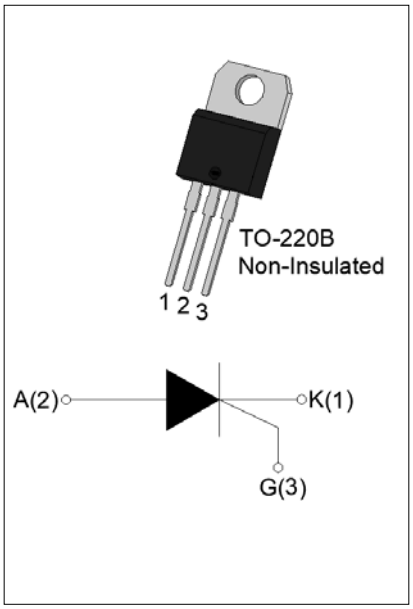
## JCT412B 12A SCR

Rev.A.1.0

### DESCRIPTION:

JCT412B with high ability to withstand the shock loading of large current, it is especially recommended for use on Battery Reverse Connect Protect. Package TO-220B is RoHS compliant.




### MAIN FEATURES

| Symbol | Value | Unit |
|---|---|---|
| $I_{T(RMS)}$ | 8 | A |
| $V_{DRM}/V_{RRM}$ | 400 | V |
| $I_{GT}$ | ≤15 | mA |

### ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Storage junction temperature range | $T_{stg}$ | -40-150 | ℃ |
| Operating junction temperature range | $T_j$ | -40-125 | ℃ |
| Repetitive peak off-state voltage ($T_j$=25℃) | $V_{DRM}$ | 400 | V |
| Repetitive peak reverse voltage ($T_j$=25℃) | $V_{RRM}$ | 400 | V |
| Average on-state current ($T_C$≤103℃) | $I_{T(AV)}$ | 7.5 | A |
| RMS on-state current ($T_C$≤103℃) | $I_{T(RMS)}$ | 12 | A |
| Non repetitive surge peak on-state current ($t_p$=10ms, $T_j$=25℃) | $I_{TSM}$ | 90 | A |
| Non repetitive surge peak on-state current ($t_p$=8.3ms, $T_j$=25℃) | | 95 | |
| $I^2t$ value for fusing ($t_p$=10ms , $T_j$=25℃) | $I^2t$ | 41 | $A^2s$ |
| Critical rate of rise of on-state current ($I_G$=2×$I_{GT}$, f=100Hz , $T_j$=125℃) | dI/dt | 200 | A/μs |
| Peak gate current ($t_p$=20μs , $T_j$=125℃) | $I_{GM}$ | 2 | A |
| Average gate power dissipation ($T_j$=125℃) | $P_{G(AV)}$ | 1 | W |
| Peak gate power | $P_{GM}$ | 5 | W |
| Peak pulse voltage ($T_j$=25℃; non-repetitive,off-state;FIG.7) | $V_{pp}$ | 0.4 | kV |

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

| Symbol | Test Condition | Value | | | Unit |
|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | |
| $I_{GT}$ | $V_D$=12V $R_L$=33Ω | - | - | 15 | mA |
| $V_{GT}$ | | - | - | 1 | V |
| $V_{GD}$ | $V_D$=$V_{DRM}$ $T_j$=125℃ $R_L$=3.3KΩ | 0.2 | - | - | V |
| $I_L$ | $I_G$=1.2$I_{GT}$ | - | - | 30 | mA |
| $I_H$ | $I_T$=100mA | - | - | 20 | mA |
| dV/dt | $V_D$=270V Gate Open $T_j$=125℃ | 400 | - | - | V/μs |
| $t_{on}$ | $I_G$=20mA $I_A$=200mA $I_R$=20mA $T_j$=25℃ | - | 3 | - | μs |
| $t_{off}$ | | - | 50 | - | μs |

