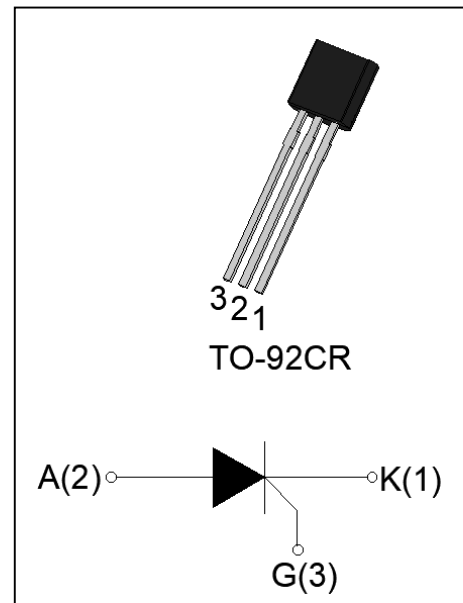


DESCRIPTION:

The SX014CR SCR provides high dV/dt rate with strong resistance to electromagnetic interface. It is especially recommended for use on residual current circuit breaker, straight hair, igniter etc. Package TO-92CR is RoHS compliant.

MAIN FEATURES

| Symbol | Value | Unit |
|---------------------|------------|---------|
| $I_{T(RMS)}$ | 1.25 | A |
| V_{DRM} / V_{RRM} | 1250 | V |
| I_{GT} | ≤ 200 | μA |


ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Value | Unit |
|--|--------------|---------|-------------|
| Storage junction temperature range | T_{stg} | -40-150 | $^{\circ}C$ |
| Operating junction temperature range | T_j | -40-110 | $^{\circ}C$ |
| Repetitive peak off-state voltage ($T_j=25^{\circ}C$) | V_{DRM} | 1250 | V |
| Repetitive peak reverse voltage ($T_j=25^{\circ}C$) | V_{RRM} | 1250 | V |
| Average on-state current ($T_c \leq 42^{\circ}C$) | $I_{T(AV)}$ | 0.8 | A |
| RMS on-state current ($T_c \leq 42^{\circ}C$) | $I_{T(RMS)}$ | 1.25 | A |
| Non repetitive surge peak on-state current ($t_p=10ms, T_j=25^{\circ}C$) | I_{TSM} | 25 | A |
| Non repetitive surge peak on-state current ($t_p=8.3ms, T_j=25^{\circ}C$) | | 28 | |
| I^2t value for fusing ($t_p=10ms, T_j=25^{\circ}C$) | I^2t | 3.1 | A^2s |
| Critical rate of rise of on-state current ($I_G=2 \times I_{GT}, f=100Hz, T_j=110^{\circ}C$) | di/dt | 100 | $A/\mu s$ |
| Peak gate current ($t_p=20\mu s, T_j=110^{\circ}C$) | I_{GM} | 1.2 | A |
| Average gate power dissipation ($T_j=110^{\circ}C$) | $P_{G(AV)}$ | 0.2 | W |

| | | | |
|--|----------|---|----|
| Peak gate power | P_{GM} | 2 | W |
| Peak pulse voltage ($T_j=25^\circ\text{C}$; non-repetitive, off-state; FIG.7) | V_{pp} | 1 | kV |

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

| Symbol | Test Condition | Value | | | Unit |
|-----------|--|-------|------|------|------------------|
| | | MIN. | TYP. | MAX. | |
| I_{GT} | $V_D=12\text{V } R_L=33\Omega$ | - | 50 | 200 | μA |
| V_{GT} | | - | 0.6 | 0.8 | V |
| V_{GD} | $V_D=V_{DRM} T_j=110^\circ\text{C}$ | 0.2 | - | - | V |
| I_L | $I_G=1.2 I_{GT}$ | - | - | 5 | mA |
| I_H | $I_T=0.05\text{A}$ | - | - | 4 | mA |
| dV/dt | $V_D=800\text{V } T_j=110^\circ\text{C } R_{GK}=1\text{k}\Omega$ | 200 | - | - | V/ μs |
| | $V_D=800\text{V } T_j=110^\circ\text{C } R_{GK}=220\Omega$ | 1000 | - | - | |
| t_{on} | $I_G=10\text{mA } I_A=20\text{mA } I_R=2\text{mA}$ | - | 2 | - | μs |
| t_{off} | $T_j=25^\circ\text{C}$ | - | 50 | - | μs |

