



## US130

Advance

SCR

### SCRS

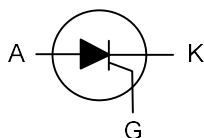
#### DESCRIPTION

The UTC **US130** is a planar passivated silicon controlled rectifier (SCR) capable of withstanding high-current surge loads. It features a high  $dV/dt$  rate and strong electromagnetic interference immunity, making it suitable for applications requiring extremely high surge current capability, high thermal cycling performance, and high junction temperature capability ( $T_{J\_MAX} = 150\text{ }^{\circ}\text{C}$ ).

#### FEATURES

\* Green Product

#### SYMBOL



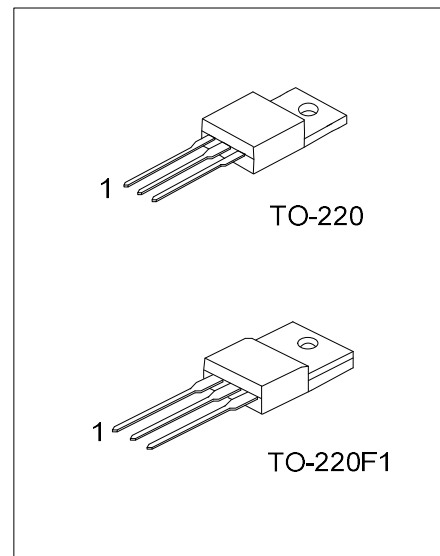
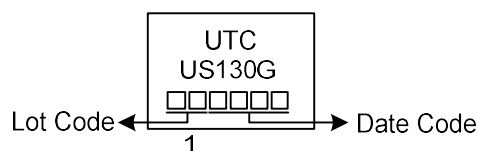
#### ORDERING INFORMATION

| Ordering Number | Package  | Pin Assignment |   |   | Packing |
|-----------------|----------|----------------|---|---|---------|
|                 |          | 1              | 2 | 3 |         |
| US130G-TA3-T    | TO-220   | K              | A | G | Tube    |
| US130G-TF1-T    | TO-220F1 | K              | A | G | Tube    |

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

|                                                                                           |                                                                                                   |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <p>US130G-TF1-T</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p> | <p>(1) T: Tube</p> <p>(2) TA3: TO-220, TF1: TO-220F1</p> <p>(3) G: Halogen Free and Lead Free</p> |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|

#### MARKING



## ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER                                                                                         |             | SYMBOL             | RATINGS    | UNIT        |
|---------------------------------------------------------------------------------------------------|-------------|--------------------|------------|-------------|
| Repetitive Peak Off-State Voltages (Note 2)                                                       |             | $V_{DRM}, V_{RRM}$ | 800        | V           |
| Peak Reverse Gate Voltage                                                                         |             | $V_{RGM}$          | 5          | V           |
| Peak Gate Current ( $t_p=20\mu s$ , $T_J=125^{\circ}C$ )                                          |             | $I_{GM}$           | 5          | A           |
| RMS On-State Current (180° Conduction Angles)<br>$T_C=95^{\circ}C$                                |             | $I_{T(RMS)}$       | 30         | A           |
| Average On-State Current (180° Conduction Angles)<br>$T_C=95^{\circ}C$                            |             | $I_{T(AV)}$        | 19         | A           |
| Non-Repetitive Peak On-State Current<br>(Half Sine Wave, $T_J=25^{\circ}C$ Prior to Surge)        | $t_p=10ms$  | $I_{TSM}$          | 315        | A           |
|                                                                                                   | $t_p=8.3ms$ |                    | 350        | A           |
| Repetitive Rate of Rise of On-State Current After<br>Triggering ( $F=60Hz$ , $T_J=125^{\circ}C$ ) |             | $dI_T/dt$          | 200        | A/ $\mu s$  |
| Average Gate Power Dissipation ( $T_J=125^{\circ}C$ )                                             |             | $P_{G(AV)}$        | 0.5        | W           |
| Junction Temperature                                                                              |             | $T_J$              | -40 ~ +125 | $^{\circ}C$ |
| Storage Temperature                                                                               |             | $T_{STG}$          | -40 ~ +150 | $^{\circ}C$ |

Notes: 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.  
2. Although not recommended, off-state voltages up to 800V may be applied without damage, but the thyristor may switch to the on-state. The rate of rise of current should not exceed 15 A/ $\mu s$ .

## ■ THERMAL DATA

| PARAMETER           |          | SYMBOL        | RATING | UNIT |
|---------------------|----------|---------------|--------|------|
| Junction to Ambient |          | $\theta_{JA}$ | 60     | °C/W |
| Junction to Case    | TO-220   | $\theta_{JC}$ | 0.8    | °C/W |
|                     | TO-220F1 | $\theta_{JC}$ | 5.5    | °C/W |

## ■ ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ C$ , unless otherwise specified)

| PARAMETER                                  | SYMBOL             | TSET CONDITIONS                                                                             | MIN               | TYP | MAX | UNIT       |
|--------------------------------------------|--------------------|---------------------------------------------------------------------------------------------|-------------------|-----|-----|------------|
| <b>STATIC CHARACTERISTICS</b>              |                    |                                                                                             |                   |     |     |            |
| Gate Trigger Current                       | $I_{GT}$           | $V_D=12V$ , $I_T=0.1A$                                                                      |                   |     | 15  | mA         |
| Latching Current                           | $I_L$              | $V_D=1.2 \times I_{GT}$                                                                     |                   |     | 80  | mA         |
| Holding Current                            | $I_H$              | $I_T=500mA$                                                                                 |                   |     | 60  | mA         |
| Gate Trigger Voltage                       | $V_{GT}$           | $V_D=12V$ , $I_T=0.1A$                                                                      |                   |     | 1   | V          |
| Off-State Leakage Current                  | $I_{DRM}, I_{RRM}$ | $V_D=Rated V_{DRM} \text{ and } V_{RRM}$                                                    | $T_J=25^\circ C$  |     | 10  | $\mu A$    |
|                                            |                    |                                                                                             | $T_J=125^\circ C$ |     | 1   | mA         |
| On-State Voltage                           | $V_{TM}$           | $I_{TM}=60A$                                                                                | $T_J=25^\circ C$  |     | 1.5 | V          |
| <b>DYNAMIC CHARACTERISTICS</b>             |                    |                                                                                             |                   |     |     |            |
| Critical Rate of Rise of Off-State Voltage | $dv_d/dt$          | $V_{DM}=67\% V_{DRM(MAX)}$ , $T_J=125^\circ C$ ,<br>exponential waveform, $R_{GK}=1k\Omega$ | 500               |     |     | V/ $\mu s$ |

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