

12A 三象限双向可控硅

Rev.2

T1235

●产品特征:

NPNPN 五层结构的硅双向器件;

P 型对通扩散隔离;

台面玻璃钝化工艺;

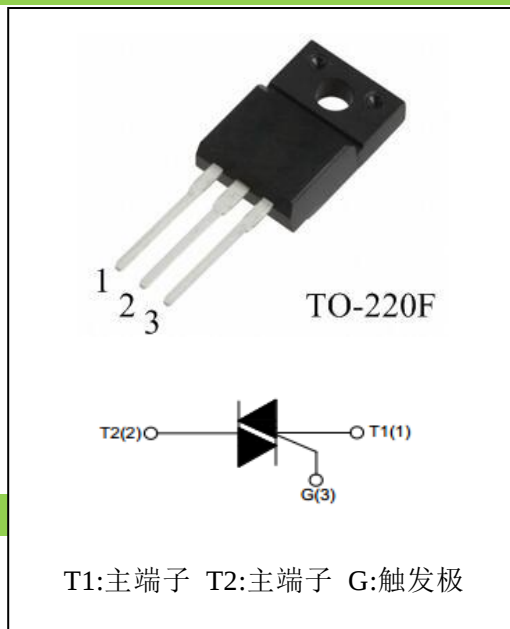
背面多层金属电极;

工作结温高; 换向能力强;

高电压变化率 dV/dt ;

大电流变化率 dI/dt ;

符合 RoHS 规范.....



应 用:

加热控制器; 马达调速控制器; 麻将机; 搅拌机;

直发器; 面包机等家用电器

●主要参数:

符号	参数	数值	单位
$I_{T(RMS)}$	通态有效值电流	12	A
V_{DRM} / V_{RRM}	断态重复峰值电压	600/800	V
V_{TM}	导通压降	1.55	V

●极限参数 ($T_{CASE}=25^{\circ}C$):

符号	参数	条件	数值	单位
V_{DRM} / V_{RRM}	断态重复峰值电压	$T_j=25^{\circ}C$	600/800	V
$I_{T(RMS)}$	通态均方根电流	TO-220F ($T_C \leq 90^{\circ}C$), Fig. 1,2	12	A
I_{TSM}	通态不重复浪涌电流	全正弦波, $T_j(\text{init})=25^{\circ}C$, $t_p=20\text{ms}$; Fig. 3,5	120	A
I^2t	I^2t 值	正弦波脉冲, $t_p=10\text{ms}$	78	A^2s
dI_T/dt	通态电流临界上升率	$I_G=2 \cdot I_{GT}$, $t_r \leq 10\text{ns}$, $F=120\text{Hz}$, $T_j=125^{\circ}C$	I - II - III 50	$A/\mu s$
I_{GM}	门极峰值电流	$t_p=20\mu s$, $T_j=125^{\circ}C$	4	A
$P_{G(AV)}$	门极平均功率	$T_j=125^{\circ}C$	1	W
T_{STG}	存储温度		-40—+150	$^{\circ}C$
T_j	工作结温		-40—+125	

●产品电性能

符号	参数	测试条件		数值		单位
				T1210	T1235	
I_{GT}	门极触发电流	$V_D=12V$, $R_L=30\Omega$,	I - II -III	≤ 10	≤ 35	mA
V_{GT}	门极触发电压	$T_j=25^\circ C$, Fig. 6	I - II -III	≤ 1.3		V
V_{GD}	门极不触发电压	$V_D=V_{DRM}$, $R_L=3.3k\Omega, T_j=125^\circ C$		≥ 0.2		V
I_H	维持电流	$I_T=500\text{ mA}$,Fig. 6		≤ 15	≤ 35	mA
I_L	擎住电流	$I_G=1.2I_{GT}$, Fig. 6	I -III	≤ 25	≤ 50	mA
			II	≤ 30	≤ 60	mA
dV_D/dt	断态电压临界上升率	$V_D=67\%V_{DRM}$, 门极开路 $T_j=125^\circ C$		≥ 40	≥ 500	V/ μs
V_{TM}	通态压降	$I_{TM}=17A$, $tp=380\mu s$, Fig. 4		≤ 1.55		V
I_{DRM} / I_{RRM}	断态重复峰值电流	$V_D=V_{DRM}/V_{RRM}$, $T_j=25^\circ C$		≤ 5	≤ 5	μA
		$V_D=V_{DRM}/V_{RRM}$, $T_j=125^\circ C$		≤ 1	≤ 1	mA

●热阻:

符号	参数		数值	单位
Rth (j-c)	结到管壳的热阻(AC)	TO-220F	2.3	℃/W
Rth (j-a)	结到环境的热阻	TO-220F	60	℃/W

●型号、标识说明:

