



PROTON-ELECTROTEX RUSSIA

Fast Thyristor Type TFI643-630-22

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

Maximum allowable mean on-state current	I_{TAV}	630 A
Repetitive peak off-state voltage	V_{DRM}	2000...2200 V
Repetitive peak reverse voltage	V_{RRM}	
Turn-off time	t_q	32.0, 40.0, 50.0, 63.0 μs
V_{DRM}, V_{RRM}, V	2000	2200
Voltage code	20	22
$T_j, ^\circ C$	-60...+125	

MAXIMUM ALLOWABLE RATINGS

Symbols and parameters		Units	Values	Test conditions	
ON-STATE					
I_{TAV}	Maximum allowable mean on-state current	A	537 630 800	$T_c=85\text{ }^{\circ}\text{C}$; Double side cooled; $T_c=75\text{ }^{\circ}\text{C}$; Double side cooled; $T_c=55\text{ }^{\circ}\text{C}$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{TRMS}	RMS on-state current	A	989	$T_c=75\text{ }^{\circ}\text{C}$; Double side cooled; 180° half-sine wave; 50 Hz	
I_{TSM}	Surge on-state current	kA	10.5 12.0	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=I_{FGM}$; $V_G=20\text{ V}$; $t_{GP}=50\text{ }\mu\text{S}$; $di_G/dt=1\text{ A}/\mu\text{S}$
			11.0 12.5	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=I_{FGM}$; $V_G=20\text{ V}$; $t_{GP}=50\text{ }\mu\text{S}$; $di_G/dt=1\text{ A}/\mu\text{S}$
I^2t	Safety factor	$A^2s\cdot 10^3$	550 720	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=10\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=I_{FGM}$; $V_G=20\text{ V}$; $t_{GP}=50\text{ }\mu\text{S}$; $di_G/dt=1\text{ A}/\mu\text{S}$
			500 640	$T_j=T_{j\text{ max}}$ $T_j=25\text{ }^{\circ}\text{C}$	180° half-sine wave; $t_p=8.3\text{ ms}$; single pulse; $V_D=V_R=0\text{ V}$; Gate pulse: $I_G=I_{FGM}$; $V_G=20\text{ V}$; $t_{GP}=50\text{ }\mu\text{S}$; $di_G/dt=1\text{ A}/\mu\text{S}$
BLOCKING					
V_{DRM}, V_{RRM}	Repetitive peak off-state and Repetitive peak reverse voltages	V	2000...2200	$T_{j\text{ min}}<T_j<T_{j\text{ max}}$; 180° half-sine wave; 50 Hz; Gate open	
V_{DSM}, V_{RSM}	Non-repetitive peak off-state and Non-repetitive peak reverse voltages	V	2100...2300	$T_{j\text{ min}}<T_j<T_{j\text{ max}}$; 180° half-sine wave; single pulse; Gate open	
V_D, V_R	Direct off-state and Direct reverse voltages	V	$0.6\cdot V_{DRM}$ $0.6\cdot V_{RRM}$	$T_j=T_{j\text{ max}}$; 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/ μ s	2000	$T_j = T_{j\max}$; $V_D = 0.67 \cdot V_{DRM}$; $I_{TM} = 2500$ A; Gate pulse: $I_G = 2$ A; $V_G = 20$ V; $t_{GP} = 50$ μ s; $di_G/dt = 2$ A/ μ s
THERMAL				
T_{stg}	Storage temperature	$^{\circ}$ C	-60...+50	
T_j	Operating junction temperature	$^{\circ}$ C	-60...+125	
MECHANICAL				
F	Mounting force	kN	14.0...16.0	
a	Acceleration	m/s ²	50	Device clamped

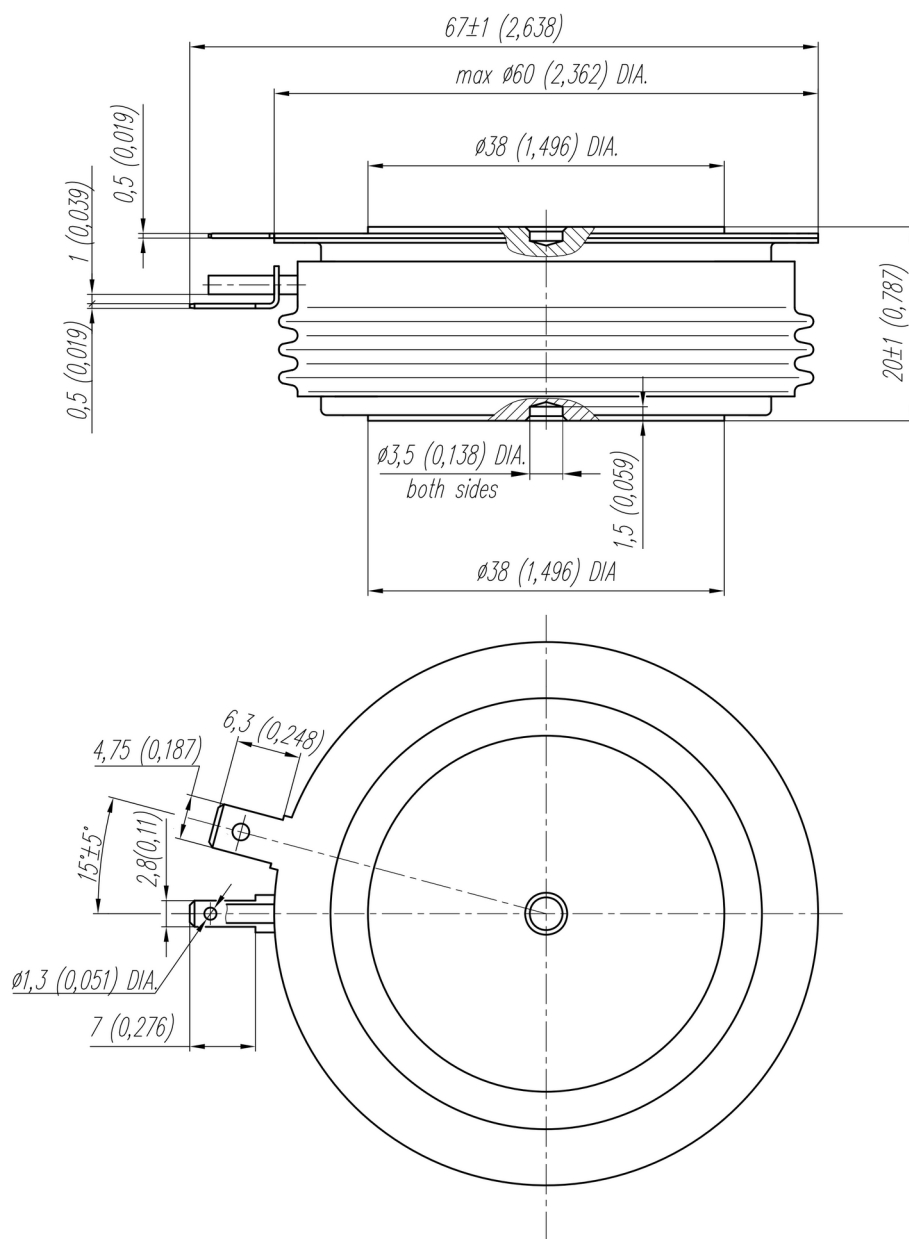
CHARACTERISTICS

Symbols and parameters		Units	Values	Conditions	
ON-STATE					
V _{TM}	Peak on-state voltage, max	V	2.50	T _j =25 °C; I _{TM} = 1978 A	
V _{T(TO)}	On-state threshold voltage, max	V	1.397	T _j =T _{j max} ;	
r _T	On-state slope resistance, max	mΩ	0.600	0.5 π I _{TAV} < I _T < 1.5 π I _{TAV}	
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	100	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·V _{DRM} ; Gate open	
TRIGGERING					
V _{GT}	Gate trigger direct voltage, max	V	3.00 2.50 1.50	T _j = T _{j min} T _j =25 °C T _j = T _{j max}	V _D =12 V; I _D =3 A; Direct gate current
I _{GT}	Gate trigger direct current, max	mA	500 300 150	T _j = T _{j min} T _j = 25 °C T _j = T _{j max}	
V _{GD}	Gate non-trigger direct voltage, min	V	0.35	T _j =T _{j max} ; V _D =0.67·V _{DRM} ;	
I _{GD}	Gate non-trigger direct current, min	mA	50.00	Direct gate current	
SWITCHING					
t _{gd}	Delay time, max	μs	0.75	T _j =25 °C; V _D =1000 V; I _{TM} =I _{TAV} ; di/dt=200 A/μs;	
t _{gt}	Turn-on time ²⁾ , max	μs	1.60, 2.00, 2.50, 3.20	Gate pulse: I _G =2 A; V _G =20 V; t _{GP} =50 μs; di _G /dt=2 A/μs	
t _q	Turn-off time ³⁾ max	μs	32.0, 40.0, 50.0, 63.0	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·V _{DRM}
			40.0, 50.0, 63.0, 80.0	dv _D /dt=200 V/μs;	
Q _{rr}	Recovered charge, max	μC	350	T _j =T _{j max} ; I _{TM} =630 A;	
t _{rr}	Reverse recovery time, max	μs	5.0	di _R /dt=-50 A/μs;	
I _{rr}	Reverse recovery current, max	A	155	V _R =100 V	

