

CR03 1.25A SCRs

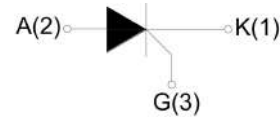
FEATURES

- Sensitive gate
- Direct triggering from low power drivers and logic ICs
- Surface mountable package



APPLICATIONS

- Ground Fault Circuit Interrupters (GFCI)
- General purpose switching and phase control
- Ignition circuits, CDI for 2- and 3-wheelers
- Motor control - e.g. small kitchen appliances



Parameters Summary

VD/VR: 600/800/1200V

IT(RMS): 1.25A

IGT : 20-100µA

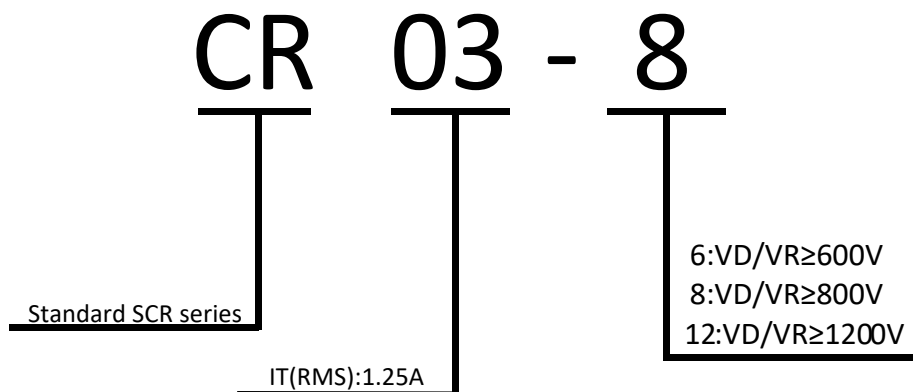
| ABSOLUTE MAXIMUM RATINGS | | | |
|--|---------------------|---------------------------------|------------------|
| Parameter | Symbol | Value | Unit |
| Storage junction temperature range | T _{stg} | -40 ~150 | °C |
| Operating junction temperature range | T _j | -40~125 | °C |
| Repetitive peak off-state voltage (T =25°C) | V _{DRM} | 600/800/1200 | V |
| Repetitive peak reverse voltage (T =25°C) | V _{RRM} | 600/800/1200 | V |
| Non repetitive surge peak Off-state voltage | V _{DSM} | V _{DRM} +100 | V |
| Non repetitive peak reverse voltage | V _{RSM} | V _{RRM} +100 | V |
| RMS on-state current | I _{T(RMS)} | 1.25 | A |
| Non repetitive surge peak on-state current (180° conduction angle, F=50Hz) | I _{TSM} | 25 | A |
| I ² t value for fusing (tp=10ms) | I ² t | 2.5 | A ² S |
| Critical rate of rise of on-state current (I =2×IGT, tr ≤ 100 ns) | di/dt | 50 | A/µS |
| Peak gate current | I _{GM} | 1.2 | A |
| Average gate power dissipation | P _{G(AV)} | 0.2 | W |
| Maximum device temperature for solderingPurposes (for 10 seconds maximum) | T _L | 260 | °C |
| ESD level | HBM | Class 3 (4000-16000V) | |
| Humidity sensitive level | MSL | Three-level (30°C, 60%RH, 168h) | |

| Thermal Resistances | | | |
|----------------------|-------------------------|-------|------|
| Symbol | Parameter | Value | Unit |
| R _{th(j-a)} | junction to ambient(DC) | 60 | °C/W |
| R _{th(j-t)} | Junction to tab (DC) | 25 | |

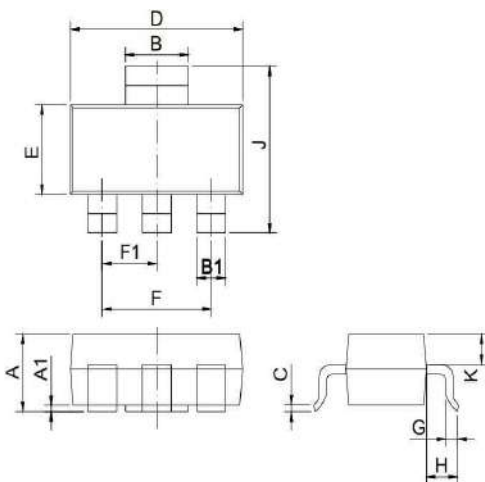
| ELECTRICAL CHARACTERISTICS (T=25°C unless otherwise specified) | | | | | |
|--|--|-------|------|------|------------|
| Symbol | Test Condition | Value | | | Unit |
| | | MIN. | TYP. | MAX. | |
| I_{GT} | $V = 12V R = 140\Omega$ | 10 | 50 | 200 | μA |
| V_{GT} | | - | 0.8 | 1.0 | V |
| V_{GD} | $V_D = V_{DRM} T_j = 125^\circ C R = 1K\Omega$ | 0.2 | | | V |
| I_L | $I_G = 1.2I_{GT}$ | - | - | 6 | mA |
| I_H | $I_T = 50mA$ | - | - | 5 | mA |
| dV/dt | $V_D = 600V, R_{GK} = 1K\Omega, T_j = 110^\circ C$ | 200 | - | - | V/ μs |

| STATIC CHARACTERISTICS | | | | |
|------------------------|--------------------------------|---------------------|--------------|---------|
| Symbol | Parameter | | Value(MAX.) | Unit |
| V_{TM} | $I_{TM} = 2.5A t_p = 380\mu s$ | $T_j = 25^\circ C$ | 1.5 | V |
| I_{DRM} | $V_D = V_{DRM} V_R = V_{RRM}$ | $T_j = 25^\circ C$ | 5 | μA |
| I_{RRM} | | $T_j = 125^\circ C$ | 0.5 | mA |

