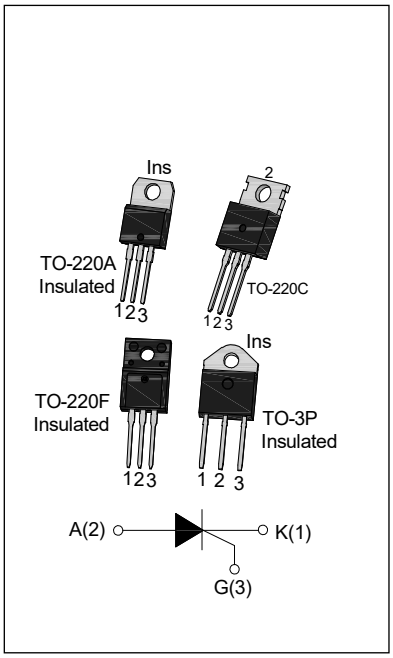
## JCT1230 Series 30A SCRs

Rev.2.0

### DESCRIPTION:

with high ability to withstand the shock loading of large current, JCT1230 SCRs provide high dv/dt rate with strong resistance to electromagnetic interference. They are especially recommended for use on solid state relay, motorcycle, power charger, T-tools etc.

From all three terminals to external heatsink, JCT1230A & JCT1230Z provide a rated insulation voltage of 2500 $V_{RMS}$, and JCT1230F provides a rated insulation voltage of 2500 $V_{RMS}$ complying with UL standards (File ref: E252906).




### MAIN FEATURES

| Symbol | JCT1230 |
|---|---|
| $V_{DRM}$/ $V_{RRM}$ | 1200V |
| $I_{T(RMS)}$ | 30A |
| $I_{GT}$ | 35mA |

### 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 | | $V_{DRM}$ | 1200 | V |
| Repetitive peak reverse voltage | | $V_{RRM}$ | 1200 | V |
| RMS on-state current | TO-3P (Ins) ($T_C$=90℃) | $I_{T(RMS)}$ | 30 | A |
| | TO-220A(Ins) TO-220F(Ins) ($T_C$=75℃) | | | |
| | TO-220C ($T_C$=85℃) | | | |

| | | | |
|---|---|---|---|
| Non repetitive surge peak on-state current (tp=10ms) | $I_{TSM}$ | 300 | A |
| $I^2t$ value for fusing (tp=10ms) | $I^2t$ | 450 | $A^2s$ |
| Critical rate of rise of on-state current ($I_G$=2×$I_{GT}$) | dI/dt | 150 | A/μs |
| Peak gate current | $I_{GM}$ | 5 | A |
| Peak gate power | $P_{GM}$ | 10 | W |
| Average gate power dissipation ($T_j$=125℃) | $P_{G(AV)}$ | 1 | W |

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

| Symbol | Test Condition | Value | | | Unit |
|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | |
| $I_{GT}$ | $V_D$=12V $R_L$=30Ω | - | - | 35 | mA |
| $V_{GT}$ | | - | - | 1.3 | V |
| $V_{GD}$ | $V_D$=$V_{DRM}$ $T_j$=125℃ | 0.25 | - | - | V |
| $I_L$ | $I_G$=1.2 $I_{GT}$ | - | - | 100 | mA |
| $I_H$ | $I_T$=1A | - | - | 80 | mA |
| dV/dt | $V_D$=2/3$V_{DRM}$ $T_j$=125℃ Gate Open | 500 | - | - | V/μs |

## STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX) | Unit |
|---|---|---|---|---|
| $V_{TM}$ | $I_{TM}$=60A tp=380μs | $T_C$=25℃ | 1.7 | V |
| $I_{DRM}$ | $V_D$=$V_{DRM}$ $V_R$=$V_{RRM}$ | $T_C$=25℃ | 20 | μA |
| $I_{RRM}$ | | $T_C$=125℃ | 6 | mA |

