描述 / Descriptions

TO-220 塑封封装 双向可控硅。Triac in a TO-220 Plastic Package.

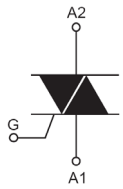
特征 / Features

大电流可控硅，低通态压降，高可靠性和稳定性，热敏电阻特性低。
High current triac, Low on state voltage drop,High reliability and stability, Low thermal resistance.

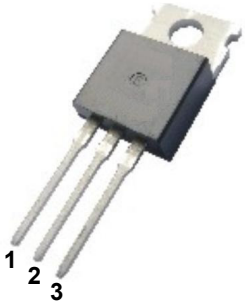
用途 / Applications

用于开关交流转换。如固态继电器、调光器和家电电机速度控制器等。
For power AC switching operations.Such as static relays,light dimmers and appliance motors speed controllers,etc.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1：Main Terminal 1　　PIN 2：Main Terminal 2　　PIN 3：Gate

放大及印章代码 / h_{FE} Classifications & Marking

见印章说明。See Marking Instructions.

极限参数 / Absolute Maximum Ratings(Ta=25℃)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Repetitive peak off-state voltages	V_{DRM}/V_{RRM}	600/800	V
RMS on-state current(full sine wave T_C=75℃)	$I_{T(RMS)}$	25	A
Non repetitive surge peak on-state current(full cycle, T_j initial = 25 °C)	$I_{TSM(F=50Hz\ t=20ms)}$	250	A
Non repetitive surge peak on-state current(full cycle, T_j initial = 25 °C)	$I_{TSM(F=60Hz\ t=16.7ms)}$	260	A
I^2t value for fusing	$I^2t_{(tp=10ms)}$	340	A^2s
Critical rate of rise of on-state current I_G =2xI_{GT}, t_r≤100 ns（F=120Hz T_j=125℃）	dI/dt	50	A/μs
Non repetitive surge peak off-state Voltage(t_p = 10 ms T_j = 25° C)	V_{DSM}/V_{RSM}	V_{DRM}/V_{RRM} + 100	V
Peak gate current(t_p =20μs T_j=125℃)	I_{GM}	4.0	A
Average gate power dissipation(T_j=125℃)	$P_{G(AV)}$	1.0	W
Operating junction temperature range	T_j	-40～125	℃
Storage junction temperature range	T_{stg}	-40～150	℃
Junction to ambient	$R_{th(j-a)}$	60	℃/W
Junction to case (AC)	$R_{th(j-c)}$	1.7	℃/W

电性能参数 / Electrical Characteristics(Ta=25℃)

免缓冲器和逻辑电平（3 象限） / Snubberless and logic level (3 quadrants)

符号 Symbol	测试条件 Test Conditions	信号区 Quadrant		BTB24		单位 Unit
				CW	BW	
I_{GT}(1)	V_D=12V R_L=33Ω	I-II-III	Max.	35	50	mA
V_{GT}	V_D=12V R_L=33Ω	I-II-III	Max.	1.3		V
V_{GD}	V_D=V_{DRM} R_L=3.3KΩ T_j=125℃	I-II-III	Min.	0.2		V
I_H(2)	I_T=500mA		Max.	50	75	mA
I_L	I_G=1.2I_{GT}	I-III	Max.	70	80	mA
		II		80	100	
dV/dt (2)	V_D = 67 % V_{DRM} gate open T_j = 125° C		Min.	500	1000	V/μs
(dI/dt)c (2)	Without snubber T_j = 125° C		Min.	13	22	A/ms

Note 1：minimum I_{GT} is guaranted at 5% of I_{GT} max.
Note 2：for both polarities of A2 referenced to A1.

电性能参数 / Electrical Characteristics(Ta=25℃)

标准（4 象限） / Standard（4 quadrants）

符号 Symbol	测试条件 Test Conditions	信号区 Quadrant		BTB24 B	单位 Unit
I_{GT}(1)	V_D=12V R_L=33Ω	I-II-III IV	Max.	50 100	mA
V_{GT}	V_D=12V R_L=33Ω	ALL	Max.	1.3	V
V_{GD}	V_D=V_{DRM} R_L=3.3KΩ T_j=125℃	ALL	Min.	0.2	V
I_H(2)	I_T=500mA		Max.	80	mA
I_L	I_G=1.2I_{GT}	I-III- IV	Max.	70	mA
		II		160	
(dV/dt)(2)	V_D=67% V_{DRM} gate open T_j=125℃		Min.	500	V/μs
(dV/dt)c(2)	(dI/dt)c=13.3A/ms T_j=125℃		Min.	10	