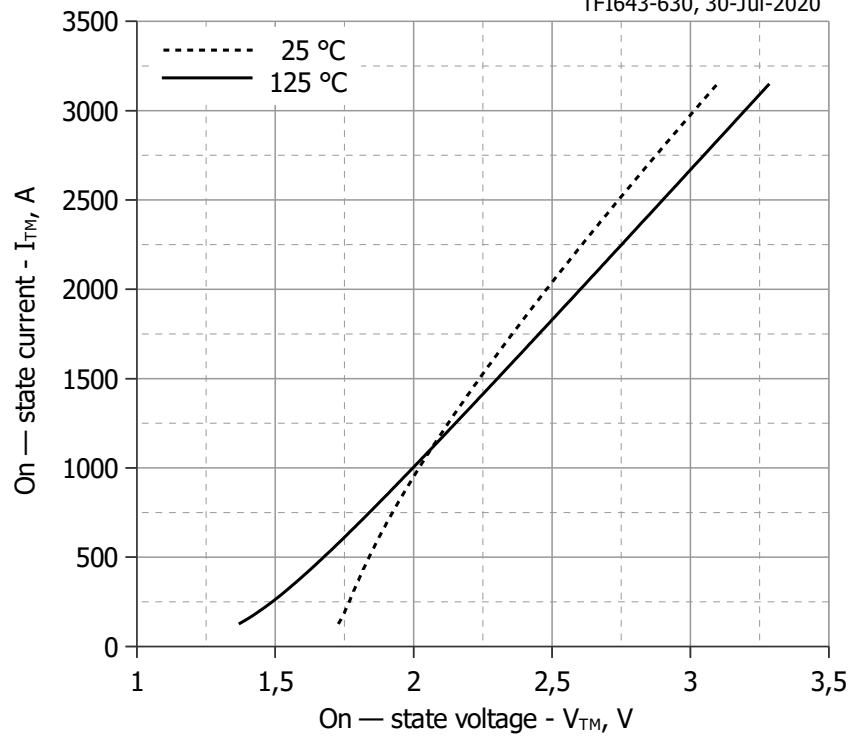
THERMAL					
R _{thjc}	Thermal resistance, junction to case, max	°C/W	0.0340	Direct current	Double side cooled
R _{thjc-A}			0.0748		Anode side cooled
R _{thjc-K}			0.0612		Cathode side cooled
R _{thck}	Thermal resistance, case to heatsink, max	°C/W	0.0060	Direct current	
MECHANICAL					
m	Weight, max	g	225		
D _s	Surface creepage distance	mm (inch)	19.44 (0.765)		
D _a	Air strike distance	mm (inch)	12.10 (0.476)		

PART NUMBERING GUIDE							
TFI	643	630	22	A2	C3	K4	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	T4	P4	M4	K4			
t _{gr} , μs	1.60	2.00	2.50	3.20			
3)Turn-off time (dv _D /dt=50 V/μs)							
Symbol of group	K3	H3	E3	C3			
t _{gr} , μs	32.0	40.0	50.0	63.0			



All dimensions in millimeters (inches)

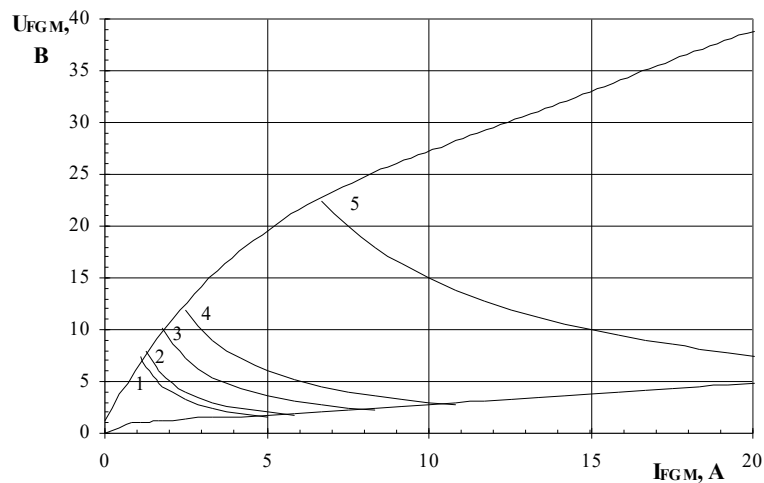


Analytical function for On-state characteristic:

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

	Coefficients for max curves	
	$T_j = 25^\circ\text{C}$	$T_j = T_{j\max}$
A	1.25444891	0.83427733
B	0.00086338	0.00061607
C	0.16693388	0.10947503
D	-0.03957676	-0.00662236

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

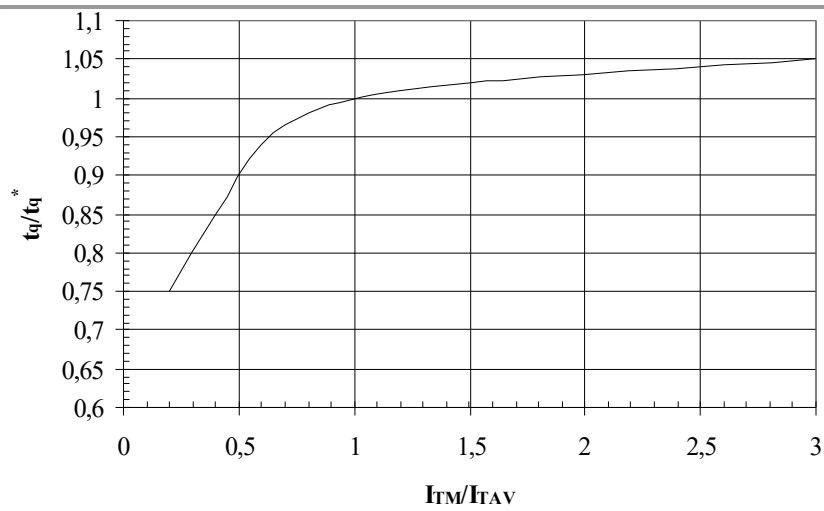


Fig. 3 Turn-off time t_q vs. On-state peak current I_{TM}

Conditions: $T_j = T_{j\ max}$; $di_R/dt = 10\ A/\mu s$; $V_R = 100\ V$; $dv_D/dt = 50\ V/\mu s$; $V_D = 0.67 \cdot V_{DRM}$

Typical changes of t_q are normalized to the t_q^* (t_q^* – see data sheet, $dv_D/dt = 50\ V/\mu s$)

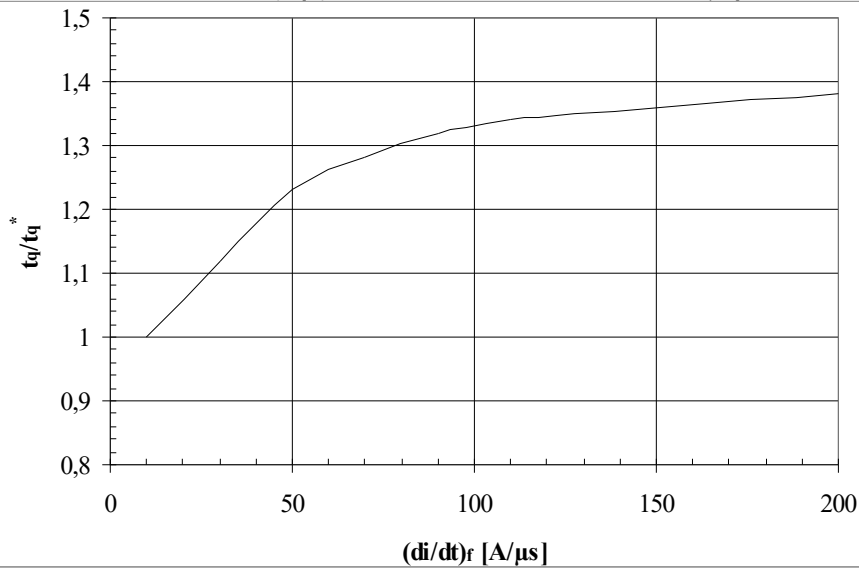


Fig. 4 Turn-off time t_q vs. Rate of fall of on-state current di_R/dt

Conditions: $T_j = T_{j\ max}$; $I_{TM} = I_{TAV}$; $V_R = 100\ V$; $dv_D/dt = 50\ V/\mu s$; $V_D = 0.67 \cdot V_{DRM}$

Typical changes of t_q are normalized to the t_q^* (t_q^* – see data sheet, $dv_D/dt = 50\ V/\mu s$)

