



JX040C 4A Sensitive SCR

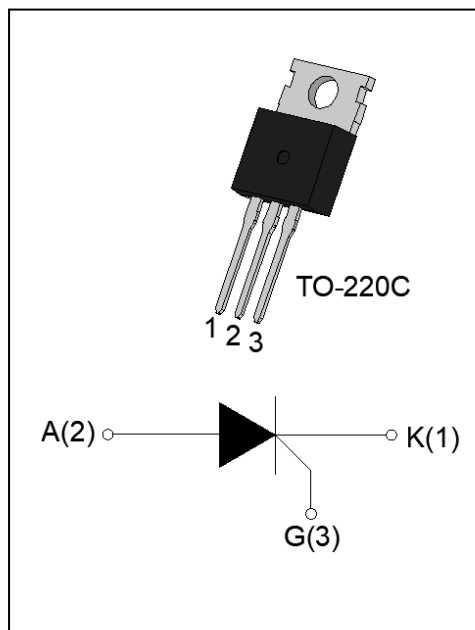
Rev.A.1.0

DESCRIPTION:

The JX040C SCR provides high dV/dt rate with strong resistance to electromagnetic interface. It is especially recommended for use on residual current circuit breaker, straight hair, igniter etc. Package TO-220C is RoHS compliant.

MAIN FEATURES

| Symbol | Value | Unit |
|---------------------|------------|---------|
| $I_{T(RMS)}$ | 4 | A |
| V_{DRM} / V_{RRM} | 600 | V |
| I_{GT} | ≤ 200 | μA |



ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|--|--------------|----------------------|-------------|
| Storage junction temperature range | T_{stg} | -40-150 | $^{\circ}C$ |
| Operating junction temperature range | T_j | -40-125 ^① | $^{\circ}C$ |
| Repetitive peak off-state voltage ($T_j=25^{\circ}C$) | V_{DRM} | 600 | V |
| Repetitive peak reverse voltage ($T_j=25^{\circ}C$) | V_{RRM} | 600 | V |
| Average on-state current ($T_c \leq 110^{\circ}C$) | $I_{T(AV)}$ | 2.5 | A |
| RMS on-state current ($T_c \leq 110^{\circ}C$) | $I_{T(RMS)}$ | 4 | A |
| Non repetitive surge peak on-state current ($t_p=10ms, T_j=25^{\circ}C$) | I_{TSM} | 40 | A |
| Non repetitive surge peak on-state current ($t_p=8.3ms, T_j=25^{\circ}C$) | | 44 | |
| I^2t value for fusing ($t_p=10ms, T_j=25^{\circ}C$) | I^2t | 8 | A^2s |
| Critical rate of rise of on-state current ($I_G=2 \times I_{GT}, f=100Hz, T_j=125^{\circ}C$) | di/dt | 50 | $A/\mu s$ |
| Peak gate current ($t_p=20\mu s, T_j=125^{\circ}C$) | I_{GM} | 2 | A |
| Average gate power dissipation ($T_j=125^{\circ}C$) | $P_{G(AV)}$ | 0.5 | W |

| | | | |
|---|----------|-----|----|
| Peak gate power | P_{GM} | 5 | W |
| Peak pulse voltage ($T_j=25^{\circ}C$; non-repetitive, off-state; FIG.7) | V_{pp} | 0.5 | kV |

NOTE 1: When we parallel connect a $\leq 1K\Omega$ resistor between Gate and Cathode, the T_j can reach $125^{\circ}C$; if without this resistor, the T_j only can reach $110^{\circ}C$.