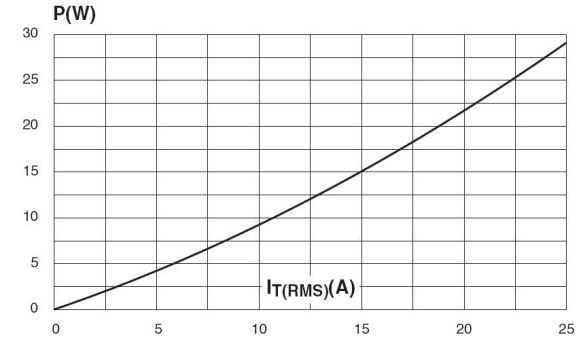
Note 1：minimum I_{GT} is guaranted at 5% of I_{GT} max.
Note 2：for both polarities of A2 referenced to A1.

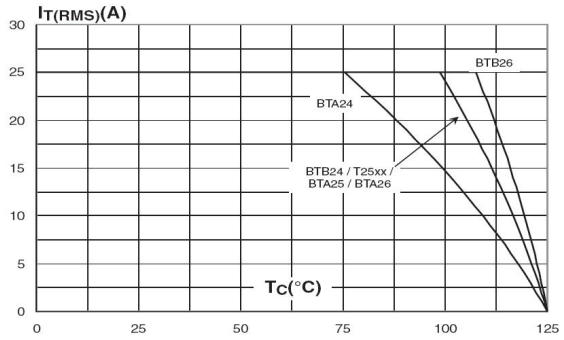
电性能参数 / Electrical Characteristics(Ta=25℃)

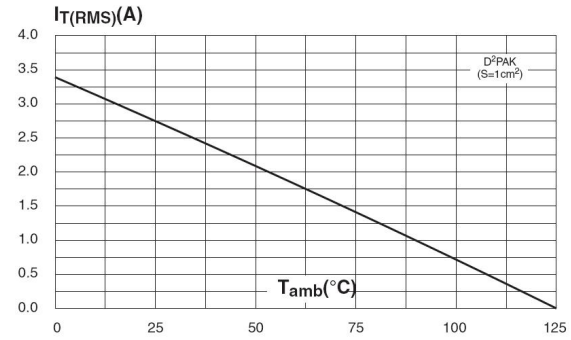
符号 Symbol	测试条件 Test Conditions			数值 Value	单位 Unit
V_{TM}(1)	I_{TM}=35A t_p =380μs T_j=25℃		Max.	1.55	V
V_{to}(1)	Threshold voltage T_j=125℃		Max.	0.85	V
R_d(1)	Dynamic resistance T_j=125℃		Max.	16	mΩ
I_{DRM} I_{RRM}	V_{DRM} = V_{RRM}	T_j=25℃	Max.	5.0	μA
		T_j=125℃	Max.	3.0	mA

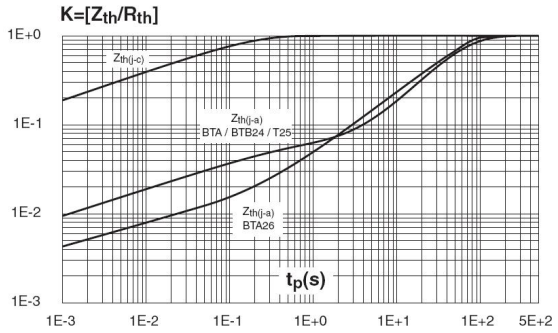
Note1. for both polarities of A2 referenced to A1

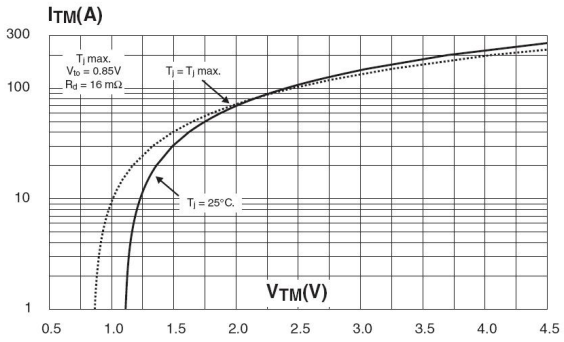
电参数曲线图 / Electrical Characteristic Curve

