



## JCT812CH 12A SCR

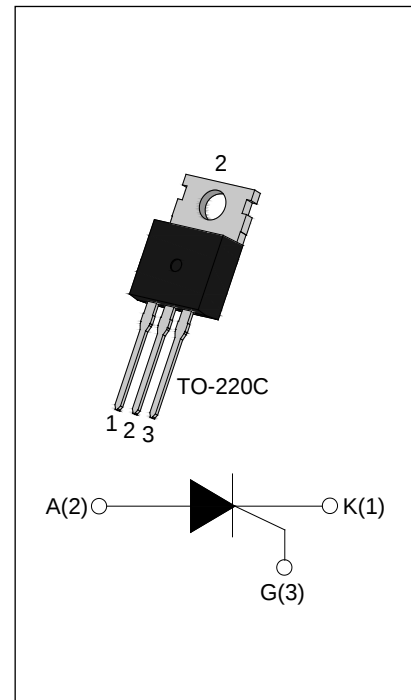
Rev.A.1.1

### DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT812CH of silicon controlled rectifiers provides high dV/dt rate with strong resistance to electromagnetic interference. It is especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc. Package TO-220C is RoHS compliant.

### MAIN FEATURES

| Symbol            | Value     | Unit |
|-------------------|-----------|------|
| $I_{T(RMS)}$      | 12        | A    |
| $V_{DRM}/V_{RRM}$ | 800       | V    |
| $I_{GT}$          | $\leq 15$ | mA   |



### ABSOLUTE MAXIMUM RATINGS

| Parameter                                                                                                          | Symbol       | Value   | Unit                   |
|--------------------------------------------------------------------------------------------------------------------|--------------|---------|------------------------|
| Storage junction temperature range                                                                                 | $T_{stg}$    | -40-150 | $^{\circ}\text{C}$     |
| Operating junction temperature range                                                                               | $T_j$        | -40-150 | $^{\circ}\text{C}$     |
| Repetitive peak off-state voltage ( $T_j=25^{\circ}\text{C}$ )                                                     | $V_{DRM}$    | 800     | V                      |
| Repetitive peak reverse voltage ( $T_j=25^{\circ}\text{C}$ )                                                       | $V_{RRM}$    | 800     | V                      |
| Average on-state current ( $T_c \leq 134^{\circ}\text{C}$ )                                                        | $I_{T(AV)}$  | 7.6     | A                      |
| RMS on-state current ( $T_c \leq 134^{\circ}\text{C}$ )                                                            | $I_{T(RMS)}$ | 12      | A                      |
| Non repetitive surge peak on-state current ( $t_p=10\text{ms}$ , $T_j=25^{\circ}\text{C}$ )                        | $I_{TSM}$    | 140     | A                      |
| Non repetitive surge peak on-state current ( $t_p=8.3\text{ms}$ , $T_j=25^{\circ}\text{C}$ )                       |              | 154     |                        |
| $I^2t$ value for fusing ( $t_p=10\text{ms}$ , $T_j=25^{\circ}\text{C}$ )                                           | $I^2t$       | 98      | $\text{A}^2\text{s}$   |
| Critical rate of rise of on-state current ( $I_G=2 \times I_{GT}$ , $f=100\text{Hz}$ , $T_j=150^{\circ}\text{C}$ ) | $di/dt$      | 150     | $\text{A}/\mu\text{s}$ |
| Peak gate current ( $t_p=20\mu\text{s}$ , $T_j=150^{\circ}\text{C}$ )                                              | $I_{GM}$     | 4       | A                      |

|                                                                                      |             |     |    |
|--------------------------------------------------------------------------------------|-------------|-----|----|
| Average gate power dissipation ( $T_j=150^{\circ}\text{C}$ )                         | $P_{G(AV)}$ | 1   | W  |
| Peak gate power                                                                      | $P_{GM}$    | 10  | W  |
| Peak pulse voltage<br>( $T_j=25^{\circ}\text{C}$ ; non-repetitive, off-state; FIG.7) | $V_{pp}$    | 0.5 | kV |