ELECTRICAL CHARACTERISTICS ($T_j=25^{\circ}C$ unless otherwise specified)

| Symbol | Test Condition | Value | | | Unit |
|-----------|--|-------|------|------|------------|
| | | MIN. | TYP. | MAX. | |
| I_{GT} | $V_D=12V R_L=33\Omega$ | - | 50 | 200 | μA |
| V_{GT} | | - | 0.6 | 0.8 | V |
| V_{GD} | $V_D=V_{DRM} T_j=125^{\circ}C$ | 0.2 | - | - | V |
| I_L | $I_G=1.2 I_{GT}$ | - | - | 6 | mA |
| I_H | $I_T=0.05A$ | - | - | 5 | mA |
| dV/dt | $V_D=400V T_j=125^{\circ}C R_{GK}=1K\Omega$ | 50 | - | - | V/ μs |
| | $V_D=400V T_j=125^{\circ}C R_{GK}=220\Omega$ | 200 | - | - | |
| t_{on} | $I_G=10mA I_A=20mA I_R=2mA$ | - | 2 | - | μs |
| t_{off} | $T_j=25^{\circ}C$ | - | 50 | - | μs |

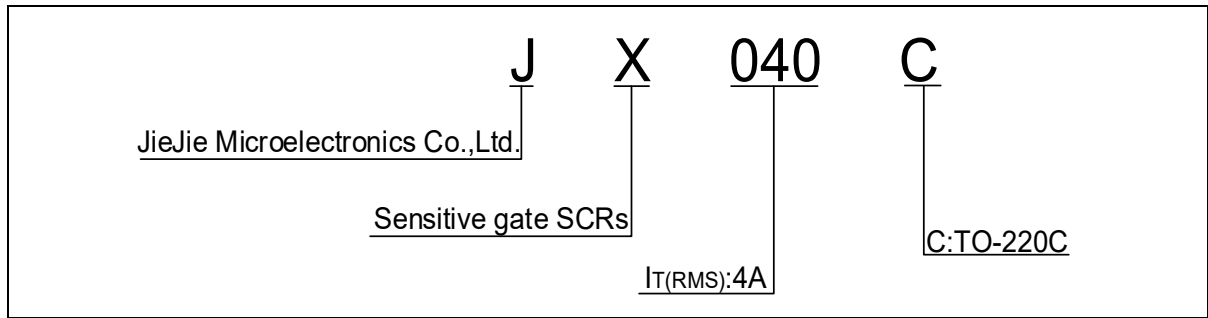
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|---------------------------|--------------------|-------------|----------|
| V_{TM} | $I_T=8A t_p=380\mu s$ | $T_j=25^{\circ}C$ | 1.6 | V |
| V_{TO} | Threshold voltage | $T_j=125^{\circ}C$ | 0.8 | V |
| R_D | Dynamic Resistance | $T_j=125^{\circ}C$ | 0.1 | Ω |
| I_{DRM} | $V_D=V_{DRM} V_R=V_{RRM}$ | $T_j=25^{\circ}C$ | 5 | μA |
| I_{RRM} | | $T_j=125^{\circ}C$ | 0.5 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|--------------------------|-------|---------------|
| $R_{th(j-c)}$ | junction to case (DC) | 2.8 | $^{\circ}C/W$ |
| $R_{th(j-a)}$ | junction to ambient (DC) | 50 | $^{\circ}C/W$ |

