



JCT640F 40A SCR

Rev.A.1.0

With high ability to withstand the shock loading of large current, JCT640F 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, JCT640F provides a rated insulation voltage of 2000 V_{RMS} , complying with UL standards (File ref: E252906). Package TO-220F is RoHS compliant.



| 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 ($T_j=25^\circ C$) | V_{DRM} | 600 | V |
| Repetitive peak reverse voltage ($T_j=25^\circ C$) | V_{RRM} | 600 | V |
| Average on-state current ($T_c=56^\circ C$) | $I_{T(AV)}$ | 25 | A |
| RMS on-state current ($T_c=56^\circ C$) | $I_{T(RMS)}$ | 40 | A |

Non repetitive surge peak on-state current (t_p)

| | | | |
|--|-------------|-----|----|
| Peak gate current ($t_p=20\mu s$, $T_j=125$) | I_{GM} | 10 | A |
| Average gate power dissipation ($T_j=125$) | $P_{G(AV)}$ | 1 | W |
| Peak gate power | P_{GM} | 20 | W |
| Peak pulse voltage ($T_j=25$; non-repetitive, off-state; FIG.7) | V_{pp} | 0.5 | kV |

($T_j=25$ unless otherwise specified)

| Symbol | Test Condition | Value | | | Unit |
|-----------|---|-------|------|------|------------|
| | | MIN. | TYP. | MAX. | |
| I_{GT} | $V_D=12V$ $R_L=33$ | - | - | 35 | mA |
| V_{GT} | | - | - | 1 | V |
| V_{GD} | $V_D=V_{DRM}$ $T_j=125$ $R_L=3.3K$ | 0.2 | - | - | V |
| I_L | $I_G=1.2I_{GT}$ | - | - | 80 | mA |
| I_H | $I_T=500mA$ | - | - | 70 | mA |
| dV/dt | $V_D=400V$ Gate Open $T_j=125$ | 1200 | - | - | V/ μs |
| t_{on} | $I_G=40mA$ $I_A=400mA$ $I_R=40mA$ $T_j=25$ | - | 2 | - | μs |
| t_{off} | | - | 60 | - | |

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|-----------------------------|-----------|-------------|---------|
| V_{TM} | $I_{TM}=80A$ $t_p=380\mu s$ | $T_j=25$ | 1.55 | V |
| V_{TO} | Threshold voltage | $T_j=125$ | 0.69 | V |
| R_D | Dynamic resistance | $T_j=125$ | 16 | m |
| I_{DRM} | $V_D=V_{DRM}$ $V_R=V_{RRM}$ | $T_j=25$ | 5 | μA |
| I_{RRM} | | $T_j=125$ | 1 | mA |

| Symbol | Parameter | Value | Unit |
|---------------|--------------------------|-------|-------------|
| $R_{th(j-c)}$ | junction to case(DC) | 1.3 | /W |
| $R_{th(j-a)}$ | junction to ambient (DC) | 60 | /W |

