



## 1、Description

**PNPN** devices designed for high volume, line-powered consumer applications such as relay and lamp drivers, small motor controls, gate drivers for larger thyristors, and sensing and detection circuits. Supplied in an inexpensive plastic **TO-92** package which is readily adaptable for use in automatic insertion equipment.

## 2、Features

- Sensitive gate allows triggering by micro-controllers and other logic circuits
- Blocking voltage to 800 volts
- On-state RMS current to 1.0A RMS at 50°C
- Ultra low gate trigger current
- Glass-Passivated Surface for Reliability and Uniformity

## 3、Pinning information

PIN	Description	Simplified outline	Symbol
1	Cathode ( K )	 TO-92	
2	Gate ( G )		
3	Anode ( A )		

## 4、Quick reference data

SYMBOL	PARAMETER	MAX	UNIT
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltages	800	V
$I_{T(RMS)}$	RMS on-state current	1.0	A
$I_{TSM}$	Non-repetitive peak on-state current	10	A
$I_{GT}$	Gate trigger current	100	uA

## 5、Thermal characteristics

SYMBOL	PARAMETER	Value	UNIT	
$R_{th(j-c)}$	junction to case(AC)	TO-92	75	°C/W

## 6、Limiting value

Limiting values in accordance with the Maximum System(IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
$V_{DRM}$ $V_{RRM}$	Repetitive peak off-state voltages		-	800	V
$I_{T(RMS)}$	RMS on-state current	Full Cycle Sine Wave 50 to 60 Hz (TC = 50°C)	-	1.0	A
$I_{TSM}$	Non-repetitive peak Surge current	One Full cycle, 60 Hz, $T_J = +110^{\circ}\text{C}$	-	10	A
$I^2t$	$I^2t$ for fusing	$t = 8.3\text{ms}$	-	0.32	$\text{A}^2\text{s}$
$V_{GM}$	Peak gate voltage	Pulse Width $\leq 1.0 \mu\text{s}$ , TC = 85°C	-	5	V
$P_{GM}$	Peak gate power	Pulse Width $\leq 1.0 \mu\text{s}$ , TC = 85°C	-	0.5	W
$P_{G(AV)}$	Average gate power	Pulse Width $\leq 1.0 \mu\text{s}$ , TC = 85°C	-	0.1	W
$T_{stg}$	Storage temperature		-40	150	$^{\circ}\text{C}$
$T_J$	Operating junction temperature		-40	110	$^{\circ}\text{C}$

## 7、Characteristics

$T_J = 25^{\circ}\text{C}$  unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
<b>Static characteristics</b>						
$I_{GT}$	Gate trigger current	$V_D = 12 \text{ V}$ ; $R_L = 33\Omega$	-	50	100	$\mu\text{A}$
$I_L$	Latching current	$I_G = 1.2 I_{GT}$	-	-	5	mA
$I_H$	Holding current	$I_T = 0.05\text{mA}$	-	-	3	mA
$V_{TM}$	On-state voltage	$I_{TM} = 1.1\text{A}$ $t_p = 380\mu\text{s}$	-	-	1.50	V
$V_{GT}$	Gate trigger voltage	$V_D = 12 \text{ V}$ ; $R_L = 33\Omega$	-	-	0.8	V
$V_{GD}$	Gate Non-Trigger Voltage	$V_D = V_{DRM}$ ; $T_J = 110^{\circ}\text{C}$	0.2	-	-	V
$I_{DRM}$ $I_{RRM}$	$V_D = V_{DRM}$ $V_R = V_{RRM}$	$T_J = 25^{\circ}\text{C}$ $T_J = 110^{\circ}\text{C}$	-	-	5 500	$\mu\text{A}$ $\mu\text{A}$
<b>Dynamic Characteristics</b>						
dV/dt	Critical rate of rise of off-state voltage	$V_D = 2/3 V_{DRM}$ Gate Open $T_J = 110^{\circ}\text{C}$	10	-	-	V/ $\mu\text{s}$

