


CR05AS

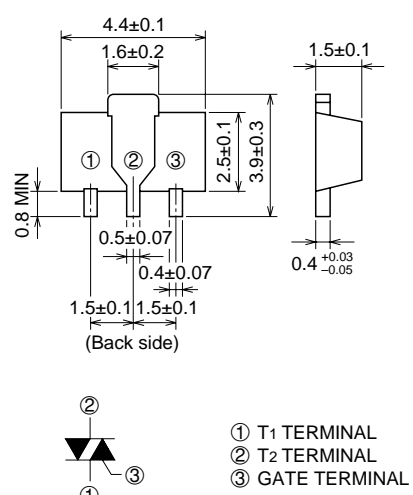
LOW POWER USE
NON-INSULATED TYPE, PLANAR PASSIVATION TYPE

CR05AS



- **IT (AV)** **0.5A**
- **VDRM** **200V/400V**
- **IGT** **100μA**

OUTLINE DRAWING Dimensions in mm



SOT-89

APPLICATION

Solid state relay, strobe flasher, ignitor, hybrid IC

MAXIMUM RATINGS

| Symbol | Parameter | Voltage class | | Unit |
|---------|--------------------------------------|-----------------|-----------------|------|
| | | 4 (marked "CB") | 8 (marked "CD") | |
| VRRM | Repetitive peak reverse voltage | 200 | 400 | V |
| VRSM | Non-repetitive peak reverse voltage | 300 | 500 | V |
| VR (DC) | DC reverse voltage | 160 | 320 | V |
| VDRM | Repetitive peak off-state voltage *1 | 200 | 400 | V |
| VD (DC) | DC off-state voltage *1 | 160 | 320 | V |

| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|--------------------------------|--|------------|------------------|
| IT (RMS) | RMS on-state current | | 0.79 | A |
| IT (AV) | Average on-state current | Commercial frequency, sine half wave, 180° conduction, Ta=57°C *2 | 0.5 | A |
| ITSM | Surge on-state current | 60Hz sine half wave 1 full cycle, peak value, non-repetitive | 10 | A |
| I ² t | I ² t for fusing | Value corresponding to 1 cycle of half wave 60Hz, surge on-state current | 0.4 | A ² s |
| PGM | Peak gate power dissipation | | 0.1 | W |
| PG (AV) | Average gate power dissipation | | 0.01 | W |
| VFGM | Peak gate forward voltage | | 6 | V |
| VRGM | Peak gate reverse voltage | | 6 | V |
| IFGM | Peak gate forward current | | 0.1 | A |
| Tj | Junction temperature | | -40 ~ +125 | °C |
| Tstg | Storage temperature | | -40 ~ +125 | °C |
| — | Weight | Typical value | 48 | mg |

*1. With Gate-to-cathode resistance R_{GK}=1kΩ

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ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|----------------------|-----------------------------------|---|--------|------|-------|--------------------|
| | | | Min. | Typ. | Max. | |
| IRRM | Repetitive peak reverse current | $T_j=125^\circ\text{C}$, V_{RRM} applied | — | — | 0.1 | mA |
| IDRM | Repetitive peak off-state current | $T_j=125^\circ\text{C}$, V_{DRM} applied, $R_{GK}=1\text{k}\Omega$ | — | — | 0.1 | mA |
| V _{TM} | On-state voltage | $T_a=25^\circ\text{C}$, $I_{TM}=1.5\text{A}$, instantaneous value | — | — | 1.9 | V |
| V _{GT} | Gate trigger voltage | $T_a=25^\circ\text{C}$, $V_D=6\text{V}$, $I_T=0.1\text{A}$ *4 | — | — | 0.8 | V |
| V _{GD} | Gate non-trigger voltage | $T_j=125^\circ\text{C}$, $V_D=1/2V_{DRM}$, $R_{GK}=1\text{k}\Omega$ | 0.2 | — | — | V |
| I _{GT} | Gate trigger current | $T_j=25^\circ\text{C}$, $V_D=6\text{V}$, $I_T=0.1\text{A}$ *4 | 1 | — | 100*3 | μA |
| I _H | Holding current | $T_j=25^\circ\text{C}$, $V_D=12\text{V}$, $R_{GK}=1\text{k}\Omega$ | — | — | 3 | mA |
| R _{th(j-a)} | Thermal resistance | Junction to ambient *2 | — | — | 70 | $^\circ\text{C/W}$ |

