

Thyristor sensitive gate

2N5064

GENERAL DESCRIPTION

Glass passivated sensitive gate thyristor in a plastic envelope, intended for use in general purpose switching and phase control applications. This device is intended to be interfaced directly to microcontrollers, logic integrated circuits and other low power gate trigger circuits.

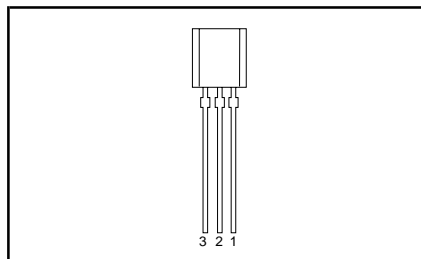
QUICK REFERENCE DATA

| SYMBOL | PARAMETER | MAX. | UNIT |
|--------------------------|--------------------------------------|------|------|
| V_{DRM} , V_{RRM} | Repetitive peak off-state voltages | 200 | V |
| $I_{T(AV)}$ | Average on-state current | 0.5 | A |
| $I_{T(RMS)}$ | RMS on-state current | 0.8 | A |
| I_{TSM} | Non-repetitive peak on-state current | 10 | A |

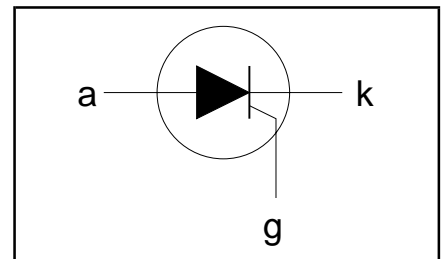
PINNING - TO92 variant

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | anode |
| 2 | gate |
| 3 | cathode |

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------------------|--------------------------------------|---|------|-------|----------------------|
| V_{DRM} , V_{RRM} | Repetitive peak off-state voltages | | - | 200 | V |
| $I_{T(AV)}$ | Average on-state current | half sine wave $T_c \leq 67^\circ\text{C}$ | - | 0.51 | A |
| $I_{T(RMS)}$ | RMS on-state current | $T_c \leq 102^\circ\text{C}$ | - | 0.255 | A |
| I_{TRM} | Repetitive peak on-state current | all conduction angles | - | 0.8 | A |
| I_{TSM} | Non-repetitive peak on-state current | | - | 8 | A |
| I^2t | I^2t for fusing | half sine wave; $T_a = 25^\circ\text{C}$ prior to surge; $t = 8.3\text{ ms}$ | - | 10 | A |
| I_{GM} | Peak gate current | $t = 8.3\text{ ms}$ | - | 0.4 | A^2s |
| V_{GM} | Peak gate voltage | $T_a = 25^\circ\text{C}$, $t_p = 300\mu\text{s}$; $f = 120\text{ Hz}$ | - | 1 | A |
| V_{RGM} | Peak reverse gate voltage | | - | 5 | V |
| P_{GM} | Peak gate power | | - | 5 | V |
| $P_{G(AV)}$ | Average gate power | $T_a = 25^\circ\text{C}$ | - | 0.1 | W |
| T_{stg} | Storage temperature | $T_a = 25^\circ\text{C}$, over any 16 ms period | - | 0.01 | W |
| T_j | Operating junction temperature | | -65 | 150 | $^\circ\text{C}$ |
| | | | -65 | 125 | $^\circ\text{C}$ |

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THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|---------------|--|------------------------|------|------|------|------|
| $R_{th\ j-c}$ | Thermal resistance junction to case | see note: ¹ | - | - | 75 | K/W |
| $R_{th\ j-a}$ | Thermal resistance junction to ambient | | - | 200 | - | K/W |

STATIC CHARACTERISTICS

 $T_c = 25\text{ °C}$, $R_{GK} = 1\text{ k}\Omega$ unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|------------|---------------------------|--|------|------|-----------------|--------------------------------|
| I_{GT} | Gate trigger current | $T_c = 25\text{ °C}$ $T_c = -65\text{ °C}$ $V_D = V_{DRM(max)}$; $R_L = 100\ \Omega$; gate open circuit | - | - | 200 350 | μA μA |
| I_L | Latching current | $V_D = 12\text{ V}$; $R_{GK} = 1\text{ k}\Omega$ | - | - | 6 | mA |
| I_H | Holding current | $V_D = 12\text{ V}$; $R_{GK} = 1\text{ k}\Omega$ | - | - | 5 | mA |
| V_T | On-state voltage | $I_T = 1.2\text{ A peak}$; $t_p = 300\ \mu\text{s}$; $\delta \leq 0.01$ | - | - | 1.7 | V |
| V_{GT} | Gate trigger voltage | $T_j = 25\text{ °C}$ $T_j = -65\text{ °C}$ $T_j = 125\text{ °C}$ $V_D = V_{DRM(max)}$; $R_L = 100\ \Omega$; gate open circuit | - | - | 0.8 1.2 - | V V V |
| I_D, I_R | Off-state leakage current | $V_D = V_{DRM(max)}$; $V_R = V_{RRM(max)}$ $T_j = 25\text{ °C}$ $T_j = 125\text{ °C}$ | - | - | 10 50 | μA μA |