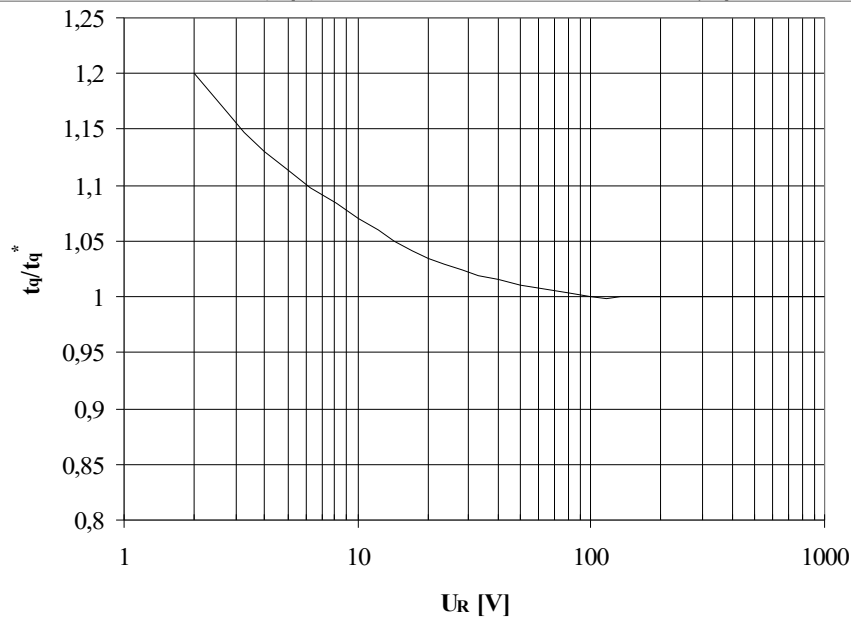


Fig. 5 Turn-off time t_q vs. Reverse voltage V_R

Conditions: $T_j = T_{j\ max}$; $I_{TM} = I_{TAV}$; $di_R/dt = 10\ A/\mu s$; $dv_D/dt = 50\ V/\mu s$; $V_D = 0.67 \cdot V_{DRM}$

Typical changes of t_q are normalized to the t_q^* (t_q^* – see data sheet, $dv_D/dt = 50\ V/\mu s$)

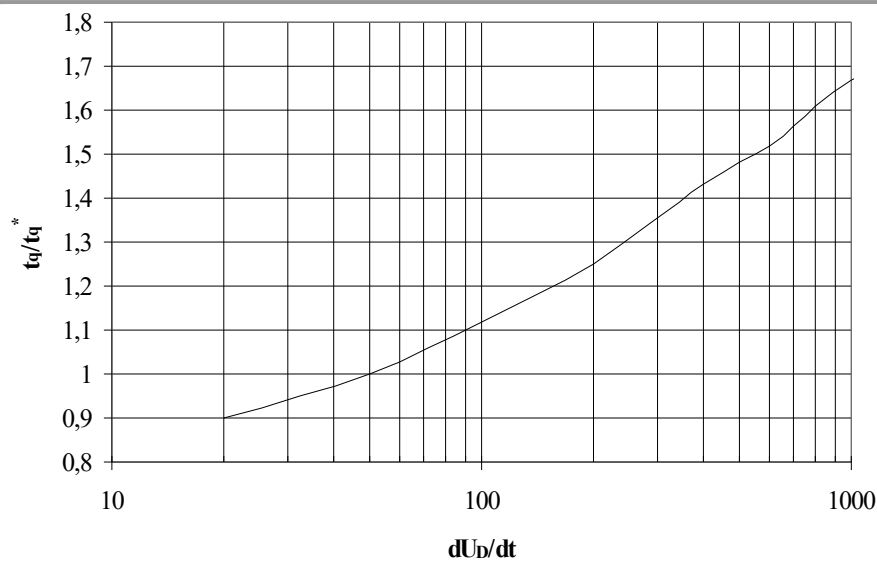


Fig. 6 Turn-off time t_q vs. Rate of rise of commutating voltage dv_D/dt

Conditions: $T_j = T_{j\max}$; $I_{TM} = I_{TAV}$; $di_R/dt = 10 \text{ A}/\mu\text{s}$; $V_R = 100 \text{ V}$; $V_D = 0.67 \cdot V_{DRM}$

Typical changes of t_q are normalized to the t_q^* (t_q^* – see data sheet, $dv_D/dt = 50 \text{ V}/\mu\text{s}$)

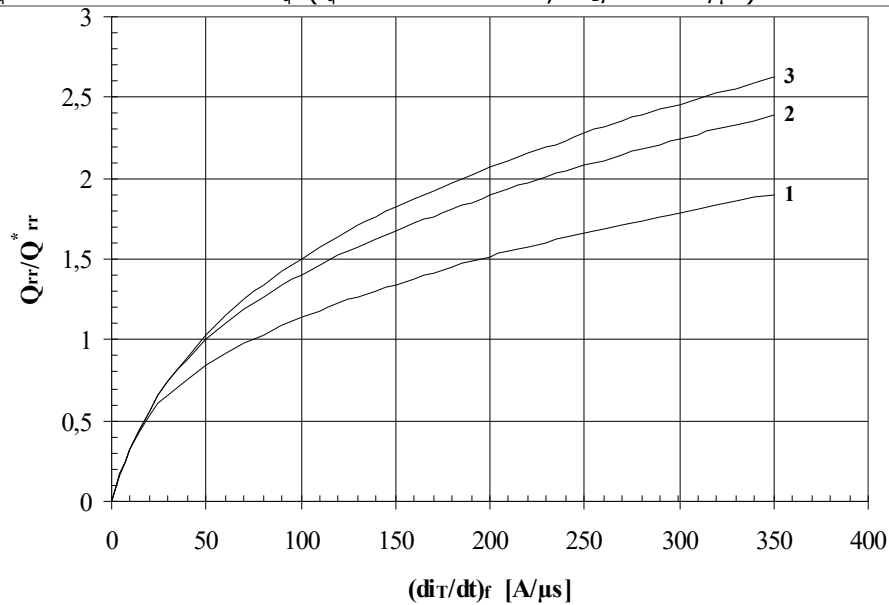


Fig. 7 Reverse recovery charge Q_{rr} vs. Rate of fall of on-state current di_R/dt

1 – $I_{TM} = 0.5 \cdot I_{TAV}$

2 – $I_{TM} = I_{TAV}$

3 – $I_{TM} = 1.5 \cdot I_{TAV}$

Conditions: $T_j = T_{j\max}$; $V_R = 100 \text{ V}$

Typical changes of Q_{rr} are normalized to the Q_{rr}^* (Q_{rr}^* – see data sheet)

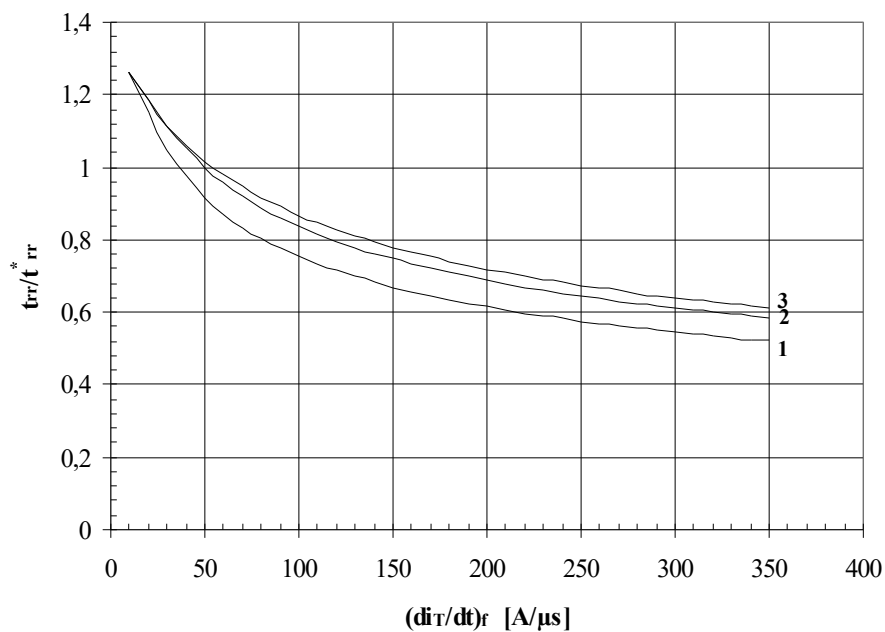


Fig. 8 Reverse recovery time t_{rr} vs. Rate of fall of on-state current di_R/dt

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)

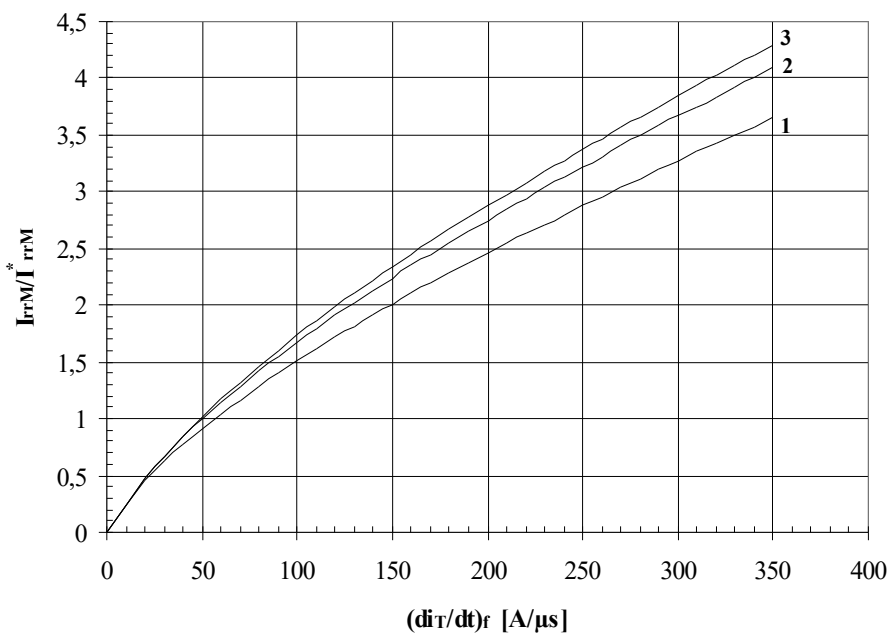


Fig. 9 Peak reverse recovery current I_{rr} vs. Rate of fall of on-state current di_R/dt

