

16A 三象限双向可控硅

Rev.2

BTA16

●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 ;

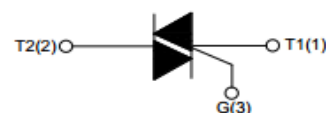
 大电流变化率 dI/dt ;

符合 RoHS 规范.....

应 用:

加热控制器; 调速控制器; 洗衣机; 搅拌机;

果汁机; 电动工具; 吸尘器等家用电器



T1:主端子 T2:主端子 G:触发极

●主要参数:

符号	参数	数值	单位
$I_{T(RMS)}$	通态有效值电流	16	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-220A($T_C \leq 85^{\circ}C$), Fig. 1,2	16	A
I_{TSM}	通态不重复浪涌电流	全正弦波, $T_j(\text{init})=25^{\circ}C$, $tp=20ms$; Fig. 3,5	160	A
I^2t	I^2t 值	正弦波脉冲, $tp=10ms$	140	A^2s
dI_T/dt	通态电流临界上升率	$I_G=2 \cdot I_{GT}$, $tr \leq 10ns$, $F=120Hz$, $T_j=125^{\circ}C$	I - II - III	50
I_{GM}	门极峰值电流	$tp=20\mu s$, $T_j=125^{\circ}C$	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
				SW	CW	BW	
I_{GT}	门极触发电流	$V_D=12V$, $R_L=33\Omega$,	I - II -III	≤ 10	≤ 35	≤ 50	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	$V_D=V_{DRM}$, $T_j=125^\circ C$		≥ 0.2			V
I_H	维持电流	$I_T=500mA$, Fig. 6		≤ 15	≤ 30	≤ 50	mA
I_L	擎住电流	$I_G=1.2I_{GT}$, Fig. 6	I -III	≤ 25	≤ 50	≤ 70	mA
			II	≤ 30	≤ 60	≤ 80	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	≥ 1000	V/ μs
V_{TM}	通态压降	$I_{TM}=23A$, $tp=380\mu s$, 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	≤ 5	μA
		$V_D=V_{DRM}/V_{RRM}$, $T_j=125^\circ C$		≤ 1	≤ 1	≤ 1	mA

●热阻:

符号	参数	数值	单位
$R_{th(j-c)}$	结到管壳的热阻(AC)	TO-220A	$2.1^\circ C/W$
$R_{th(j-a)}$	结到环境的热阻	TO-220A	$60^\circ C/W$

●型号、标识说明:

双向可控硅	BT	A	16	-600	C	W	三象限可控硅
A: TO-220A绝缘封装							S: $I_{GT1-3} \leq 10mA$
$I_{T(RMS)}=16A$							C: $I_{GT1-3} \leq 35mA$
							B: $I_{GT1-3} \leq 50mA$
							断态重复峰值电压
							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

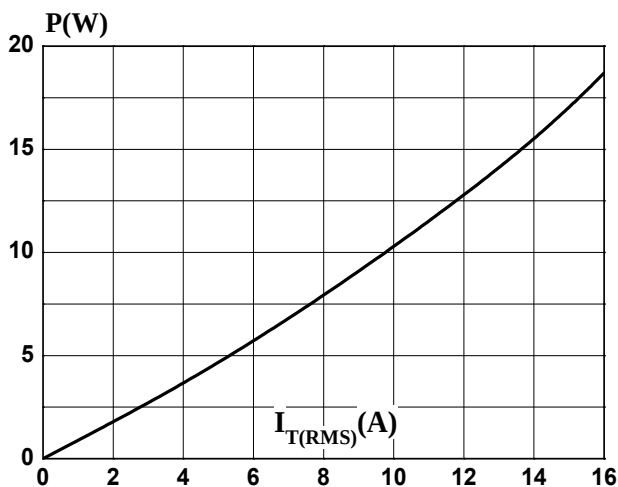


FIG.2: RMS current vs. case temperature. The graph shows $I_{T(RMS)}(A)$ on the y-axis (0 to 18) versus $T_c(^{\circ}C)$ on the x-axis (0 to 150). The current is constant at 16A until $T_c \approx 85^{\circ}C$, then decreases linearly to 0A at $T_c \approx 135^{\circ}C$.

