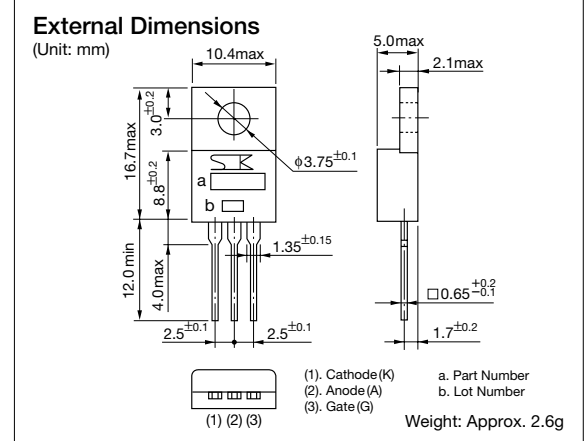


TO-220 5A Thyristor

TF521M, TF541M, TF561M

■ Features

- Repetitive peak off-state voltage: $V_{DRM}=200, 400, 600V$
- Average on-state current: $I_{T(AV)}=5A$
- Gate trigger current: $I_{GT}=15mA$ max



■ Absolute Maximum Ratings

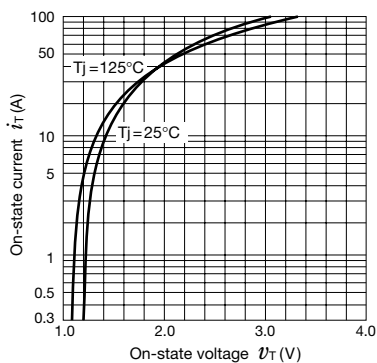
| Parameter | Symbol | Ratings | | | Unit | Conditions |
|---------------------------------------|--------------|-------------|--------|--------|------------|--|
| | | TF521M | TF541M | TF561M | | |
| Repetitive peak off-state voltage | V_{DRM} | 200 | 400 | 600 | V | $T_j = -40$ to $+125^\circ C$, $R_{GK} = 1k\Omega$ |
| Repetitive peak reverse voltage | V_{RRM} | 200 | 400 | 600 | V | |
| Non-repetitive peak off-state voltage | V_{DSM} | 300 | 500 | 700 | V | |
| Non-repetitive peak reverse voltage | V_{RSM} | 300 | 500 | 700 | V | |
| Average on-state current | $I_{T(AV)}$ | 5.0 | | | A | 50Hz Half-cycle sinewave, Continuous current, $T_c = 96^\circ C$ |
| RMS on-state current | $I_{T(RMS)}$ | 7.8 | | | A | |
| Surge on-state current | I_{TSM} | 80 | | | A | 50Hz Half-cycle sinewave, Single shot, Non-repetitive, $T_j = 125^\circ C$ |
| Peak forward gate current | I_{FGM} | 2.0 | | | A | $f \geq 50Hz$, duty $\leq 10\%$ |
| Peak forward gate voltage | V_{FGM} | 10 | | | V | |
| Peak reverse gate voltage | V_{RGM} | 5.0 | | | V | $f \geq 50Hz$ |
| Peak gate power loss | P_{GM} | 5.0 | | | W | $f \geq 50Hz$, duty $\leq 10\%$ |
| Average gate power loss | $P_{G(AV)}$ | 0.5 | | | W | |
| Junction temperature | T_j | -40 to +125 | | | $^\circ C$ | |
| Storage temperature | T_{stg} | -40 to +125 | | | $^\circ C$ | |

■ Electrical Characteristics

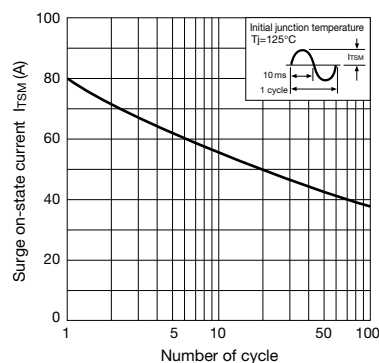
| Parameter | Symbol | Ratings | | | Unit | Conditions |
|--|-----------|---------|-----|-----|--------------|--|
| | | min | typ | max | | |
| Off-state current | I_{DRM} | | | 2.0 | mA | $T_j = 125^\circ C$, $V_D = V_{DRM}(V_{RRM})$, $R_{GK} = 1k\Omega$ |
| Reverse current | I_{RRM} | | | 2.0 | mA | |
| On-state voltage | V_{TM} | | | 1.4 | V | $T_c = 25^\circ C$, $I_{TM} = 10A$ |
| Gate trigger voltage | V_{GT} | | | 1.5 | V | $V_D = 6V$, $R_L = 10\Omega$, $T_c = 25^\circ C$ |
| Gate trigger current | I_{GT} | | 3.0 | 15 | mA | |
| Gate non-trigger voltage | V_{GD} | 0.1 | | | V | $V_D = 1/2 \times V_{DRM}$, $T_j = 125^\circ C$, $R_{GK} = 1k\Omega$ |
| Holding current | I_H | | 4.0 | | mA | $R_{GK} = 1k\Omega$, $T_j = 25^\circ C$ |
| Critical rate-of-rise of off-state voltage | dv/dt | | 50 | | $V/\mu S$ | $V_D = 1/2 \times V_{DRM}$, $T_j = 125^\circ C$, $R_{GK} = 1k\Omega$, $C_{GK} = 0.033\mu F$ |
| Turn-off time | t_q | | 30 | | μS | $T_c = 25^\circ C$ |
| Thermal resistance | R_{th} | | | 3.0 | $^\circ C/W$ | Junction to case |