ORDERING INFORMATION



MARKING

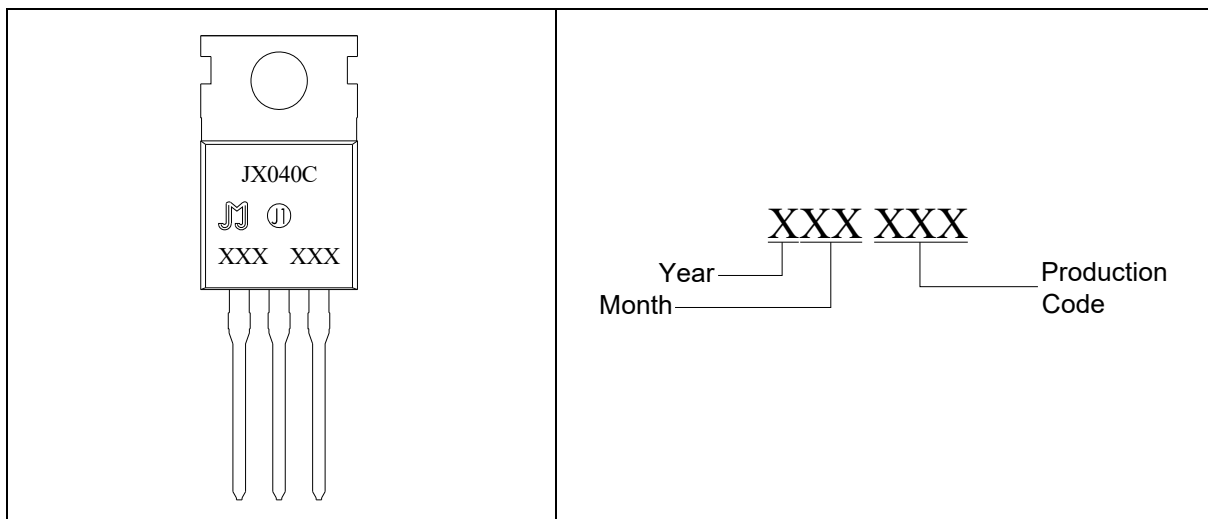


FIG.1 Maximum power dissipation versus RMS on-state current

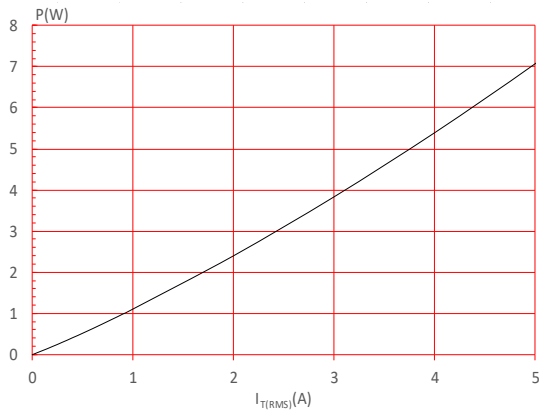


FIG.2: RMS on-state current versus case temperature

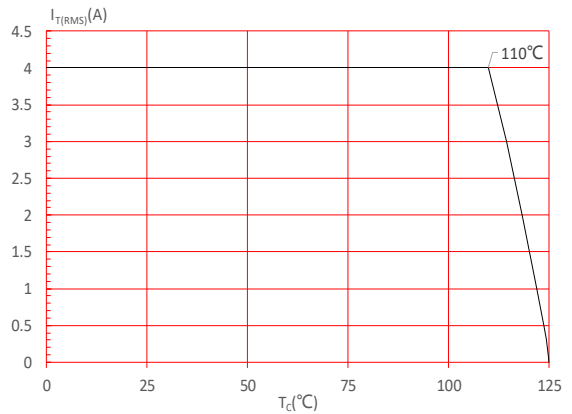


FIG.3: Surge peak on-state current versus number of cycles

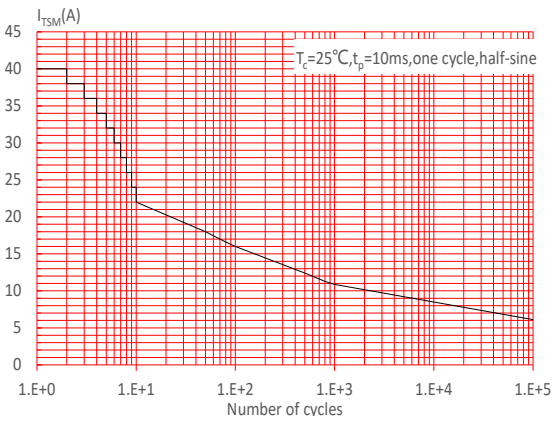


FIG.4: On-state characteristics

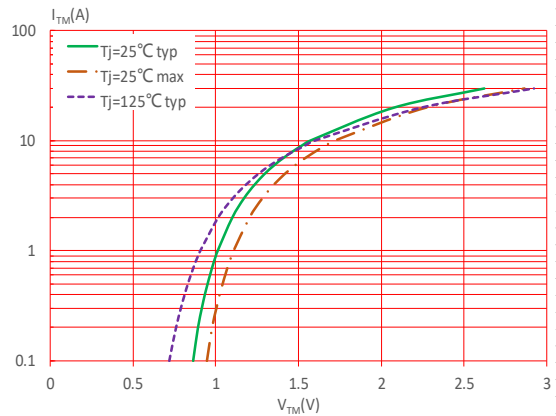


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 50\text{A}/\mu\text{s}$)

