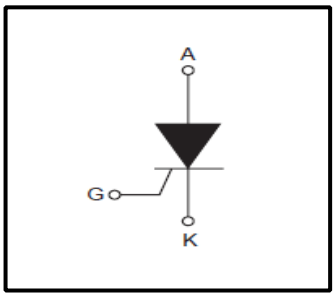
Silicon Controlled Rectifiers

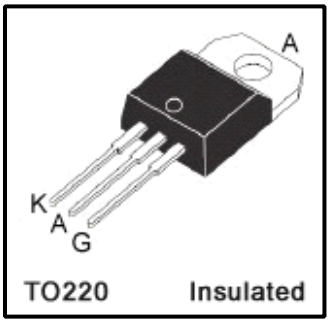
Features

- Repetitive Peak Off-State Voltage:600V
- R.M.S On-State Current ($IT_{(RMS)}$=25A)
- Low On-State Voltage(1.3V(Typ.)@I_{TM})
- Non-isolaed Type



General Description

Standard gate triggering SCR is fully isolated package suitable for the application where requiring high bidirectional blocking voltage capability and also suitable for over voltage protection ,motor control circuit in power tool, inrush current limit circuit and heating control system.



Absolute Maximum Ratings (T_J= 25°C unless otherwise specified)

Symbol	Parameter	Condition	Value	Units
V_{DRM}	Repetitive Peak Off-State Voltage		600	V
$I_{T(AV)}$	Average On-State Current	Half Sine Wave:T_C=102°C	16	A
$I_{T(RMS)}$	R.M.S On-State Current	180°conduction Angle	25	A
I_{TSM}	Non Repetitive Surge Peak on-state Current	tp=10ms	300	A
		tp=8.3ms	314	
I^2t	I^2t for Fusing	t=10ms	450	A^2s
di/dt	Critical rate of rise of on-state current		50	A/μs
P_{GM}	Forward Peak Gate Power Dissipation		20	W
$P_{G(AV)}$	Forward Average Gate Power Dissipation	Over any 20ms period	1	W
I_{FGM}	Forward Peak Gate Current		5	A
V_{RGM}	Reverse Peak Gate Voltage		5	V
T_J	Operating Junction Temperature		-40~125	°C
T_{STG}	Storage Temperature		-40~150	°C

Thermal Characteristics

Symbol	Parameter	Value			Units
		Min	Typ	Max	
$R_{\theta Jc}$	Thermal Resistance Junction to Case	-	-	1.0	℃/W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	-	-	60	℃/W

Electrical Characteristics (T_C=25℃,unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
I_{DRM}	Repetitive Peak Off-State Current	$V_{AK}=V_{DRM}$ T_C=25℃	-	-	5	μA
		T_C=125℃	-	-	2	mA
V_{TM}	Peak On-State Voltage (1)	I_{TM}=38A, tp=380μs	-	1.3	1.6	V
I_{GT}	Gate Trigger Current (2)	V_D=12V,R_L=30Ω T_C=25℃	3	-	25	mA
V_{GT}	Gate Trigger Voltage (2)	V_D=12V,R_L=30Ω T_C=25℃	-	-	1.3	V
V_{GD}	Non-Trigger Gate Voltage (1)	$V_D=V_{DRM}$,R_L=3.3KΩ T_J=125℃	0.2	-	-	V
dv/dt	Critical Rate of Rise Off-State Voltage	Linear slope up to V_D=2/3V_{DRM}, gate open T_J=125℃	800	-	-	V/μs
I_H	Holding Current	I_T=500mA, Gate Open T_C=25℃	-	-	50	mA
I_L	Dynamic resistance	I_G=1.2I_{GT}			60	mA

***Notes:**

1 Pulse Width ≤1.0ms,Duty cycle≤1%

2 R_{GK} Current is not Included in measurement.

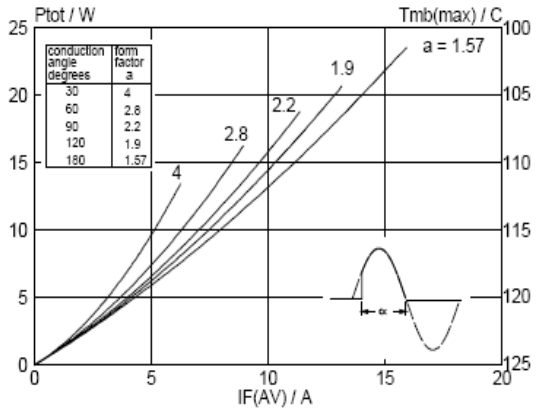


Fig.1. Maximum on-state dissipation, P_{tot}, versus average on-state current, $I_{T(AV)}$, where a = form factor = $I_{T(RMS)}/ I_{T(AV)}$.