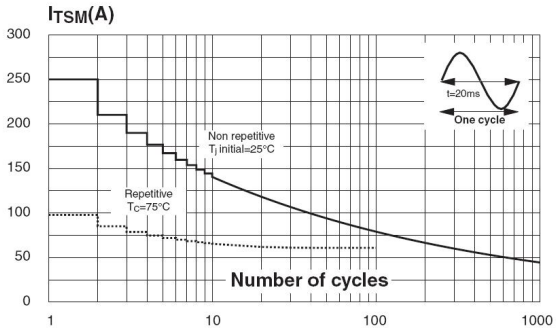




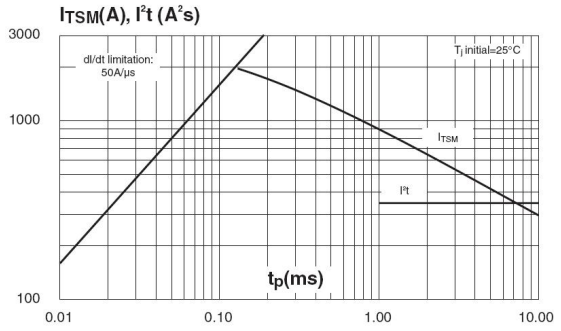


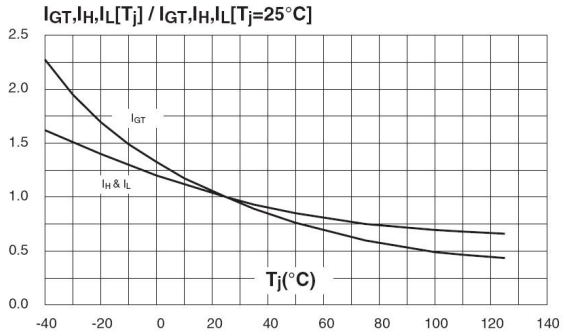


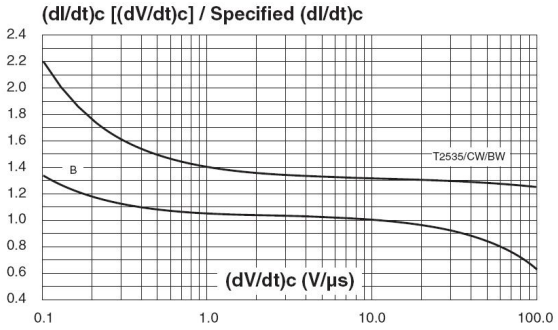


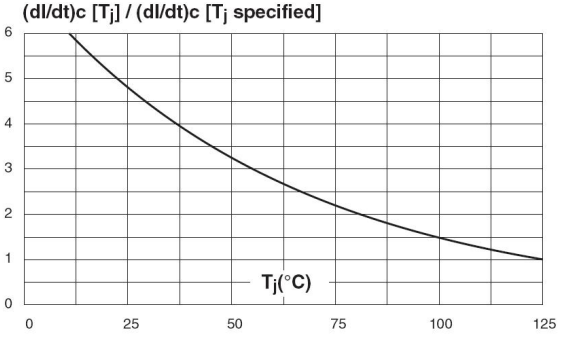


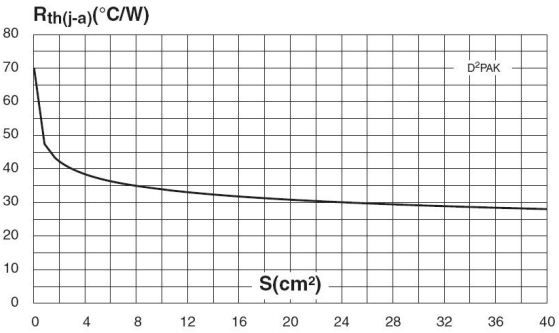
电参数曲线图 / Electrical Characteristic Curve