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 I_{rr} are normalized to the I_{rr}^* (I_{rr}^* – see data sheet)

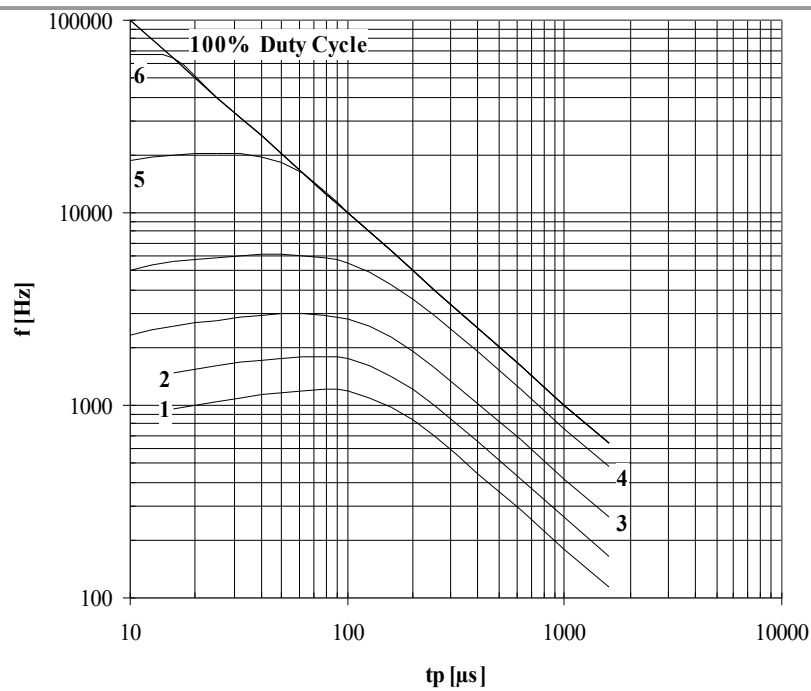


Fig. 10 Sine wave frequency ratings

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

Conditions: $V_R \leq 3 \text{ V}$; $T_C = 55 \text{ }^\circ\text{C}$

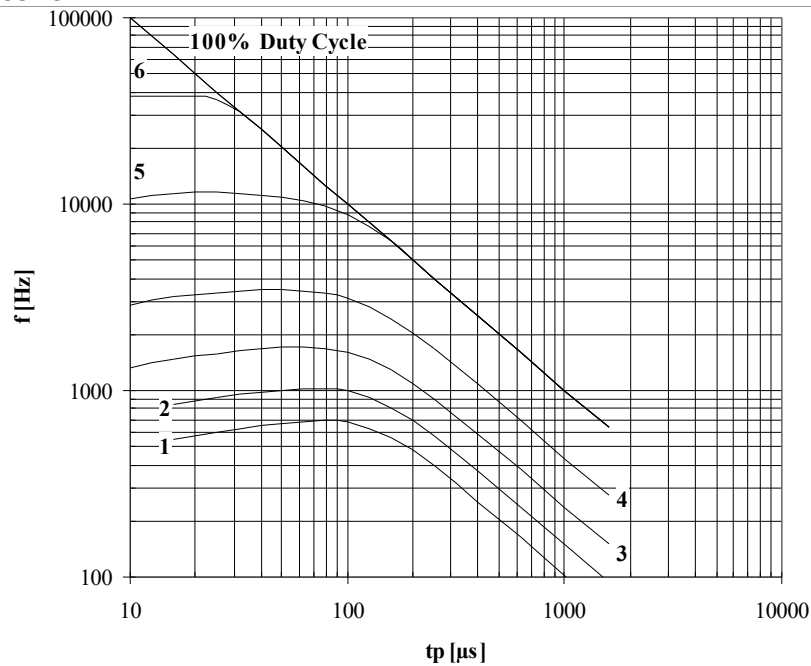


Fig. 11 Sine wave frequency ratings

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

Conditions: $V_R \leq 3 \text{ V}$; $T_C = 80 \text{ }^\circ\text{C}$

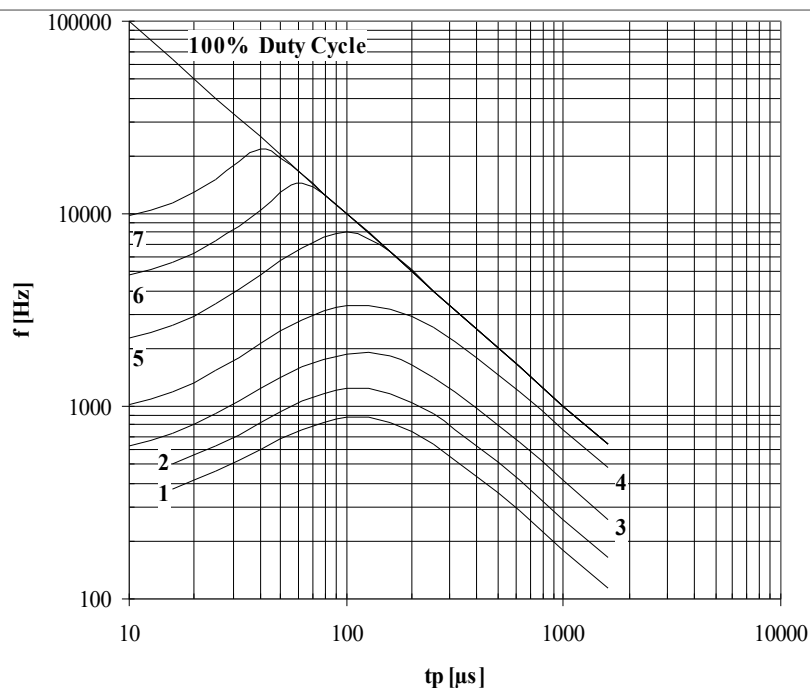


Fig. 12 Sine wave frequency ratings

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

Conditions: $V_R = 0.67 \cdot V_{RRM}$; $T_C = 55 \text{ °C}$

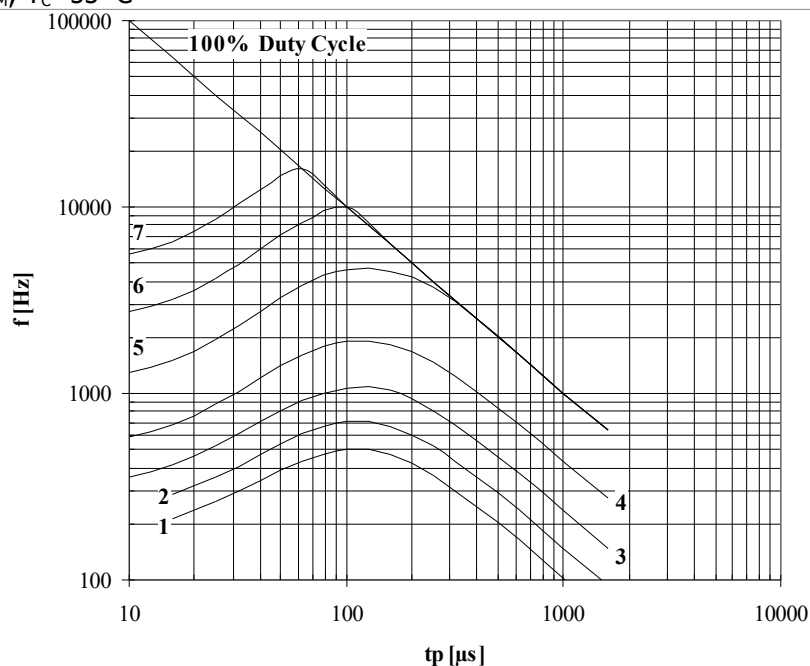


Fig. 13 Sine wave frequency ratings

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

Conditions: $V_R = 0.67 \cdot V_{RRM}$; $T_C = 80 \text{ °C}$

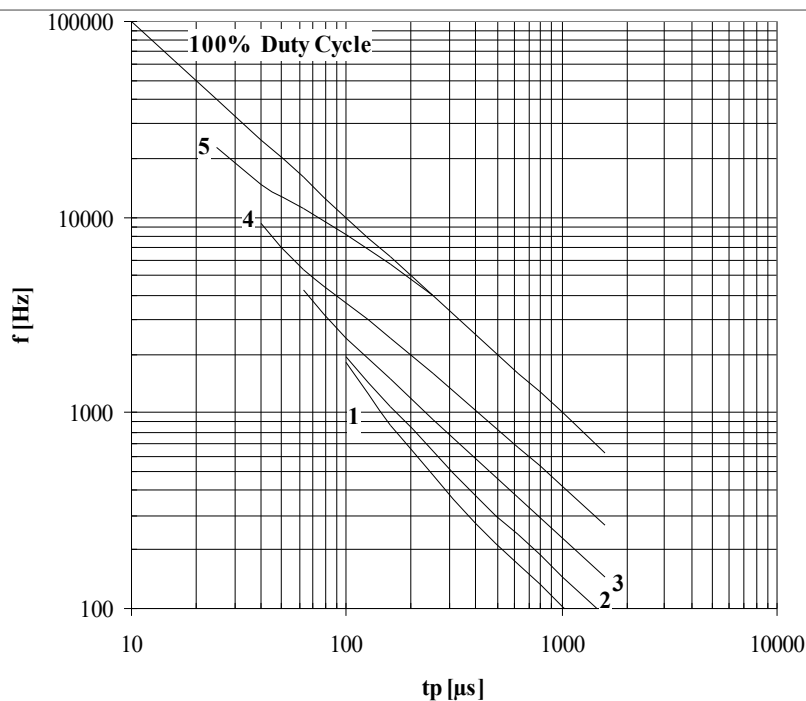


Fig. 14 Square wave frequency ratings

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