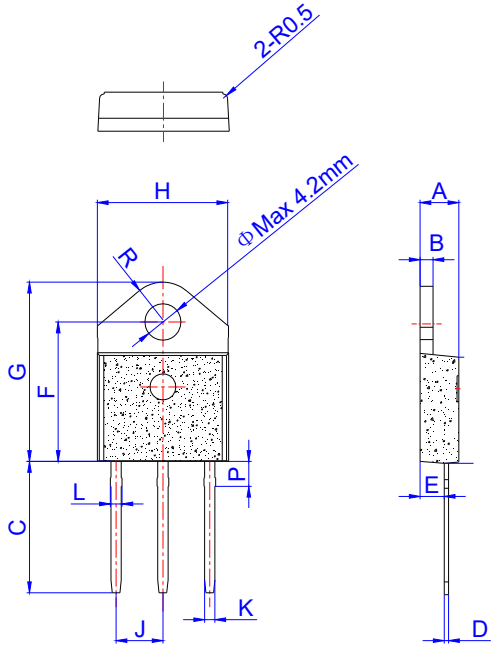
## THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $R_{th(j-c)}$ | junction to case(DC) | TO-3P(Ins) | 0.70 | ℃/W |
| | | TO-220B | 0.85 | |
| | | TO-220A(Ins)/ TO-220F(Ins) | 1.12 | |

## ORDERING INFORMATION

| J | CT | 12 | 30 | Z |
|---|---|---|---|---|
| JieJie Microelectronics Co.,Ltd | SCRs | 12:$V_{DRM}/V_{RRM}\geqslant$1200V | $I_{T(RMS)}$:30A | C:TO-220C<br>Z:TO-3P(Ins)<br>A:TO-220A(Ins)<br>F:TO-220F(Ins) |

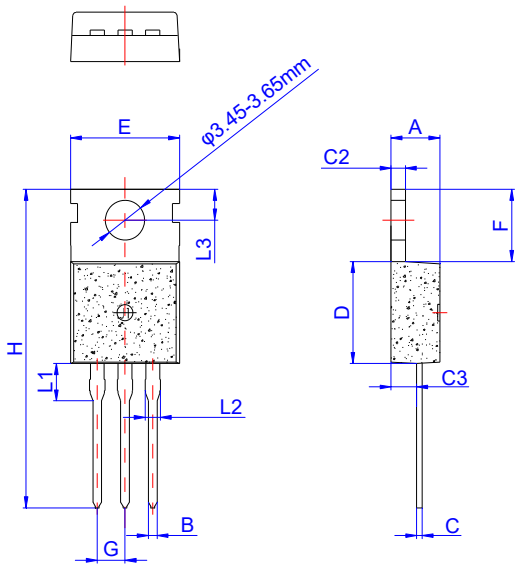
## PACKAGE MECHANICAL DATA




TO-3P Ins

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 1.45 | | 1.55 | 0.057 | | 0.061 |
| C | 14.35 | | 15.60 | 0.565 | | 0.614 |
| D | 0.50 | | 0.70 | 0.020 | | 0.028 |
| E | 2.70 | | 2.90 | 0.106 | | 0.114 |
| F | 15.80 | | 16.50 | 0.622 | | 0.650 |
| G | 20.40 | | 21.10 | 0.803 | | 0.831 |
| H | 15.10 | | 15.50 | 0.594 | | 0.610 |
| J | 5.40 | | 5.65 | 0.213 | | 0.222 |
| K | 1.10 | | 1.40 | 0.043 | | 0.055 |
| L | 1.35 | | 1.50 | 0.053 | | 0.059 |
| P | 2.80 | | 3.00 | 0.110 | | 0.118 |
| R | | 4.35 | | | 0.171 | |