双向可控硅	T	12	35	-600	F
$I_{T(RMS)}=12A$					F: TO-220F Q: TO-263(D ² PAK)
10: $I_{GT1-3}\leq 10mA$					断态重复峰值电压
35: $I_{GT1-3}\leq 35mA$					600: $\geq 600V$
					800: $\geq 800V$

●参数特性曲线

FIG.1 最大功耗与均方根电流关系曲线图

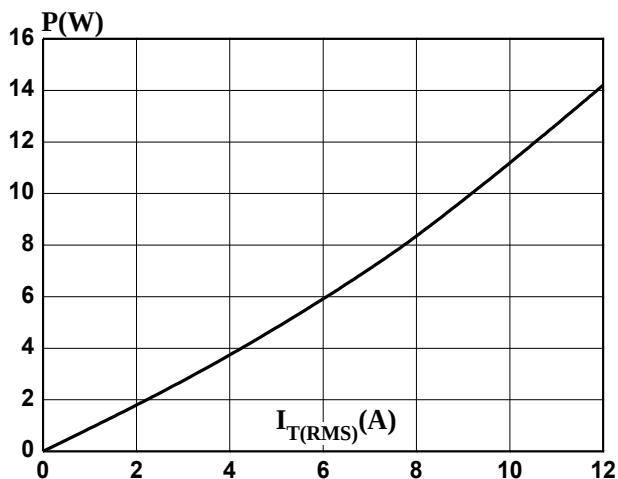


FIG.2: RMS current vs. case temperature. A graph showing $I_{T(RMS)}(A)$ on the y-axis (0 to 14) and $T_c(^{\circ}C)$ on the x-axis (-50 to 150). The current is constant at 12A until 90°C, then decreases linearly to 0A at 130°C.

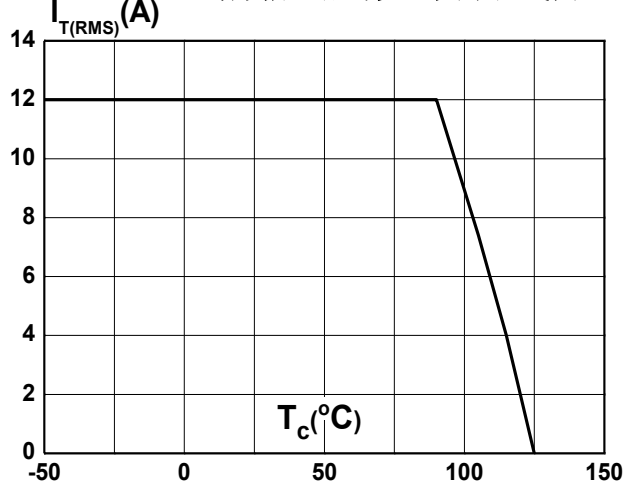


FIG.3: Peak surge current vs. number of cycles. A graph showing $I_{TSM}(A)$ on the y-axis (0 to 140) and Number of cycles on the x-axis (1 to 1000). The current starts at 120A for 1 cycle and decreases as the number of cycles increases.

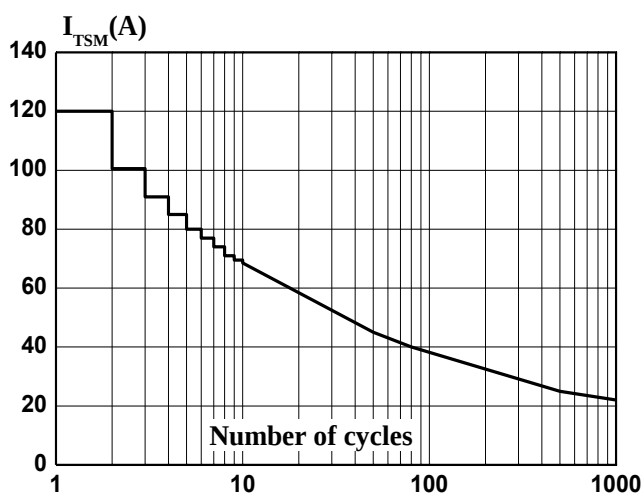


FIG.4: Output characteristic graph (maximum value graph). A graph showing $I_{TM}(A)$ on the y-axis (1 to 100) and $V_{TM}(V)$ on the x-axis (0.5 to 5.0). Two curves are shown: one for $T_j = 25^{\circ}C$ (black) and one for $T_j = T_{j,max}$ (red).

