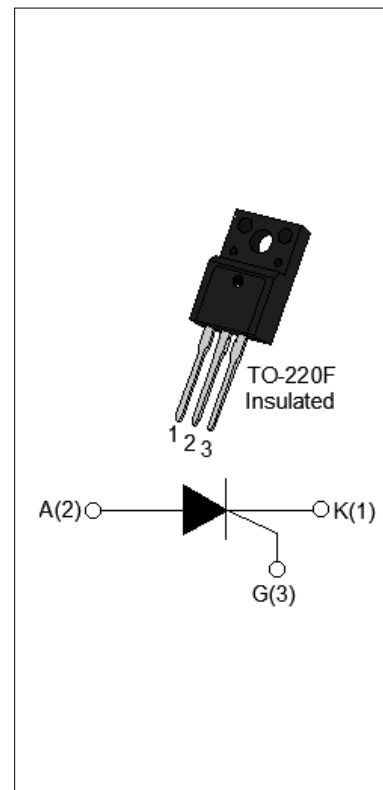




DESCRIPTION:

With high ability to withstand the shock loading of large current, JCT820F SCR 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. From all three terminals to external heatsink, JCT820F provides a rated insulation voltage of $2000 V_{RMS}$, complying with UL standards (File ref: E252906). Package TO-220F is RoHS compliant.



MAIN FEATURES

| Symbol | Value | Unit |
|-------------------|-----------|------|
| $I_{T(RMS)}$ | 20 | A |
| V_{DRM}/V_{RRM} | 800 | V |
| I_{GT} | ≤ 15 | mA |

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 | $^{\circ}C$ |
| Repetitive peak off-state voltage ($T_j=25^{\circ}C$) | V_{DRM} | 800 | V |
| Repetitive peak reverse voltage ($T_j=25^{\circ}C$) | V_{RRM} | 800 | V |
| Average on-state current ($T_c \leq 61^{\circ}C$) | $I_{T(AV)}$ | 13 | A |
| RMS on-state current ($T_c \leq 61^{\circ}C$) | $I_{T(RMS)}$ | 20 | A |
| Non repetitive surge peak on-state current ($t_p=10ms, T_j=25^{\circ}C$) | I_{TSM} | 250 | A |
| Non repetitive surge peak on-state current ($t_p=8.3ms, T_j=25^{\circ}C$) | | 275 | |
| I^2t value for fusing ($t_p=10ms, T_j=25^{\circ}C$) | I^2t | 312.5 | 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 | 150 | $A/\mu s$ |

| | | | |
|------------------------------------------------------------------------------|-------------|-----|----|
| Peak gate current ($t_p=20\mu s$, $T_j=125^\circ C$) | I_{GM} | 5 | A |
| Average gate power dissipation ($T_j=125^\circ C$) | $P_{G(AV)}$ | 1 | W |
| Peak gate power | P_{GM} | 20 | W |
| Peak pulse voltage ($T_j=25^\circ C$; non-repetitive, off-state; FIG.7) | V_{pp} | 0.5 | kV |

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

| Symbol | Test Condition | Value | | | Unit |
|-----------|-------------------------------------------------------|-------|------|------|------------|
| | | MIN. | TYP. | MAX. | |
| I_{GT} | $V_D=12V$ $R_L=33\Omega$ | - | - | 15 | mA |
| V_{GT} | | - | - | 1 | V |
| V_{GD} | $V_D=V_{DRM}$ $T_j=125^\circ C$ $R_L=3.3K\Omega$ | 0.2 | - | - | V |
| I_L | $I_G=1.2I_{GT}$ | - | - | 60 | mA |
| I_H | $I_T=500mA$ | - | - | 50 | mA |
| dV/dt | $V_D=540V$ Gate Open $T_j=125^\circ C$ | 300 | - | - | V/ μs |
| t_{on} | $I_G=40mA$ $I_A=400mA$ $I_R=40mA$ $T_j=25^\circ C$ | - | 5 | - | μs |
| t_{off} | | - | 70 | - | |