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

| Symbol    | Test Condition                                                                   | Value |      |      | Unit             |
|-----------|----------------------------------------------------------------------------------|-------|------|------|------------------|
|           |                                                                                  | MIN.  | TYP. | MAX. |                  |
| $I_{GT}$  | $V_D=12\text{V } R_L=33\Omega$                                                   | -     | -    | 15   | mA               |
| $V_{GT}$  |                                                                                  | -     | -    | 1    | V                |
| $V_{GD}$  | $V_D=V_{DRM} T_j=150^{\circ}\text{C } R_L=3.3\text{k}\Omega$                     | 0.2   | -    | -    | V                |
| $I_L$     | $I_G=1.2I_{GT}$                                                                  | -     | -    | 60   | mA               |
| $I_H$     | $I_T=500\text{mA}$                                                               | -     | -    | 50   | mA               |
| dV/dt     | $V_D=540\text{V}$ Gate Open $T_j=125^{\circ}\text{C}$                            | 1800  | -    | -    | V/ $\mu\text{s}$ |
|           | $V_D=540\text{V}$ Gate Open $T_j=150^{\circ}\text{C}$                            | 900   | -    | -    |                  |
| $t_{on}$  | $I_G=20\text{mA } I_A=200\text{mA } I_R=20\text{mA}$<br>$T_j=25^{\circ}\text{C}$ | -     | 5    | -    | $\mu\text{s}$    |
| $t_{off}$ |                                                                                  | -     | 80   | -    |                  |

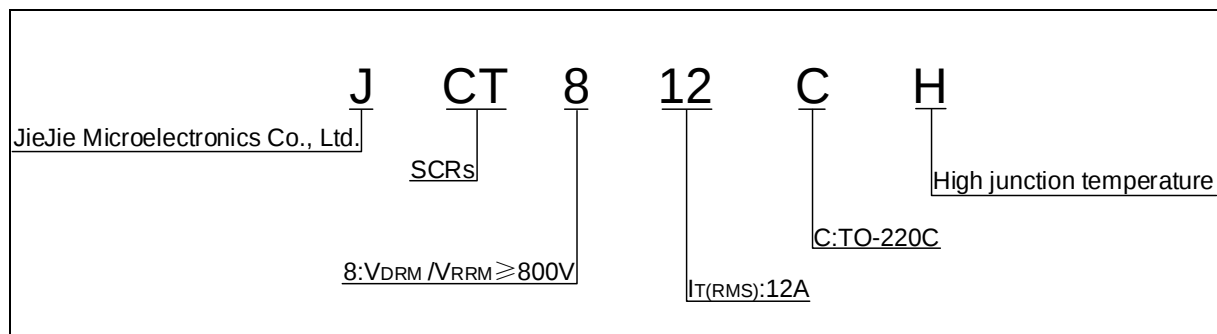
**STATIC CHARACTERISTICS**

| Symbol    | Parameter                               |                           | Value(MAX.) | Unit          |
|-----------|-----------------------------------------|---------------------------|-------------|---------------|
| $V_{TM}$  | $I_{TM}=24\text{A } t_p=380\mu\text{s}$ | $T_j=25^{\circ}\text{C}$  | 1.5         | V             |
| $V_{TO}$  | Threshold voltage                       | $T_j=150^{\circ}\text{C}$ | 0.74        | V             |
| $R_D$     | Dynamic resistance                      | $T_j=150^{\circ}\text{C}$ | 28          | m $\Omega$    |
| $I_{DRM}$ | $V_D=V_{DRM} V_R=V_{RRM}$               | $T_j=25^{\circ}\text{C}$  | 5           | $\mu\text{A}$ |
| $I_{RRM}$ |                                         | $T_j=150^{\circ}\text{C}$ | 1.2         | mA            |