8. Electrical Characteristics Curve

FIG.1 Maximum power dissipation versus RMS on-state current

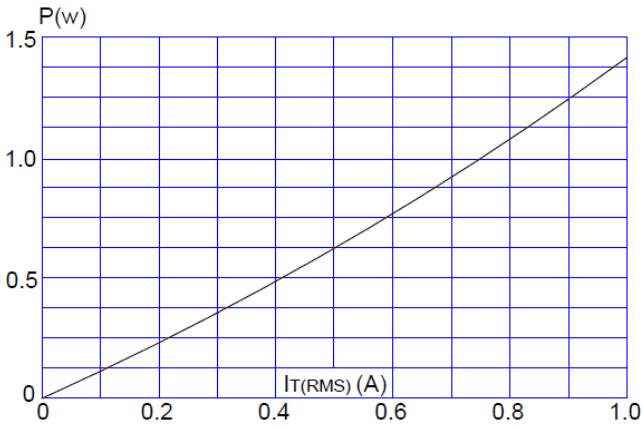


FIG.2: RMS on-state current versus case temperature

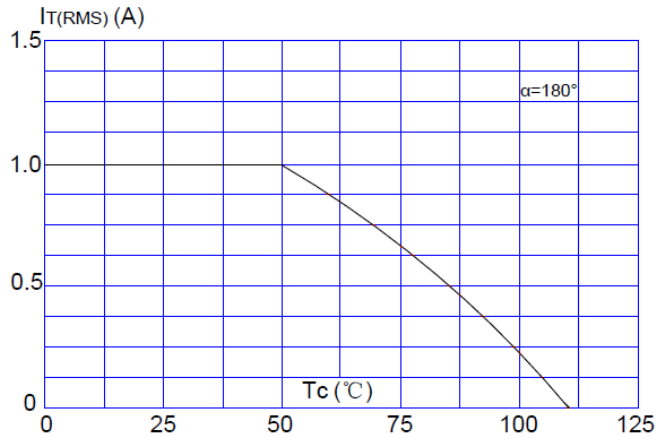


FIG.3: Surge peak on-state current versus number of cycles

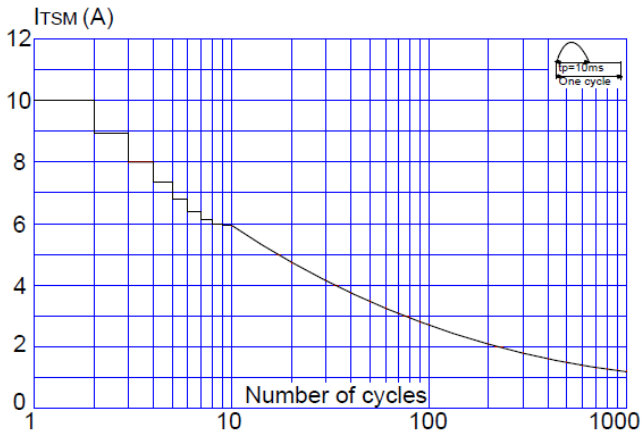


FIG.4: On-state characteristics (maximum values)

