

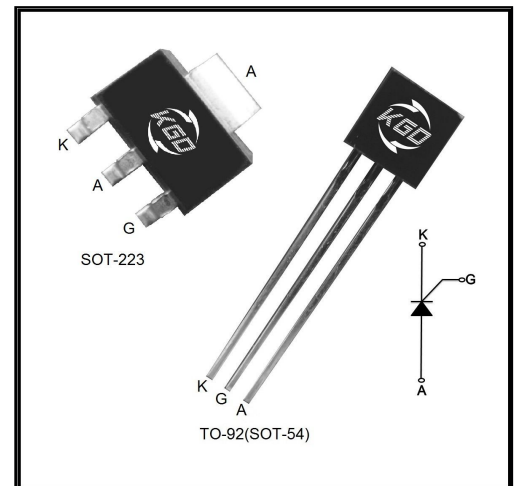
- **Description:**

Highly sensitive triggering levels, the BT169MN Series SCRs is suitable for all applications, where the available gate current is limited, such as capacitive discharge ignitions, motor control in kitchen aids, overvoltage crowbar protection in low power supplies...

- **Features:**

Blocking voltage to 600V  
 On-state RMS current to 1.5A  
 Non-repetitive peak on-state current to 12A

- **Absolute Maximum Ratings**



| Symbol       | Parameter  | Conditions                                 | Value   | Unit                 |
|--------------|--|--|---------|----------------------|
| $V_{DRM}$    | Repetitive peak off-state voltage                                    | $T_J=25^\circ\text{C}$                     | 600     | V                    |
| $V_{RRM}$    | Repetitive peak Reverse voltage                                      | $T_J=25^\circ\text{C}$                     | 600     | V                    |
| $I_{T(RMS)}$ | RMS on-state current (180° conduction half sine wave)                | $T_c=77^\circ\text{C}$                     | 1.5     | A                    |
| $I_{T(av)}$  | Average on-state current (180° conduction half sine wave)            | $T_c=77^\circ\text{C}$                     | 1.0     | A                    |
| $I_{TSM}$    | Non-repetitive surge peak On-state current( $T_J=25^\circ\text{C}$ ) | $t_p=10\text{ms}$                          | 12      | A                    |
| $I^2t$       | $I^2t$ Value for fusing  | $t_p=10\text{ms}$                          | 0.7     | $\text{A}^2\text{S}$ |
| $I_{GFM}$    | Forward Peak Gate Current  | $T_J=25^\circ\text{C}$                     | 0.2     | A                    |
| $I_{GM}$     | Peak gate current  | $t_p=20\mu\text{s}, T_J=110^\circ\text{C}$ | 0.5     | A                    |
| $P_{G(AV)}$  | Average gate power dissipation                                       |  | 0.1     | W                    |
| $T_{STG}$    | Storage temperature  |  | -40 150 | $^\circ\text{C}$     |
| $T_J$        | Junction temperature   |  | -40 110 | $^\circ\text{C}$     |

**● Electrical Characteristics**

| Symbol   | Conditions  | Value |     |     | Unit       |
|----------|---|-------|-----|-----|------------|
|          |   | MIN   | TYP | MAX |            |
| $I_{GT}$ | $V_D=6V, R_L=100\Omega$   | /     | 40  | 200 | $\mu A$    |
| $V_{GT}$ | $V_D=12V, R_L=100\Omega$  | /     | 0.6 | 0.8 | V          |
| $V_{GD}$ | $V_D=V_{DRM}, R_L=3.3K\Omega, R_{GK}=1K\Omega, T_J=110^\circ C$ | 0.1   | /   | /   | V          |
| $I_L$    | $I_G=1mA, R_{GK}=1K\Omega$                                      | /     | /   | 6   | mA         |
| $I_H$    | $I_T=50mA, R_{GK}=1K\Omega$                                     | /     | /   | 5   | mA         |
| $dv/dt$  | $V_{DM}=67\%V_{DRM}, R_{GK}=1K\Omega, T_J=110^\circ C$          | 10    | /   | /   | V/ $\mu s$ |

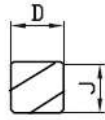
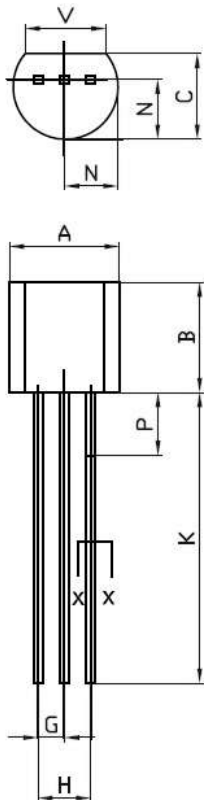
**● Electrical Characteristics**

| Symbol    | Parameter                                      | Numerical(Max) | Unit    |
|-----------|--|----------------|---------|
| $V_{TM}$  | $I_T=2A, t_p=380\mu s$<br>$T_J=25^\circ C$     | 1.7            | V       |
| $I_{DRM}$ | $V_D=V_{DRM}, V_R=V_{RRM}$<br>$T_J=25^\circ C$ | 5              | $\mu A$ |
| $I_{RRM}$ | $T_J=110^\circ C$                              | 0.1            | mA      |