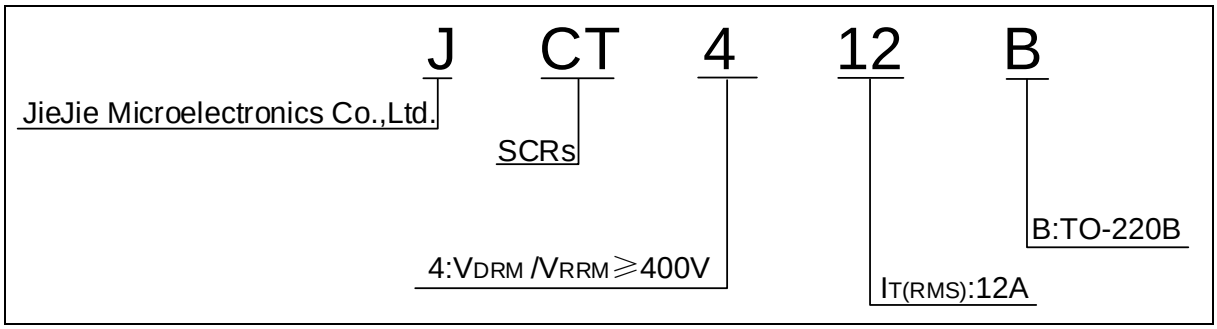
## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$=23A $t_p$=380μs | $T_j$=25℃ | 1.6 | V |
| $V_{TO}$ | Threshold voltage | $T_j$=125℃ | 0.9 | V |
| $R_D$ | Dynamic resistance | $T_j$=125℃ | 25.4 | mΩ |
| $I_{DRM}$ | $V_D$=$V_{DRM}$ $V_R$=$V_{RRM}$ | $T_j$=25℃ | 5 | μA |
| $I_{RRM}$ | | $T_j$=125℃ | 0.2 | mA |

## THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th(j-c)}$ | junction to case(DC) | 1.35 | ℃/W |
| $R_{th(j-a)}$ | junction to ambient (DC) | 40 | ℃/W |

