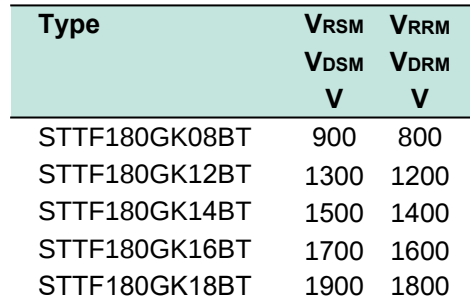


## Fast Thyristor-Thyristor Modules



**Sirectifier®**

# STTF180GK16BT

## Fast Thyristor-Thyristor Modules

| Symbol             | Test Conditions                                                                                           | Characteristic Values | Unit             |
|--------------------|-----------------------------------------------------------------------------------------------------------|-----------------------|------------------|
| $I_{RRM}, I_{DRM}$ | $T_{VJ}=T_{VJM}; V_R=V_{RRM}; V_D=V_{DRM}$                                                                | 5 0                   | mA               |
| $V_T, V_F$         | $I_T, I_F=540A; T_{VJ}=25^{\circ}C$                                                                       | 1.90                  | V                |
| $V_{TO}$           | For power-loss calculations only ( $T_{VJ}=125^{\circ}C$ )                                                | 1.30                  | V                |
| $r_T$              |                                                                                                           | 0.90                  | mΩ               |
| $V_{GT}$           | $V_D=6V;$<br>$T_{VJ}=25^{\circ}C$<br>$T_{VJ}=-40^{\circ}C$                                                | 2.2<br>2.4            | V                |
| $I_{GT}$           | $V_D=6V;$<br>$T_{VJ}=25^{\circ}C$<br>$T_{VJ}=-40^{\circ}C$                                                | 250<br>300            | mA               |
| $V_{GD}$           | $T_{VJ}=T_{VJM}; V_D=2/3V_{DRM}$                                                                          | 0.25                  | V                |
| $I_{GD}$           |                                                                                                           | 10                    | mA               |
| $I_L$              | $T_{VJ}=25^{\circ}C; t_p=30\mu s; V_D=6V$<br>$I_G=0.5A; di_G/dt=0.5A/\mu s$                               | 1000                  | mA               |
| $I_H$              | $T_{VJ}=25^{\circ}C; V_D=6V; R_{GK}=\infty$                                                               | 250                   | mA               |
| $t_{gd}$           | $T_{VJ}=25^{\circ}C; V_D=1/2V_{DRM}$<br>$I_G=0.5A; di_G/dt=0.5A/\mu s$                                    | 1.2                   | μs               |
| $t_q$              | $T_{VJ}=T_{VJM}; I_T=300A; t_p=200\mu s; -di/dt=10A/\mu s$<br>$V_R=100V; dv/dt=20V/\mu s; V_D=2/3V_{DRM}$ | 18-25                 | μs               |
| $Q_s$              | $T_{VJ}=T_{VJM}; I_T, I_F=300A; -di/dt=50A/\mu s$                                                         | 550                   | μC               |
| $I_{RM}$           |                                                                                                           | 235                   | A                |
| $R_{thJC}$         | per thyristor/diode; DC current<br>per module                                                             | 0.130<br>0.065        | K/W              |
| $R_{thJK}$         | per thyristor/diode; DC current<br>per module                                                             | 0.225<br>0.1125       | K/W              |
| $ds$               | Creeping distance on surface                                                                              | 12.7                  | mm               |
| $da$               | Strike distance through air                                                                               | 9.6                   | mm               |
| $a$                | Maximum allowable acceleration                                                                            | 50                    | m/s <sup>2</sup> |

### FEATURES

- \* International standard package
- \* Copper baseplate
- \* Pressure Contact Technology
- \* Isolation voltage 3600 V~
- \* RoHS compliant

### APPLICATIONS

- \* Motor control
- \* Power converter
- \* Heat and temperature control for industrial furnaces and chemical processes
- \* Lighting control
- \* Contactless switches

### ADVANTAGES

- \* Space and weight savings
- \* Simple mounting
- \* Improved temperature and power cycling
- \* Reduced protection circuits



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## Fast Thyristor-Thyristor Modules

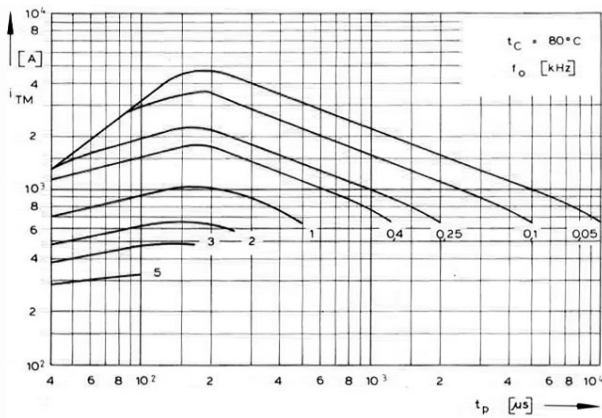


Fig.1 Maximum allowable current load versus halfwave duration per arm at: sinusoidal current waveform, given case temp.  $t_c$ , forward off-state voltage  $V_{DM} \leq 2/3 V_{RRM}$