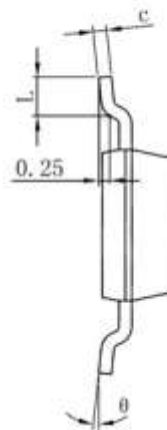
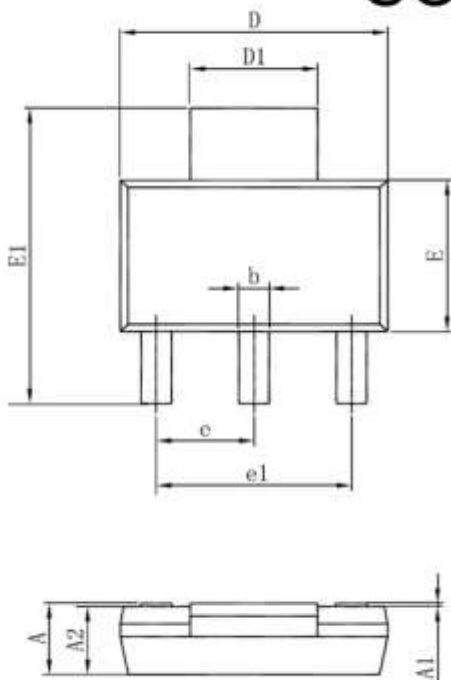
**● Thermal Characteristics**

| Symbol        | Parameter  | Numerical(MAX) | Unit       |
|---------------|--|----------------|------------|
| $R_{th(j-c)}$ | Junction to case                                       | TO-92          | 75         |
|               |  | SOT-223        | 15         |
| $R_{th(j-a)}$ | Junction to ambient                                    | TO-92          | 150        |
|               |  | SOT-223        | 156        |
| $T_L$         | Lead Solder Temperature(<1/16" from case, 10 secs max) | 260            | $^\circ C$ |

