 | $T_j$=25 °C; $V_D$=12 V; Gate open |
| **BLOCKING** | | | | |
| $I_{DRM}$, $I_{RRM}$ | Repetitive peak off-state and Repetitive peak reverse currents, max | mA | 150 | $T_j=T_{j\,max}$; $V_D=V_{DRM}$; $V_R=V_{RRM}$ |
| $(dv_D/dt)_{crit}$ | Critical rate of rise of off-state voltage[1], min | V/µs | 200, 320, 500, 1000, 1600, 2000, 2500 | $T_j=T_{j\,max}$; $V_D=0.67{\cdot}V_{DRM}$; Gate open |
| **TRIGGERING** | | | | |
| $V_{GT}$ | Gate trigger direct voltage, max | V | 3.00<br>2.50<br>1.50 | $T_j=T_{j\,min}$<br>$T_j$=25 °C<br>$T_j=T_{j\,max}$<br>$V_D$=12 V; $I_D$=3 A; Direct gate current |
| $I_{GT}$ | Gate trigger direct current, max | mA | 500<br>300<br>150 | $T_j=T_{j\,min}$<br>$T_j$= 25 °C<br>$T_j=T_{j\,max}$<br>$V_D$=12 V; $I_D$=3 A; Direct gate current |
| $V_{GD}$ | Gate non-trigger direct voltage, min | V | 0.40 | $T_j=T_{j\,max}$; $V_D=0.67{\cdot}V_{DRM}$; Direct gate current |
| $I_{GD}$ | Gate non-trigger direct current, min | mA | 75.00 | |
| **SWITCHING** | | | | |
| $t_{gd}$ | Delay time, max | µs | 0.90 | $T_j$=25 °C; $V_D$=1000 V; $I_{TM}=I_{TAV}$; di/dt=200 A/µs; Gate pulse: $I_G$=2 A; $V_G$=20 V; $t_{GP}$=50 µs; $di_G/dt$=2 A/µs |
| $t_{gt}$ | Turn-on time[2], max | µs | 2.00, 2.50, 3.20, 4.00 | |
| $t_q$ | Turn-off time[3] max | µs | 20.0, 25.0, 32.0, 40.0 | $dv_D/dt$=50 V/µs; $T_j=T_{j\,max}$; $I_{TM}=I_{TAV}$; $di_R/dt$=-10 A/µs; $V_R$=100V; $V_D=0.67{\cdot}V_{DRM}$ |
| | | | 25.0, 32.0, 40.0, 50.0 | $dv_D/dt$=200 V/µs; |
| $Q_{rr}$ | Total recovered charge, max | µC | 450 | $T_j=T_{j\,max}$; $I_{TM}$=1000 A; $di_R/dt$=-50 A/µs; $V_R$=100 V |
| $t_{rr}$ | Reverse recovery time, typ | µs | 6.3 | |
| $I_{rrM}$ | Peak reverse recovery current, max | A | 175 | |

| THERMAL | | | | | |
|---|---|---|---|---|---|
| $R_{thjc}$ | Thermal resistance, junction to case, max | °C/W | 0.0210 | Direct current | Double side cooled |
| $R_{thjc-A}$ | | | 0.0462 | | Anode side cooled |
| $R_{thjc-K}$ | | | 0.0378 | | Cathode side cooled |
| $R_{thck}$ | Thermal resistance, case to heatsink, max | °C/W | 0.0040 | Direct current | |
| **MECHANICAL** | | | | | |
| w | Weight, max | g | 510 | | |
| $D_s$ | Surface creepage distance | mm (inch) | 31.60 (1.244) | | |
| $D_a$ | Air strike distance | mm (inch) | 16.50 (0.649) | | |

## PART NUMBERING GUIDE

| TFI | 253 | 1000 | 22 | A2 | H3 | H4 | N |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

1. TFI — fast inverter thyristor
2. Design version
3. Mean on-state current, A
4. Voltage code
5. Critical rate of rise of off-state voltage
6. Group of turn-off time ($dv_D/dt$=50 V/µs)
7. Group of turn-on time
8. Ambient conditions: N – normal; T – tropical

## NOTES

1) Critical rate of rise of off-state voltage

| Symbol of Group | P2 | K2 | E2 | A2 | T1 | P1 | M1 |
|---|---|---|---|---|---|---|---|
| $(dv_D/dt)_{crit}$, V/µs | 200 | 320 | 500 | 1000 | 1600 | 2000 | 2500 |

2) Turn-on time

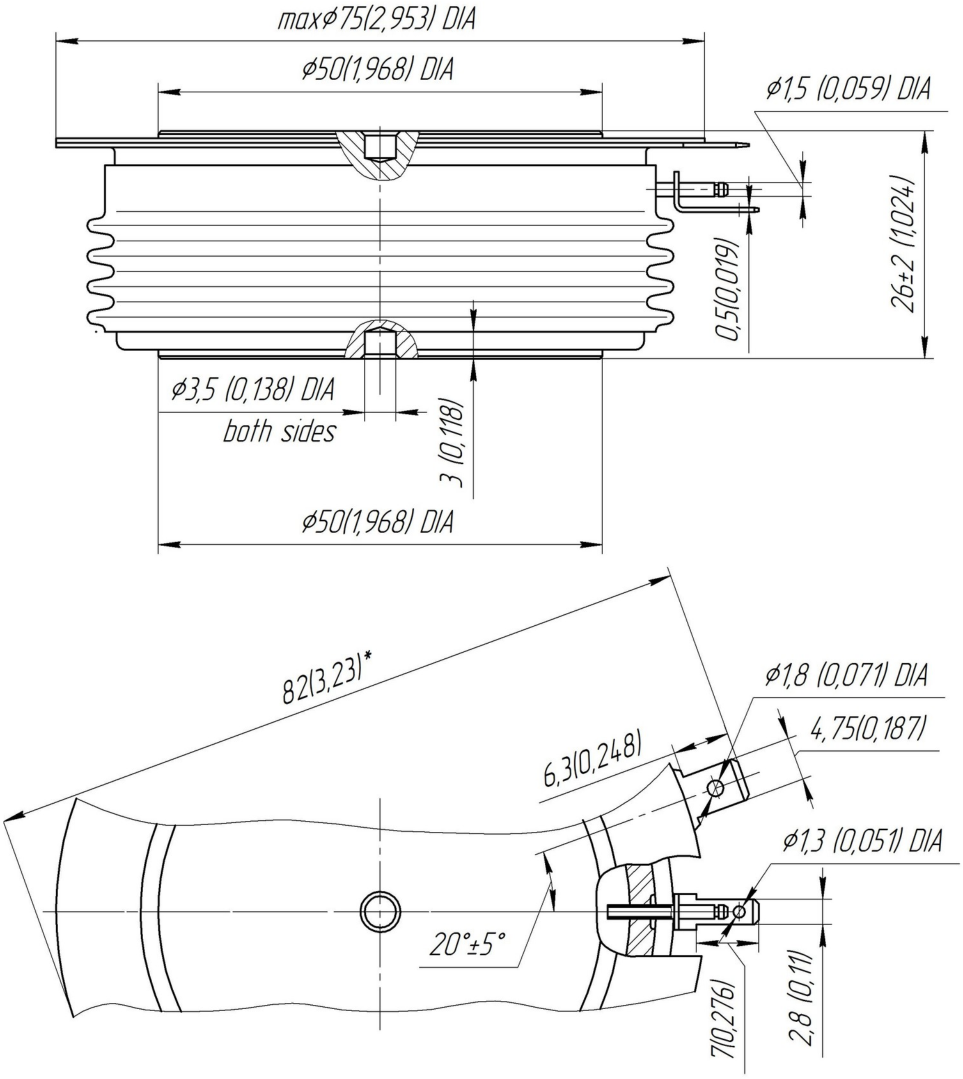
| Symbol of group | P4 | M4 | K4 | H4 |
|---|---|---|---|---|
| $t_{gt}$, µs | 2.00 | 2.50 | 3.20 | 4.00 |

3) Turn-off time ($dv_D/dt$=50 V/µs)