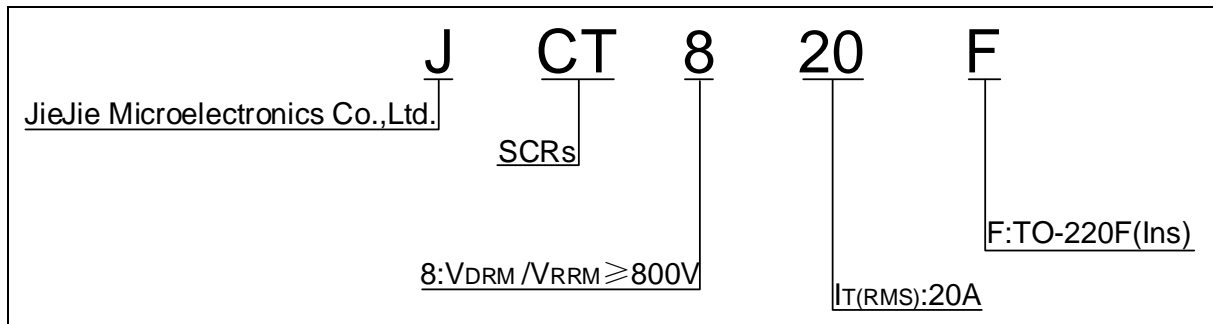
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|-----------------------------|-------------------|-------------|------------|
| V_{TM} | $I_{TM}=40A$ $t_p=380\mu s$ | $T_j=25^\circ C$ | 1.55 | V |
| V_{TO} | Threshold voltage | $T_j=125^\circ C$ | 0.74 | V |
| R_D | Dynamic resistance | $T_j=125^\circ C$ | 20 | m Ω |
| I_{DRM} | $V_D=V_{DRM}$ $V_R=V_{RRM}$ | $T_j=25^\circ C$ | 5 | μA |
| I_{RRM} | | $T_j=125^\circ C$ | 0.4 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|--------------------------|-------|--------------|
| $R_{th(j-c)}$ | junction to case(DC) | 2.4 | $^\circ C/W$ |
| $R_{th(j-a)}$ | junction to ambient (DC) | 65 | $^\circ C/W$ |