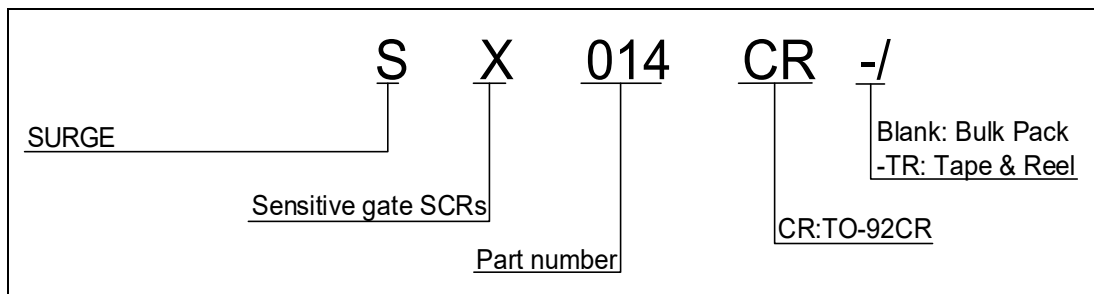
STATIC CHARACTERISTICS

| Symbol | Parameter | | Value(MAX.) | Unit |
|-----------|-------------------------------------|-------------------------|-------------|---------------|
| V_{TM} | $I_T=2\text{A } t_p=380\mu\text{s}$ | $T_j=25^\circ\text{C}$ | 1.3 | V |
| V_{TO} | Threshold voltage | $T_j=110^\circ\text{C}$ | 0.8 | V |
| R_D | Dynamic Resistance | $T_j=110^\circ\text{C}$ | 0.2 | Ω |
| I_{DRM} | $V_D=V_{DRM} V_R=V_{RRM}$ | $T_j=25^\circ\text{C}$ | 5 | μA |
| I_{RRM} | | $T_j=110^\circ\text{C}$ | 0.3 | mA |

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|--------------------------|-------|---------------------------|
| $R_{th(j-c)}$ | junction to case (DC) | 50 | $^\circ\text{C}/\text{W}$ |
| $R_{th(j-a)}$ | junction to ambient (DC) | 130 | $^\circ\text{C}/\text{W}$ |