## ORDERING INFORMATION




## MARKING

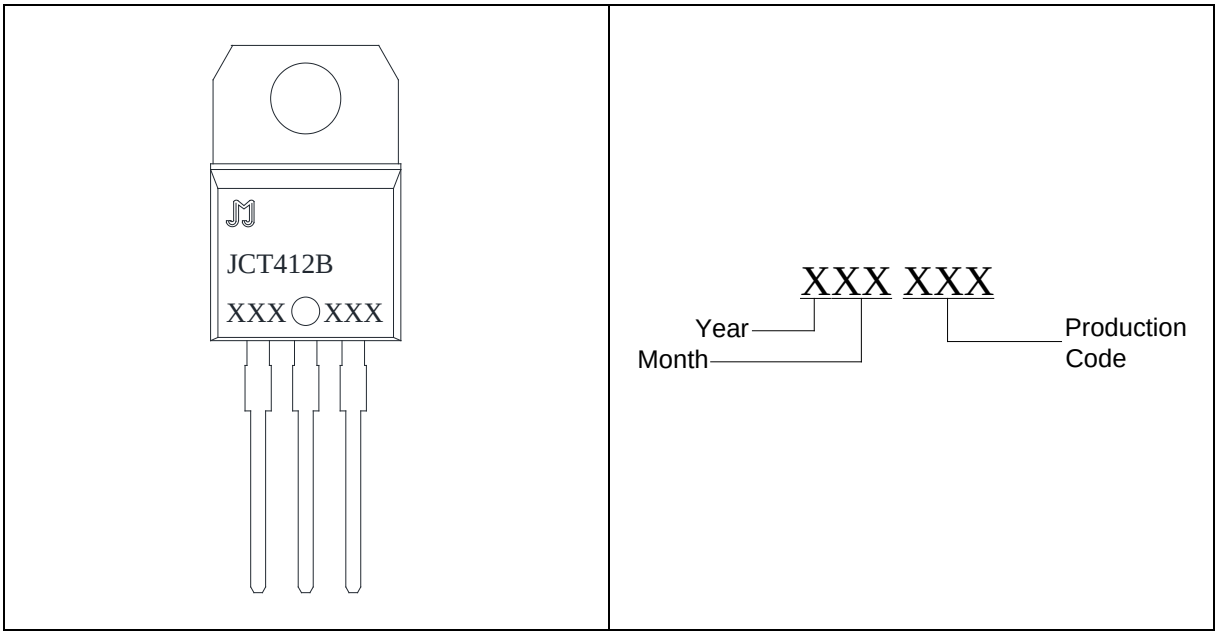


**FIG.1** Maximum power dissipation versus RMS on-state current

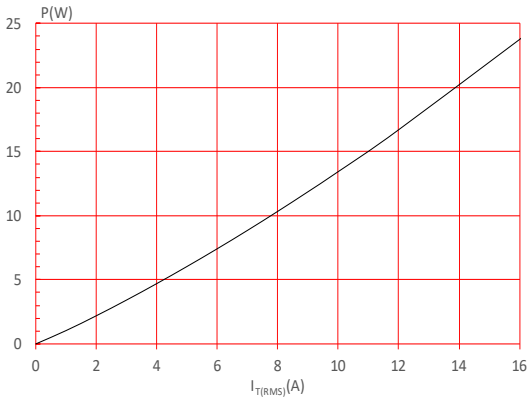



**FIG.2:** RMS on-state current versus case temperature

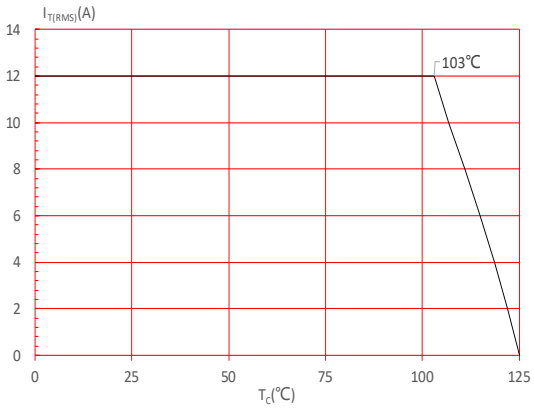



**FIG.3:** Surge peak on-state current versus number of cycles

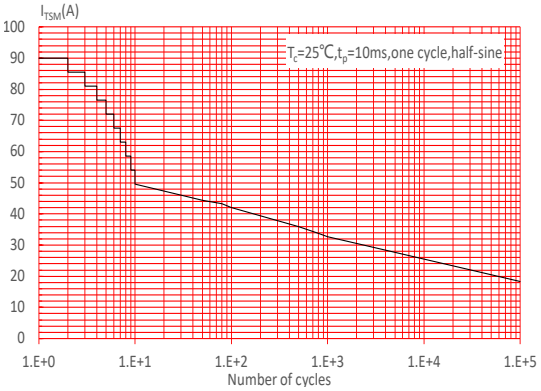



**FIG.4:** On-state characteristics

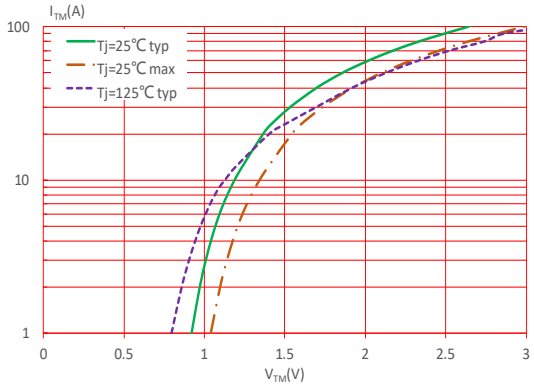



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p$<10ms, and corresponding value of $I^2t$ (dI/dt<200A/μs)