ORDERING INFORMATION



MARKING

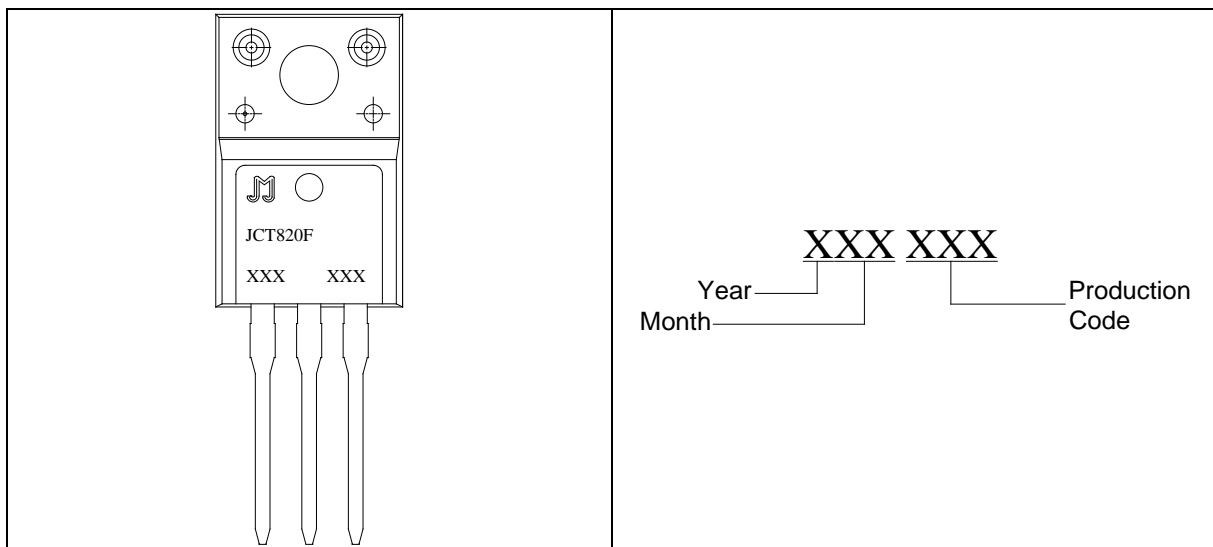


FIG.1 Maximum power dissipation versus RMS on-state current

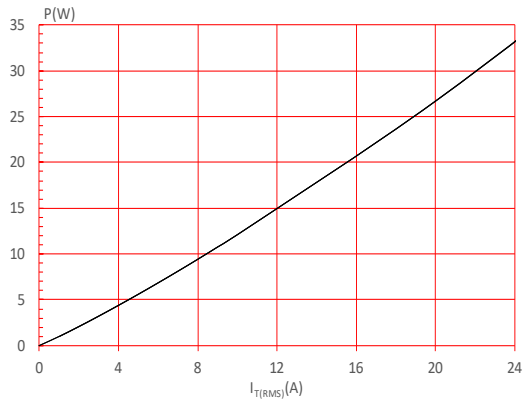


FIG.2: RMS on-state current versus case temperature

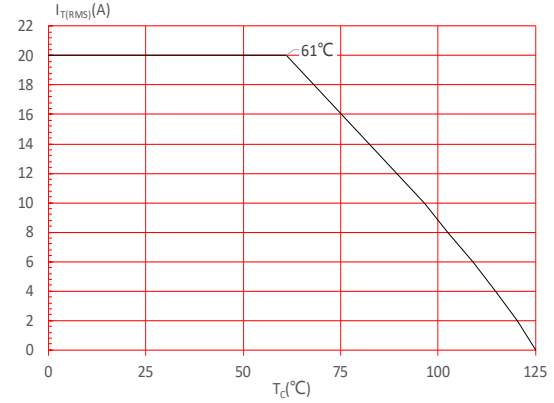


FIG.3: Surge peak on-state current versus number of cycles

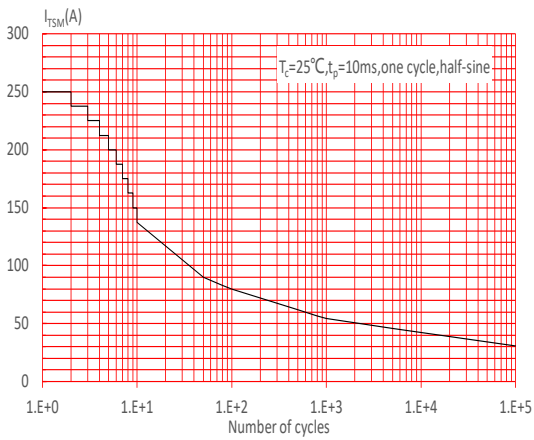


FIG.4: On-state characteristics

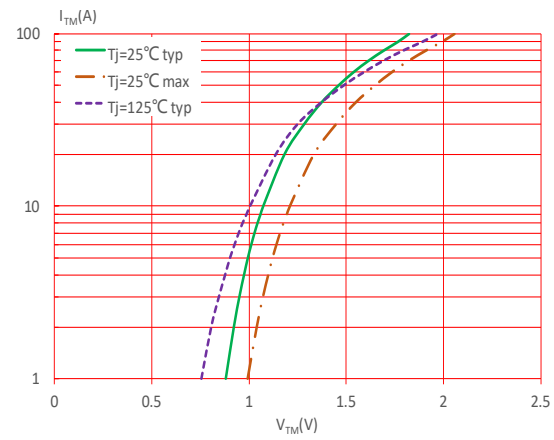


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 150\text{A}/\mu\text{s}$)

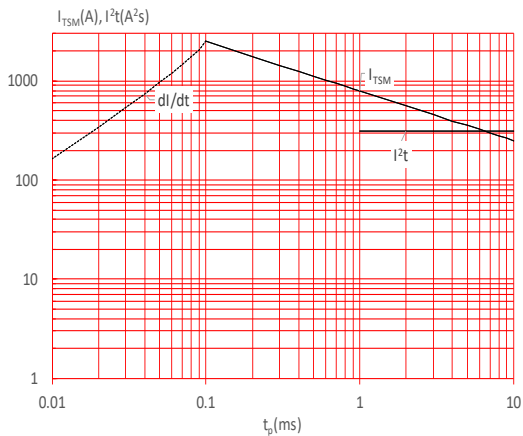


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

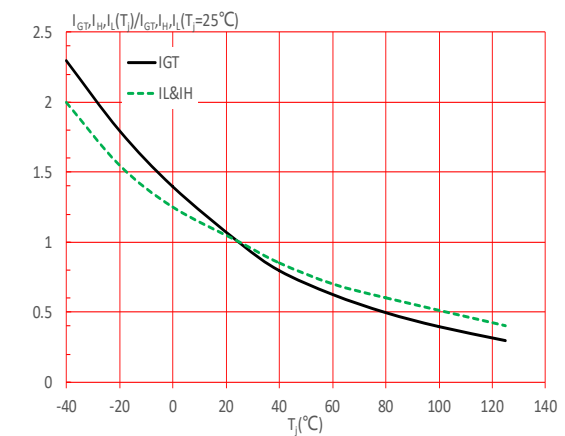
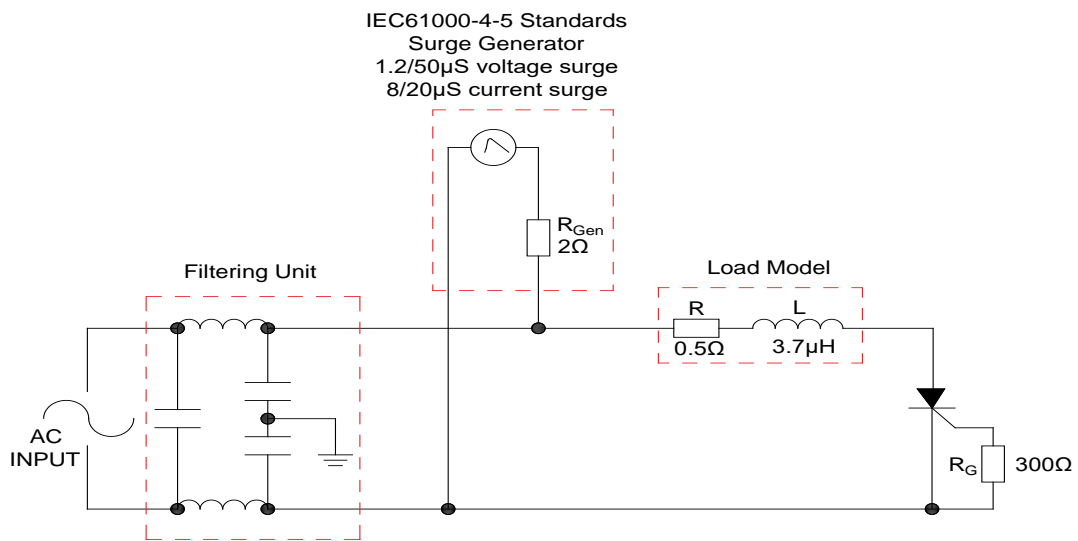