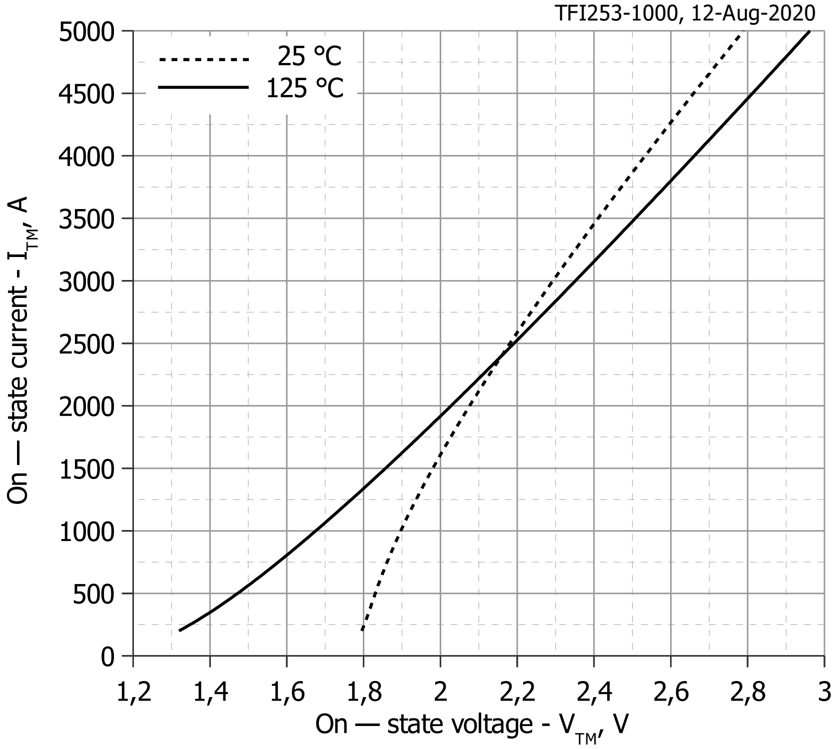
| Symbol of group | P3 | M3 | K3 | H3 |
|---|---|---|---|---|
| $t_q$, µs | 20.0 | 25.0 | 32.0 | 40.0 |

## OVERALL DIMENSIONS

**Package type: T.D5**




All dimensions in millimeters (inches)

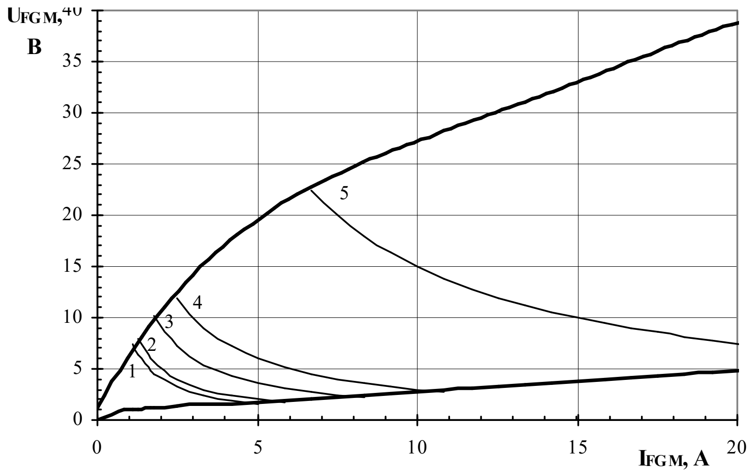



Analytical function for On-state characteristic:

$$V_T = A + B \cdot i_T + C \cdot \ln(i_T + 1) + D \cdot \sqrt{i_T}$$

| | Coefficients for max curves | |
|---|---|---|
| | $T_j$ = 25°C | $T_j = T_{j\,max}$ |
| **A** | 1.42795826 | 1.04577999 |
| **B** | 0.00040463 | 0.00024267 |
| **C** | 0.11622188 | 0.02344156 |
| **D** | -0.02335906 | 0.00711876 |

**Fig. 1** On-state characteristics of Limit device




Maximum peak gate power loss

| Position | On-Off time ratio | Gate pulse length, ms | Gate Pulse Power, W |
|---|---|---|---|
| 1 | 1 | DC | 8 |
| 2 | 2 | 10 | 10 |
| 3 | 20 | 1 | 18 |
| 4 | 40 | 0.5 | 30 |
| 5 | 200 | 0.1 | 150 |

**Fig. 2** Gate characteristics

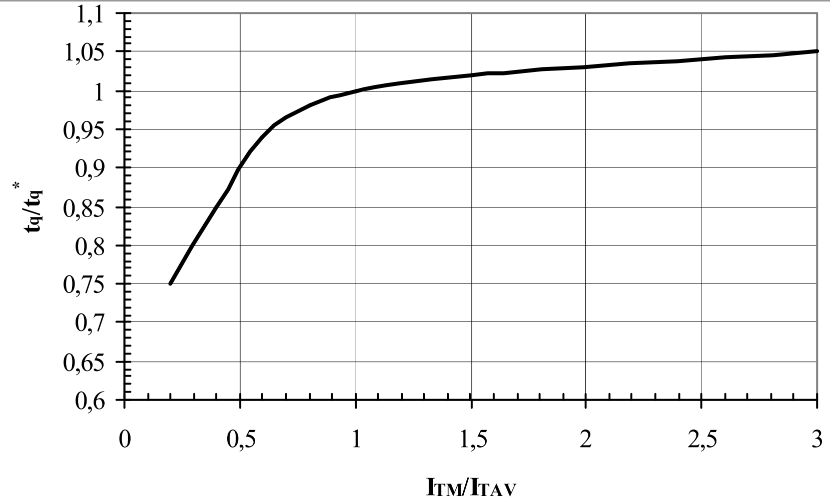



**Fig. 3** Turn-off time $t_q$ vs. On-state peak current $I_{TM}$

Conditions: $T_j=T_{j\,max}$; $di_R/dt=10$ A/µs; $V_R=100$ V; $dv_D/dt=50$ V/µs; $V_D=0.67 \cdot V_{DRM}$
Typical changes of $t_q$ are normalized to the $t_q^*$ ($t_q^*$ – see data sheet, $dv_D/dt=50$ V/µs)

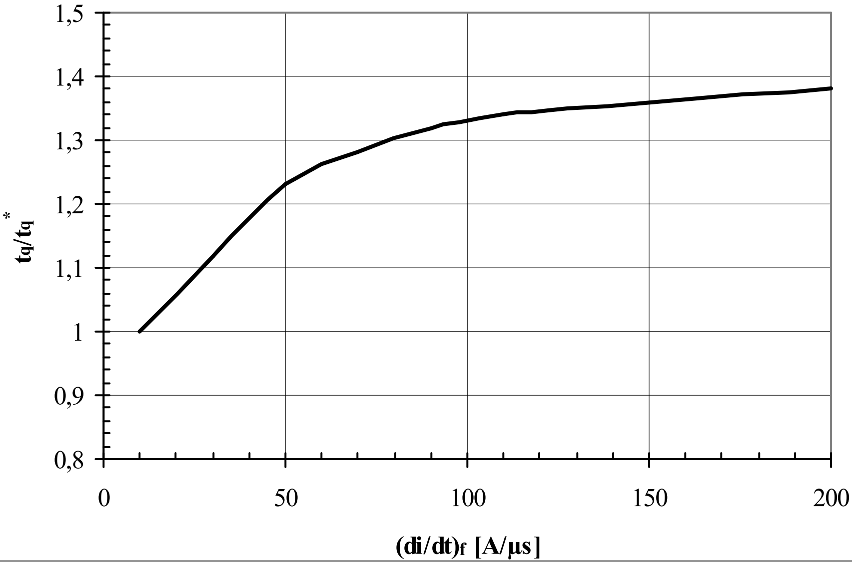



**Fig. 4** Turn-off time $t_q$ vs. Rate of fall of on-state current $di_R/dt$

Conditions: $T_j=T_{j\,max}$; $I_{TM}=I_{TAV}$; $V_R=100$ V; $dv_D/dt=50$ V/µs; $V_D=0.67 \cdot V_{DRM}$
Typical changes of $t_q$ are normalized to the $t_q^*$ ($t_q^*$ – see data sheet, $dv_D/dt=50$ V/µs)

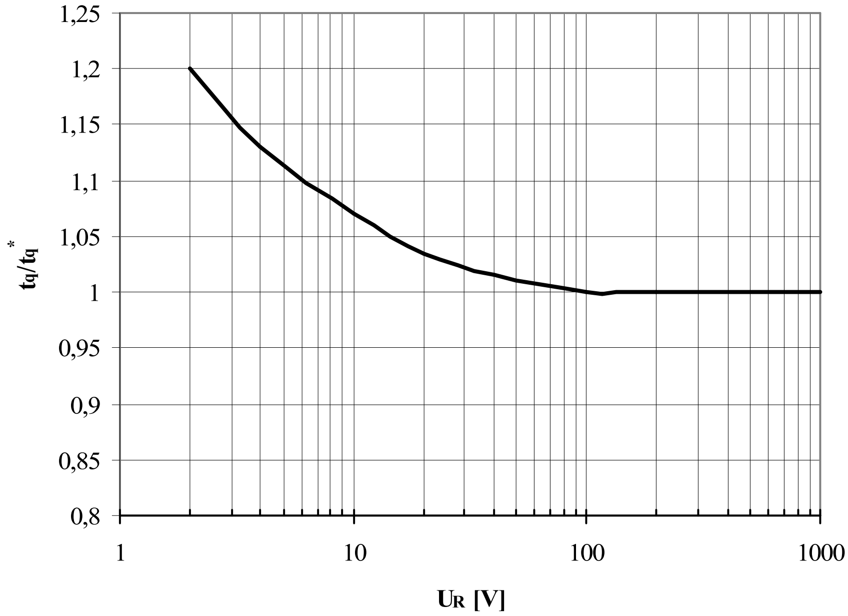



**Fig. 5** Turn-off time $t_q$ vs. Reverse voltage $V_R$

Conditions: $T_j=T_{j\,max}$; $I_{TM}=I_{TAV}$; $di_R/dt=10$ A/µs; $dv_D/dt=50$ V/µs; $V_D=0.67 \cdot V_{DRM}$
Typical changes of $t_q$ are normalized to the $t_q^*$ ($t_q^*$ – see data sheet, $dv_D/dt=50$ V/µs)

