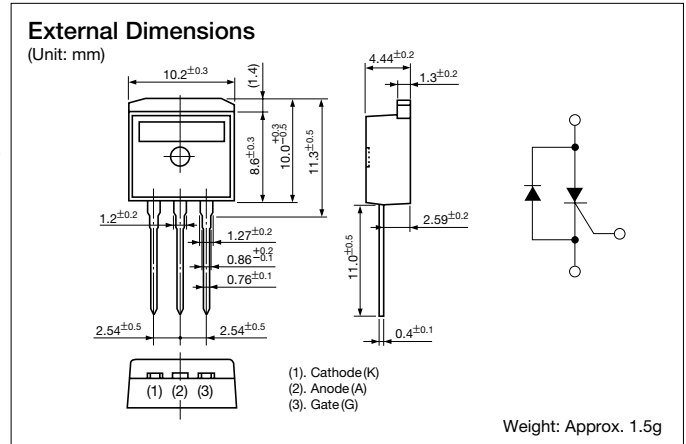


TO-220S Thyristor with built-in reverse diode for HID lamp ignition

TFC561D

Features

- Repetitive peak off-state voltage: $V_{DRM}=600V$
- Repetitive peak surge on-state current: $I_{TRM}=430A$
- Critical rate-of-rise of on-state current: $di/dt=1200A/\mu s$
- Gate trigger current: $I_{GT}=20mA$ max
- With built-in reverse diode

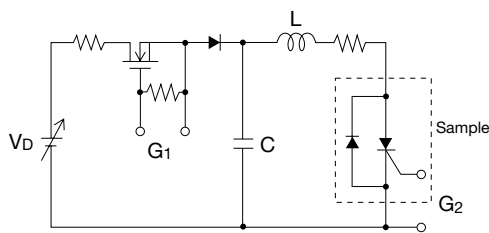


Absolute Maximum Ratings

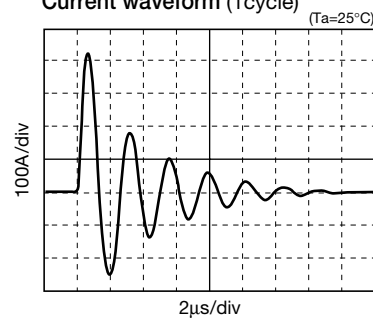
Parameter	Symbol	Ratings	Unit	Conditions
Repetitive peak off-state voltage	V_{DRM}	600	V	$T_j = -40$ to $+125^\circ C$, $R_{GK}=1k\Omega$
Repetitive surge peak on-state current	I_{TRM}	430	A	$V_D \leq 430V$, 100kcycle, $W_p=1.3\mu s$, $T_a=125^\circ C$ *
Critical rate-of-rise of on-state current	di/dt	1200	$A/\mu s$	*
Peak forward gate current	I_{FGM}	2.0	A	$f \geq 50Hz$, duty $\leq 10\%$
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	
Peak reverse gate voltage	V_{RGM}	5	V	$f \geq 50Hz$
Diode repetitive peak surge forward current	I_{FRM}	240	A	$V_D \leq 430V$, 100kcycle, $W_p=1.3\mu s$, $T_a=125^\circ C$ *
Junction temperature	T_j	-40 to $+125$	$^\circ C$	
Storage temperature	T_{stg}	-40 to $+125$	$^\circ C$	

* The surge current for $T=10ms$ /cycle shall be applied 50 cycles successively, and an interval time shall follow to cool down the junction temperature of the device to $125^\circ C$. This process shall be repeated up to 100K cycles.

Measurement circuit



Current waveform (1 cycle)



Electrical Characteristics

($T_j=25^\circ C$)

Parameter	Symbol	Ratings			Unit	Conditions
		min	typ	max		
On-state voltage	V_{TM}			1.4	V	$I_T=10A$
Gate trigger voltage	V_{GT}			1.5	V	$V_D=6V$, $R_L=10\Omega$
Gate trigger current	I_{GT}			20	mA	$V_D=6V$, $R_L=10\Omega$
Gate non-trigger voltage	V_{GD}	0.1			V	$V_D=480V$, $T_j=125^\circ C$
Holding current	I_H	2	10.0		mA	$R_{G-K}=1k\Omega$, $T_j=25^\circ C$
Off-state current (1)	$I_{DRM}(1)$			100	μA	$V_D=V_{DRM}$, $R_{G-K}=1k\Omega$, $T_j=25^\circ C$
Off-state current (2)	$I_{DRM}(2)$			1	mA	$V_D=V_{DRM}$, $R_{G-K}=1k\Omega$, $T_j=125^\circ C$
Thermal resistance	R_{th}			4.0	$^\circ C/W$	Junction to case
Diode forward voltage	V_F			1.4	V	$I_F=10A$