ORDERING INFORMATION



MARKING

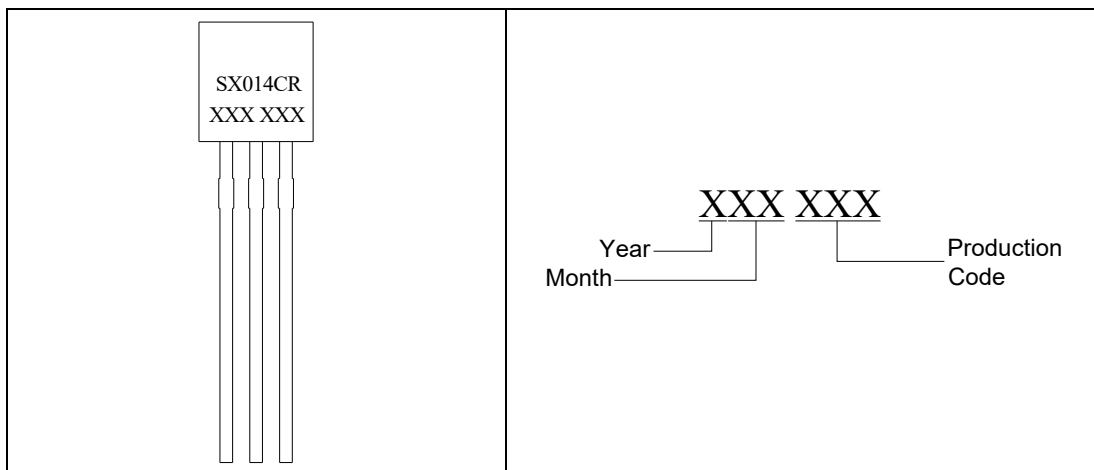


FIG.1: Maximum power dissipation versus RMS on-state current

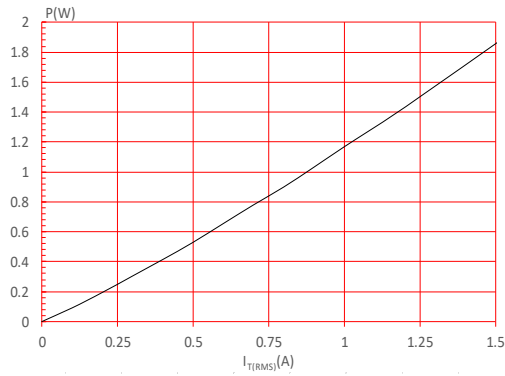


FIG.2: RMS on-state current versus case temperature

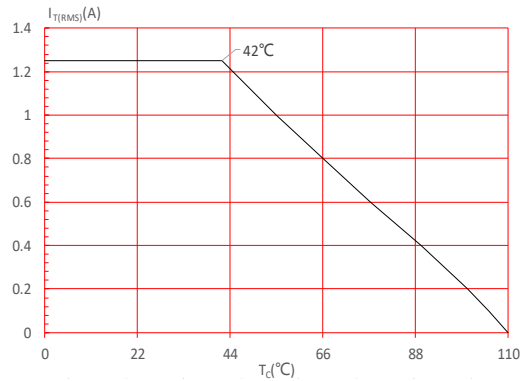


FIG.3: Surge peak on-state current versus number of cycles

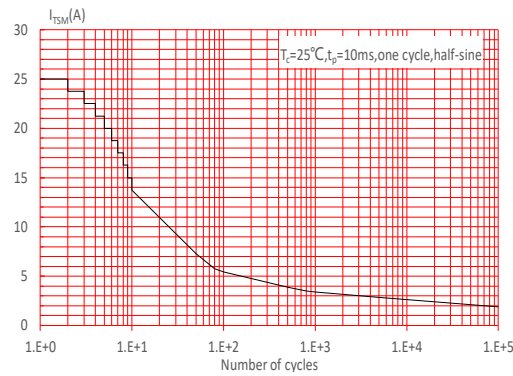


FIG.4: On-state characteristics

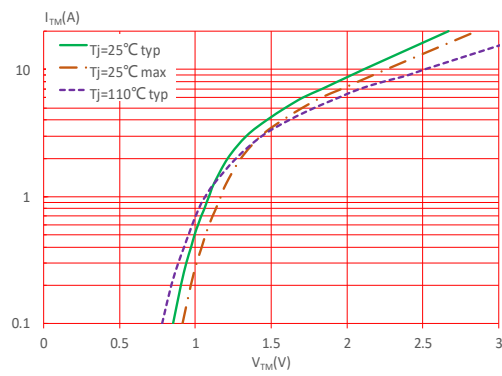


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 10\text{ms}$, and corresponding value of I^2t ($di/dt < 100\text{A}/\mu\text{s}$)