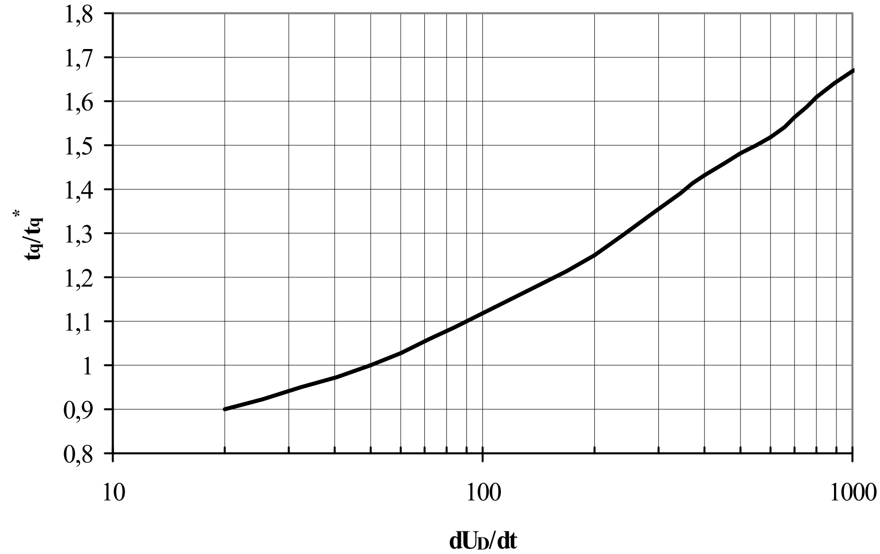



**Fig. 6** Turn-off time $t_q$ vs. Rate of rise of commutating voltage $dv_D/dt$

Conditions: $T_j=T_{j\,max}$; $I_{TM}=I_{TAV}$; $di_R/dt=10$ A/μs; $V_R=100$ V; $V_D=0.67 \cdot V_{DRM}$
Typical changes of $t_q$ are normalized to the $t_q^*$ ($t_q^*$ – see data sheet, $dv_D/dt=50$ V/μs)

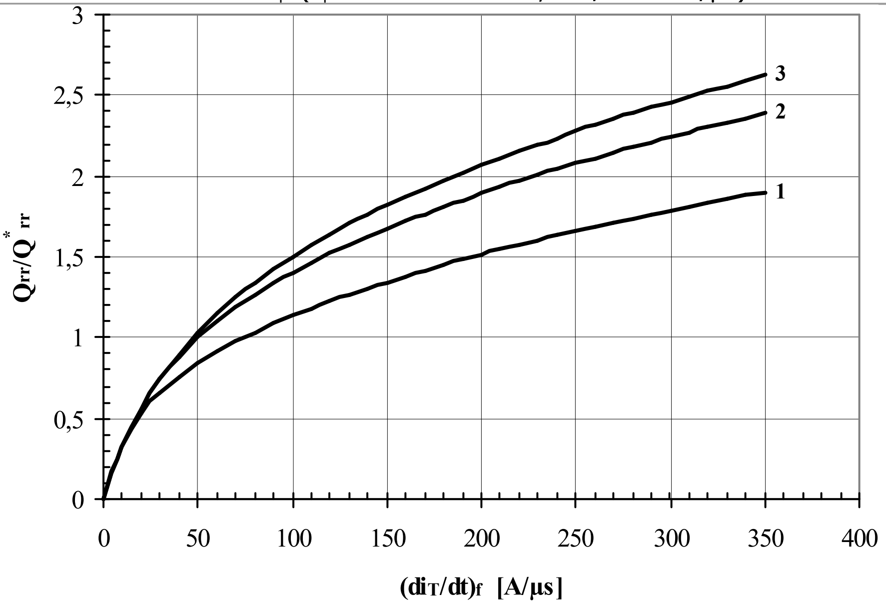



**Fig. 7** Reverse recovery charge $Q_{rr}$, vs. Rate of fall of on-state current $di_R/dt$
1 – $I_{TM} = 0.5 \cdot I_{TAV}$
2 – $I_{TM} = I_{TAV}$,
3 – $I_{TM} = 1.5 \cdot I_{TAV}$

Conditions: $T_j=T_{j\,max}$; $V_R=100$ V
Typical changes of $Q_{rr}$ are normalized to the $Q_{rr}^*$ ($Q_{rr}^*$ – see data sheet)

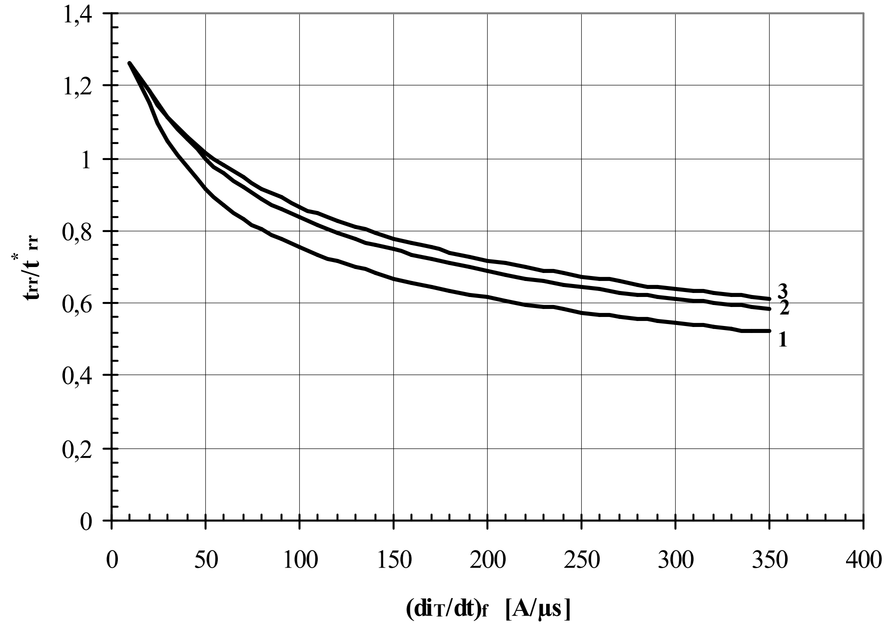



**Fig. 8** Reverse recovery time $t_{rr}$ vs. Rate of fall of on-state current $di_R/dt$
1 – $I_{TM} = 0.5 \cdot I_{TAV}$
2 – $I_{TM} = I_{TAV}$,
3 – $I_{TM} = 1.5 \cdot I_{TAV}$

Conditions: $T_j = T_{j\,max}$; $V_R$=100 V
Typical changes of $t_{rr}$ are normalized to the $t_{rr}^*$ ($t_{rr}^*$ – see data sheet)

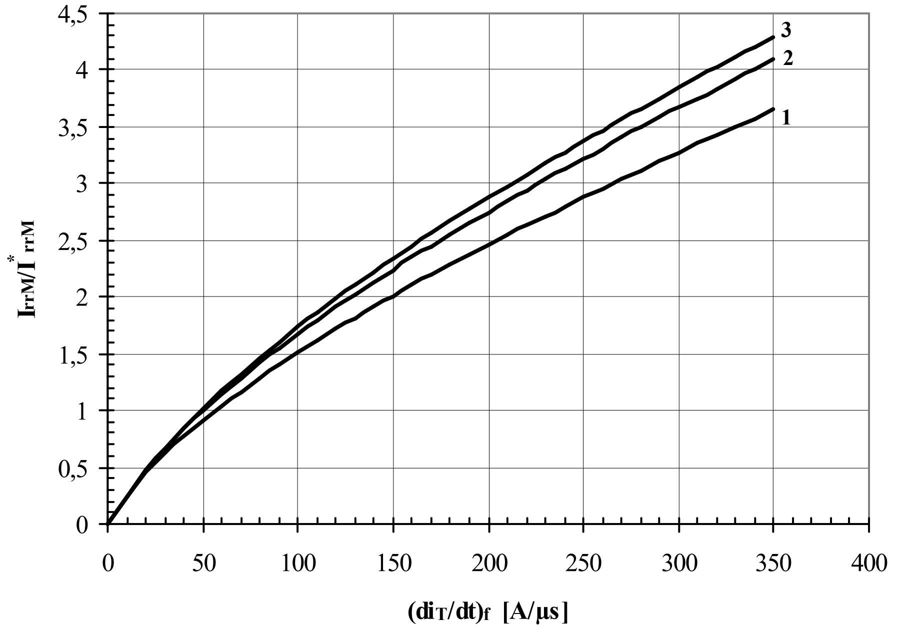



**Fig. 9** Peak reverse recovery current $I_{rrM}$ vs. Rate of fall of on-state current $di_R/dt$
1 – $I_{TM} = 0.5 \cdot I_{TAV}$
2 – $I_{TM} = I_{TAV}$,
3 – $I_{TM} = 1.5 \cdot I_{TAV}$