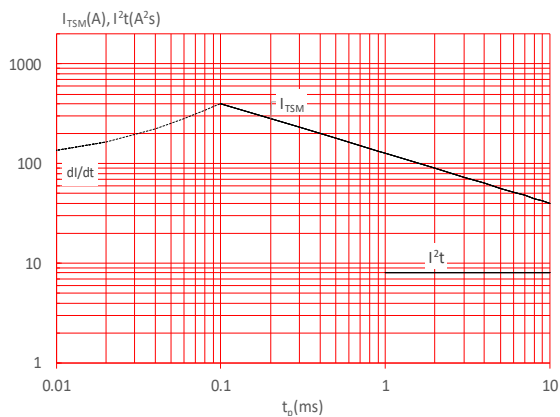


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

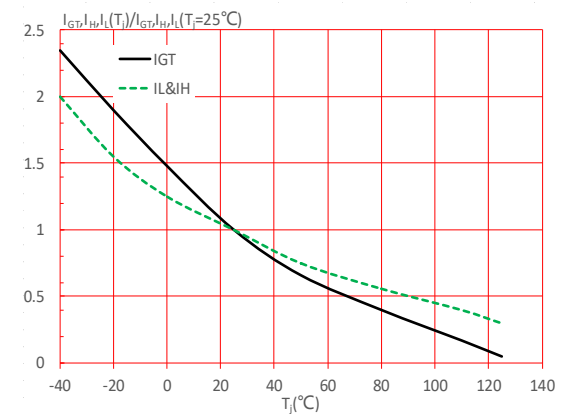
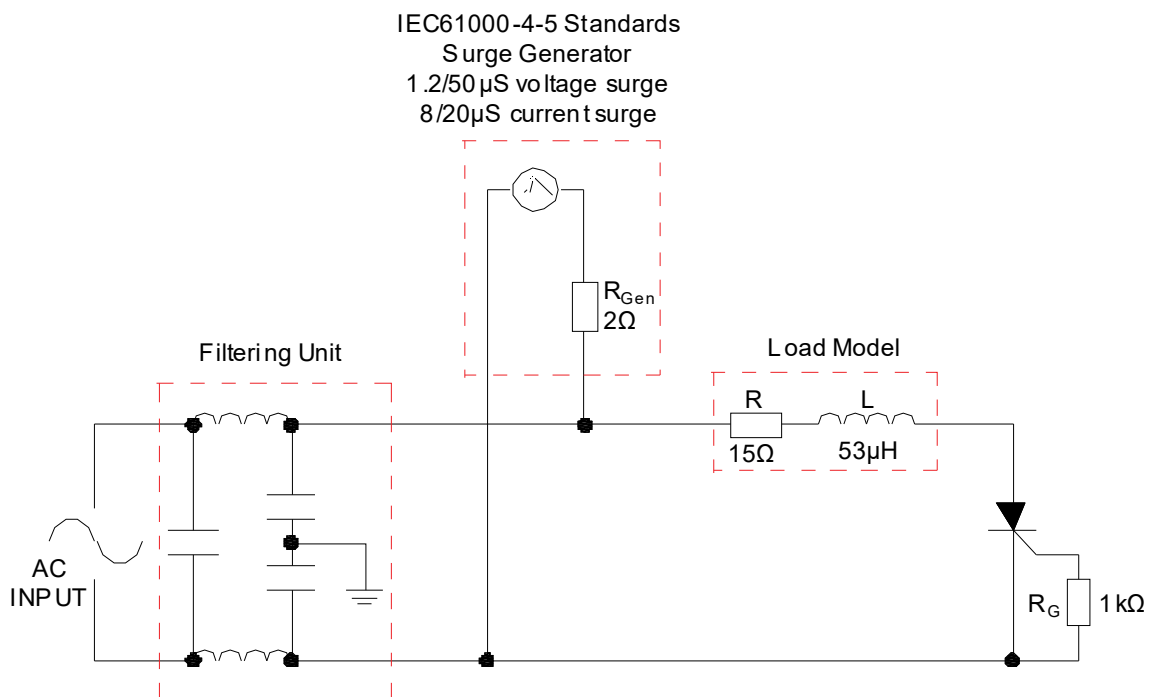


