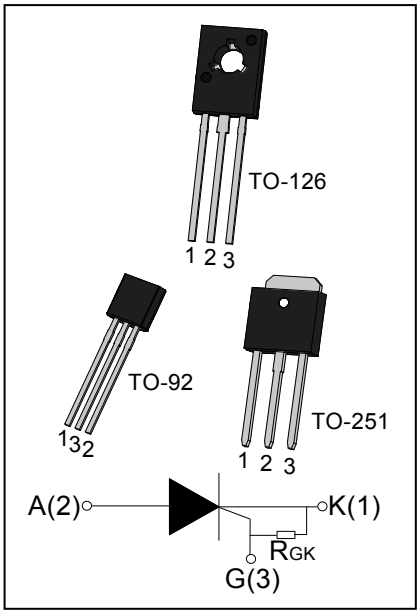
## JR0205 Series Sensitive gate SCRs

Rev.9.0

### DESCRIPTION:

The JR0205 SCR series with the parallel resistor between Gate and Cathode are especially recommended for use on straight hair, igniter, anion generator, etc. All the packages mentioned are RoHS compliant. (2011/65/EU)




### MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 2 | A |
| $I_{GT}$ | ≤200 | μA |
| $V_{TM}$ | ≤1.5 | V |

### ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Storage junction temperature range | | $T_{stg}$ | -40-150 | ℃ |
| Operating junction temperature range | | $T_j$ | -40-125① | ℃ |
| Repetitive peak off-state voltage | | $V_{DRM}$ | 600 | V |
| Repetitive peak reverse voltage | | $V_{RRM}$ | 600 | V |
| RMS on-state current | TO-92 ($T_C$=60℃) | $I_{T(RMS)}$ | 2 | A |
| | TO-251/ TO-126 ($T_C$=72℃) | | | |
| Non repetitive surge peak on-state current (tp=10ms) | | $I_{TSM}$ | 20 | A |
| $I^2t$ value for fusing (tp=10ms) | | $I^2t$ | 2 | $A^2s$ |
| Critical rate of rise of on-state current | | dI/dt | 50 | A/μs |
| Peak gate current (tp=20μs, $T_j$=125℃) | | $I_{GM}$ | 0.2 | A |
| Peak gate power (tp=20μs, $T_j$=125℃) | | $P_{GM}$ | 0.5 | W |
| Average gate power dissipation($T_j$=125℃) | | $P_{G(AV)}$ | 0.1 | W |

**NOTE 1:** When we parallel connect a ≤1KΩ resistor between Gate and Cathode, the Tj can reach 125℃; if without this resistor, the Tj only can reach 110℃.

## ELECTRICAL CHARACTERISTICS ($T_j$=25℃ unless otherwise specified)

| Symbol | Test Condition | Value | | | Unit |
|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | |
| $I_{GT}$ | $V_D$=12V $R_L$=33Ω | - | 40 | 200 | μA |
| $V_{GT}$ | | - | 0.5 | 0.8 | V |
| $V_{GD}$ | $V_D$=$V_{DRM}$ $T_j$=125℃ | 0.2 | - | - | V |
| $I_L$ | $I_G$=1.2 $I_{GT}$ | - | - | 3 | mA |
| $I_H$ | $I_T$=0.05A | - | - | 2 | mA |
| dV/dt | $V_D$=60%$V_{DRM}$ $T_j$=125℃ $R_{GK}$=1KΩ | 10 | - | - | V/μs |

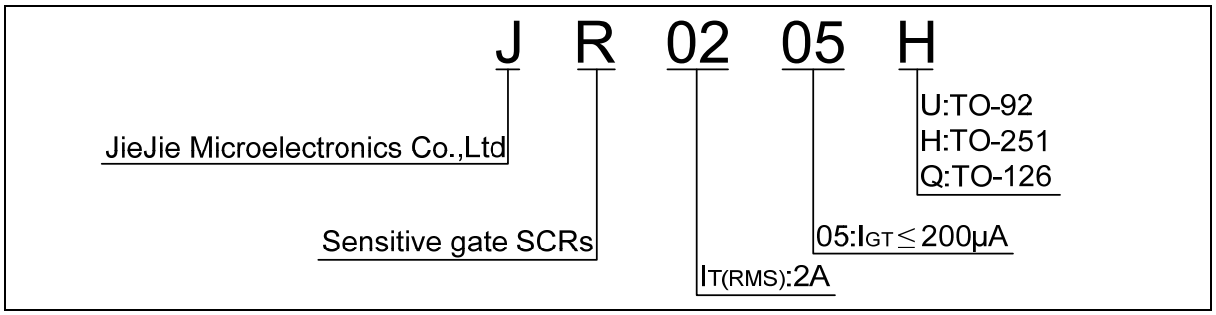
## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$=4A tp=380μs | $T_j$=25℃ | 1.5 | V |
| $I_{DRM}$ | $V_D$=$V_{DRM}$ $V_R$=$V_{RRM}$ | $T_j$=25℃ | 5 | μA |
| $I_{RRM}$ | | $T_j$=125℃ | 100 | μA |