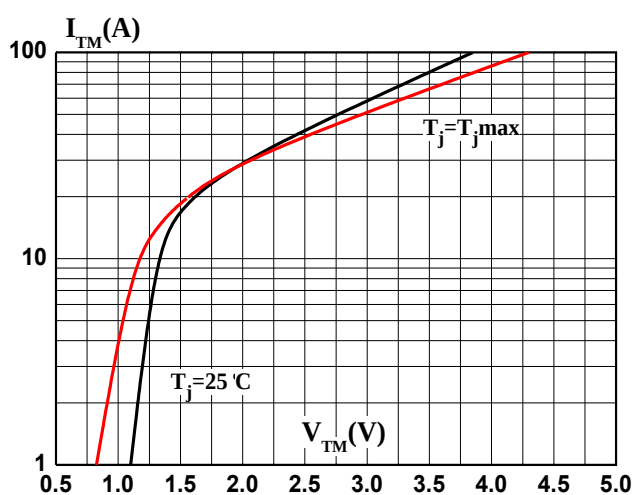


FIG.5: Non-repeating peak surge current vs. sine wave pulse width. A graph showing $I_{TSM}(A)$ on the y-axis (10 to 1000) and tp(ms) on the x-axis (0.01 to 10). The current peaks at 1000A for tp = 0.05ms and decreases as tp increases.

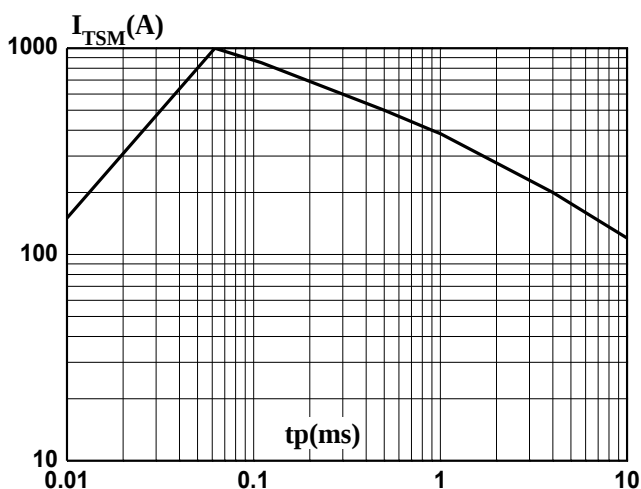
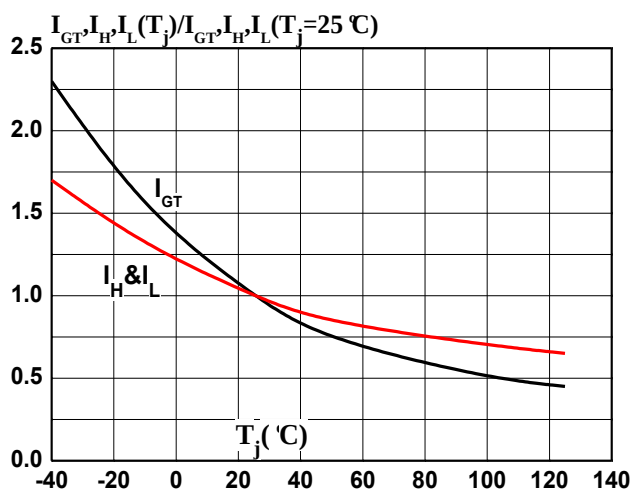
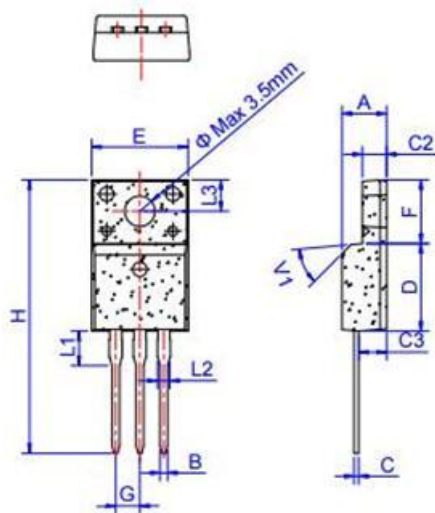


FIG.6: Gate trigger current, holding current, latching current vs. junction temperature. A graph showing $I_{GT}, I_H, I_L(T_j)/I_{GT}, I_H, I_L(T_j = 25^{\circ}C)$ on the y-axis (0.0 to 2.5) and $T_j(^{\circ}C)$ on the x-axis (-40 to 140). Three curves are shown: I_{GT} (black), I_H (red), and I_L (black).



●封装外形尺寸

TO-220F



TO-220F

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.80	0.173		0.189
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.48		0.75	0.019		0.030
C2	2.40		2.70	0.094		0.106
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.70		10.3	0.382		0.406
F	6.40		7.00	0.252		0.276
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

●修订记录:

日期	修订次数	修订内容
2016-11-01	2	重新修订了特性曲线图
2016-08-15	1	第一版