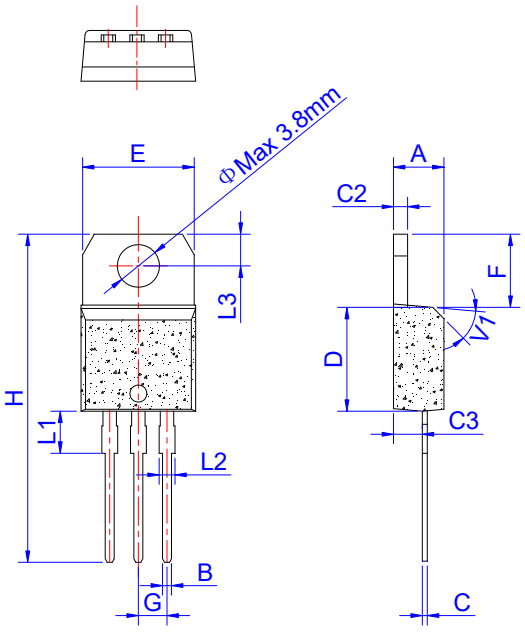
## PACKAGE MECHANICAL DATA




TO-220C

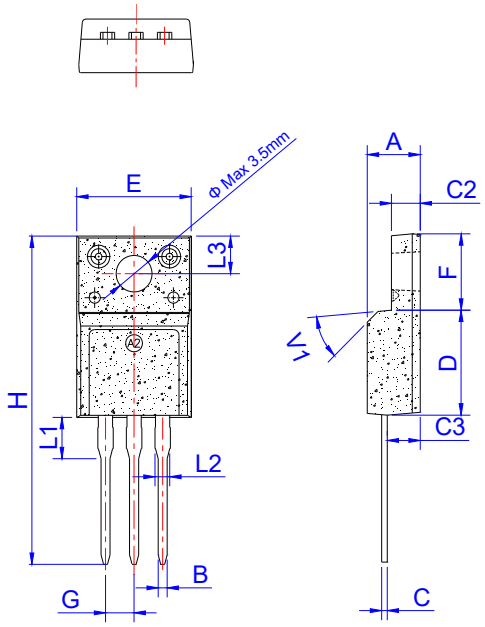
| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| B | 0.70 | | 0.90 | 0.028 | | 0.035 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 1.25 | | 1.35 | 0.049 | | 0.053 |
| 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 |

## PACKAGE MECHANICAL DATA




TO-220A Ins

| 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 | 9.80 | | 10.4 | 0.386 | | 0.409 |
| F | 6.55 | | 6.95 | 0.258 | | 0.274 |
| G | | 2.54 | | | 0.1 | |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | | 3.75 | | | 0.148 | |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | 2.65 | | 2.95 | 0.104 | | 0.116 |
| V1 | | 45° | | | 45° | |




TO-220F Ins

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.50 | | 4.90 | 0.177 | | 0.193 |
| B | 0.74 | 0.80 | 0.83 | 0.029 | 0.031 | 0.033 |
| C | 0.47 | | 0.65 | 0.019 | | 0.026 |
| C2 | 2.45 | | 2.75 | 0.096 | | 0.108 |
| C3 | 2.60 | | 3.00 | 0.102 | | 0.118 |
| D | 8.80 | | 9.30 | 0.346 | | 0.366 |
| E | 9.80 | | 10.4 | 0.386 | | 0.410 |
| F | 6.40 | | 6.80 | 0.252 | | 0.268 |
| G | | 2.54 | | | 0.1 | |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | | 3.63 | | | 0.143 | |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | | 3.30 | | | 0.130 | |
| V1 | | 45° | | | 45° | |