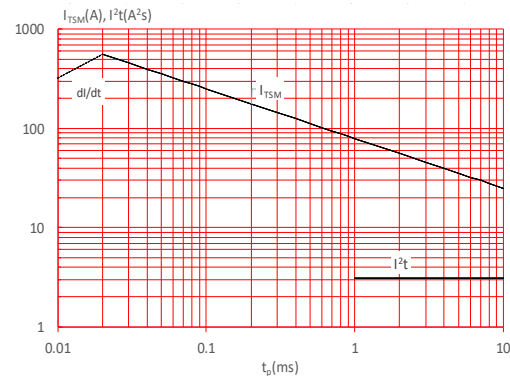


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

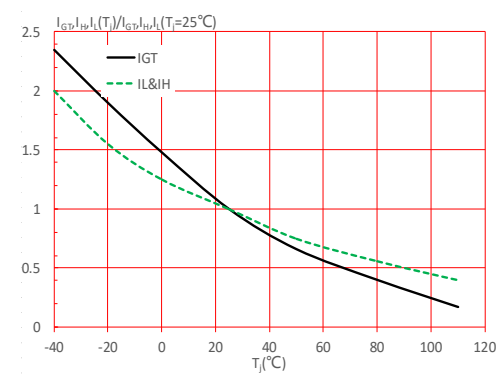
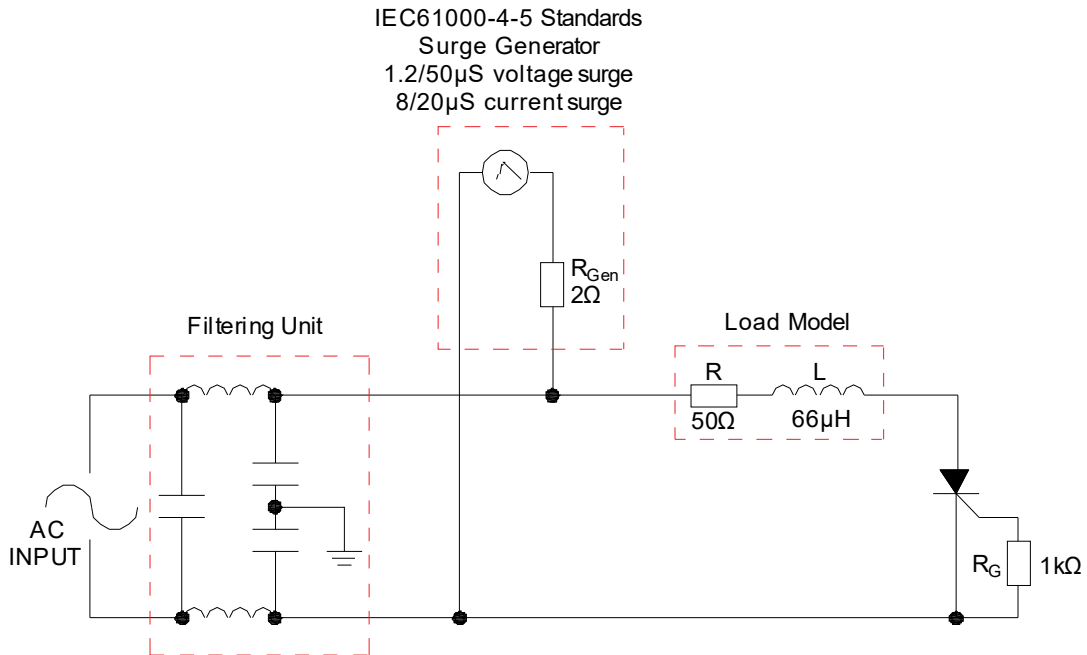


FIG.7: Test circuit for inductive and resistive loads to IEC-61000-4-5 standards.



LEAD FORMING AND SOLDERING

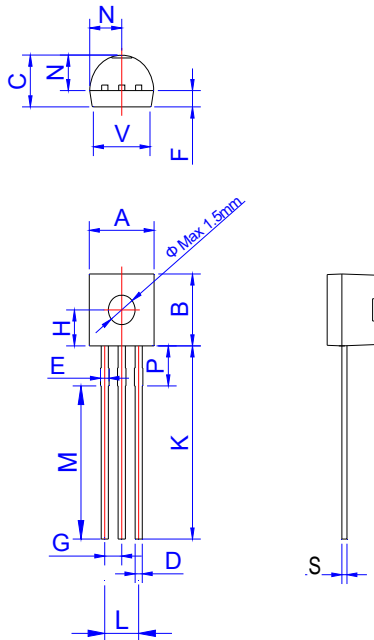
Refer to the application note “Assembly Instructions for Thyristors in Through-hole Package”

ORDERING INFORMATION

| Order code | Voltage V_{DRM}/V_{RRM} (V) | IGT(μ A) | Package | Base qty. (pcs) | Delivery mode |
|------------|----------------------------------|---------------|---------|--------------------|------------------|
| SX014CR | 1250 | ≤ 200 | TO-92CR | 1,000 | Bulk Pack |
| SX014CR-TR | | | | 2,000 | Tape & Reel |