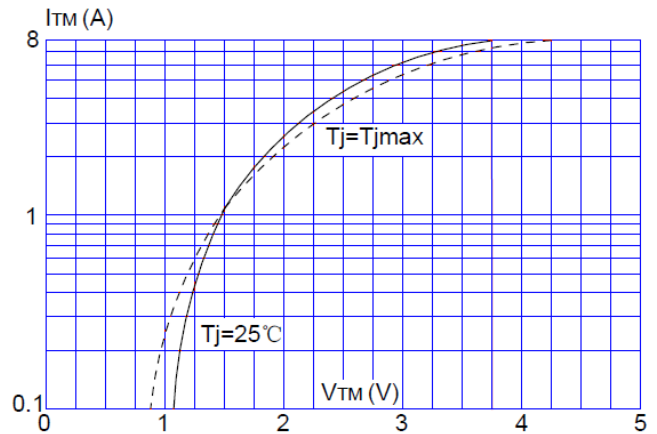


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponding value of I²t

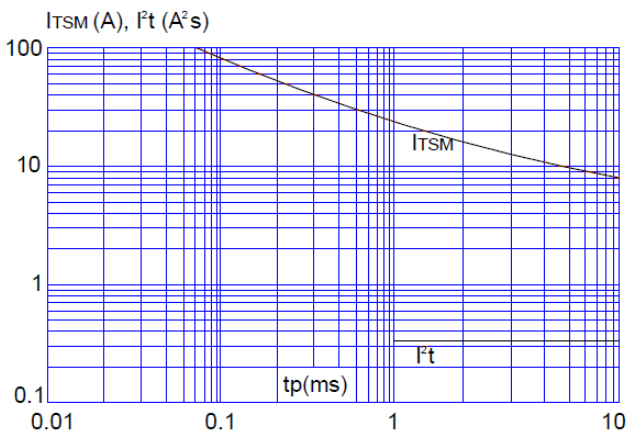
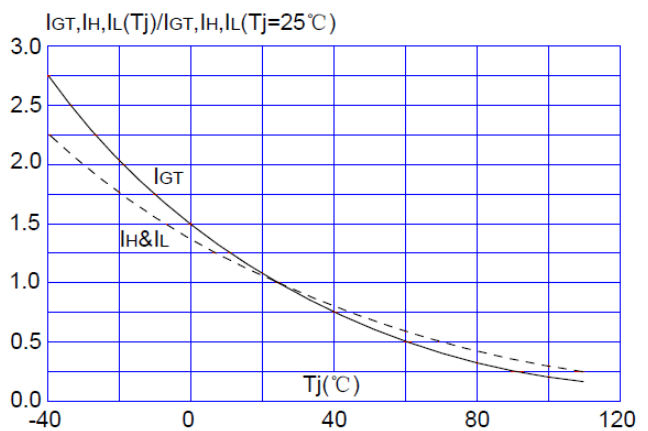
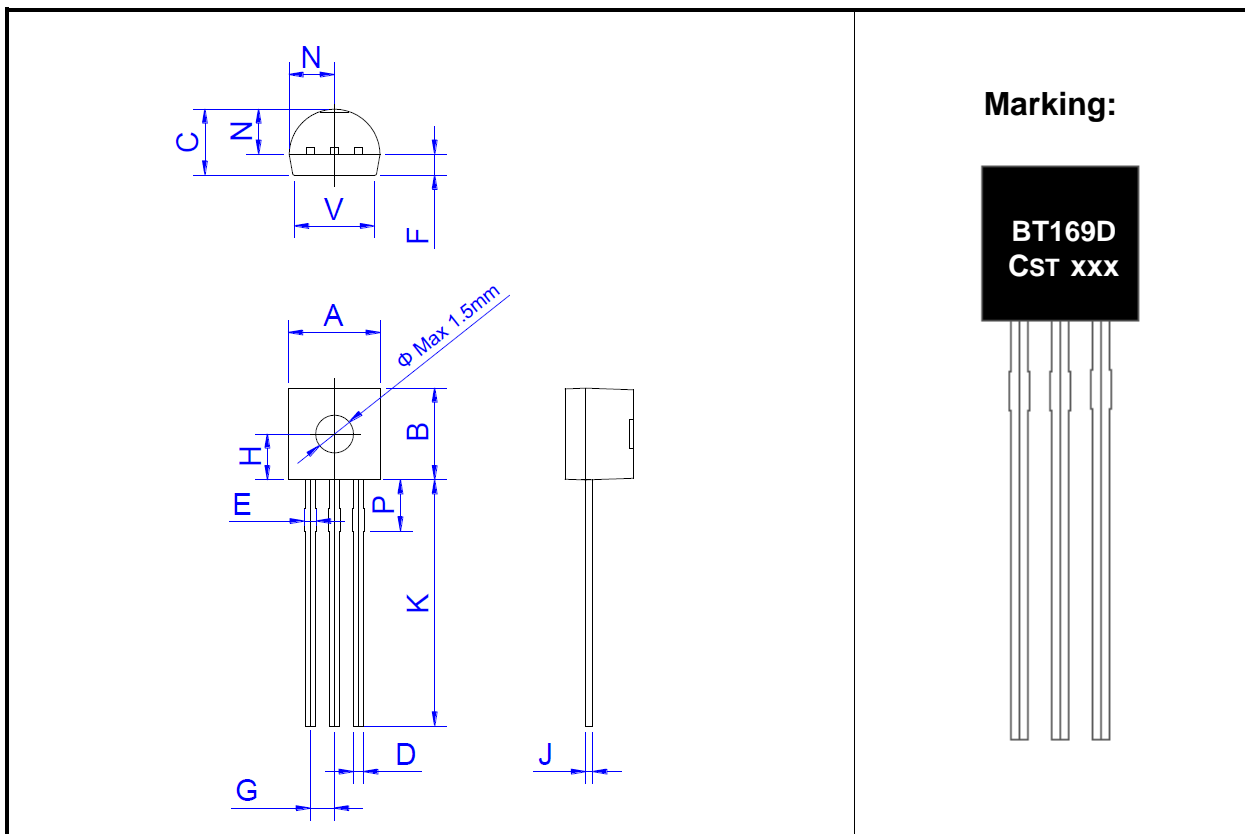


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



9、Package outline(TO-92)



DIM	Inches			Millimeters		
	Min	Type	Max	Min	Type	Max
A	0.175	-	0.205	4.45	-	5.20
B	0.170	-	0.210	4.32	-	5.33
C	0.125	-	0.165	3.18	-	4.19
D	0.016	-	0.021	0.407	-	0.533
E	0.016	-	0.028	0.40	-	0.70
F	-	0.043	-	-	1.10	-
G	-	0.050	-	-	1.27	-
H	-	0.091	-	-	2.30	-
J	0.013	-	0.018	0.32	-	0.45
K	0.500	-	0.591	12.7	-	15.0
N	0.080	-	0.105	2.04	-	2.66
P	0.073	-	0.081	1.86	-	2.06
V	-	-	0.177	-	-	4.50