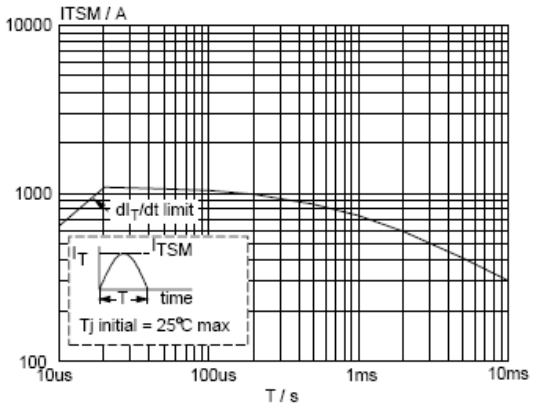


Fig.2. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus pulse width t_p, for sinusoidal currents, $t_p \leq 10ms$.

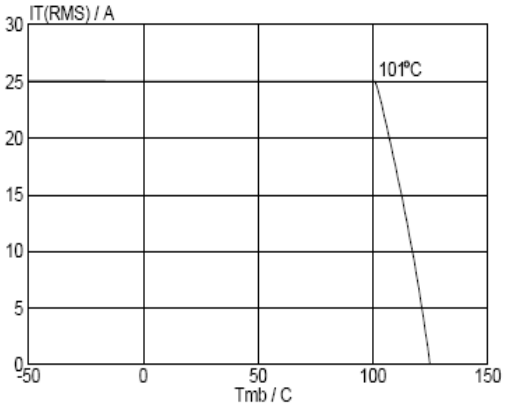


Fig.3. Maximum permissible rms current $I_{T(RMS)}$, versus mounting base temperature T_{mb}.

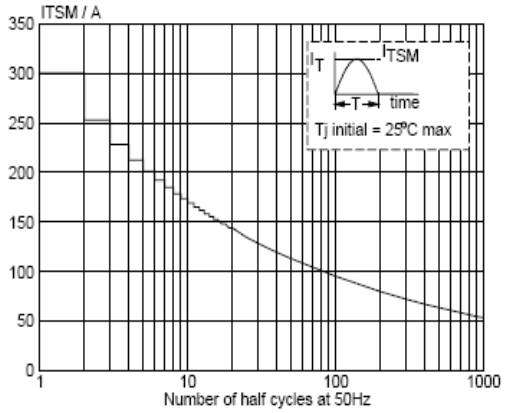


Fig.4. Maximum permissible non-repetitive peak on-state current I_{TSM}, versus number of cycles, for sinusoidal currents, f = 50 Hz.

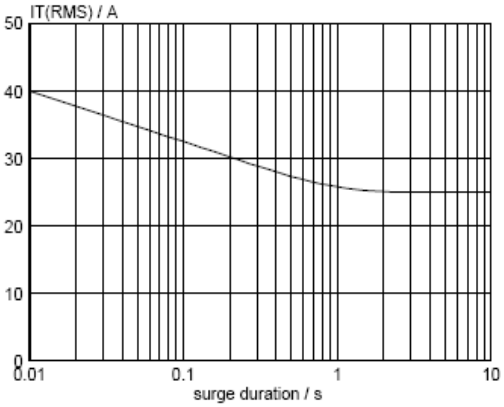


Fig.5. Maximum permissible repetitive rms on-state current $I_{T(RMS)}$, versus surge duration, for sinusoidal currents, f = 50 Hz; $T_{mb} \leq 101°C$.

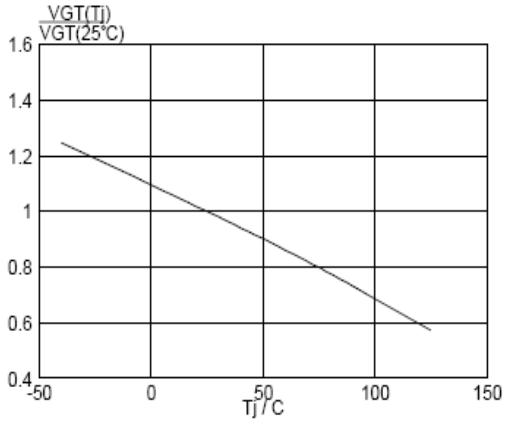


Fig.6. Normalised gate trigger voltage $V_{GT}(T_j)/ V_{GT}(25°C)$, versus junction temperature T_j.