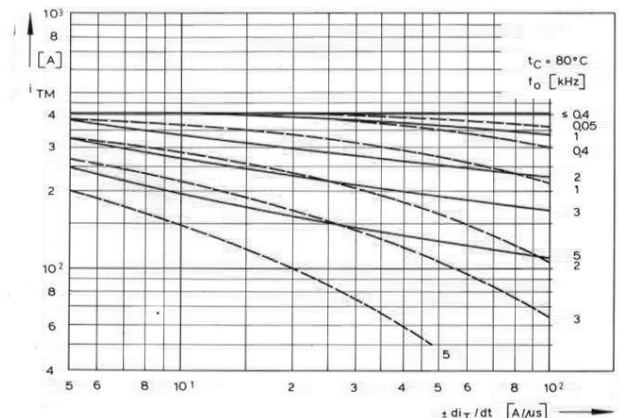


Fig.2 Maximum allowable current load versus rate of current per arm at: trapezoidal current waveform, given case temp.  $t_c$ , forward off-state voltage  $V_{DM} \leq 2/3 V_{RRM}$

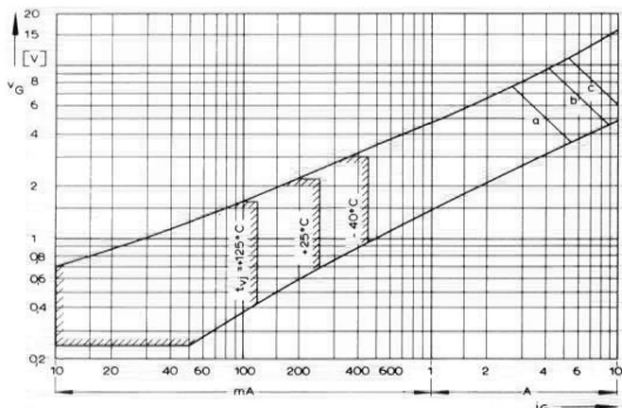


Fig.3 Gate characteristic and peak gate power dissipation at  $V_D = 6\text{V}$

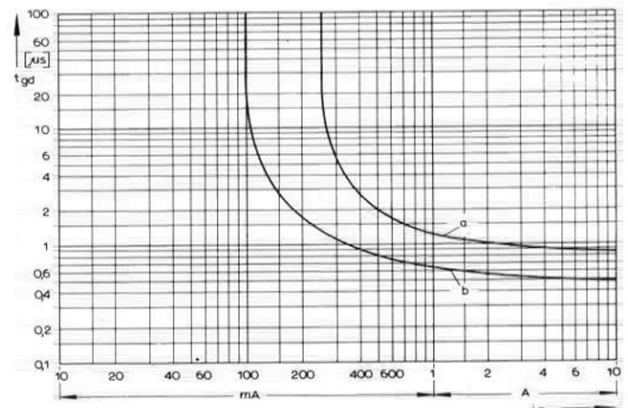


Fig. 4 Gate controlled delay time  $t_{gd}$ ,  $t_a = 1\mu\text{s}$ ,  $t_{vj} = 25^\circ\text{C}$   
a=Limiting characteristic b=Typical characteristic

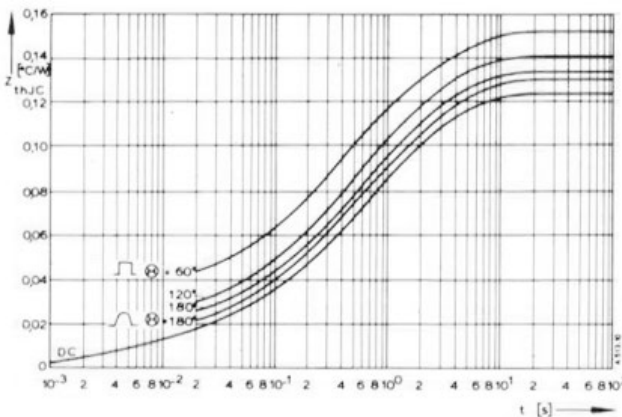


Fig.5 Transient thermal impedance per arm  $Z_{thJC}$ , Junction to case

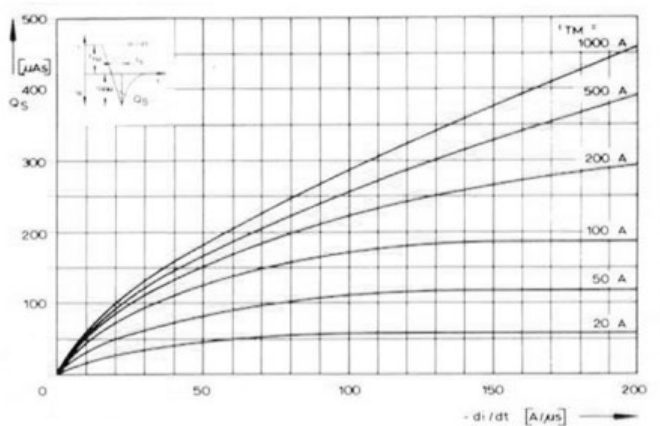


Fig.6 Typical relationship between the maximum lag charge  $Q_s$  and the rate of decay of on-state current  $-di_T/dt$  at  $t_{VJmax}$