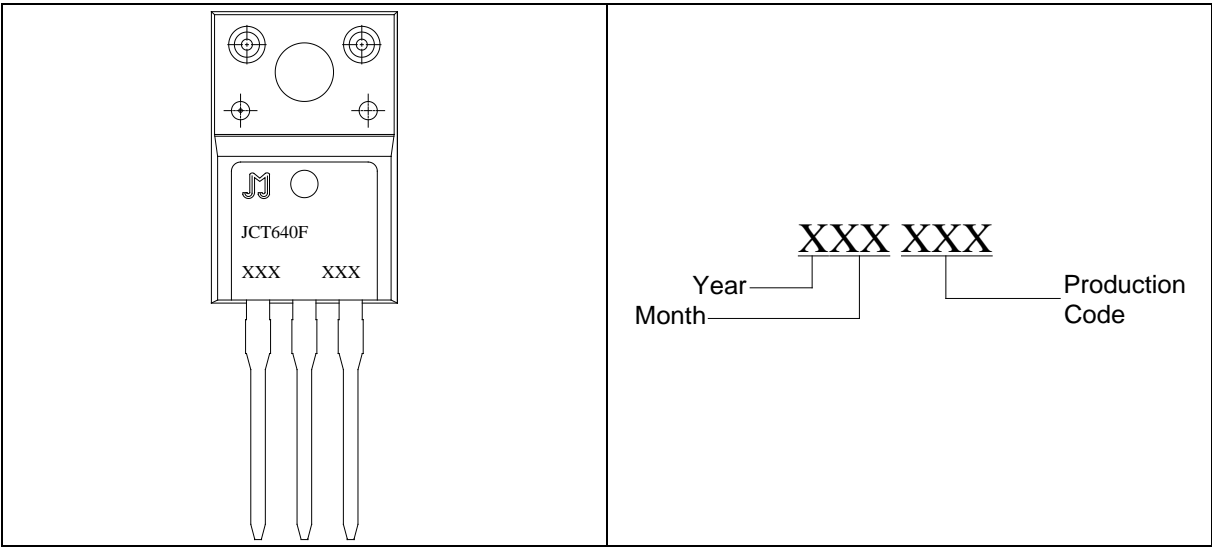
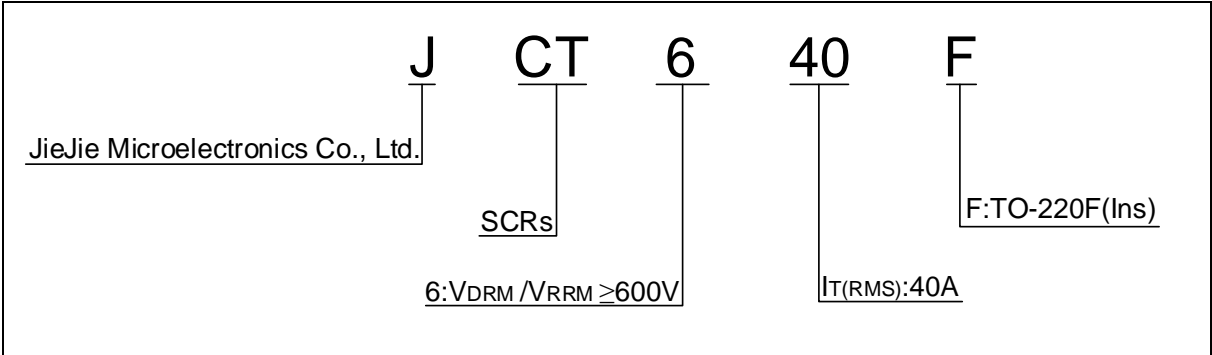