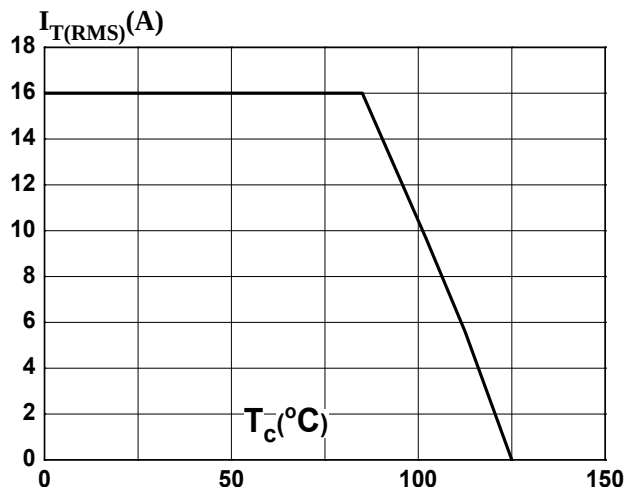


FIG.3: Peak surge current vs. number of cycles. The graph shows $I_{TSM}(A)$ on the y-axis (0 to 180) versus Number of cycles on the x-axis (log scale, 1 to 1000). The current starts at 160A for 1 cycle and decreases to approximately 30A at 1000 cycles.

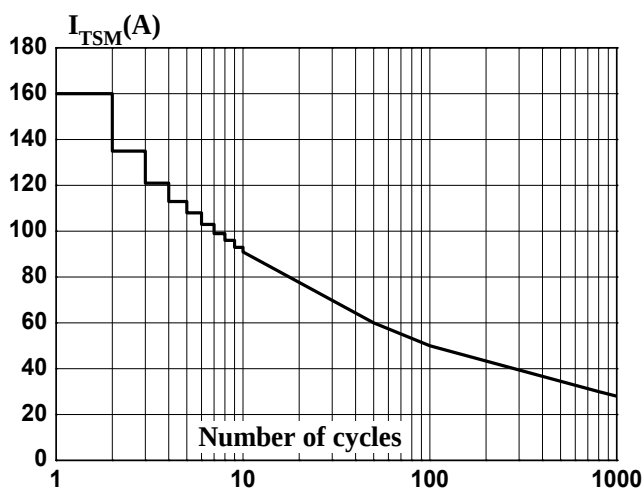


FIG.4: Output characteristic graph (maximum value graph). The graph shows $I_{TM}(A)$ on the y-axis (log scale, 1 to 200) versus $V_{TM}(V)$ on the x-axis (0.0 to 5.0). Two curves are shown for $T_j = 25^{\circ}C$ (black) and $T_j = 125^{\circ}C$ (red).

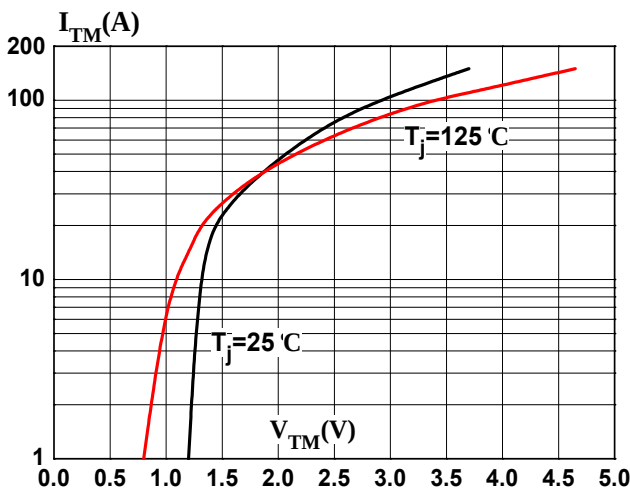


FIG.5: Non-repeating peak surge current vs. sine wave pulse width relationship curve. The graph shows $I_{TSM}(A)$ on the y-axis (log scale, 100 to 3000) versus $tp(ms)$ on the x-axis (log scale, 0.01 to 10). The current increases with pulse width up to about 0.1ms and then decreases.