Ordering Information Scheme



SOT-223 Package Mechanical Data



| Ref. | Dimensions | | | | | |
|------|-------------|------|------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 1.5 | 1.6 | 1.8 | 0.059 | 0.063 | 0.071 |
| A1 | 0.01 | 0.06 | 0.10 | 0.001 | 0.002 | 0.004 |
| B | 2.9 | 3.0 | 3.1 | 0.114 | 0.118 | 0.122 |
| B1 | 0.6 | 0.7 | 0.8 | 0.024 | 0.028 | 0.031 |
| C | 0.22 | 0.26 | 0.32 | 0.009 | 0.010 | 0.013 |
| D | 6.3 | 6.5 | 6.7 | 0.248 | 0.256 | 0.264 |
| E | 3.3 | 3.5 | 3.7 | 0.130 | 0.138 | 0.146 |
| F | | 4.6 | | | 0.181 | |
| F1 | | 2.3 | | | 0.091 | |
| G | 0.7 | 0.9 | 1.1 | 0.028 | 0.035 | 0.043 |
| H | 1.5 | 1.75 | 2 | 0.059 | 0.069 | 0.079 |
| J | 6.7 | 7.0 | 7.3 | 0.264 | 0.276 | 0.287 |
| K | | 0.9 | | | 0.035 | |

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

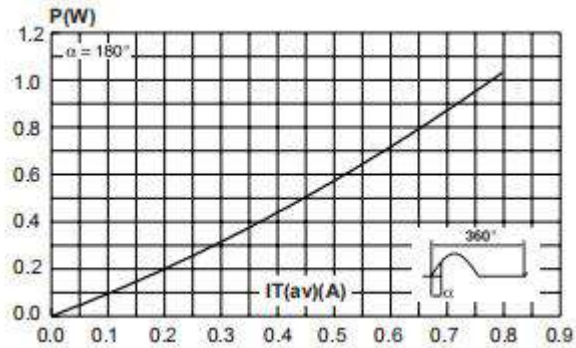


FIG.2: on-state current versus case temperature

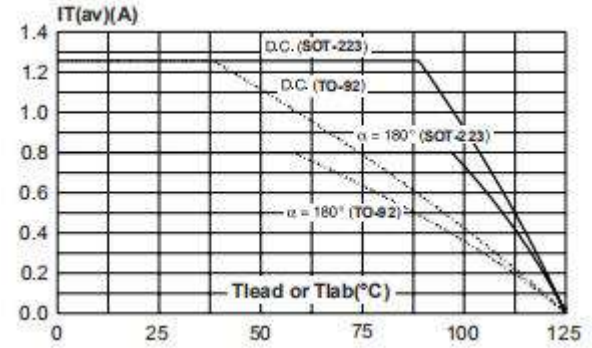


FIG.3: Surge peak on-state current versus number of cycles

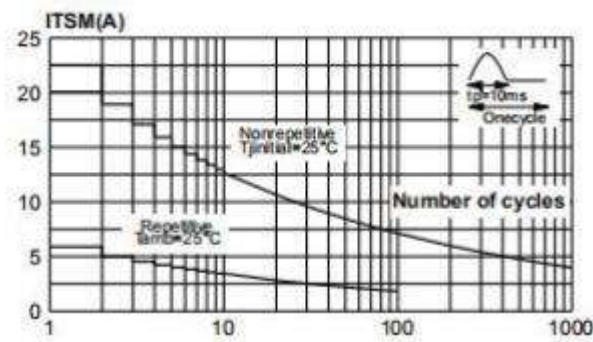


FIG.4: On-state characteristics (maximum values)

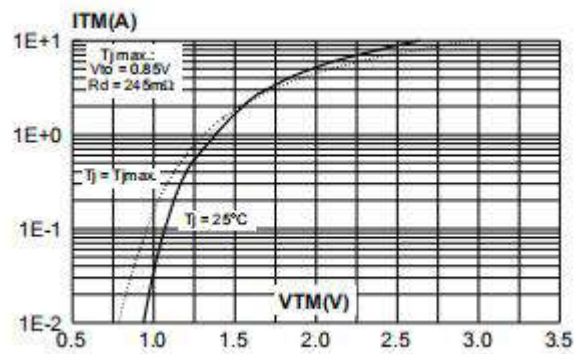


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of $I_2 t$ ($di/dt < 50\text{A}/\mu\text{s}$)

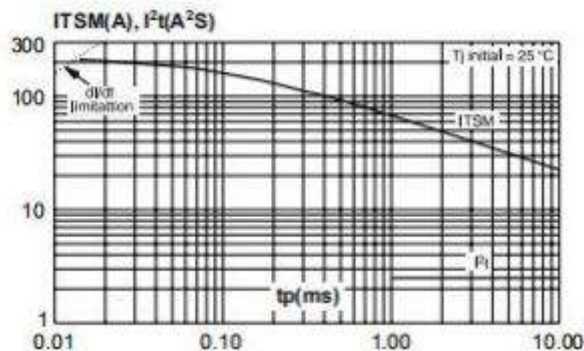


FIG.6: Relative variations of gate trigger current holding current and latching current versus junction temperature