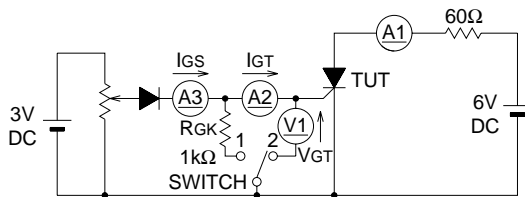
*2. Soldering with ceramic plate (25mm × 25mm × t0.7).

*3. If special values of I_{GT} are required, choose at least two items from those listed in the table below. (Example: AB, BC)

| Item | A | B | C |
|-----------------------------------|--------|---------|----------|
| I _{GT} (μA) | 1 ~ 30 | 20 ~ 50 | 40 ~ 100 |

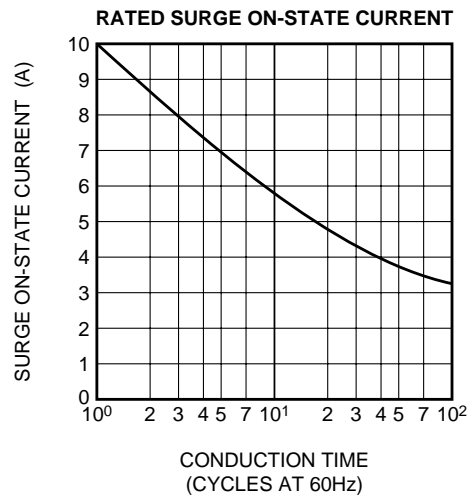
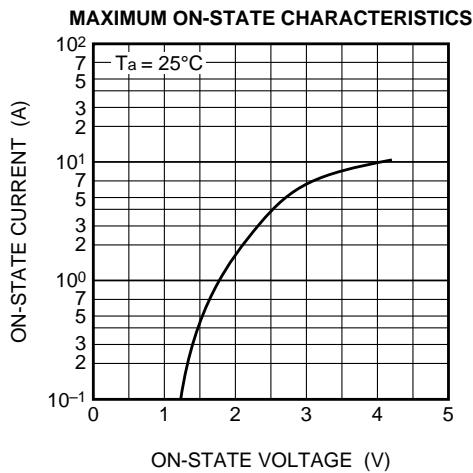
The above values do not include the current flowing through the 1k Ω resistance between the gate and cathode.

*4. I_{GT}, V_{GT} measurement circuit.