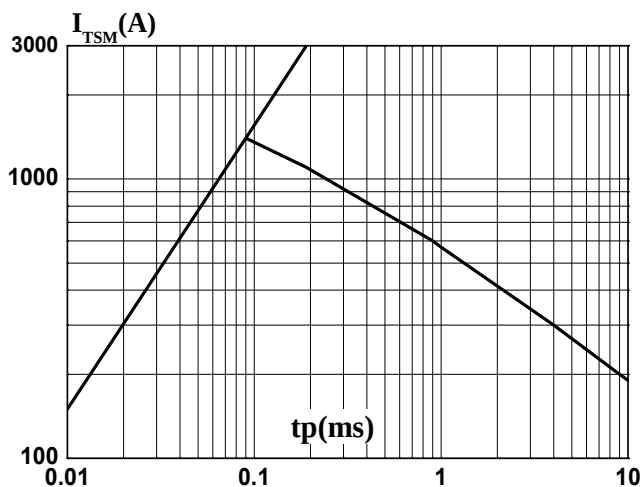
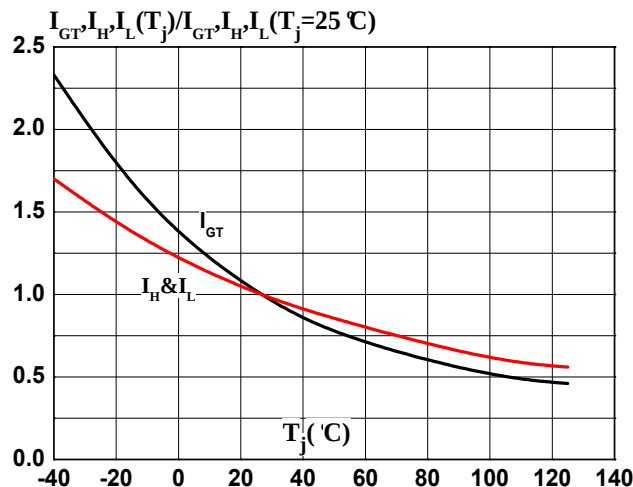
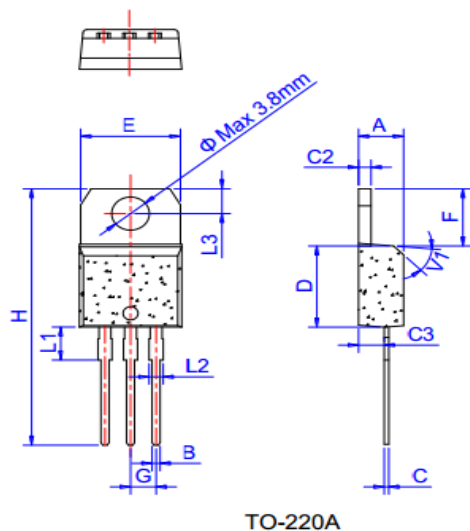


FIG.6: Gate trigger current, holding current, latching current vs. junction temperature relationship curve. The graph shows normalized current ratios on the y-axis (0.0 to 2.5) versus $T_j(^{\circ}C)$ on the x-axis (0 to 140). Three curves are shown: I_{GT} (black), I_H (red), and I_L (black).



●封装外形尺寸

TO-220A



TO-220A

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
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