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



SHAPING AND SOLDERING PARAMETERS

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

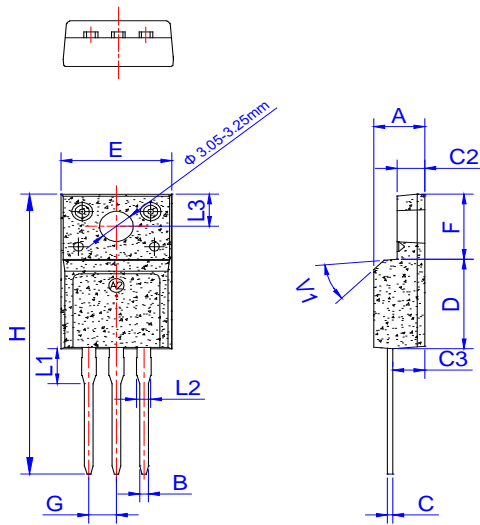
ORDERING INFORMATION

| Order code | Voltage V_{DRM}/V_{RRM} (V) | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|------------|----------------------------------|---------|--------------|--------------------|------------------|
| JCT820F | 800 | 15 | TO-220F(Ins) | 50 | Tube |

Document Revision History

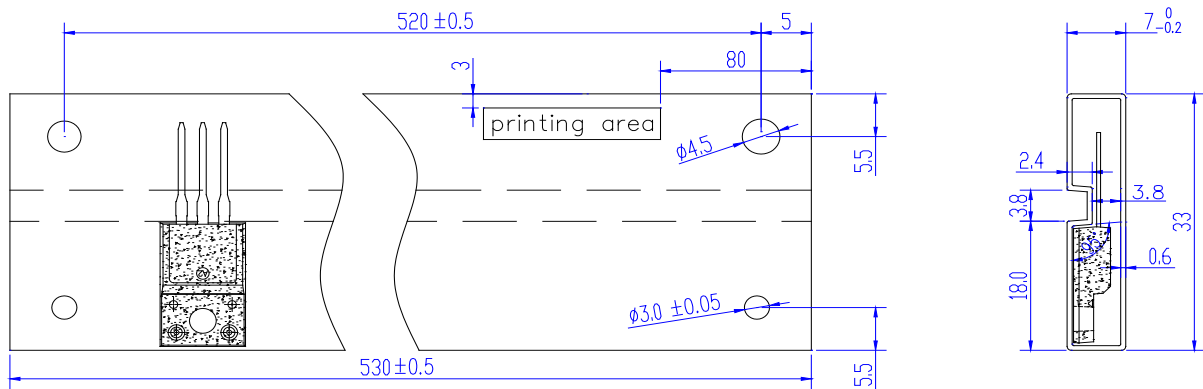
| Date | Revision | Changes |
|--------------|----------|-------------|
| Apr.13, 2023 | A.1.0 | Last update |

PACKAGE MECHANICAL DATA




| 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 | 2.40 | | 2.70 | 0.094 | | 0.106 |
| H | 28.0 | | 29.8 | 1.102 | | 1.173 |
| L1 | 3.20 | | 3.80 | 0.126 | | 0.150 |
| L2 | 1.14 | | 1.70 | 0.045 | | 0.067 |
| L3 | 3.20 | | 3.60 | 0.126 | | 0.142 |
| V1 | | 45° | | | 45° | |

DELIVERY MODE



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

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