



US108S/N

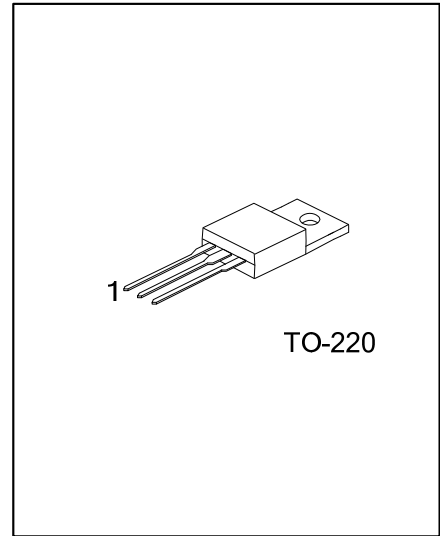
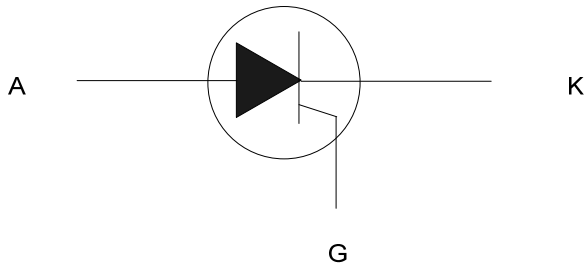
SCR

SCRS

DESCRIPTION

The UTC **US108S/N** is suitable to fit all modes of control, found in applications such as overvoltage crowbar protection, motor control circuits in power tools and kitchen aids, inrush current limiting circuits, capacitive discharge ignition and voltage regulation circuits.

SYMBOL



ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | Packing |
|-----------------|-----------------|---------|----------------|---|---|---------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | |
| US108SL-4-TA3-T | US108SG-4-TA3-T | TO-220 | K | A | G | Tube |
| US108SL-6-TA3-T | US108SG-6-TA3-T | TO-220 | K | A | G | Tube |
| US108SL-8-TA3-T | US108SG-8-TA3-T | TO-220 | K | A | G | Tube |
| US108NL-4-TA3-T | US108NG-4-TA3-T | TO-220 | K | A | G | Tube |
| US108NL-6-TA3-T | US108NG-6-TA3-T | TO-220 | K | A | G | Tube |
| US108NL-8-TA3-T | US108NG-8-TA3-T | TO-220 | K | A | G | Tube |

Note: Pin Assignment: K: Cathode G: Gate A: Anode

| | |
|--|--|
| <p>US108SL-4-TA3-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p> | <p>(1) T: Tube</p> <p>(2) TA3: TO-220</p> <p>(3) G: Halogen Free, L: Lead Free</p> |
|--|--|

■ ABSOLUTE MAXIMUM RATING

| PARAMETER | | SYMBOL | RATING | UNIT |
|---|----------------------|---------------------|------------|------------------|
| Repetitive Peak Off-State Voltages | US108S/N-4 | V_{DRM} | 400 | V |
| | US108S/N-6 | | 600 | |
| | US108S/N-8 | V_{RRM} | 800 | |
| RMS On-State Current (180° Conduction Angle) ($T_C = 110^\circ\text{C}$) | | $I_{T(RMS)}$ | 8 | A |
| Average On-State Current (180° Conduction Angle) ($T_C = 110^\circ\text{C}$) | | $I_{T(AV)}$ | 5 | A |
| Non Repetitive Surge Peak On-State Current ($T_J = 25^\circ\text{C}$) | $t_p = 8.3\text{ms}$ | US108S | 73 | A |
| | | US108N | 100 | |
| | $t_p = 10\text{ms}$ | US108S | 70 | |
| | | US108N | 95 | |
| I ² t Value For Fusing ($t_p = 10\text{ms}$, $T_J = 25^\circ\text{C}$) | | US108S | 24.5 | A ² S |
| | | US108N | 45 | |
| Critical Rate Of Rise Of On-State Current ($I_G = 2 \times I_{GT}$, $t_R \leq 100\text{ns}$, $T_J = 125^\circ\text{C}$, $F = 60\text{Hz}$) | | dI/dt | 50 | A/ μs |
| Peak Gate Current ($t_p = 20\mu\text{s}$, $T_J = 125^\circ\text{C}$) | | I_{GM} | 4 | A |
| Peak Reverse Gate Voltage | | US108N V_{RGM} | 5 | V |
| Average Gate Power Dissipation ($T_J = 125^\circ\text{C}$) | | $P_{G(AV)}$ | 1 | W |
| Storage Temperature | | T_{STG} | -40 ~ +150 | $^\circ\text{C}$ |
| Junction Temperature | | T_J | -40 ~ +125 | $^\circ\text{C}$ |