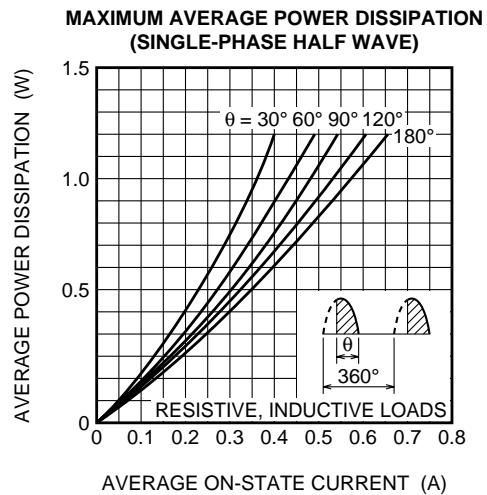
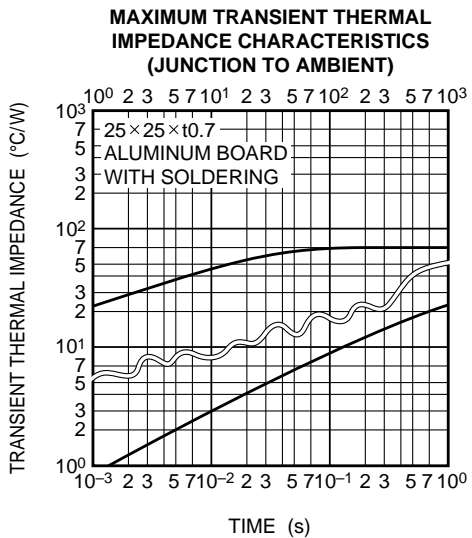
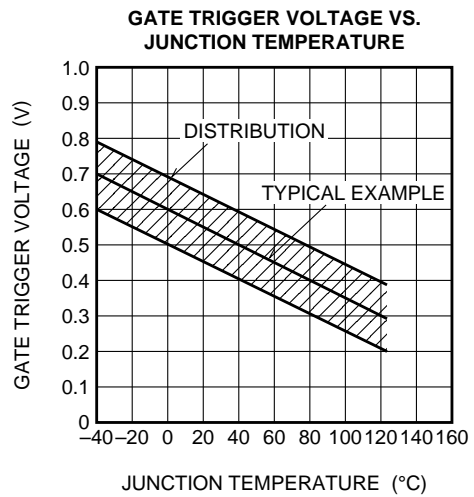
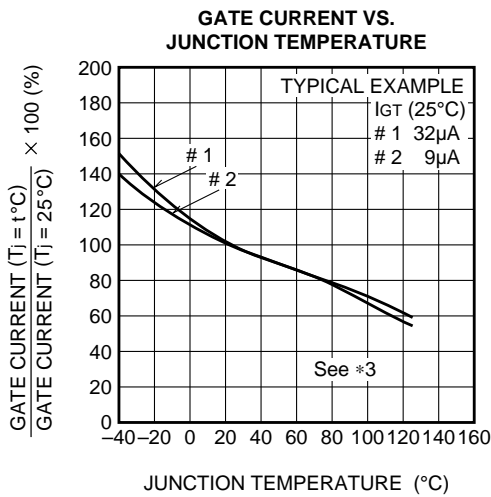
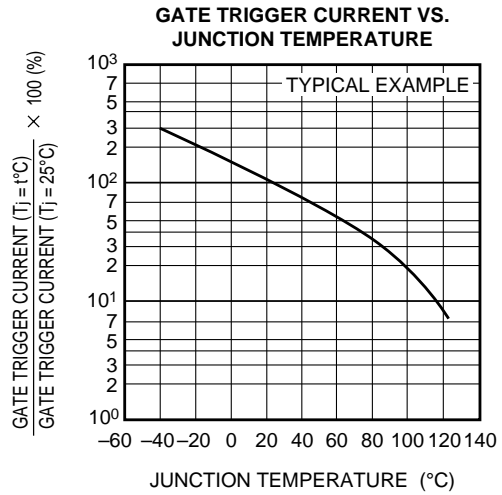
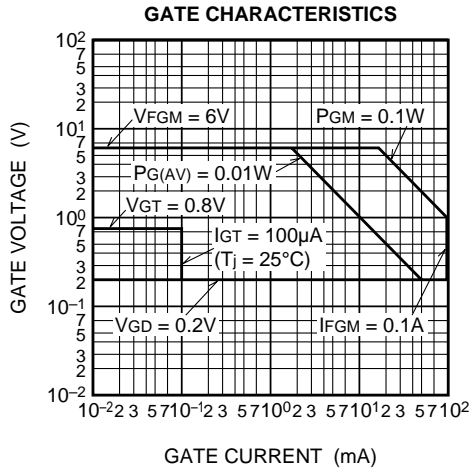
SWITCH 1 : I_{GT} measurement
 SWITCH 2 : V_{GT} measurement
 (Inner resistance of voltage meter is about 1k Ω)