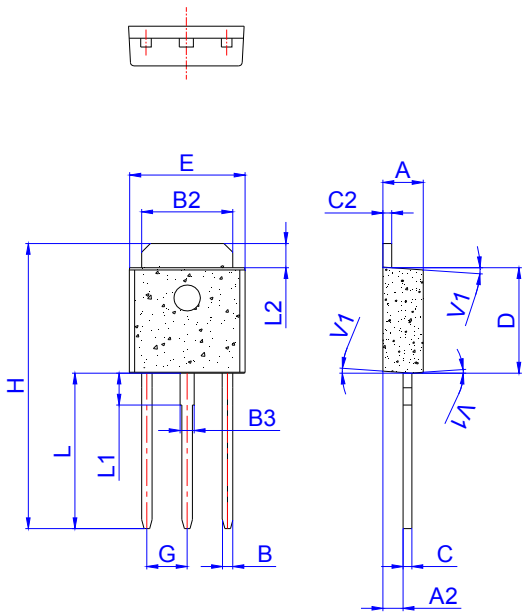
## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-c)}$ | junction to case | TO-92 | 30 | ℃/W |
| | | TO-251/ TO-126 | 6.5 | |

## ORDERING INFORMATION

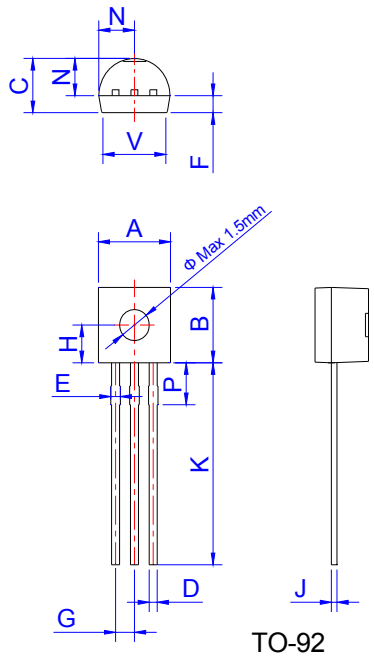


## PACKAGE MECHANICAL DATA




TO-251

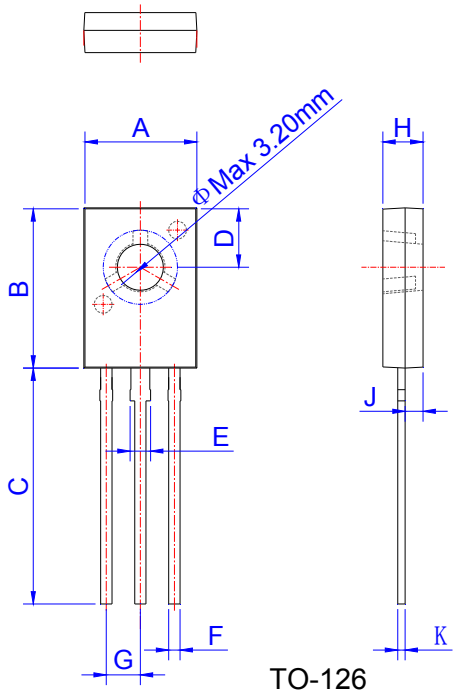
| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.20 | | 2.40 | 0.086 | | 0.095 |
| A2 | 0.90 | | 1.20 | 0.035 | | 0.047 |
| B | 0.55 | | 0.65 | 0.022 | | 0.026 |
| B2 | 5.10 | | 5.40 | 0.200 | | 0.213 |
| B3 | 0.76 | | 0.85 | 0.030 | | 0.033 |
| C | 0.45 | | 0.62 | 0.018 | | 0.024 |
| C2 | 0.48 | | 0.62 | 0.019 | | 0.024 |
| D | 6.00 | | 6.20 | 0.236 | | 0.244 |
| E | 6.40 | | 6.70 | 0.252 | | 0.264 |
| G | | 2.30 | | | 0.091 | |
| H | 16.0 | | 17.0 | 0.630 | | 0.669 |
| L | 8.90 | | 9.40 | 0.350 | | 0.370 |
| L1 | 1.80 | | 1.90 | 0.071 | | 0.075 |
| L2 | 1.37 | | 1.50 | 0.054 | | 0.059 |
| V1 | | 4° | | | 4° | |