Note 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------|---------------|---------|------|
| Junction to Ambient | θ_{JA} | 60 | K/W |
| Junction to Case | θ_{JC} | 20 | K/W |

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

US108S(SENSITIVE)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|-----------|---|-----|-----|------|------------------|
| Gate Trigger Current | I_{GT} | $V_D = 12\text{V}$, $R_L = 140\Omega$ | | | 200 | μA |
| Gate Trigger Voltage | V_{GT} | $V_D = 12\text{V}$, $R_L = 140\Omega$ | | | 0.8 | V |
| Gate Non-Trigger Voltage | V_{GD} | $V_D = V_{DRM}$, $R_L = 3.3\text{k}\Omega$ $R_{GK} = 220\Omega$, $T_J = 125^\circ\text{C}$ | 0.1 | | | V |
| Reverse Gate Voltage | V_{RG} | $I_{RG} = 10\mu\text{A}$ | 8 | | | V |
| Holding Current | I_H | $I_T = 50\text{mA}$, $R_{GK} = 1\text{k}\Omega$ | | | 5 | mA |
| Latching Current | I_L | $I_G = 1\text{mA}$, $R_{GK} = 1\text{k}\Omega$ | | | 6 | mA |
| Circuit Rate Of Change Of off-State Voltage | dV/dt | $V_D = 65\% V_{DRM}$, $R_{GK} = 220\Omega$ | 5 | | | V/ μs |
| On-State Voltage | V_{TM} | $I_{TM} = 16\text{A}$, $t_p = 380\mu\text{s}$ | | | 1.6 | V |
| Threshold Voltage | V_{T0} | $T_J = 125^\circ\text{C}$ | | | 0.85 | V |
| Dynamic Resistance | R_D | $T_J = 125^\circ\text{C}$ | | | 46 | m Ω |
| Off-State Leakage Current | I_{DRM} | $V_{DRM} = V_{RRM}$, $R_{GK} = 220\Omega$ | | | 5 | μA |
| | I_{RRM} | $V_{DRM} = V_{RRM}$, $R_{GK} = 220\Omega$ | | | 1 | mA |

■ ELECTRICAL CHARACTERISTICS(Cont.)

US108N(SENSITIVE)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|-----------|------------------------------------|-----|-----|------|------------|
| Gate Trigger Current | I_{GT} | $V_D = 12V, R_L = 33\Omega$ | 2 | | 15 | mA |
| Gate Trigger Voltage | V_{GT} | $V_D = 12V, R_L = 33\Omega$ | | | 1.3 | V |
| Gate Non-Trigger Voltage | V_{GD} | $V_D = V_{DRM}, R_L = 3.3 k\Omega$ | 0.2 | | | V |
| Holding Current | I_H | $I_T = 100mA$ Gate open | | | 30 | mA |
| Latching Current | I_L | $I_G = 1.2 I_{GT}$ | | | 70 | mA |
| Circuit Rate Of Change Of off-State Voltage | dV/dt | $V_D = 67 \% V_{DRM}$ Gate open | 150 | | | V/ μ s |
| On-State Voltage | V_{TM} | $I_{TM} = 16 A, t_P = 380 \mu s$ | | | 1.6 | V |
| Threshold Voltage | V_{t0} | $T_J = 125^\circ C$ | | | 0.85 | V |
| Dynamic Resistance | R_D | $T_J = 125^\circ C$ | | | 16 | m Ω |
| Off-State Leakage Current | I_{DRM} | $V_{DRM} = V_{RRM}$ | | | 5 | μ A |
| | I_{RRM} | $V_{DRM} = V_{RRM}$ | | | 2 | mA |

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.