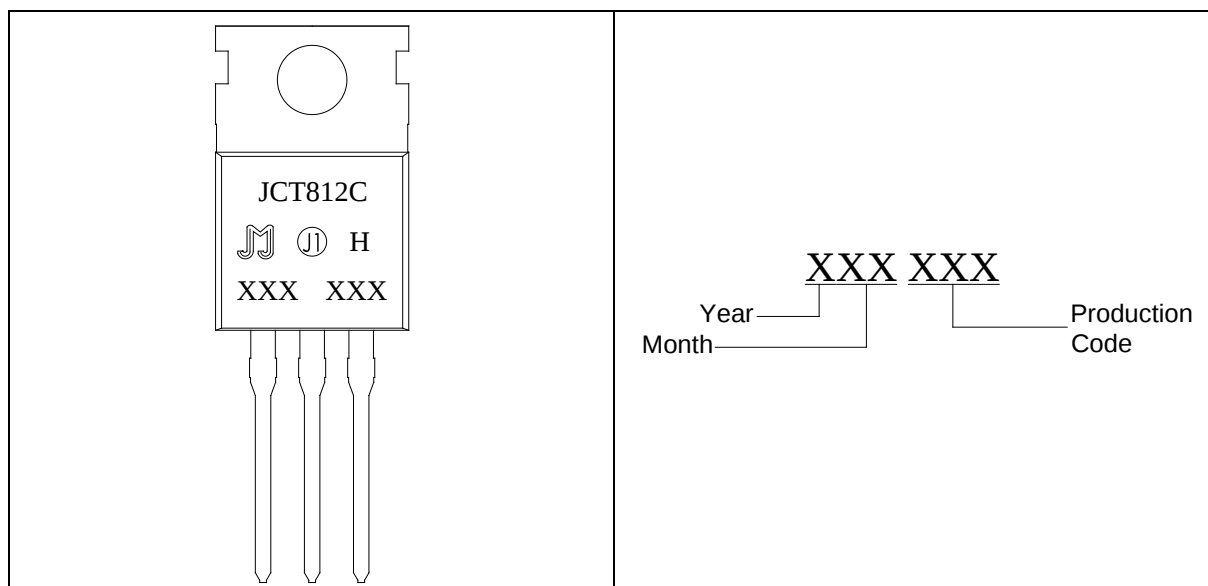
**THERMAL RESISTANCES**

| Symbol        | Parameter                | Value | Unit                 |
|---------------|--------------------------|-------|----------------------|
| $R_{th(j-c)}$ | junction to case (DC)    | 1.05  | $^{\circ}\text{C/W}$ |
| $R_{th(j-a)}$ | junction to ambient (DC) | 60    | $^{\circ}\text{C/W}$ |