PERFORMANCE CURVES



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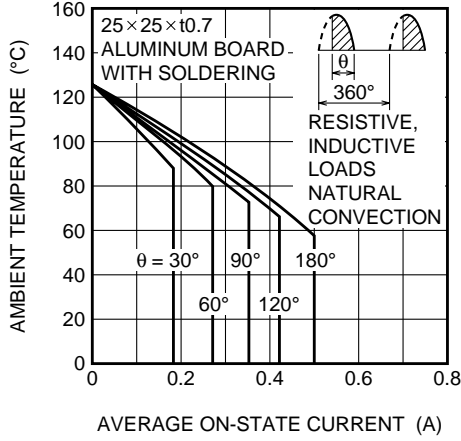
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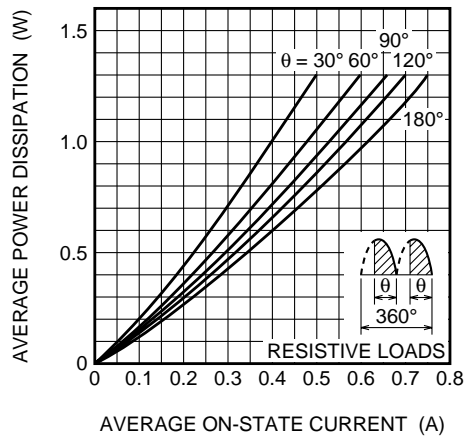
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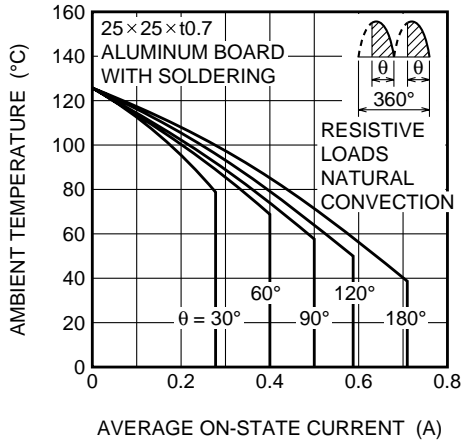
ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE HALF WAVE)



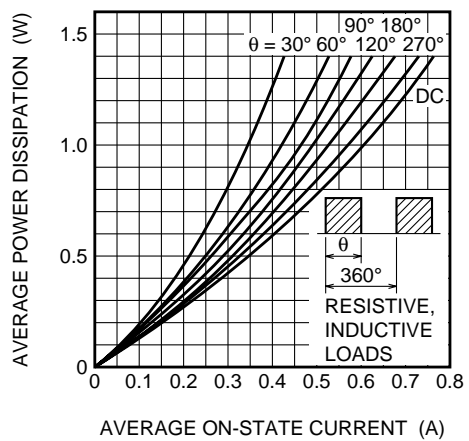
MAXIMUM AVERAGE POWER DISSIPATION (SINGLE-PHASE FULL WAVE)



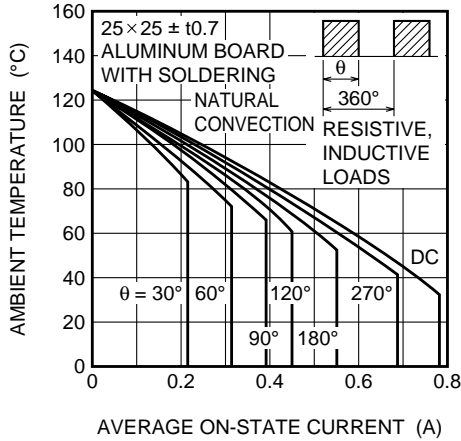
ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (SINGLE-PHASE FULL WAVE)



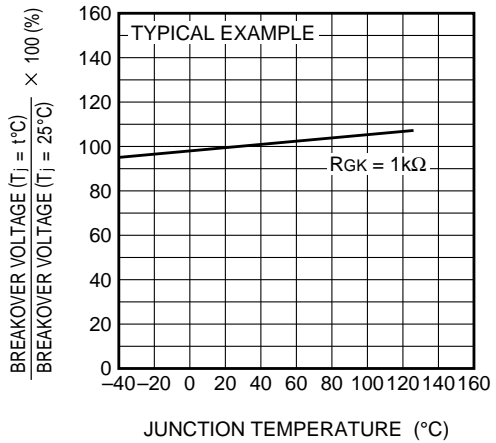
MAXIMUM AVERAGE POWER DISSIPATION (RECTANGULAR WAVE)



ALLOWABLE AMBIENT TEMPERATURE VS. AVERAGE ON-STATE CURRENT (RECTANGULAR WAVE)



BREAKOVER VOLTAGE VS. JUNCTION TEMPERATURE



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