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



SHAPING AND SOLDERING PARAMETERS

Refer to 《Instructions for installation of plastic-sealed in-line power devices》 released by JieJie

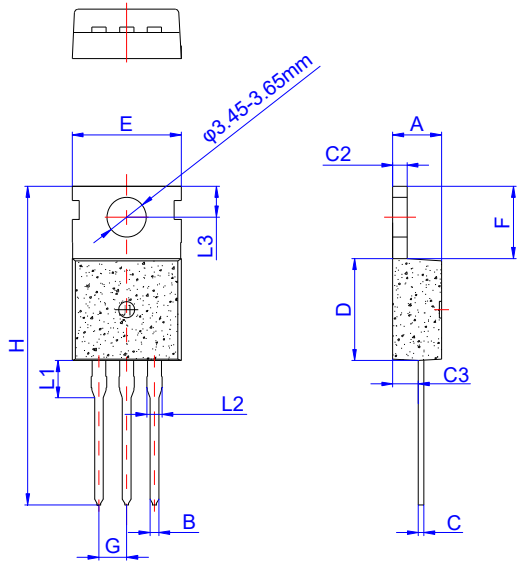
ORDERING INFORMATION

| Order code | Voltage V _{DRM} /V _{R_{RRM}} (V) | IGT(μA) | Package | Base qty. (pcs) | Delivery mode |
|------------|---|---------|---------|--------------------|------------------|
| JX040C | 600 | ≤200 | TO-220C | 50 | Tube |

Document Revision History

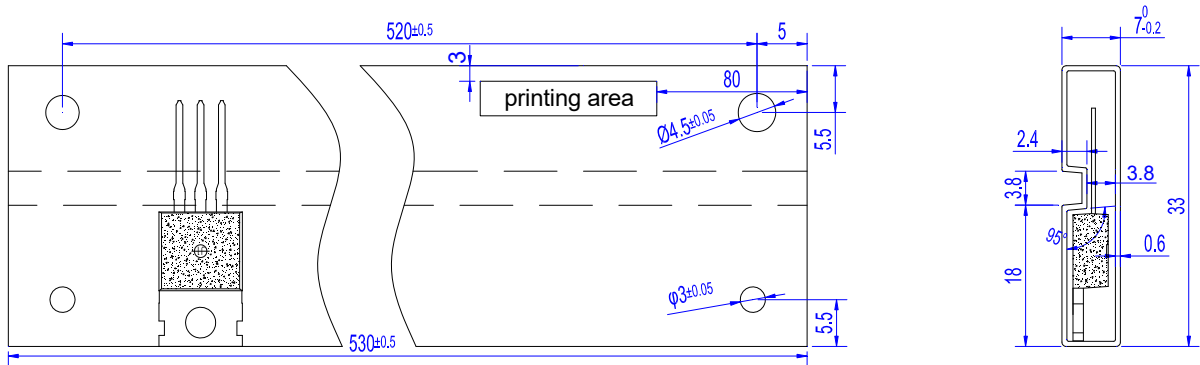
| Date | Revision | Changes |
|--------------|----------|-------------|
| Apr.12, 2023 | A.1.0 | Last update |

PACKAGE MECHANICAL DATA




| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 0.70 | | 0.90 | 0.028 | | 0.035 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 1.25 | | 1.35 | 0.049 | | 0.053 |
| C3 | 2.20 | | 2.60 | 0.087 | | 0.102 |
| D | 8.90 | | 9.90 | 0.350 | | 0.390 |
| E | 9.90 | | 10.3 | 0.390 | | 0.406 |
| F | 6.30 | | 6.90 | 0.248 | | 0.272 |
| G | 2.40 | | 2.70 | 0.094 | | 0.106 |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | 2.70 | | 3.30 | 0.106 | | 0.130 |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |

DELIVERY MODE



| PACKAGE | OUTLINE | TUBE (PCS) | INNER BOX (PCS) | PER CARTON |
|---------|---------|------------|-----------------|------------|
| TO-220C | TUBE | 50 | 1,000 | 5,000 |

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