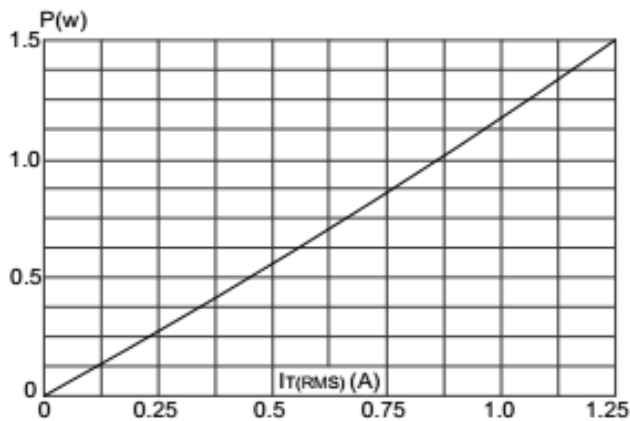
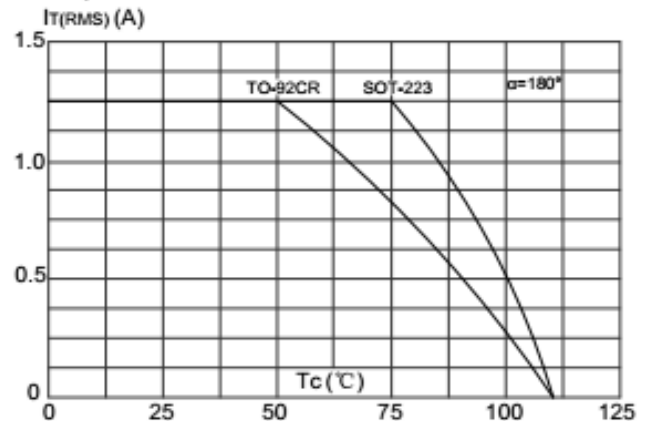
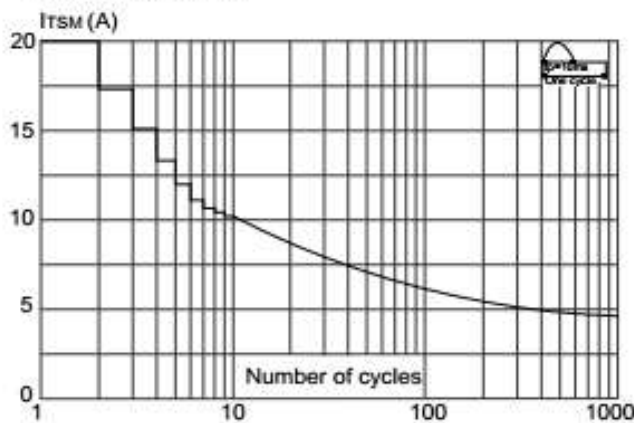
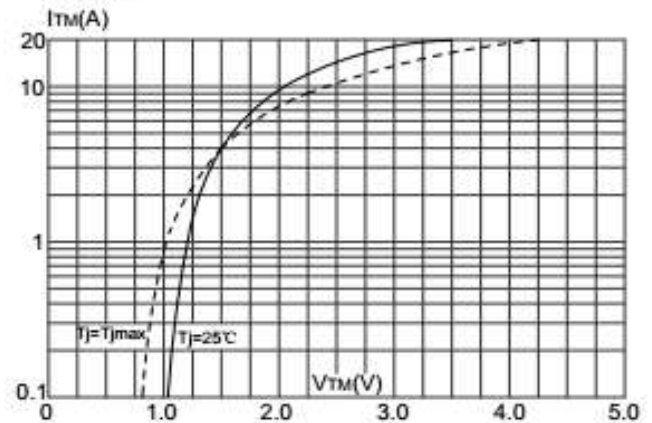
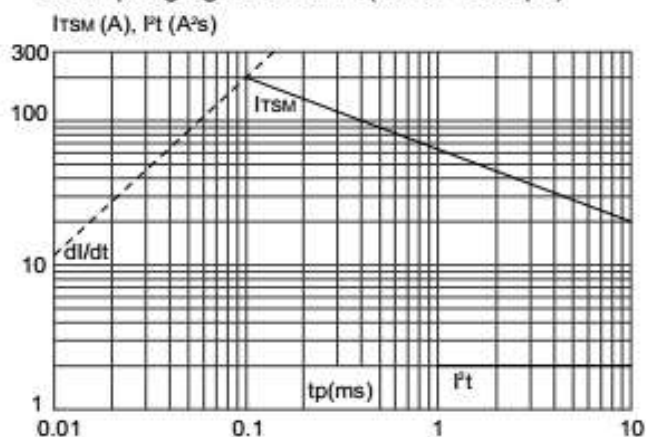
## ● Package Outline Dimensions

**TO-92 (SOT-54)**

**SECTION  
X-X**

| Ref. | Dimensions  |       |        |       |
|------|-------------|-------|--------|-------|
|      | Millimeters |       | Inches |       |
|      | Min.        | Max.  | Min.   | Max.  |
| A    | 4.45        | 5.2   | 0.175  | 0.205 |
| B    | 4.32        | 5.33  | 0.170  | 0.210 |
| C    | 3.18        | 4.19  | 0.125  | 0.165 |
| D    | 0.407       | 0.533 | 0.016  | 0.021 |
| G    | 1.15        | 1.39  | 0.045  | 0.055 |
| H    | 2.42        | 2.66  | 0.095  | 0.105 |
| J    | 0.39        | 0.50  | 0.015  | 0.020 |
| K    | 12.70       | -     | 0.500  | -     |
| N    | 2.04        | 2.66  | 0.080  | 0.105 |
| P    | -           | 2.54  | -      | 0.100 |
| V    | 3.43        | -     | 0.135  | -     |

**SOT-223**


| Ref. | Dimensions  |       |            |       |
|------|-------------|-------|------------|-------|
|      | Millimeters |       | Inches     |       |
|      | Min.        | Max.  | Min.       | Max.  |
| A    | 1.520       | 1.800 | 0.060      | 0.071 |
| A1   | 0.000       | 0.100 | 0.000      | 0.004 |
| A2   | 1.500       | 1.700 | 0.059      | 0.067 |
| b    | 0.660       | 0.820 | 0.026      | 0.032 |
| c    | 0.250       | 0.350 | 0.010      | 0.014 |
| D    | 6.200       | 6.400 | 0.244      | 0.252 |
| D1   | 2.900       | 3.100 | 0.114      | 0.122 |
| E    | 3.300       | 3.700 | 0.130      | 0.146 |
| E1   | 6.830       | 7.070 | 0.269      | 0.278 |
| e    | 2.300(BSC)  |       | 0.091(BSC) |       |
| e1   | 4.500       | 4.700 | 0.177      | 0.185 |
| L    | 0.900       | 1.150 | 0.035      | 0.045 |
| θ    | 0°          | 10°   | 0°         | 10°   |

**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  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 50\text{A}/\mu\text{s}$ )

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