Conditions: $T_j = T_{j\,max}$; $V_R$=100 V
Typical changes of $I_{rrM}$ are normalized to the $I_{rrM}^*$ ($I_{rrM}^*$ – see data sheet)

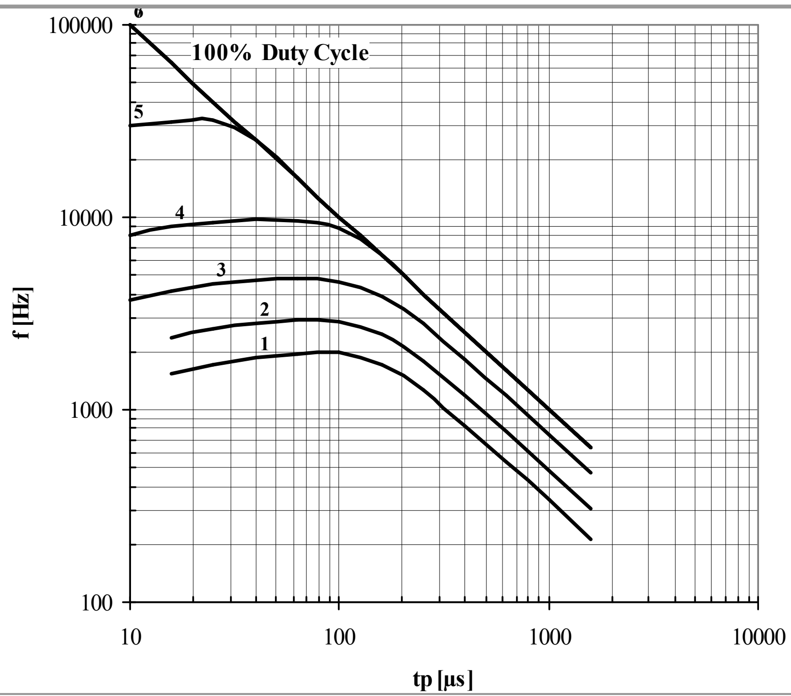



**Fig. 10** Sine wave frequency ratings

1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A

Conditions: $V_R$≤3 V; $T_C$=55 ºC

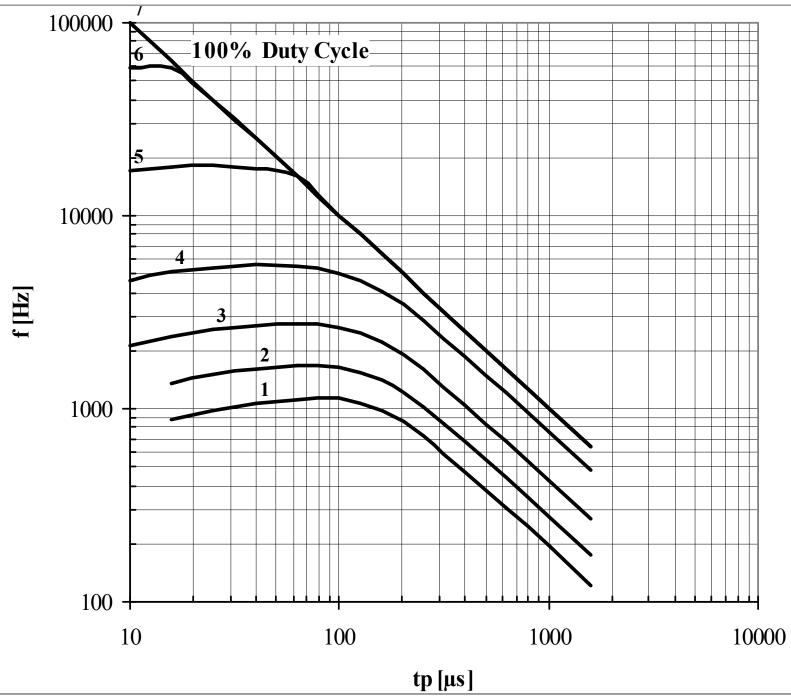



**Fig. 11** Sine wave frequency ratings

1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$≤3 V; $T_C$=75 ºC

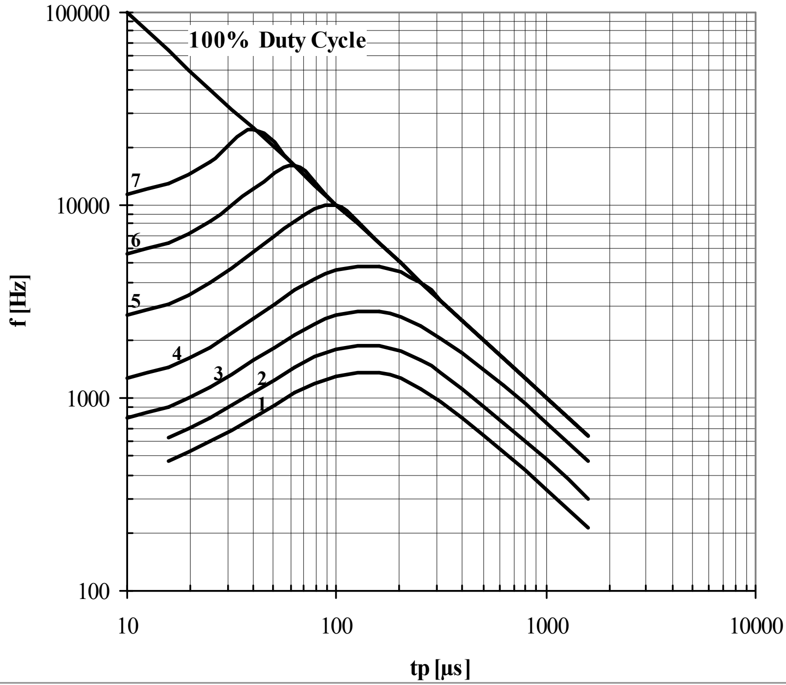



**Fig. 12** Sine wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$=0.67·$V_{RRM}$; $T_C$=55 °C

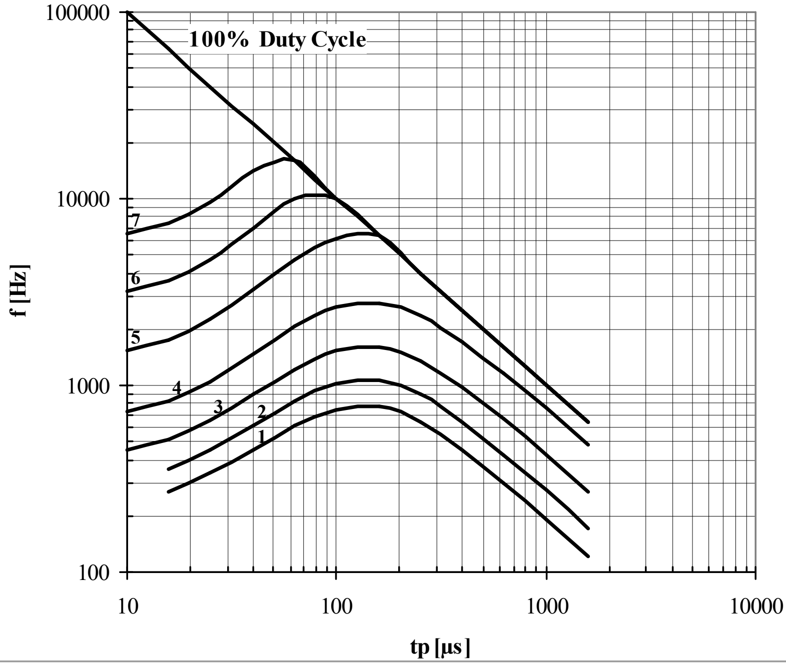



**Fig. 13** Sine wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$=0.67·$V_{RRM}$; $T_C$=75 °C

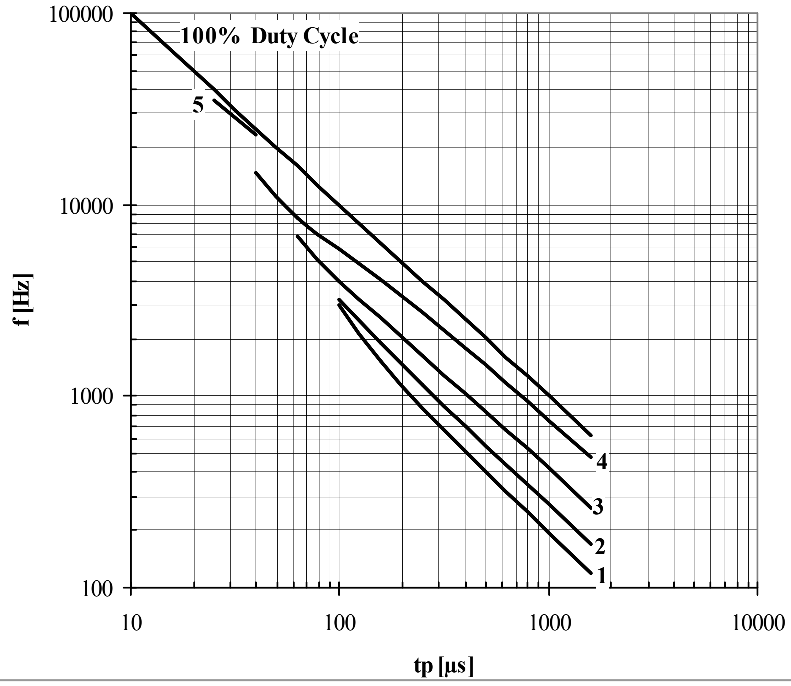