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

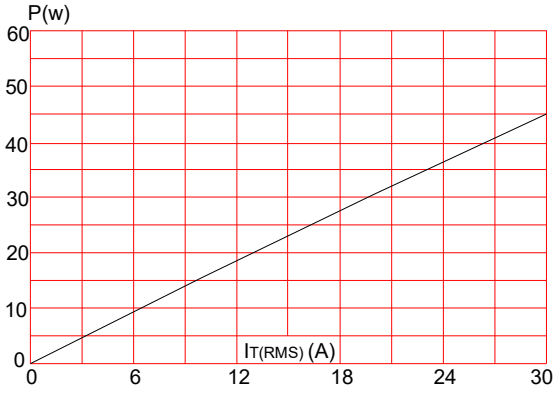



**FIG.2:** RMS on-state current versus case temperature

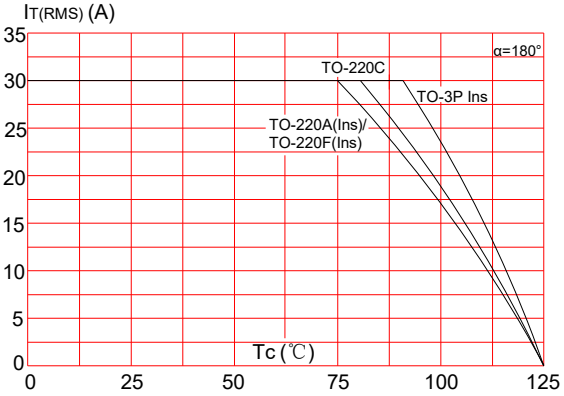



**FIG.3:** Surge peak on-state current versus number of cycles

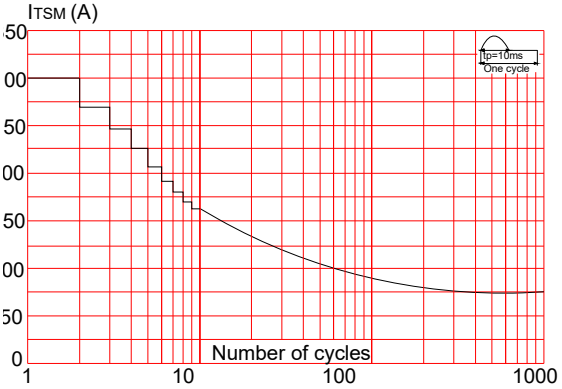



**FIG.4:** On-state characteristics (maximum values)

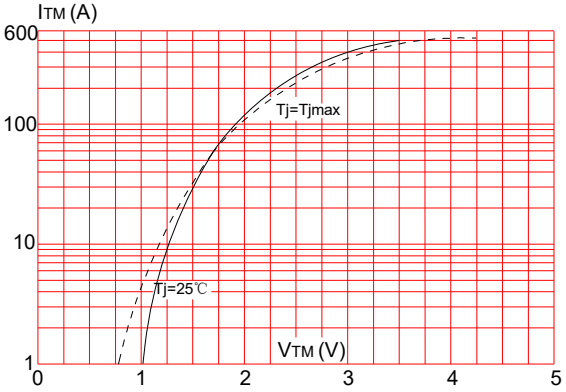



**FIG.5:** Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<10ms, and corresponging value of $I^2t$ (dI/dt < 150A/μs)

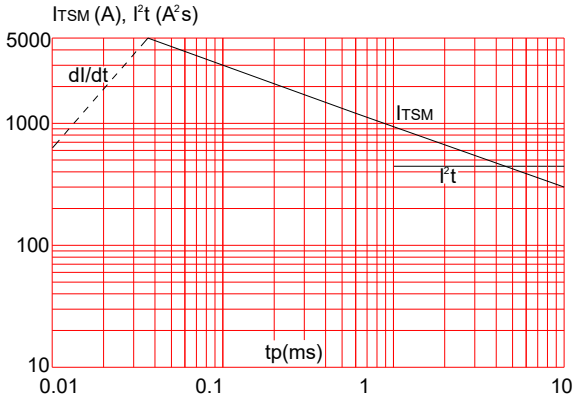
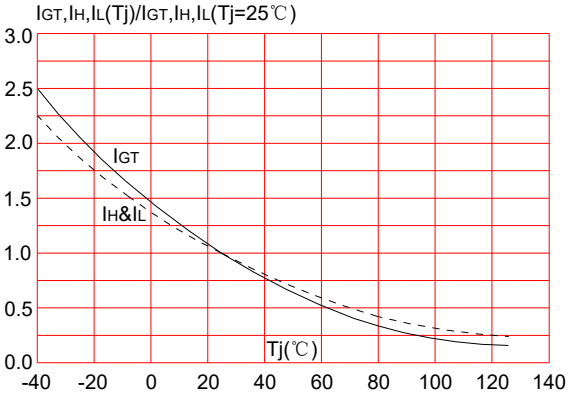



**FIG.6:** Relative variations of gate trigger current, holding current and latching current versus junction temperature



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