DYNAMIC CHARACTERISTICS

 $T_c = 25\text{ °C}$, $R_{GK} = 1\text{ k}\Omega$ unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-----------|--|--|------|------|------|------------------|
| dV_D/dt | Critical rate of rise of off-state voltage | $V_{DM} = 67\% V_{DRM(max)}$; $T_j = 125\text{ °C}$; exponential waveform; $R_{GK} = 1\text{ k}\Omega$ | - | 25 | - | V/ μs |
| t_{gt} | Gate controlled turn-on time | $I_{TM} = 2\text{ A}$; $V_D = V_{DRM(max)}$; $I_G = 10\text{ mA}$; $dI_G/dt = 0.1\text{ A}/\mu\text{s}$ | - | 2 | - | μs |
| t_q | Circuit commutated turn-off time | $V_{DM} = 67\% V_{DRM(max)}$; $T_j = 125\text{ °C}$; $I_{TM} = 1.6\text{ A}$; $V_R = 35\text{ V}$; $dI_{TM}/dt = 30\text{ A}/\mu\text{s}$; $dV_D/dt = 2\text{ V}/\mu\text{s}$; $R_{GK} = 1\text{ k}\Omega$ | - | 100 | - | μs |

¹ This measurement is made with the case mounted "flat side down" on a heatsink and held in position by means of a metal clamp over the curved surface.

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MECHANICAL DATA

Dimensions in mm

Net Mass: 0.2 g

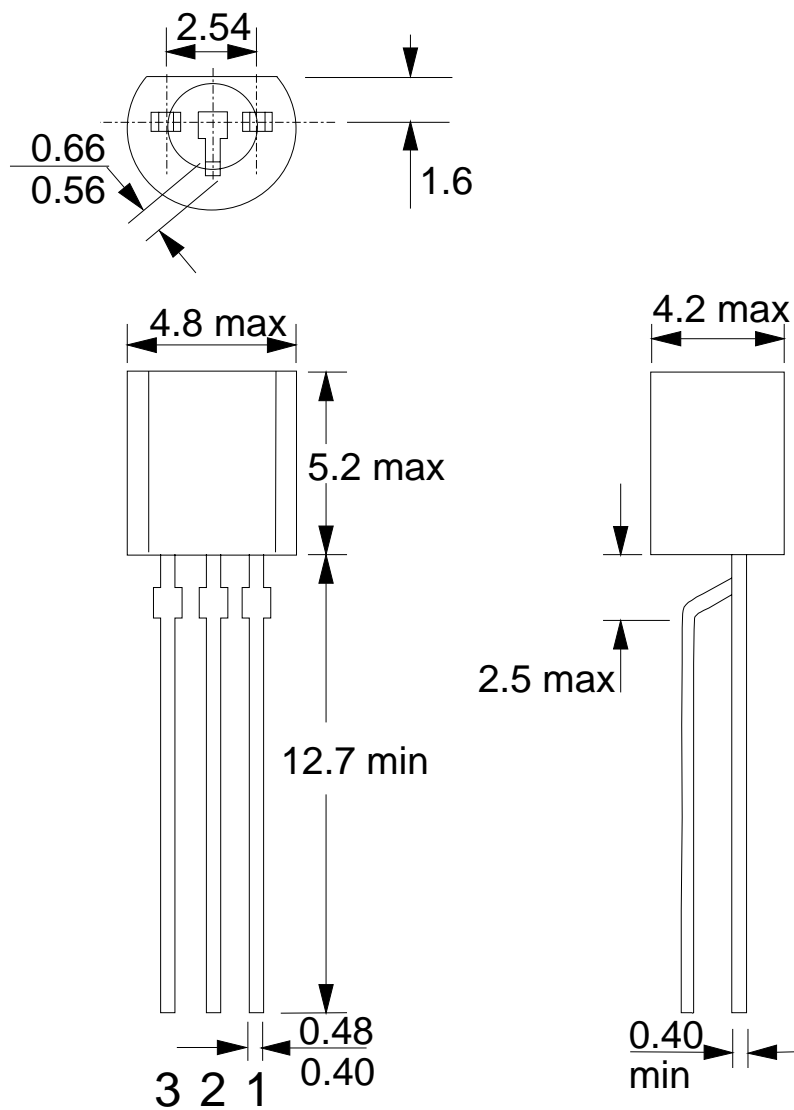


Fig.1. TO92; plastic envelope.

Notes

1. Epoxy meets UL94 V0 at 1/8".

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DEFINITIONS

| | |
|--|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |
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