Conditions: $V_R \leq 3 \text{ V}$; $T_C = 55^\circ \text{C}$; $di_F/dt = di_R/dt = 100 \text{ A}/\mu\text{s}$

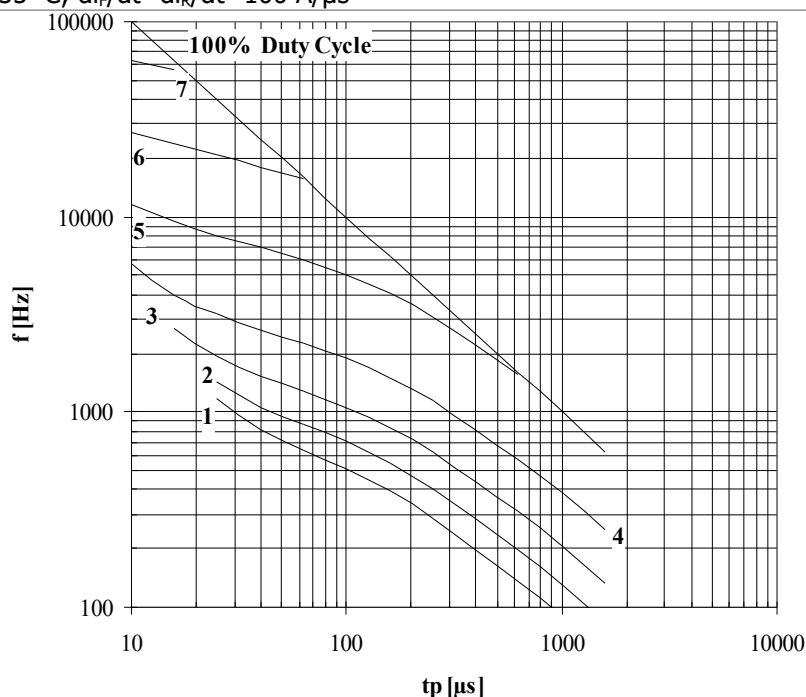


Fig. 15 Square wave frequency ratings

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

Conditions: $V_R \leq 3 \text{ V}$; $T_C = 55^\circ \text{C}$; $di_F/dt = di_R/dt = 500 \text{ A}/\mu\text{s}$

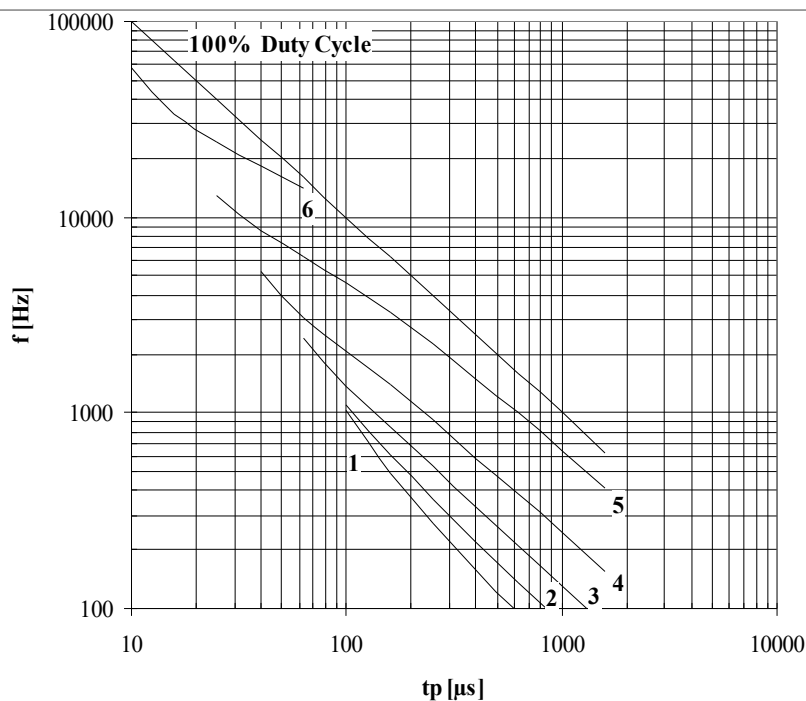


Fig. 16 Square wave frequency ratings

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

Conditions: $V_R \leq 3 \text{ V}$; $T_C = 80 \text{ }^\circ\text{C}$; $di_F/dt = di_R/dt = 100 \text{ A}/\mu\text{s}$

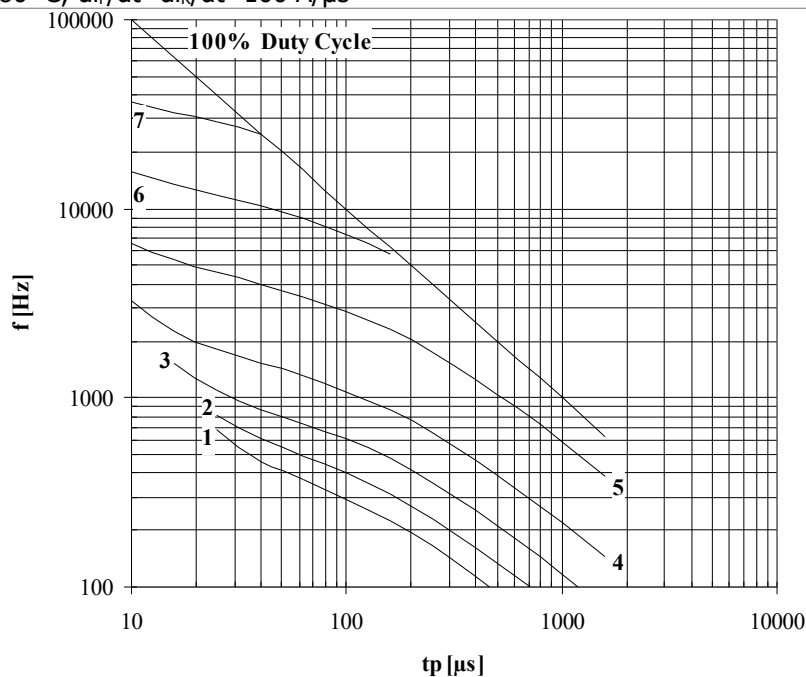


Fig. 17 Square wave frequency ratings

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

Conditions: $V_R \leq 3 \text{ V}$; $T_C = 80 \text{ }^\circ\text{C}$; $di_F/dt = di_R/dt = 500 \text{ A}/\mu\text{s}$

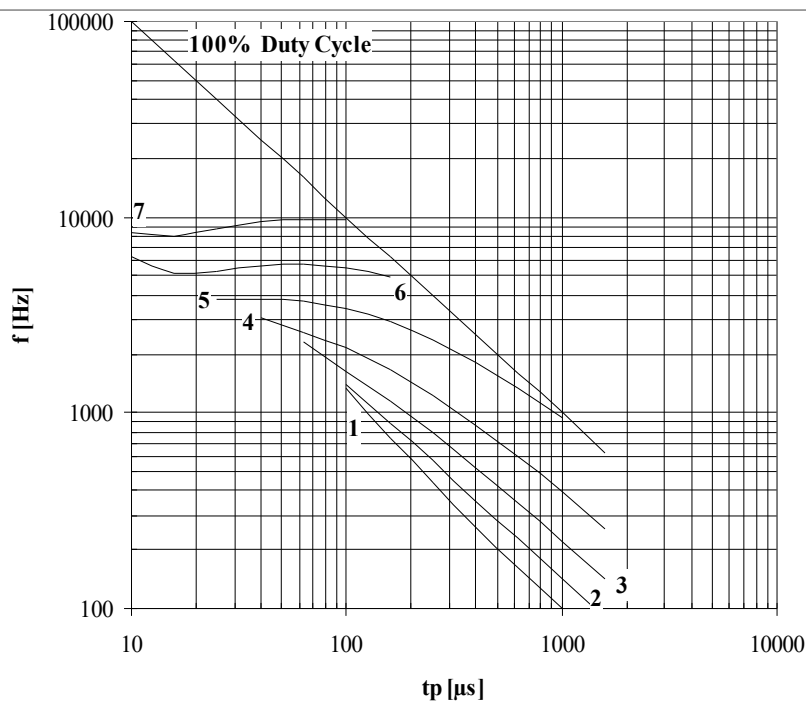


Fig. 18 Square wave frequency ratings

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

Conditions: $V_R = 0.67 \cdot V_{RRM}$; $T_C = 55^\circ \text{C}$; $di_F/dt = di_R/dt = 100 \text{ A}/\mu\text{s}$