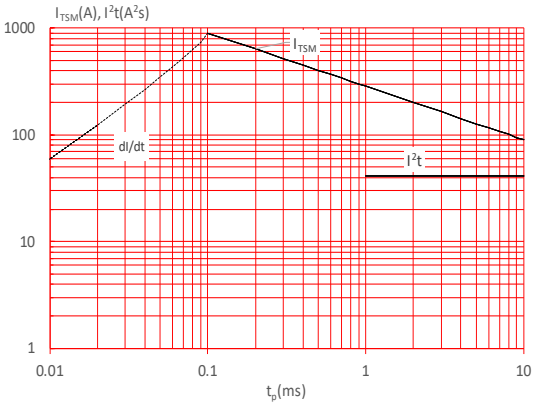



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature

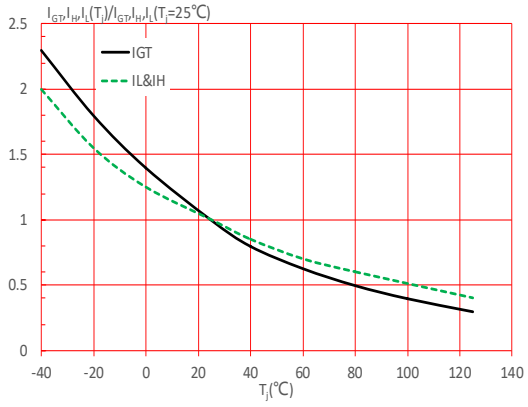
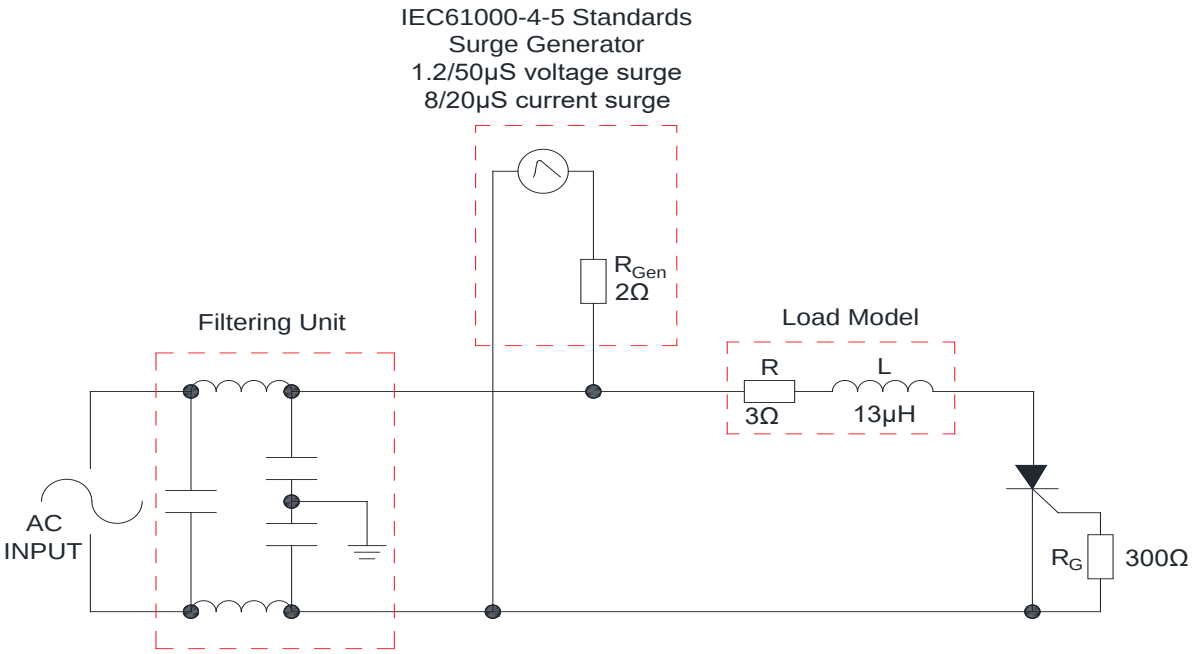


FIG.7：Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.