## ORDERING INFORMATION



## MARKING



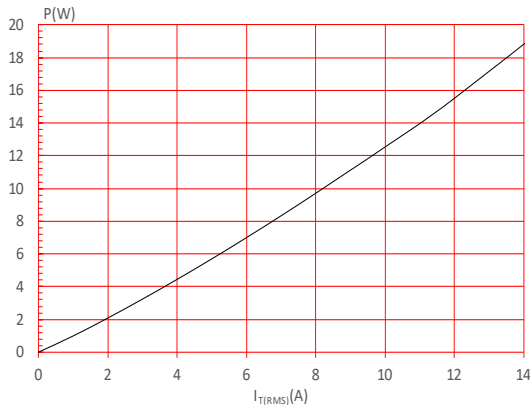
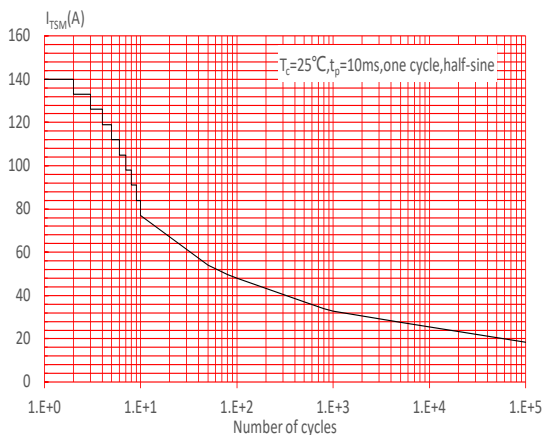
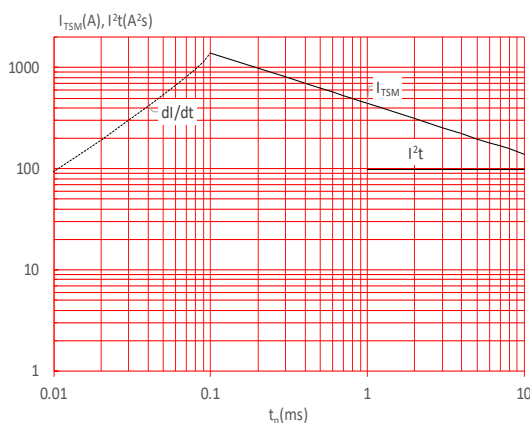
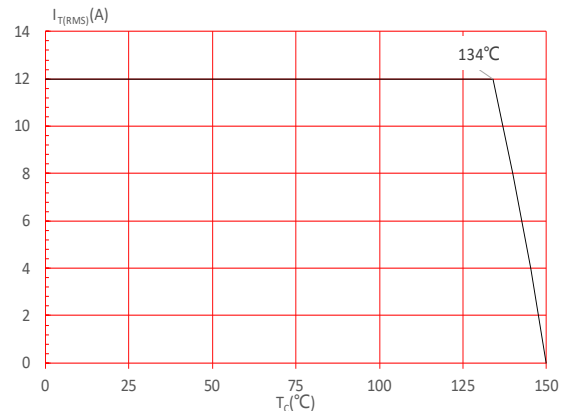
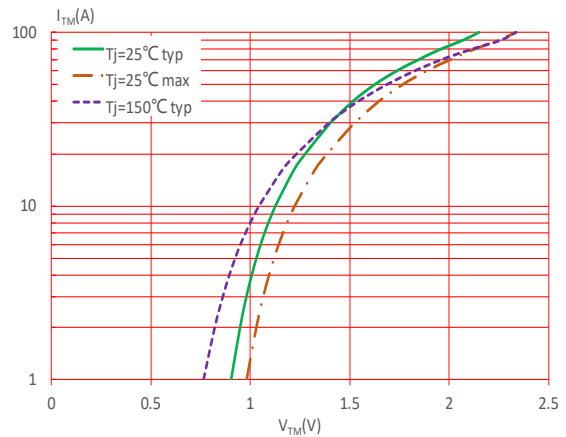
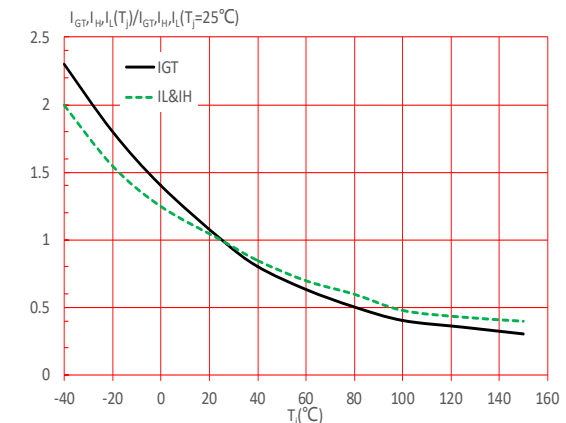
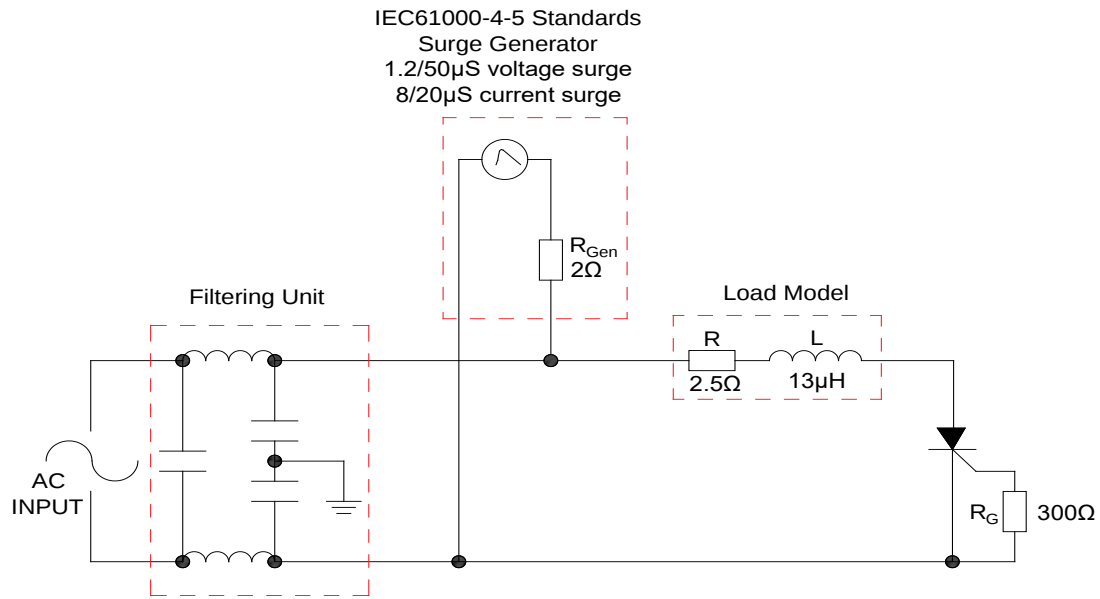
**FIG.1:** Maximum power dissipation versus RMS on-state current

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

**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10\text{ms}$ , and corresponding value of  $I^2t$  ( $di/dt < 150\text{A}/\mu\text{s}$ )