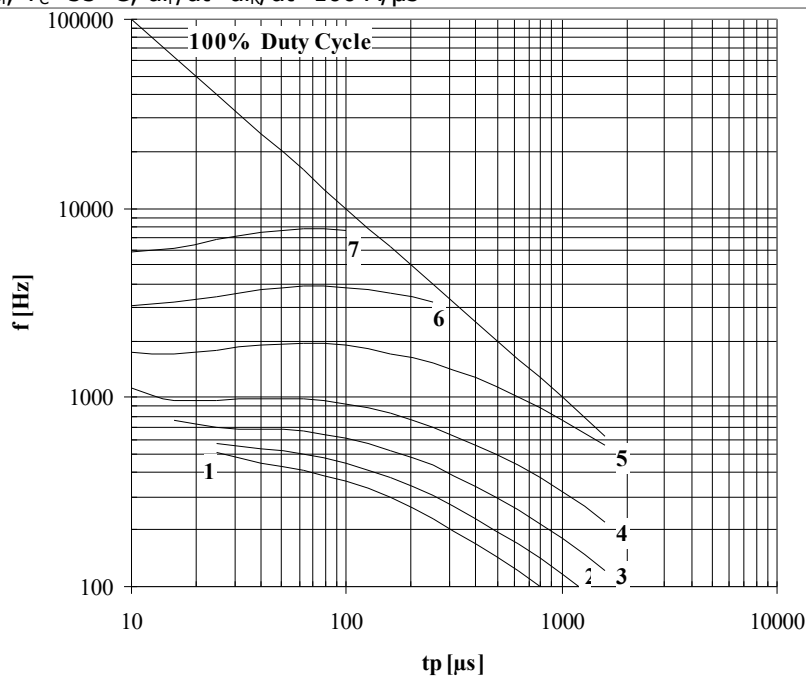


Fig. 19 Square wave frequency ratings

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

Conditions: $V_R = 0.67 \cdot V_{RRM}$; $T_C = 55^\circ \text{C}$; $di_F/dt = di_R/dt = 500 \text{ A}/\mu\text{s}$

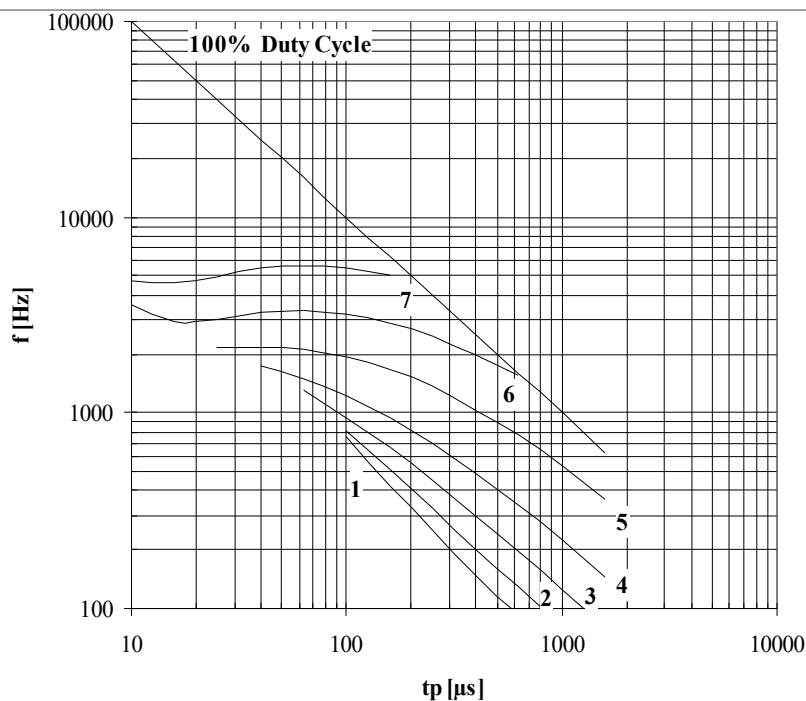


Fig. 20 Square wave frequency ratings

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

Conditions: $V_R = 0.67 \cdot V_{RRM}$; $T_C = 80 \text{ }^\circ\text{C}$; $di_F/dt = di_R/dt = 100 \text{ A}/\mu\text{s}$

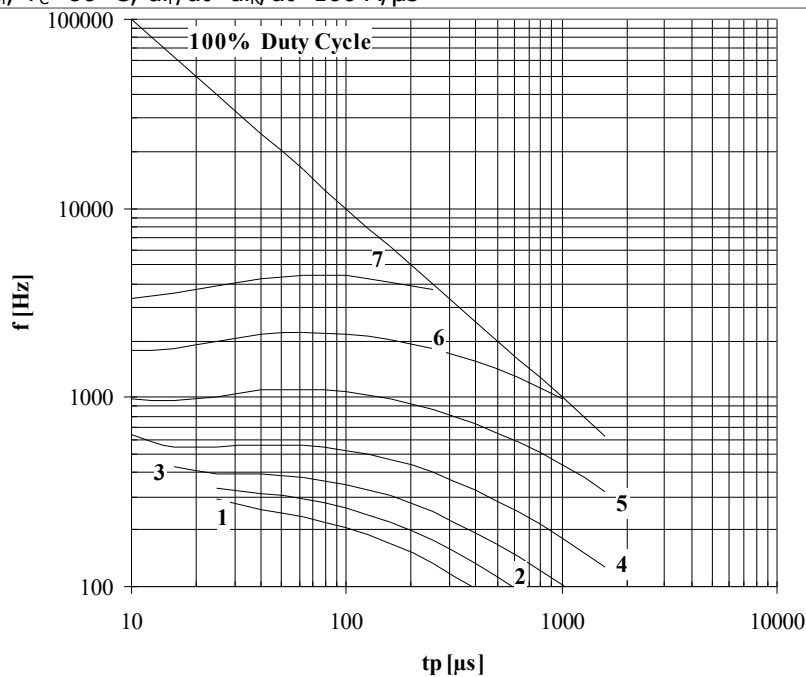


Fig. 21 Square wave frequency ratings

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

Conditions: $V_R = 0.67 \cdot V_{RRM}$; $T_C = 80 \text{ }^\circ\text{C}$; $di_F/dt = di_R/dt = 500 \text{ A}/\mu\text{s}$