TO-92

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.45 | | 5.20 | 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 |
| E | 0.50 | | 0.70 | 0.020 | | 0.028 |
| F | - | 1.1 | - | - | 0.043 | - |
| G | - | 1.27 | - | - | 0.050 | - |
| H | - | 2.30 | - | - | 0.091 | - |
| J | 0.36 | | 0.50 | 0.014 | | 0.020 |
| K | 12.70 | | 15.0 | 0.500 | | 0.591 |
| N | 2.04 | | 2.66 | 0.080 | | 0.105 |
| P | 1.86 | | 2.06 | 0.073 | | 0.081 |
| V | - | | 4.3 | - | | 0.169 |

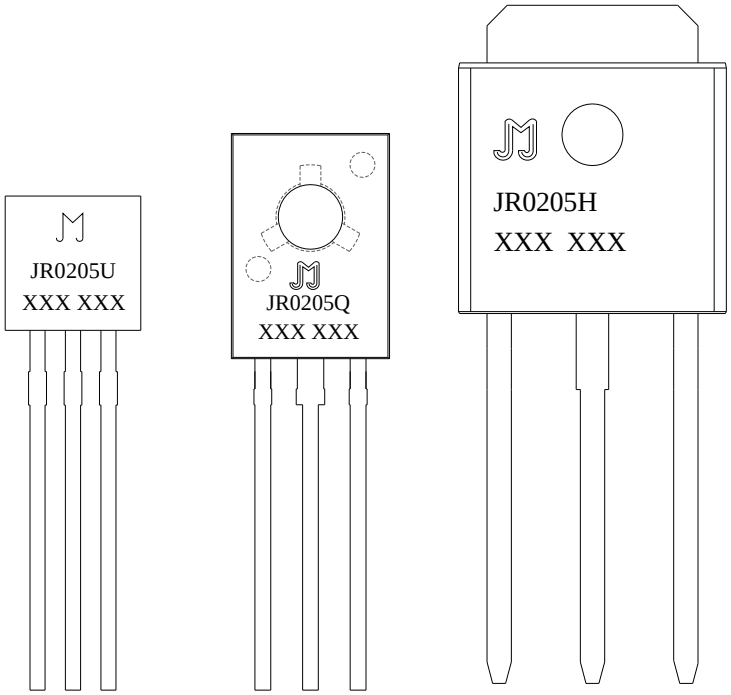
## PACKAGE MECHANICAL DATA

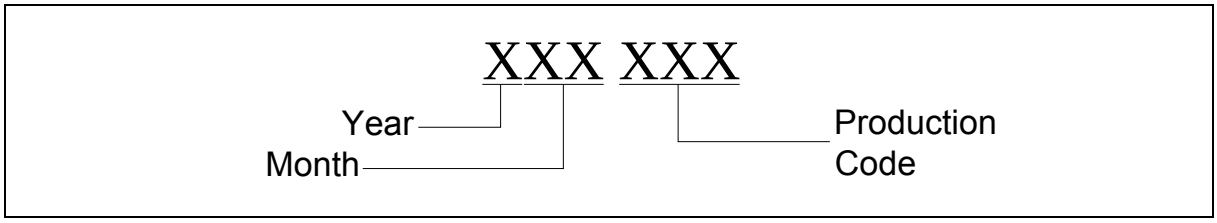



TO-126

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 7.40 | | 7.80 | 0.291 | | 0.307 |
| B | 10.6 | | 11.2 | 0.417 | | 0.441 |
| C | 15.3 | | 16.3 | 0.602 | | 0.642 |
| D | 3.90 | | 4.10 | 0.154 | | 0.161 |
| E | 1.17 | | 1.47 | 0.046 | | 0.058 |
| F | 0.66 | | 0.86 | 0.026 | | 0.034 |
| G | | 2.29 | | | 0.090 | |
| H | 2.50 | | 2.90 | 0.098 | | 0.114 |
| J | 1.10 | | 1.50 | 0.043 | | 0.059 |
| K | 0.45 | | 0.60 | 0.018 | | 0.024 |

## MARKING




## PACKAGE INFORMATION

| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON |
|---|---|---|---|---|
| TO-126 | TUBE | 50 | 3,000 | 18,000 |
| TO-251 | TUBE | 80 | 4,000 | 32,000 |
| **PACKAGE** | **OUTLINE** | **BAG (PCS)** | **INNER BOX (PCS)** | **PER CARTON** |
| TO-92 | Shielding Bag | 1,000 | 10,000 | 30,000 |