**Fig. 14** Square wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A

Conditions: $V_R \leq 3$ V; $T_C$=55 °C; $di_F/dt=di_R/dt$=100 A/µs

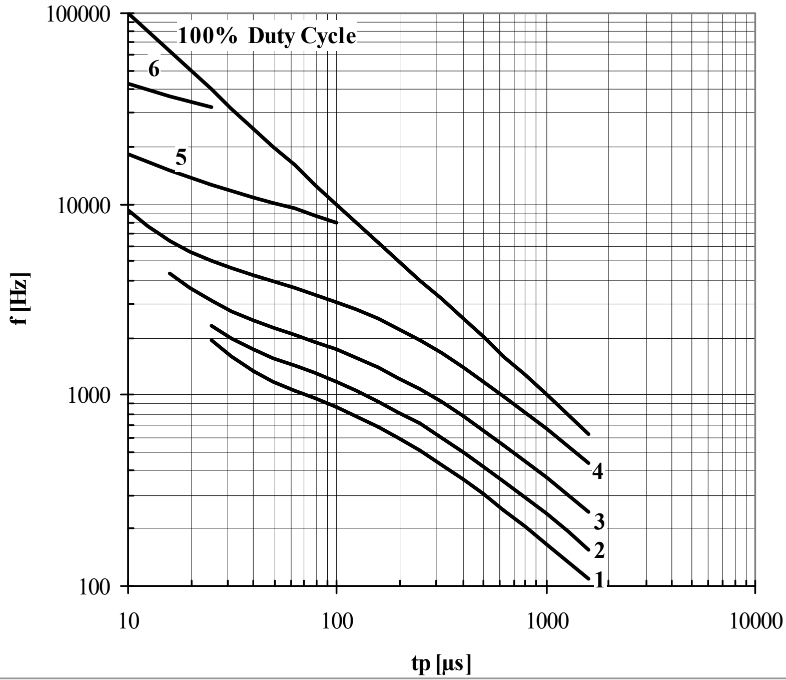



**Fig. 15** Square wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A

Conditions: $V_R \leq 3$ V; $T_C$=55 °C; $di_F/dt=di_R/dt$=500 A/µs

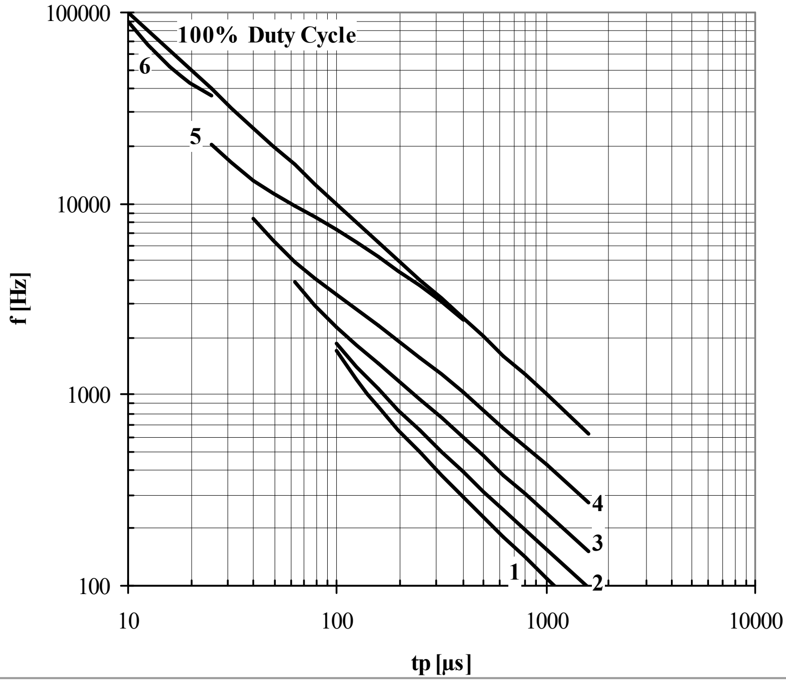



**Fig. 16** Square wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A

Conditions: $V_R$≤3 V; $T_C$=75 °C; $di_F/dt$=$di_R/dt$=100 A/µs

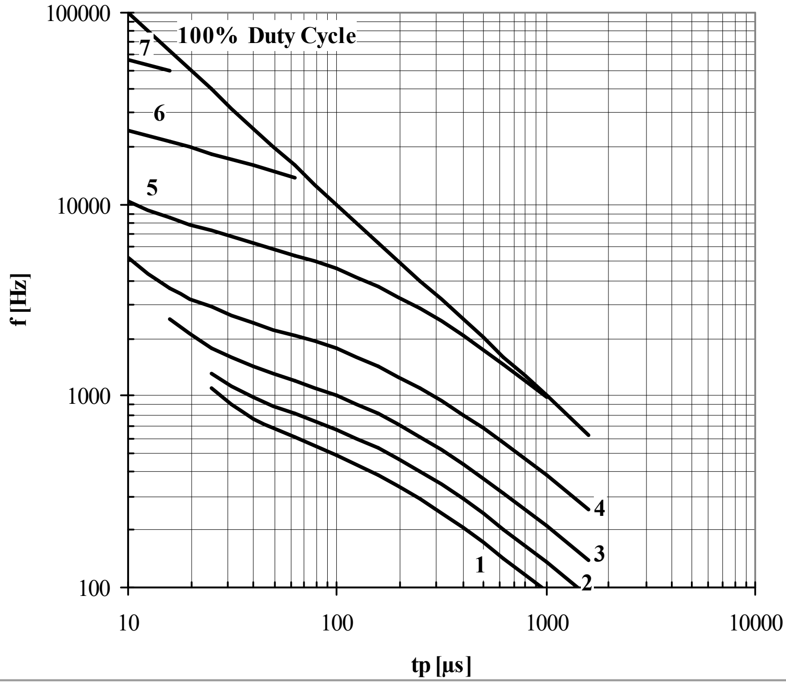



**Fig. 17** Square wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$≤3 V; $T_C$=75 °C; $di_F/dt$=$di_R/dt$=500 A/µs

