

TO-220 5A Thyristor

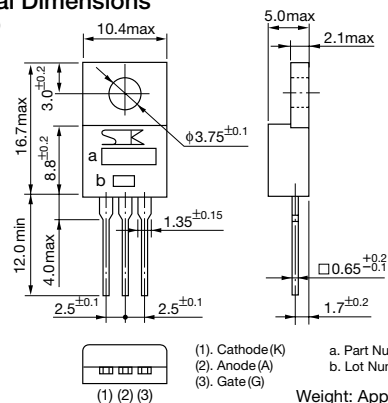
TF521M, TF541M, TF561M

■ 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

External Dimensions

(Unit: mm)



■ Absolute Maximum Ratings

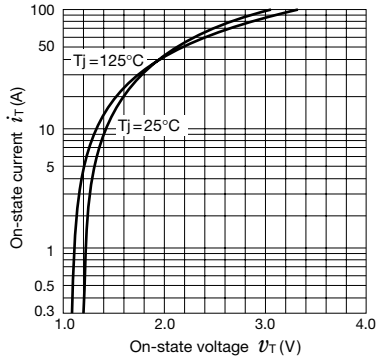
Parameter	Symbol	Ratings			Unit	Conditions
		TF521M	TF541M	TF561M		
Repetitive peak off-state voltage	V_{DRM}	200	400	600	V	$T_j = -40$ to $+125^{\circ}C$, $R_{GK} = 1k\Omega$
Repetitive peak reverse voltage	V_{RRM}	200	400	600	V	
Non-repetitive peak off-state voltage	V_{DSM}	300	500	700	V	
Non-repetitive 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

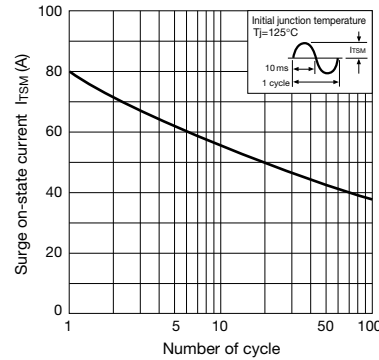
Parameter	Symbol	Ratings			Unit	Conditions
		min	typ	max		
Off-state current	I_{DRM}			2.0	mA	$T_j = 125^{\circ}C$, $V_D = V_{DRM}(V_{RRM})$, $R_{GK} = 1k\Omega$
Reverse current	I_{RRM}			2.0	mA	
On-state voltage	V_{TM}			1.4	V	$T_c = 25^{\circ}C$, $I_{TM} = 10A$
Gate trigger voltage	V_{GT}			1.5	V	$V_D = 6V$, $R_L = 10\Omega$, $T_c = 25^{\circ}C$
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/ μS	$V_D = 1/2 \times V_{DRM}$, $T_j = 125^{\circ}C$, $R_{GK} = 1k\Omega$, $C_{GK} = 0.033\mu F$
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

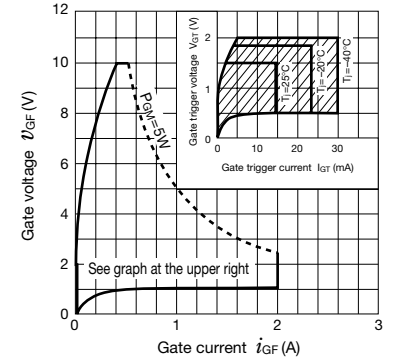
$V_T - I_T$ Characteristics (max)



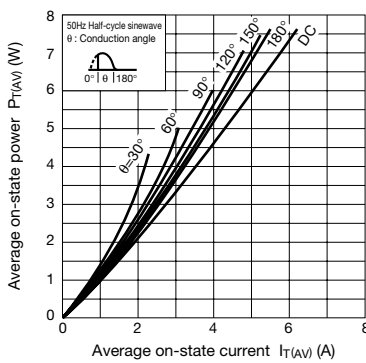
I_{TSM} Ratings



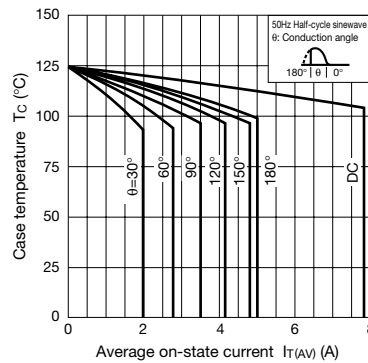
Gate Characteristics



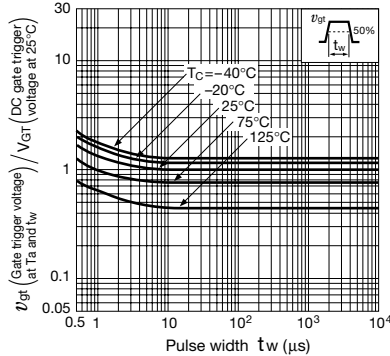
$I_T(AV) - P_T(AV)$ Characteristics



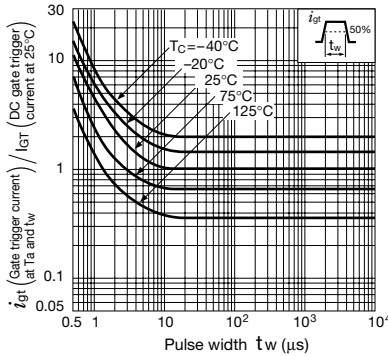
$I_T(AV) - T_C$ Ratings



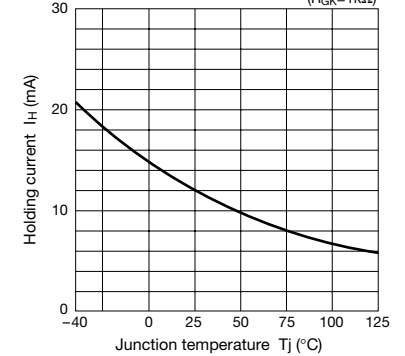
Pulse trigger temperature Characteristics V_{gt} (Typical)



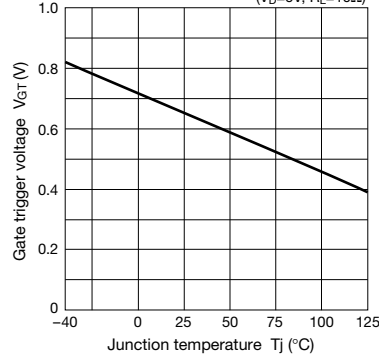
Pulse trigger temperature Characteristics I_{gt} (Typical)



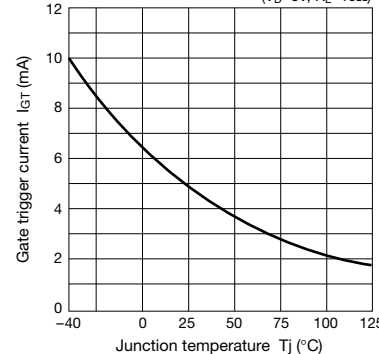
I_H temperature Characteristics (Typical)



V_{GT} temperature Characteristics (Typical)



I_{GT} temperature Characteristics (Typical)



Transient thermal resistance Characteristics (Junction to case)