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

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

**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.



## LEAD FORMING AND SOLDERING

Refer to the application note "Assembly Instructions for Thyristors in Through-hole Package" released by JieJie Microelectronics

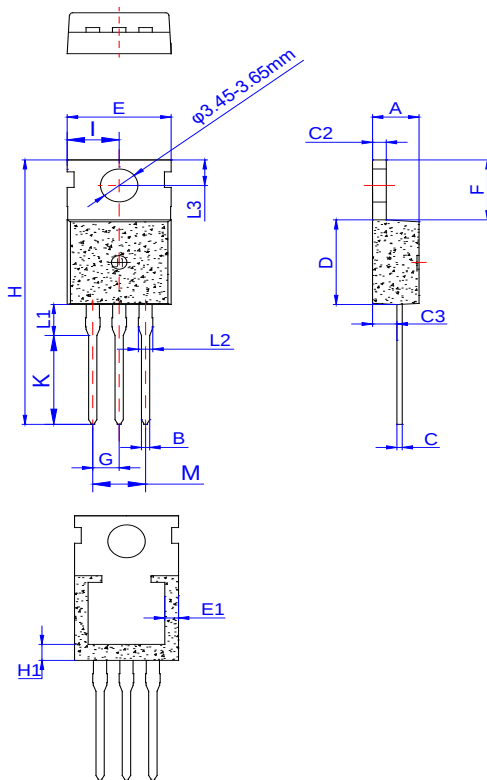
**ORDERING INFORMATION**

| Order code | Voltage<br>$V_{\text{DRM}}/V_{\text{RRM}}$ (V) | IGT(mA) | Package | Base qty.<br>(pcs) | Delivery<br>mode |
|------------|------------------------------------------------|---------|---------|--------------------|------------------|
| JCT812CH   | 800                                            | 15      | TO-220C | 50                 | Tube             |

**Document Revision History**

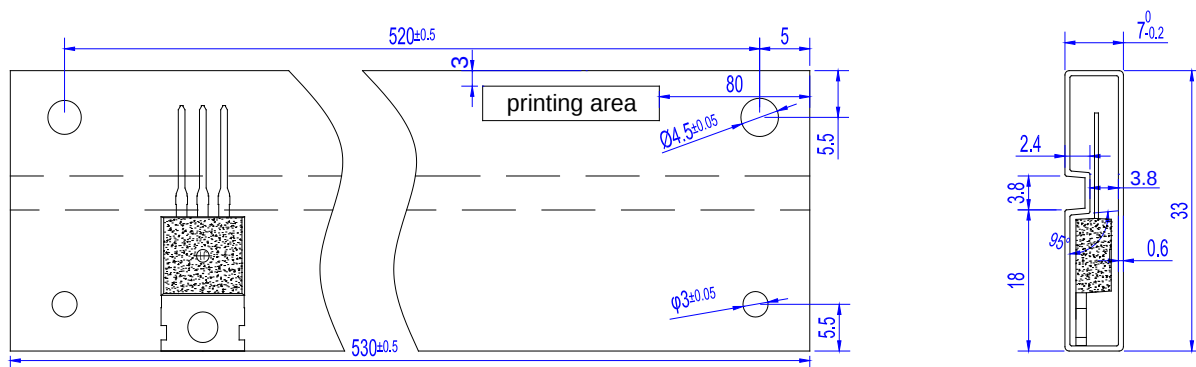
| Date         | Revision | Changes                        |
|--------------|----------|--------------------------------|
| Jun.15, 2023 | A.1.0    | Last update                    |
| Oct.14, 2025 | A.1.1    | Revise PACKAGE MECHANICAL DATA |

## 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        |      | 10.30 | 0.390  |      | 0.406 |
| E1   | 0.80        |      | 1.20  | 0.031  |      | 0.047 |
| F    | 6.30        |      | 6.90  | 0.248  |      | 0.272 |
| G    | 2.40        |      | 2.70  | 0.094  |      | 0.106 |
| H    | 28.00       |      | 29.80 | 1.102  |      | 1.173 |
| H1   | 2.15        |      | 2.55  | 0.085  |      | 0.100 |
| I    | 4.70        |      | 5.10  | 0.185  |      | 0.201 |
| K    | 9.90        |      | 10.30 | 0.390  |      | 0.406 |
| 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 |
| M    | 4.80        |      | 5.20  | 0.189  |      | 0.205 |

## DELIVERY MODE



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

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