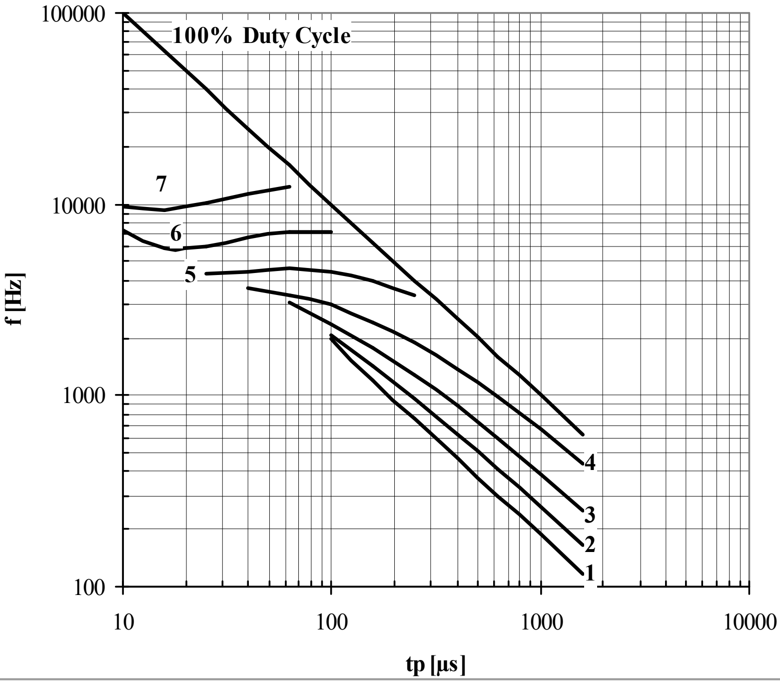



**Fig. 18** Square wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R=0.67 \cdot V_{RRM}$; $T_C=55$ °C; $di_F/dt=di_R/dt=100$ A/µs

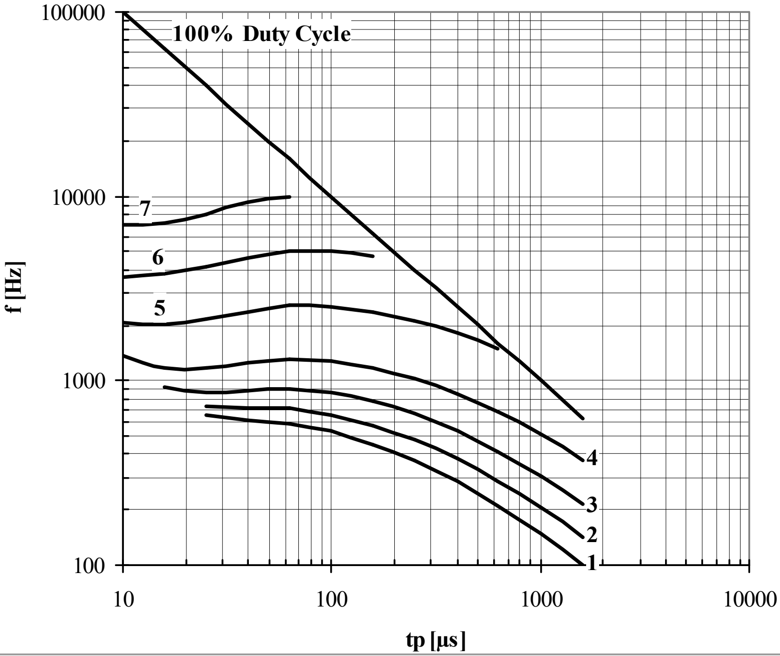



**Fig. 19** Square wave frequency ratings
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R=0.67 \cdot V_{RRM}$; $T_C=55$ °C; $di_F/dt=di_R/dt=500$ A/µs

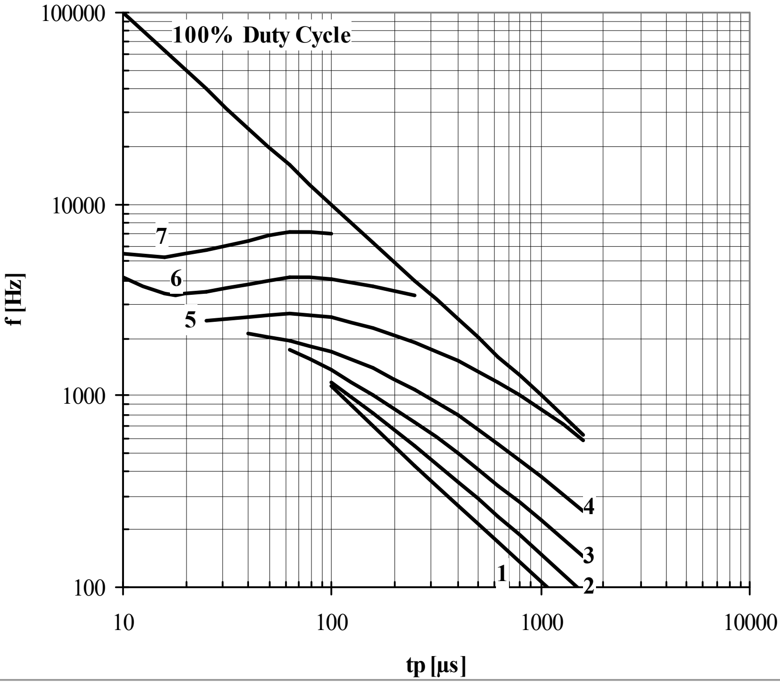



**Fig. 20** Square wave frequency ratings

1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$=0.67·$V_{RRM}$; $T_C$=75 °C; $di_F/dt$=$di_R/dt$=100 A/μs

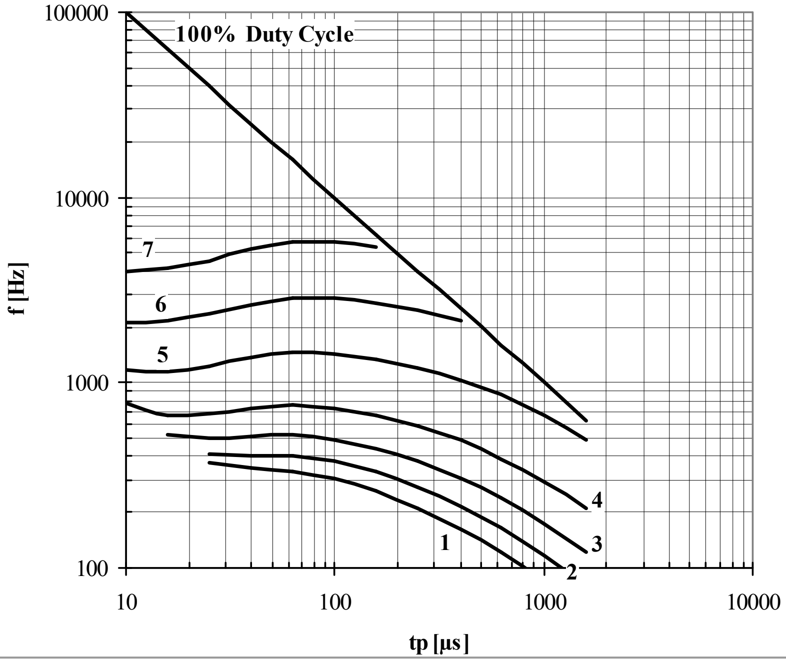



**Fig. 21** Square wave frequency ratings

1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$=0.67·$V_{RRM}$; $T_C$=75 °C; $di_F/dt$=$di_R/dt$=500 A/μs