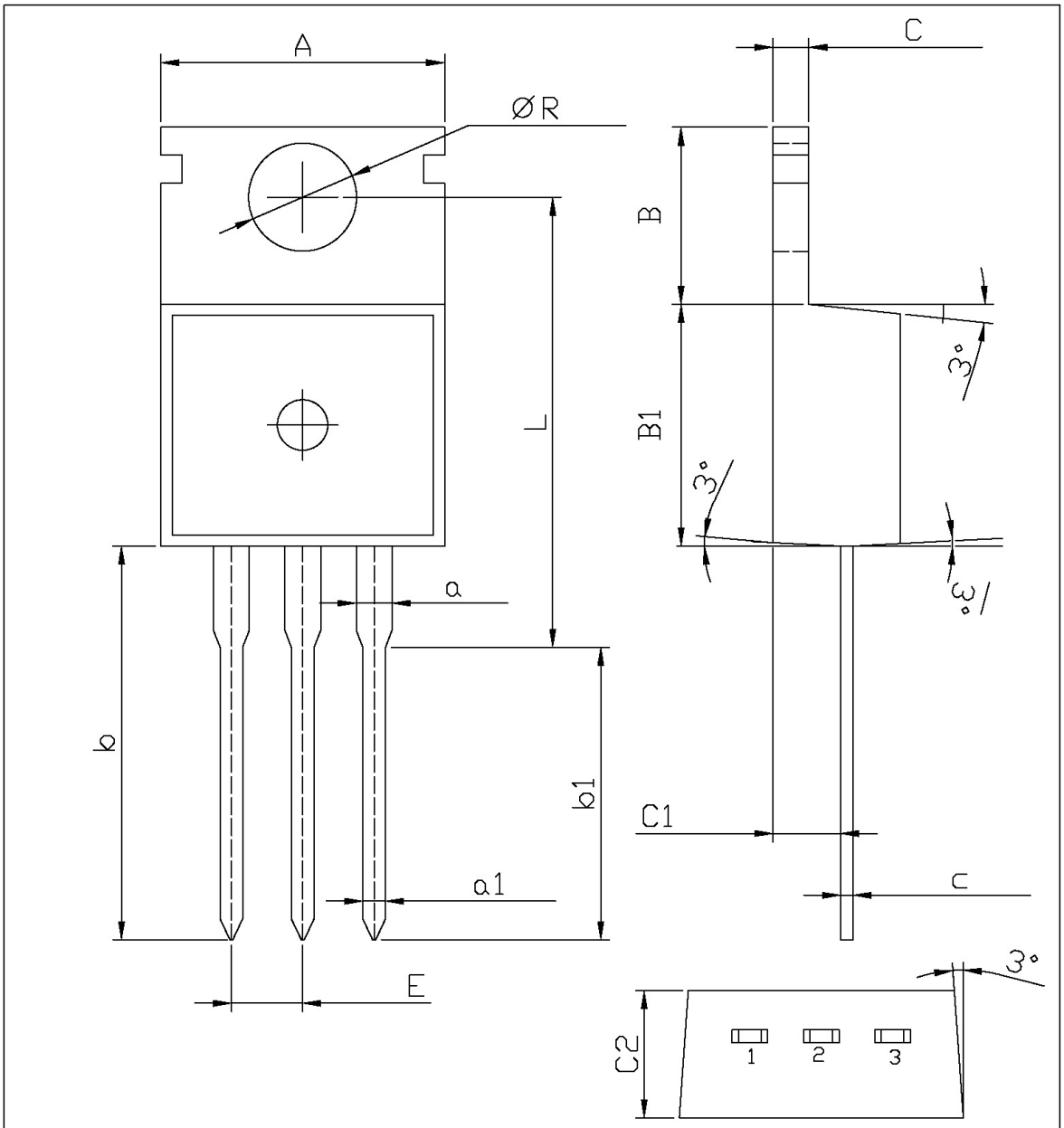






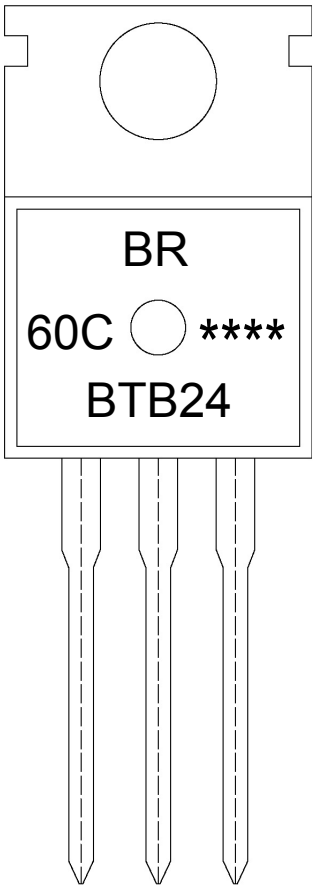
外形尺寸图 / Package Dimensions

TO-220 单位：mm



Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	9.8	10.2	C	1.2	1.4
R	3.56	3.64	B	6.3	6.7
L	15.7	16.1	B1	9.0	9.4
b	12.6	13.6	C1	2.2	2.6
b1	9.6	10.6	a1	0.7	0.9
a	1.22	1.32	c	0.4	0.6
E	2.34	2.74	C2	4.3	4.7