FIG.1 Maximum power dissipation versus RMS on-state current

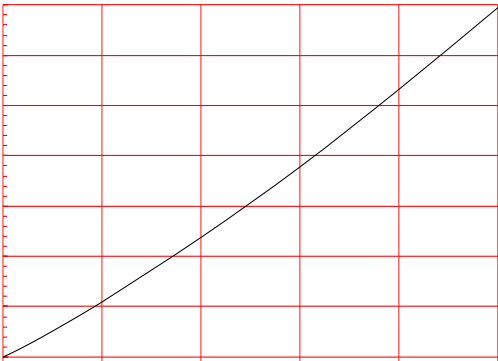


FIG.2: RMS on-state current versus case temperature

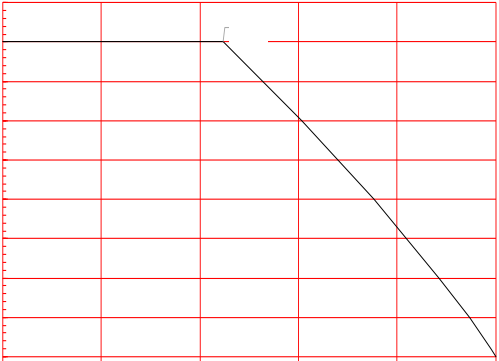


FIG.3: Surge peak on-state current versus number of cycles

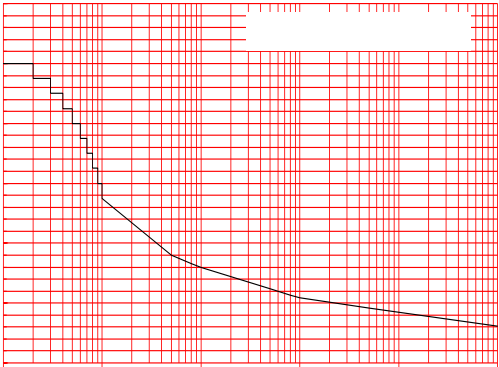
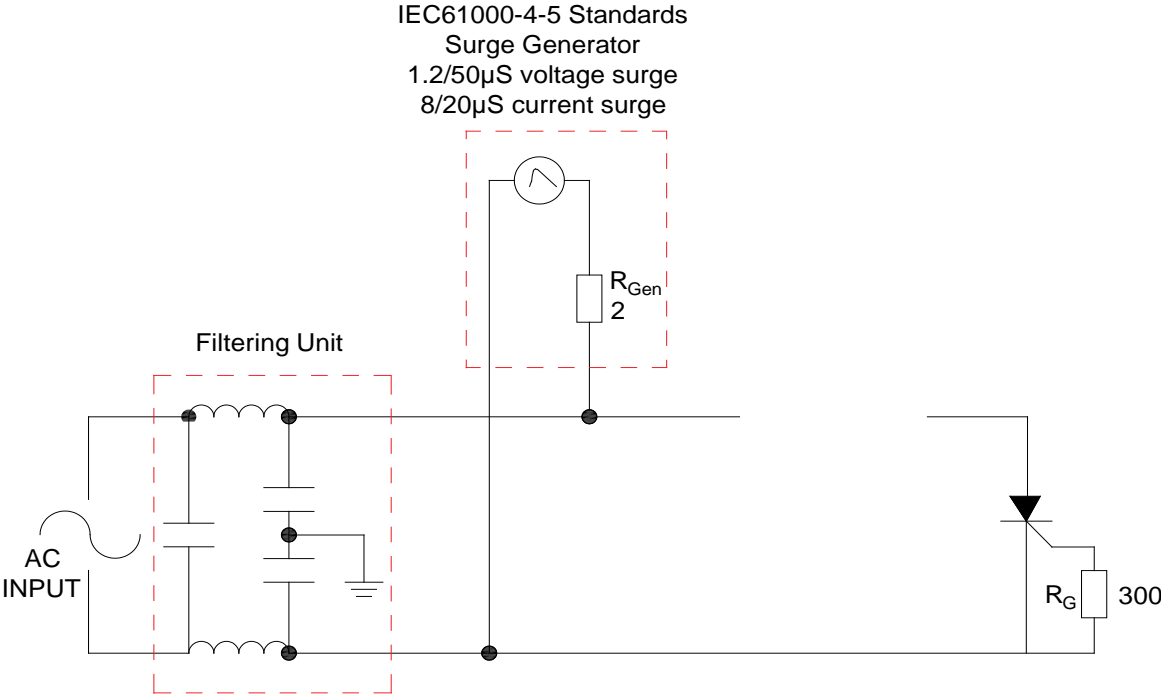


FIG.4: On-state characteristics

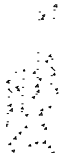
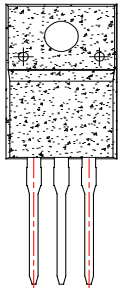
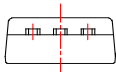
FIG.7 Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.




| Order code | Voltage V_{DRM}/V_{RRM} (V) | IGT(mA) | Package | Base qty. (pcs) | Delivery mode |
|------------|----------------------------------|---------|--------------|--------------------|------------------|
| JCT640F | 600 | 35 | TO-220F(Ins) | 50 | Tube |

Document Revision History

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



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