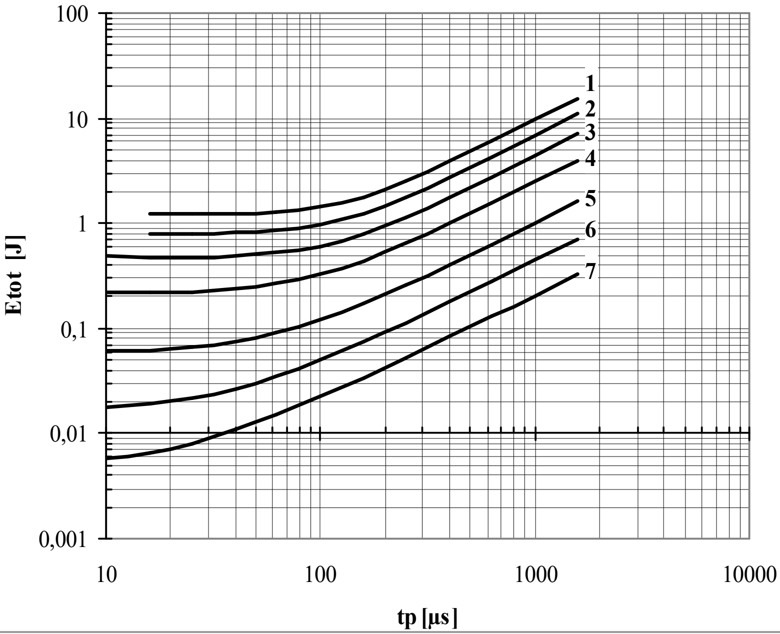



**Fig. 22** Sine wave loss energy per pulse

1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R \leq 3$ V

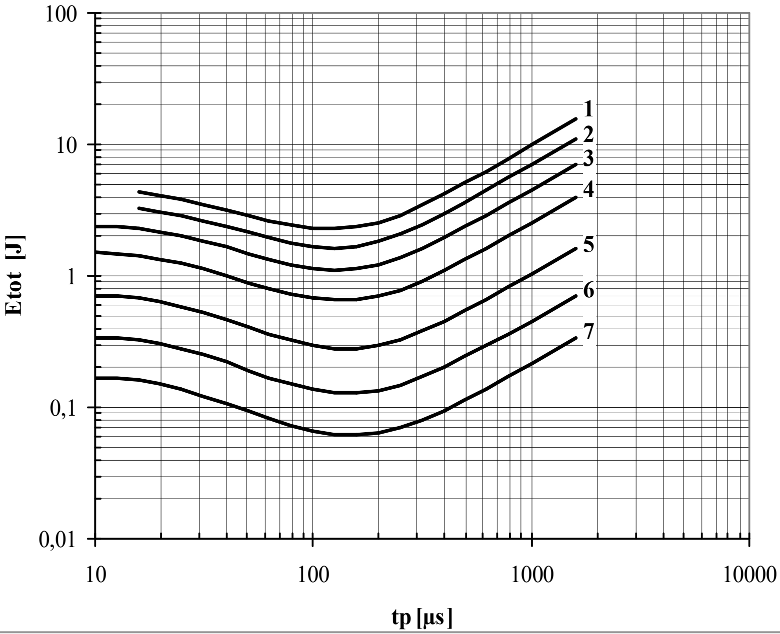



**Fig. 23** Sine wave loss energy per pulse

1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R = 0.67 \cdot V_{RRM}$

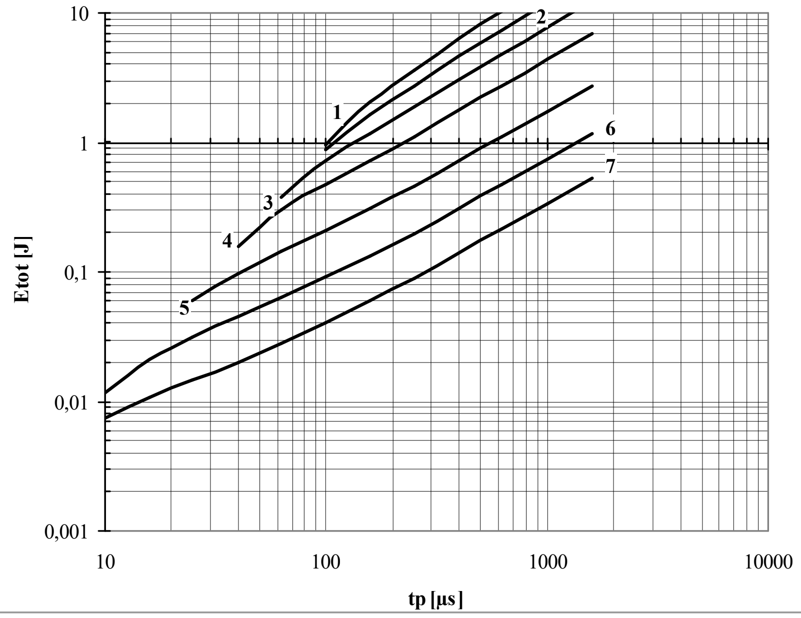



**Fig. 24** Square wave loss energy per pulse
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$≤3 V; $di_F/dt=di_R/dt$=100 A/µs

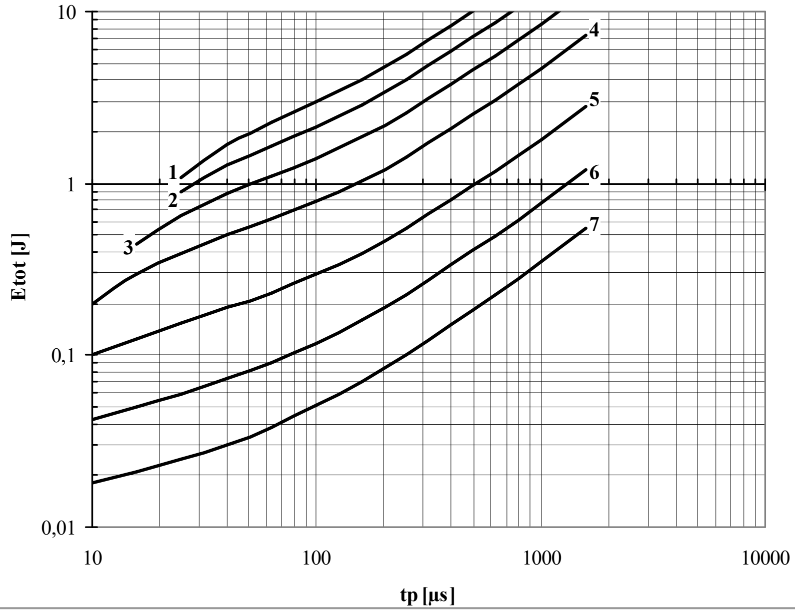



**Fig. 25** Square wave loss energy per pulse
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$≤3 V; $di_F/dt=di_R/dt$=500 A/µs

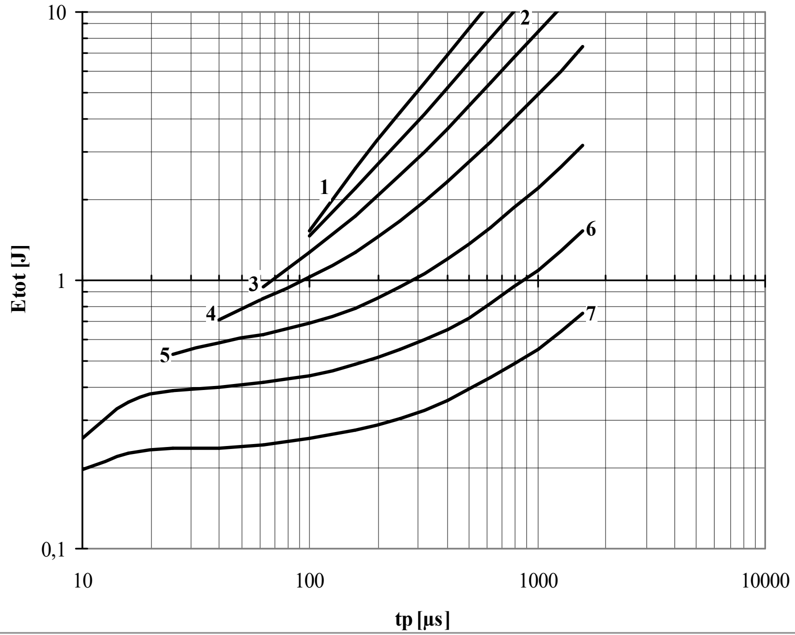



**Fig. 26** Square wave loss energy per pulse
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$=0.67·$V_{RRM}$; $di_F/dt$=$di_R/dt$=100 A/µs

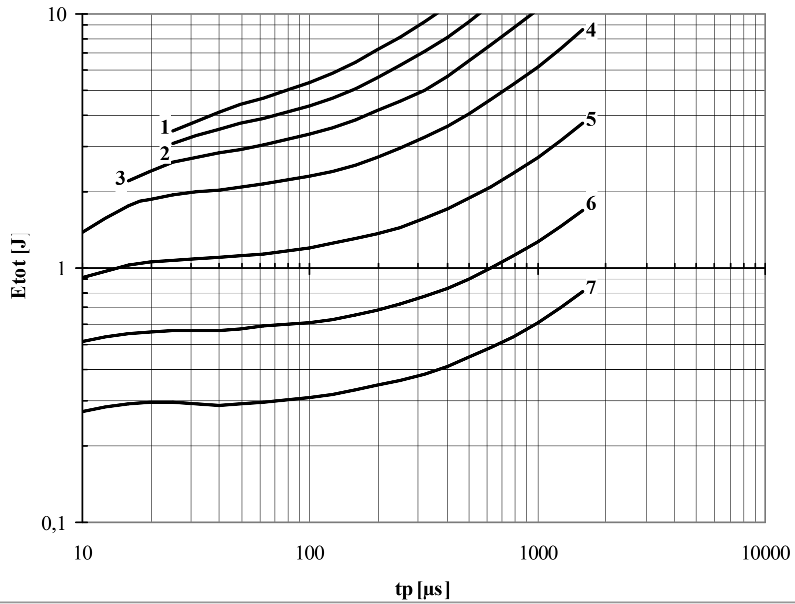



**Fig. 27** Square wave loss energy per pulse
1 – $I_{TM}$ = 5000 A
2 – $I_{TM}$ = 4000 A
3 – $I_{TM}$ = 3000 A
4 – $I_{TM}$ = 2000 A
5 – $I_{TM}$ = 1000 A
6 – $I_{TM}$ = 500 A
7 – $I_{TM}$ = 250 A