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

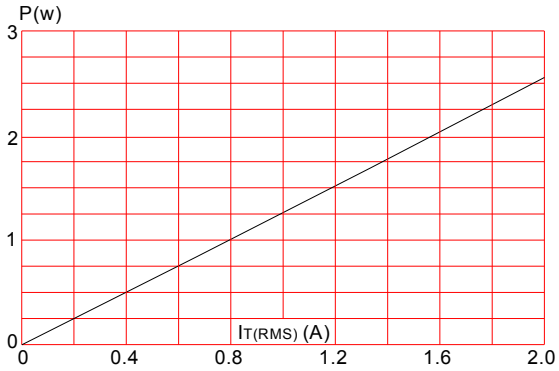



**FIG.2:** RMS on-state current versus case temperature

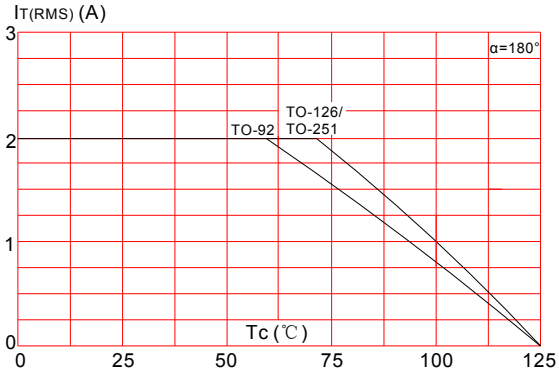



**FIG.3:** Surge peak on-state current versus number of cycles

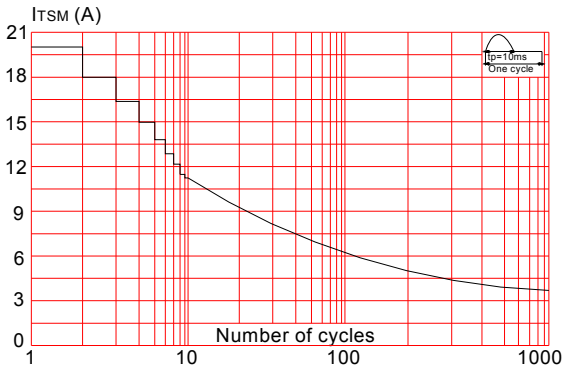



**FIG.4:** On-state characteristics (maximum values)

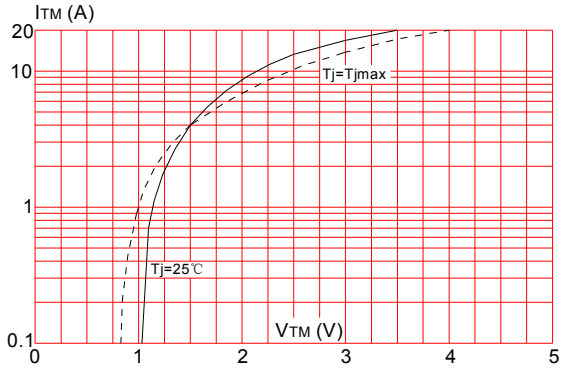



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponging value of $I^2t$ (dI/dt < 50A/μs)

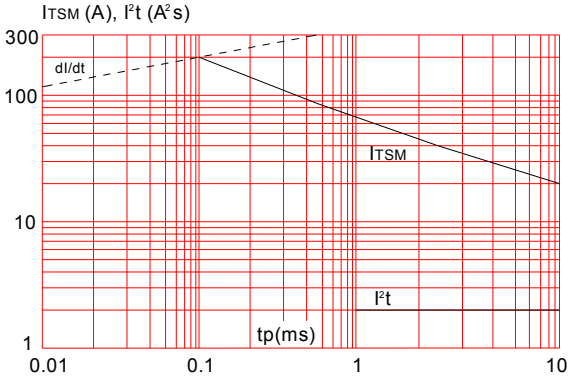
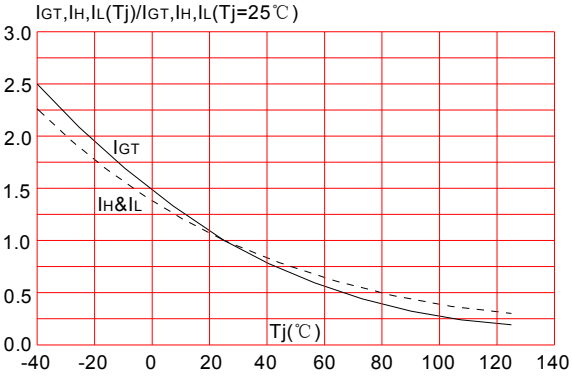



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature



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