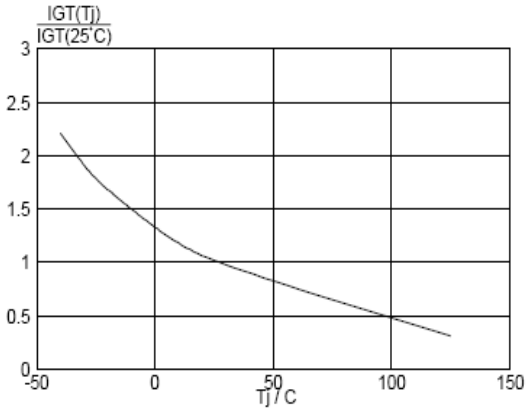


Fig.7. Normalised gate trigger current $I_{GT}(T_j)/ I_{GT}(25°C)$, versus junction temperature T_j.

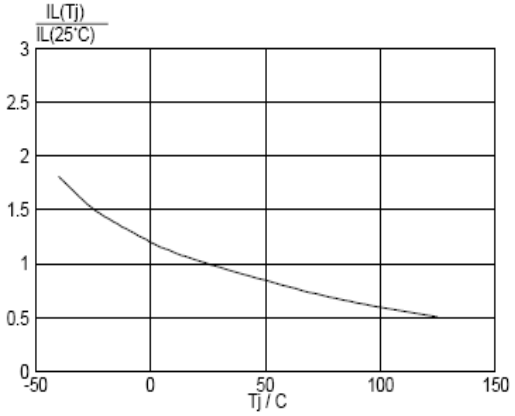


Fig.8. Normalised latching current $I_L(T_j)/ I_L(25°C)$, versus junction temperature T_j.

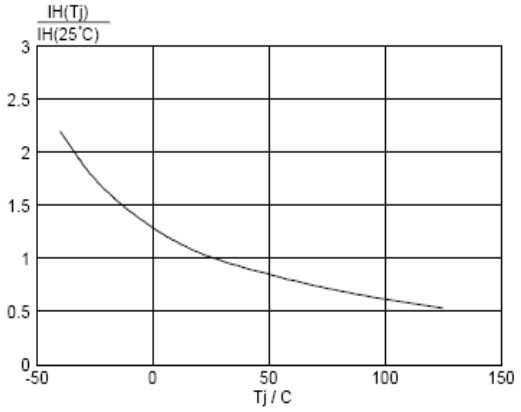


Fig.9. Normalised holding current $I_H(T_j)/ I_H(25°C)$, versus junction temperature T_j.

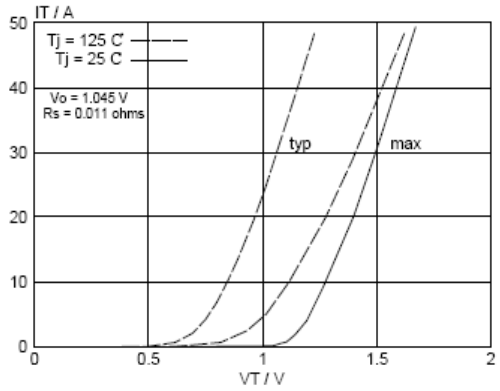


Fig.10. Typical and maximum on-state characteristic.

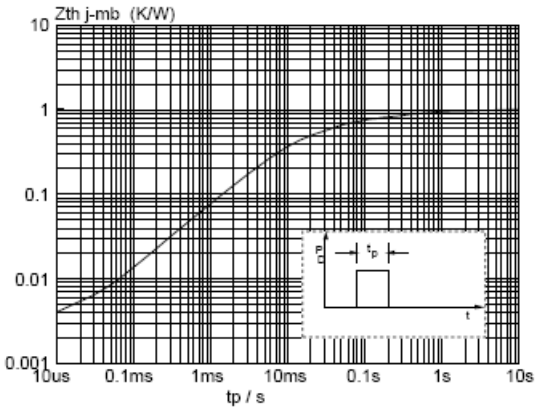


Fig.11. Transient thermal impedance $Z_{th\ j\text{-}mb}$, versus pulse width t_p.

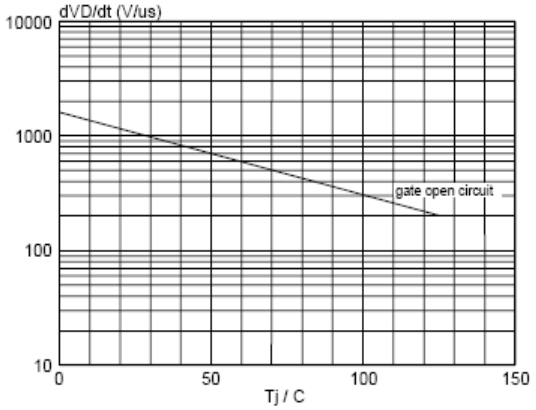


Fig.12. Typical, critical rate of rise of off-state voltage, dV_D/dt versus junction temperature T_j.

TO-220 Package Dimension

Unit: mm