Conditions: $V_R$=0.67·$V_{RRM}$; $di_F/dt$=$di_R/dt$=500 A/µs

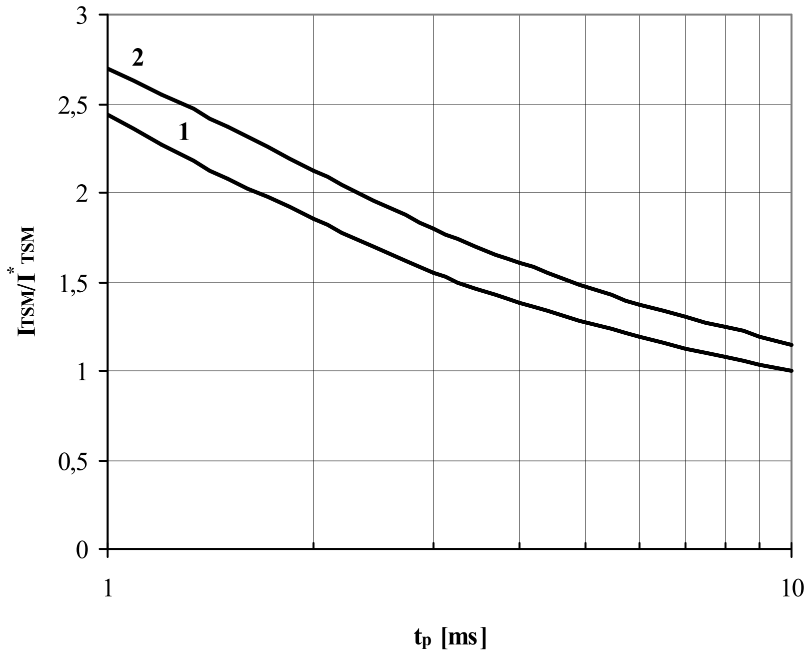



**Fig. 28** The surge current $I_{TSM}$ vs. Duration of surge $t_p$ for a half-sine wave
1 – $T_j$=125 °C
2 – $T_j$=25 °C

Conditions: $V_R$=0 V – the peak value of reverse voltage which is applied immediately after the surge current
Typical changes of $I_{TSM}$ are normalized to the $I_{TSM}^*$ ($I_{TSM}^*$ – see data sheet, $T_j$=$T_{j\,max}$)

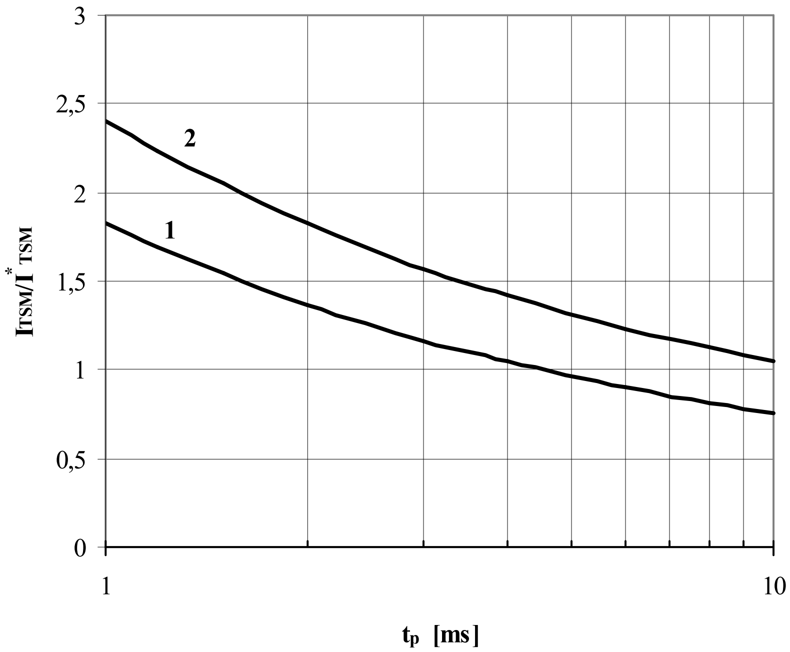



**Fig. 29** The surge current $I_{TSM}$ vs. Duration of surge $t_p$ for a half-sine wave
1 – $T_j$=125 °C
2 – $T_j$=25 °C

Conditions: $V_R$=0.8·$V_{RRM}$ – the peak value of reverse voltage which is applied immediately after the surge current
Typical changes of $I_{TSM}$ are normalized to the $I_{TSM}^*$ ($I_{TSM}^*$ – see data sheet, $T_j$=$T_{j\,max}$)

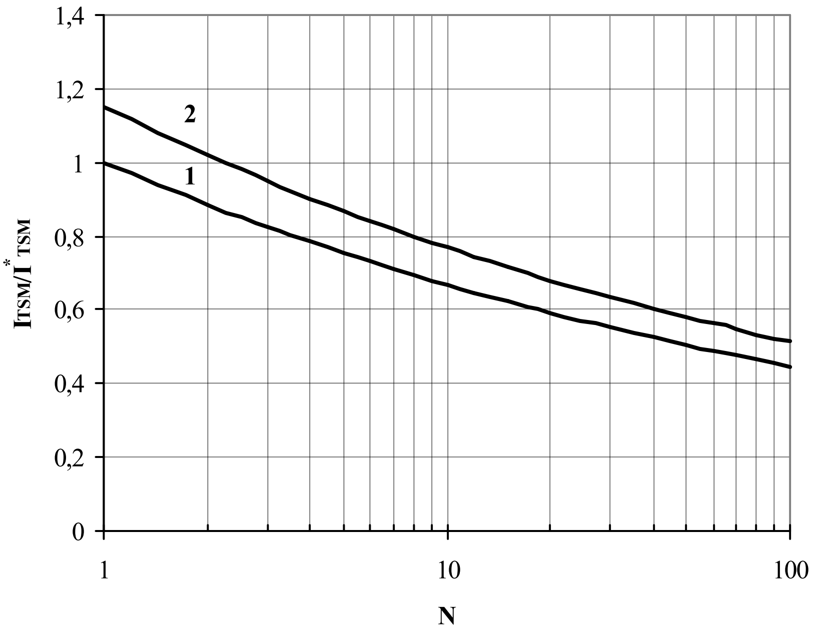



**Fig. 30** The surge current $I_{TSM}$ vs. Number of half-sine waves at 50 Hz
1 – $T_j$=125 °C
2 – $T_j$=25 °C

Conditions: $V_R$=0 V – the peak value of reverse voltage which is applied immediately after the surge current
Typical changes of $I_{TSM}$ are normalized to the $I_{TSM}^*$ ($I_{TSM}^*$ – see data sheet, $T_j=T_{j\,max}$)

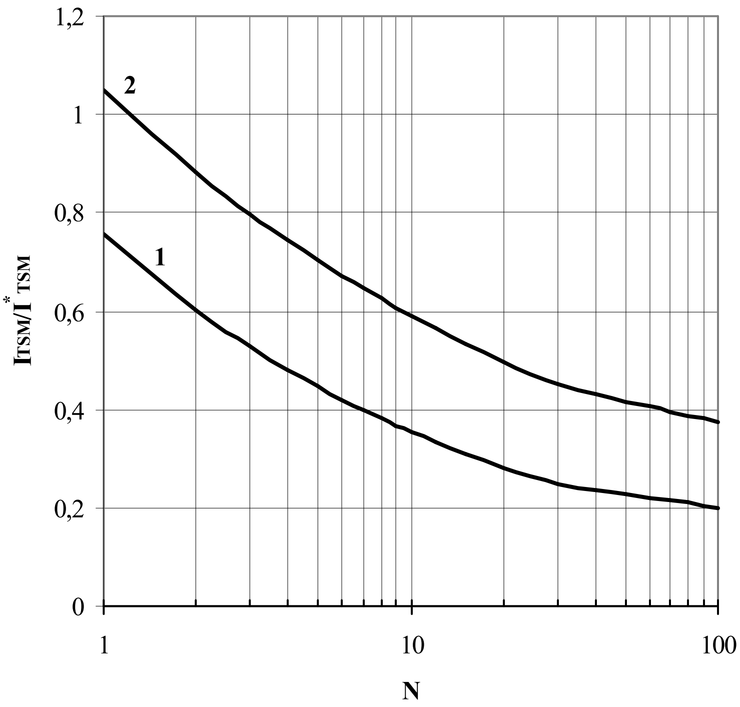



**Fig. 31** The surge current $I_{TSM}$ vs. Number of half-sine waves at 50 Hz
1 – $T_j$=125°C
2 – $T_j$=25°C

Conditions: $V_R=0.8 \cdot V_{RRM}$ – the peak value of reverse voltage which is applied immediately after the surge current
Typical changes of $I_{TSM}$ are normalized to the $I_{TSM}^*$ ($I_{TSM}^*$ – see data sheet, $T_j=T_{j\,max}$)