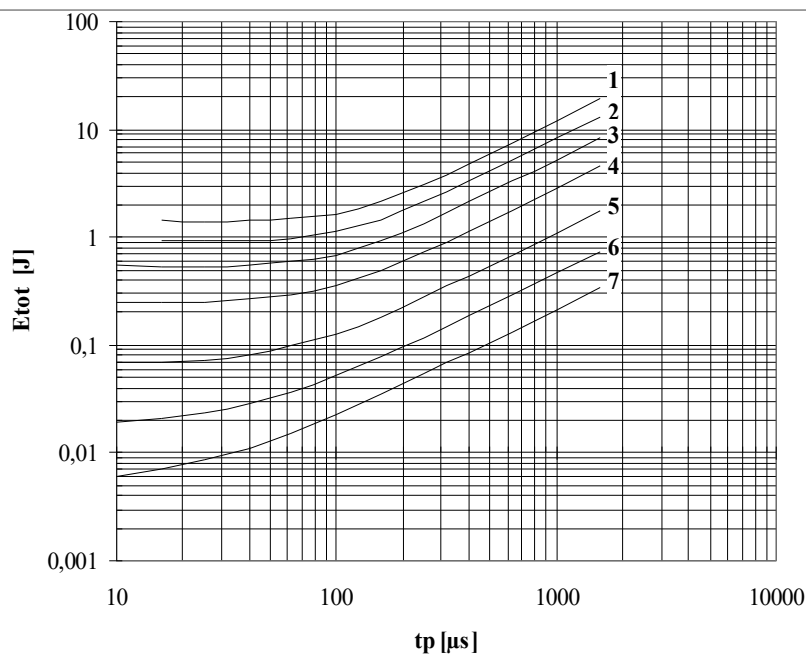


Fig. 22 Sine wave loss energy per pulse

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

Conditions: $V_R \leq 3 \text{ V}$

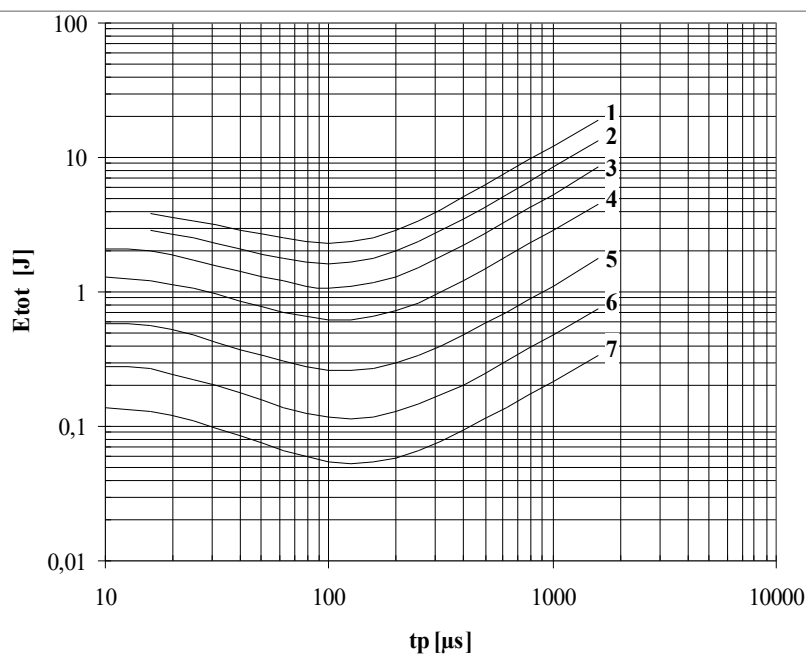


Fig. 23 Sine wave loss energy per pulse

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

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

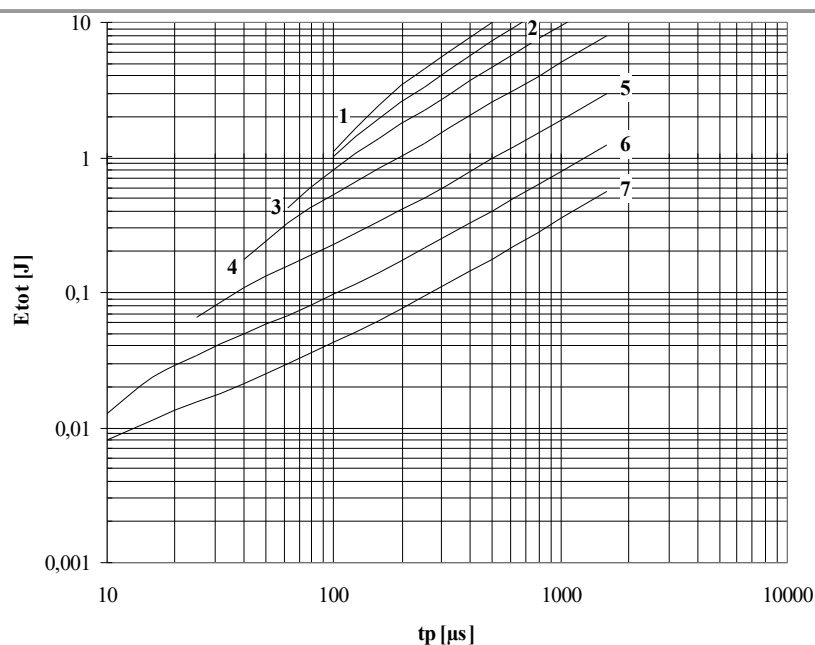


Fig. 24 Square wave loss energy per pulse

- 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: $V_R \leq 3$ V; $di_F/dt = di_R/dt = 100$ A/ μ s

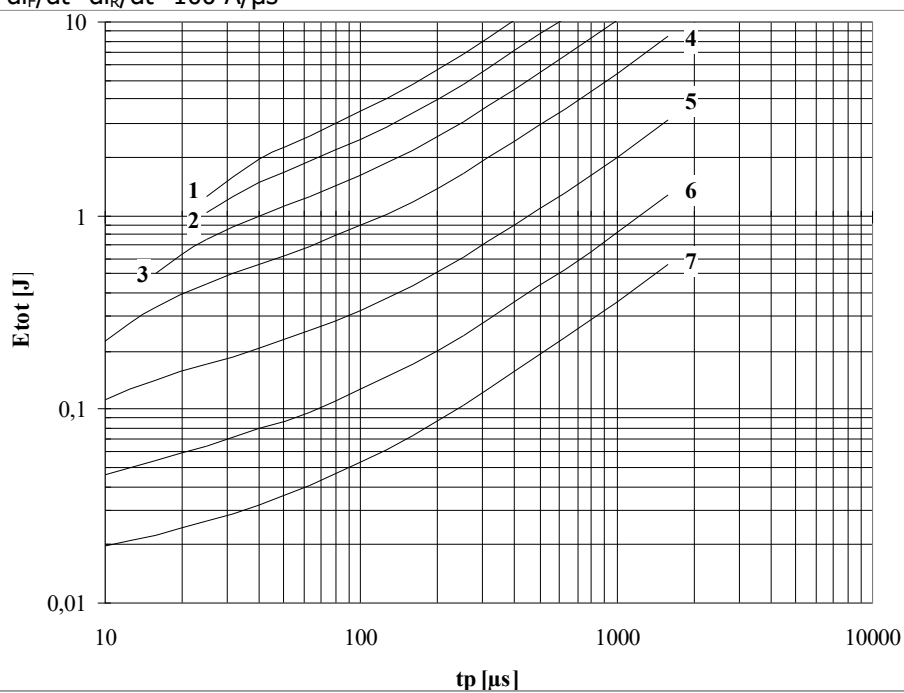


Fig. 25 Square wave loss energy per pulse

- 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: $V_R \leq 3$ V; $di_F/dt = di_R/dt = 500$ A/ μ s

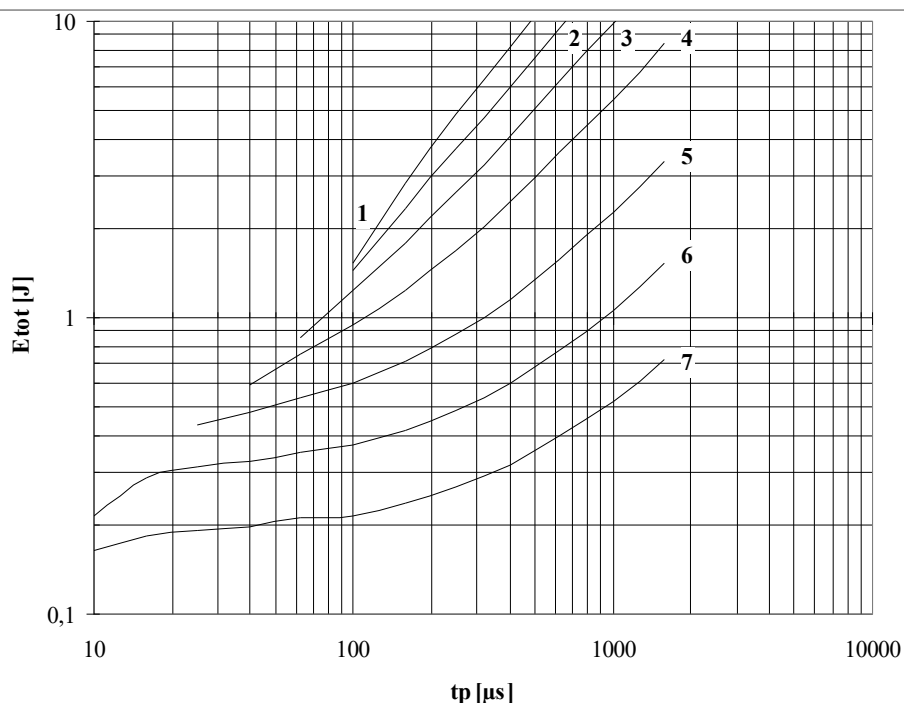


Fig. 26 Square wave loss energy per pulse

- 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: $V_R = 0.67 \cdot V_{RRM}$; $di_F/dt = di_R/dt = 100$ A/ μ s