Document Revision History

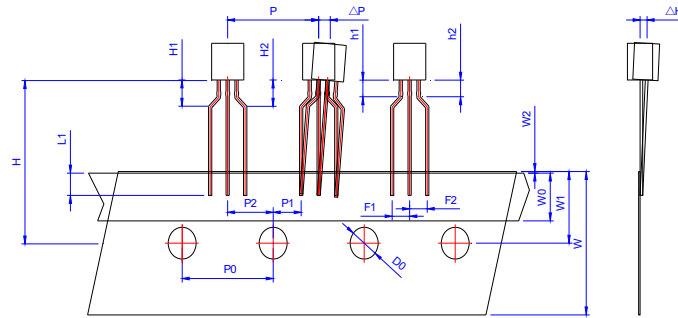
| Date | Revision | Changes |
|---------------|----------|--------------------------------|
| Apr.12, 2023 | A.1.0 | Last update |
| Mar.26, 2025 | A.2.0 | Revise PACKAGE MECHANICAL DATA |
| Sept.3, 2025 | A.2.1 | Revise dV/dt |
| Sept.28, 2025 | A.2.2 | Revise PACKAGE MECHANICAL DATA |

PACKAGE MECHANICAL DATA


| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.45 | | 5.20 | 0.175 | | 0.205 |
| B | 4.32 | | 5.33 | 0.170 | | 0.210 |
| C | 3.18 | | 4.19 | 0.125 | | 0.165 |
| D | 0.407 | | 0.533 | 0.016 | | 0.021 |
| E | 0.50 | | 0.70 | 0.020 | | 0.028 |
| F | 1.00 | | 1.20 | 0.039 | | 0.047 |
| G | 1.10 | | 1.40 | 0.043 | | 0.055 |
| H | 2.30 | | 2.60 | 0.091 | | 0.102 |
| S | 0.36 | | 0.50 | 0.014 | | 0.020 |
| K | 12.70 | | 15.0 | 0.500 | | 0.591 |
| L | 2.44 | | 2.64 | 0.096 | | 0.104 |
| M | 11.64 | | 12.04 | 0.458 | | 0.474 |
| N | 2.04 | | 2.66 | 0.080 | | 0.105 |
| P | 1.86 | | 2.06 | 0.073 | | 0.081 |
| V | 4.40 | | 5.00 | 0.173 | | 0.197 |

DELIVERY MODE

| PACKAGE | OUTLINE | BAG (PCS) | INNER BOX (PCS) | CARTON BOX (PCS) |
|---------|-----------|-----------|-----------------|------------------|
| TO-92CR | Bulk Pack | 1,000 | 10,000 | 50,000 |



| Ref. | Dimensions | | | | | |
|--------|-------------|-------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| P | 12.40 | 12.70 | 13.00 | 0.488 | 0.500 | 0.512 |
| P0 | 12.40 | 12.70 | 13.00 | 0.488 | 0.500 | 0.512 |
| P1 | 3.55 | 3.85 | 4.15 | 0.140 | 0.152 | 0.163 |
| P2 | 6.05 | 6.35 | 6.65 | 0.238 | 0.250 | 0.262 |
| ΔP | -1.00 | 0 | 1.00 | -0.039 | 0 | 0.039 |
| F1, F2 | 2.20 | 2.50 | 2.80 | 0.087 | 0.098 | 0.110 |
| F1-F2 | -0.30 | 0 | 0.30 | -0.012 | 0 | 0.012 |
| W | 17.50 | 18.00 | 19.00 | 0.689 | 0.709 | 0.748 |
| W0 | 5.50 | 6.00 | 6.50 | 0.217 | 0.236 | 0.256 |
| W1 | 8.50 | 9.00 | 9.50 | 0.335 | 0.354 | 0.374 |
| W2 | | | 1.00 | | | 0.039 |
| D0 | 3.80 | 4.00 | 4.20 | 0.150 | 0.157 | 0.165 |
| ΔH | -1.00 | 0 | 1.00 | -0.039 | 0 | 0.039 |
| L1 | 2.50 | | | 0.098 | | |
| H | 18.00 | 19.00 | 20.00 | 0.709 | 0.748 | 0.787 |
| H1, H2 | | | 3.00 | | | 0.119 |
| H1-H2 | -0.50 | | 0.50 | -0.020 | | 0.020 |
| h1, h2 | | | 1.00 | | | 0.040 |
| h1+h2 | -0.20 | | 0.20 | -0.008 | | 0.008 |

| PACKAGE | OUTLINE | REEL (PCS) | INNER BOX (PCS) | CARTON BOX (PCS) |
|---------|-------------|------------|-----------------|------------------|
| TO-92CR | Tape & Reel | / | 2,000 | 20,000 |

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