## SHAPING AND SOLDERING PARAMETERS

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

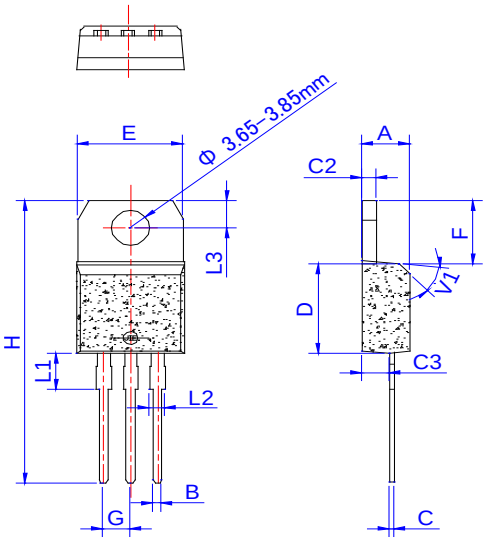
## ORDERING INFORMATION

| Order code | Voltage $V_{DRM}/V_{RRM}$ (V) | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|---|---|---|---|---|---|
| JCT412B | 400 | 15 | TO-220B | 50 | Tube |

## Document Revision History

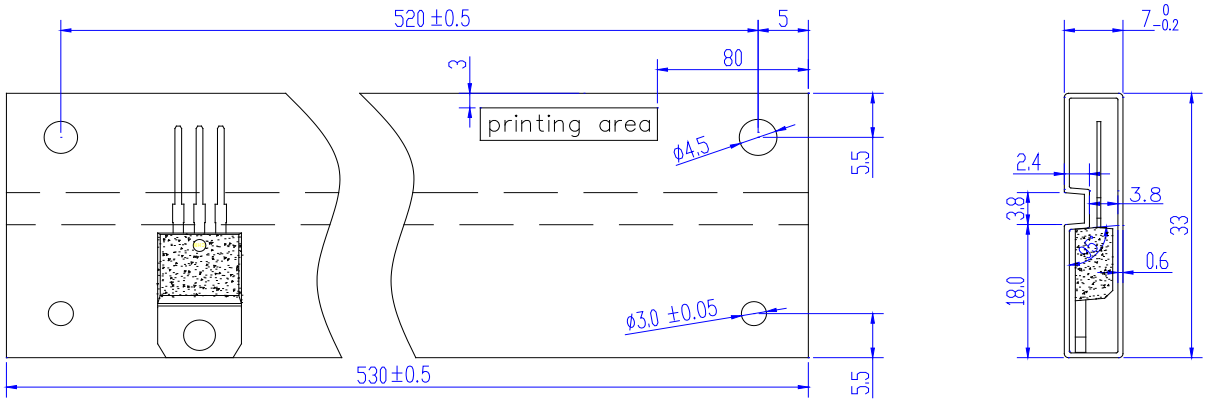
| Date | Revision | Changes |
|---|---|---|
| Apr.12, 2023 | A.1.0 | Last update |

## PACKAGE MECHANICAL DATA




| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 0.61 | | 0.88 | 0.024 | | 0.035 |
| C | 0.46 | | 0.70 | 0.018 | | 0.028 |
| C2 | 1.21 | | 1.32 | 0.048 | | 0.052 |
| C3 | 2.40 | | 2.72 | 0.094 | | 0.107 |
| D | 8.60 | | 9.70 | 0.339 | | 0.382 |
| E | 9.60 | | 10.4 | 0.378 | | 0.409 |
| F | 6.20 | | 6.60 | 0.244 | | 0.260 |
| G | 2.40 | | 2.70 | 0.094 | | 0.106 |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | 3.50 | | 4.10 | 0.138 | | 0.161 |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| V1 | | 45° | | | 45° | |

## DELIVERY MODE




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