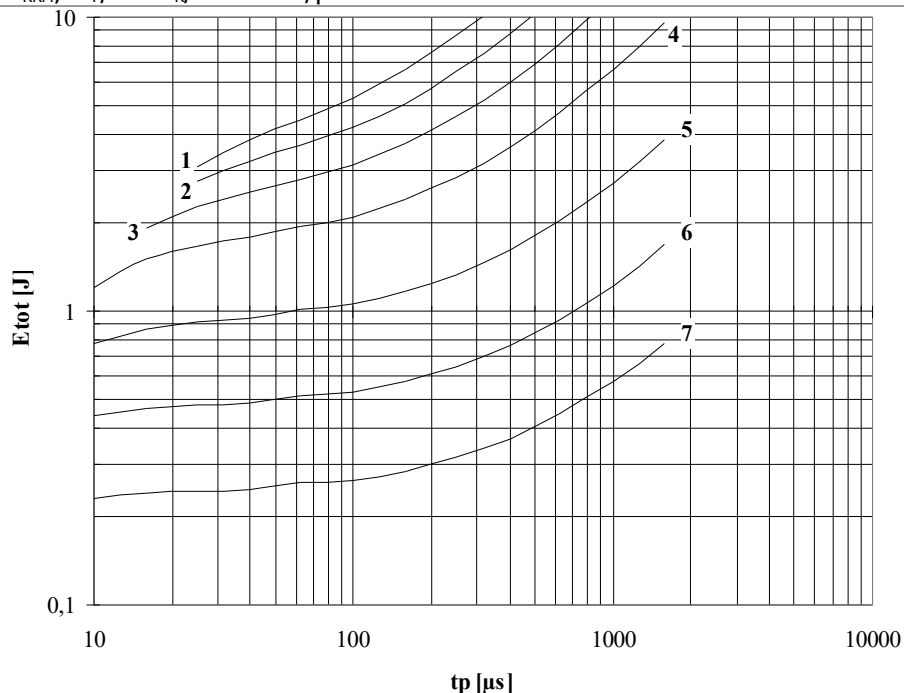


Fig. 27 Square wave loss energy per pulse

- 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: $V_R = 0.67 \cdot V_{RRM}$; $di_F/dt = di_R/dt = 500$ A/ μ s

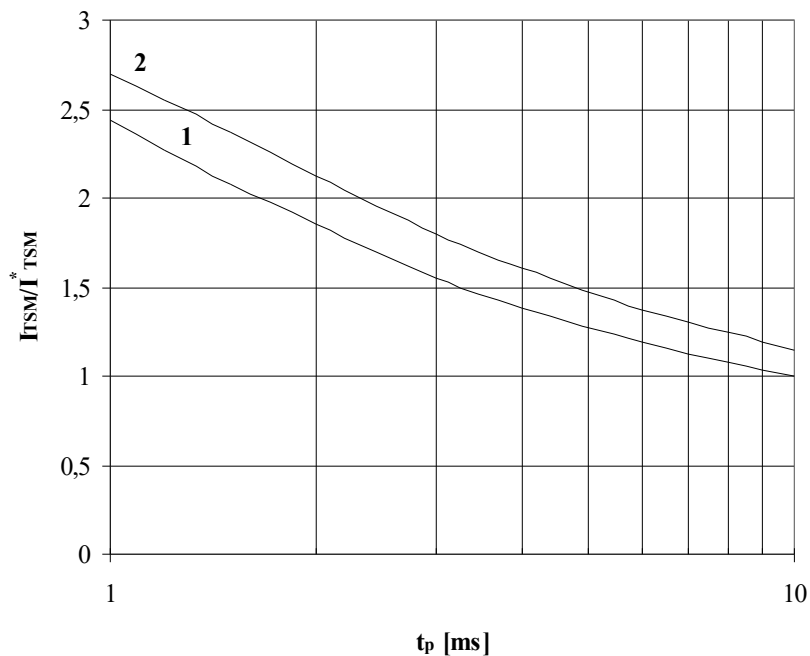


Fig. 28 The surge current I_{TSM} vs. Duration of surge t_p for a half-sine wave
 1 – $T_j=125$ °C
 2 – $T_j=25$ °C

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, $T_j=T_{j\max}$)

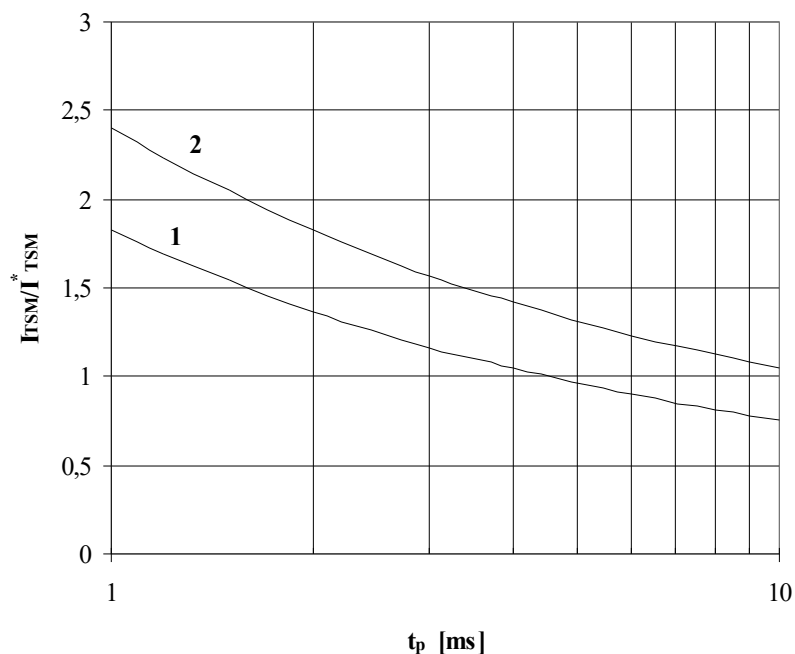


Fig. 29 The surge current I_{TSM} vs. Duration of surge t_p for a half-sine wave
 1 – $T_j=125$ °C
 2 – $T_j=25$ °C

Conditions: $V_R=0.8 \cdot V_{RRM}$ – 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, $T_j=T_{j\max}$)

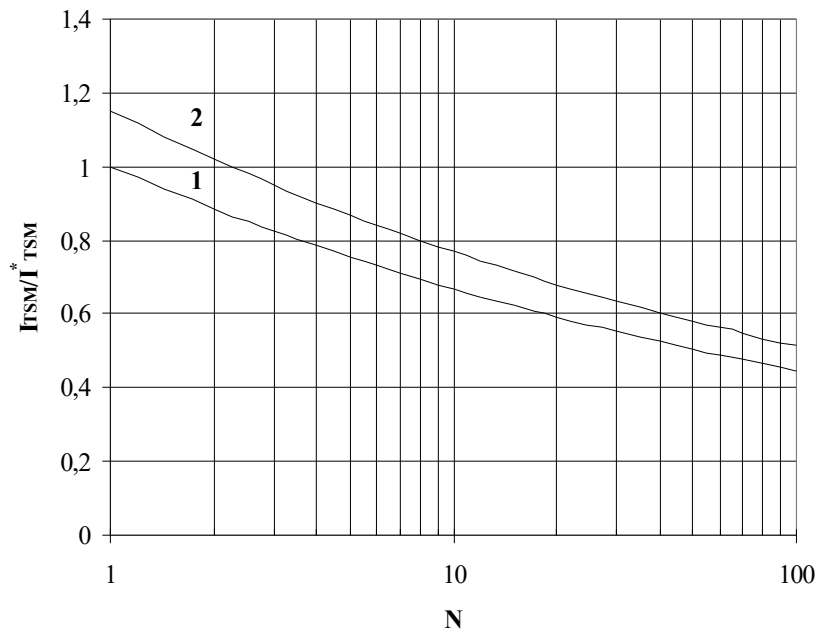


Fig. 30 The surge current I_{TSM} vs. Number of half-sine waves at 50 Hz

1 – $T_j = 125^\circ\text{C}$

2 – $T_j = 25^\circ\text{C}$

Conditions: $V_R = 0\text{ V}$ – 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, $T_j = T_{j\text{max}}$)

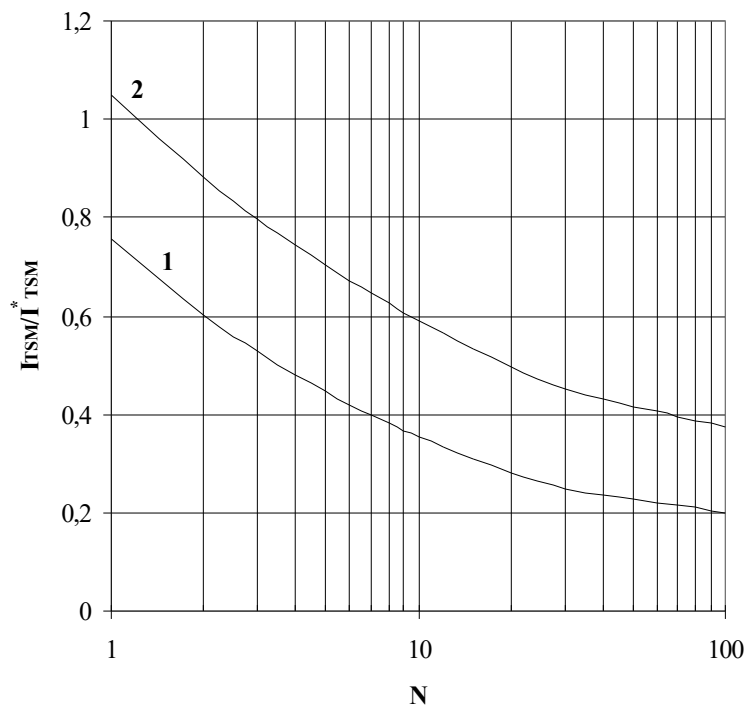


Fig. 31 The surge current I_{TSM} vs. Number of half-sine waves at 50 Hz

1 – $T_j = 125^\circ\text{C}$

2 – $T_j = 25^\circ\text{C}$

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, $T_j = T_{j\text{max}}$)