TF521M, TF541M, TF561M

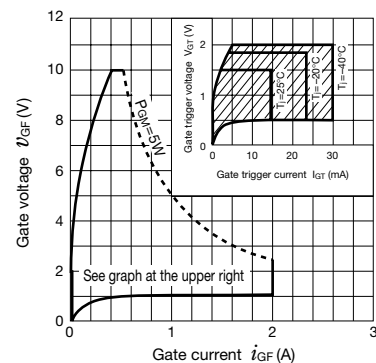
$v_T - i_T$ Characteristics (max)



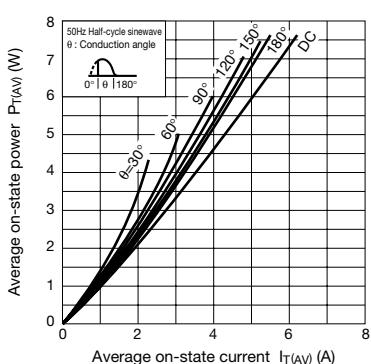
I_{TSM} Ratings



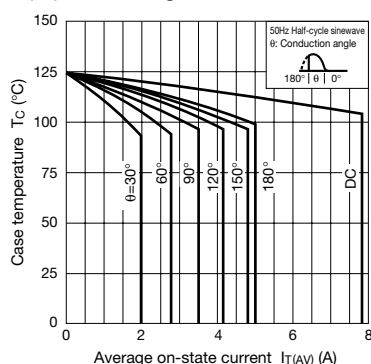
Gate Characteristics



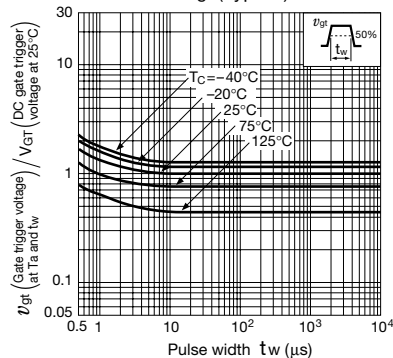
$I_T(AV) - P_T(AV)$ Characteristics



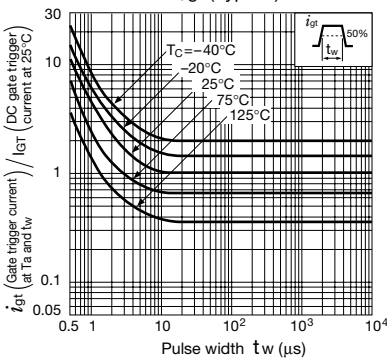
$I_T(AV) - T_C$ Ratings



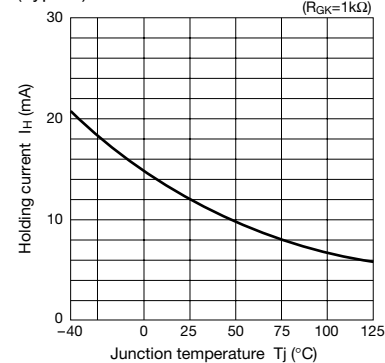
Pulse trigger temperature Characteristics v_{gt} (Typical)



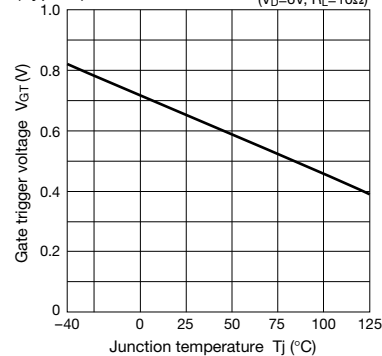
Pulse trigger temperature Characteristics i_{gt} (Typical)



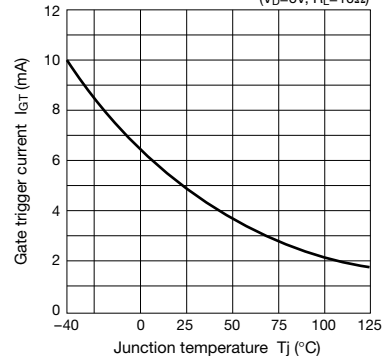
I_H temperature Characteristics (Typical)



V_{GT} temperature Characteristics (Typical)



I_{GT} temperature Characteristics (Typical)



Transient thermal resistance Characteristics (Junction to case)