印章说明 / Marking Instructions



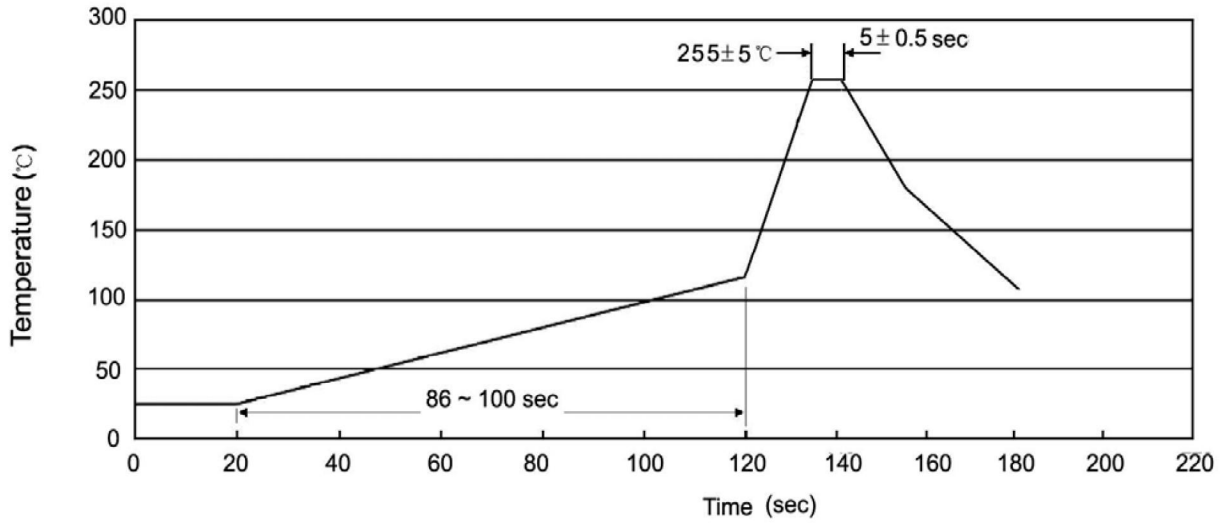
说明：

BR：	为公司代码
60C:	为 V_{RRM} 和 I_{GT} 分档代码
BTB24：	为产品型号
****：	为生产批号代码，随生产批号变化。

Note:

BR:	Company Code
60C:	V_{RRM}/I_{GT} Bracket code
BTB24:	Product Type.
****:	Lot No. Code, code change with Lot No.

波峰焊温度曲线图(无铅) / Temperature Profile for Dip Soldering(Pb-Free)



说明：

1、预热温度 25～150℃，时间 60～90sec;

2、峰值温度 255±5℃，时间持续为 5±0.5sec;

3、焊接制程冷却速度为 2～10℃/sec.

Note:

1.Preheating:25~150℃, Time:60~90sec.

2.Peak Temp.:255±5℃, Duration:5±0.5sec.

3. Cooling Speed: 2~10℃/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：270±5℃　　时间：10±1 sec.　　Temp.:270±5℃　　Time:10±1 sec

包装规格 / Packaging SPEC.

散件包装 / BULK

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm³)		
	Units/Bag 只/袋	Bags/Inner Box 袋/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Bag 袋	Inner Box 盒	Outer Box 箱
TO-220/F	200	10	2,000	5	10,000	135×190	237×172×102	560×245×195

套管包装 / TUBE

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm³)		
	Units/Tube 只/套管	Tubes/Inner Box 套管/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Tube 套管	Inner Box 盒	Outer Box 箱
TO-220/F	50	20	1,000	5	5,000	532×31.4×5.5	555×164×50	575×290×180

使用说明 / Notices