

# RC1255

## ●产品特征:

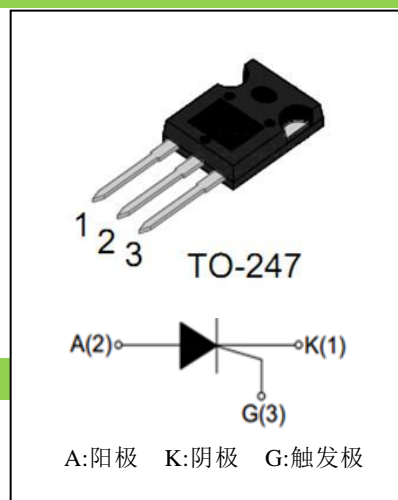
PNPN 四层结构的硅单向器件;

P 型对通扩散隔离;

台面玻璃钝化工艺;

背面多层金属电极;

符合 RoHS 规范.....



## 应用:

电加热控制; 电机调速; 交流电开关; 交直流逆变...

## ●主要参数:

| 符号                  | 参数       | 数值        | 单位 |
|---------------------|----------|-----------|----|
| $I_{T(AV)}$         | 通态平均电流   | 40        | A  |
| $V_{DRM} / V_{RRM}$ | 断态重复峰值电压 | 1200/1600 | V  |
| $V_{TM}$            | 导通压降     | 1.6       | V  |

## ●极限参数 ( $T_{CASE}=25^{\circ}C$ ):

| 符号                  | 参数        | 条件   | 数值        | 单位        |
|---------------------|-----------|--|-----------|-----------|
| $V_{DRM} / V_{RRM}$ | 断态重复峰值电压  | $T_j=25^{\circ}C$  | 1200/1600 | V         |
| $I_{T(AV)}$         | 通态平均电流    | TO-247( $T_C \leq 83^{\circ}C$ )   | 40        | A         |
| $I_{T(RMS)}$        | 通态均方根电流   | TO-247( $T_C \leq 83^{\circ}C$ ), Fig. 1,2   | 55        | A         |
| $I_{TSM}$           | 通态不重复浪涌电流 | 全正弦波, $T_j(\text{init})=25^{\circ}C$ ,<br>$t_p=10\text{ms}$ ; Fig. 3,5                   | 520       | A         |
| $I^2t$              | $I^2t$ 值  | 正弦波脉冲, $t_p=10\text{ms}$   | 1350      | $A^2s$    |
| $dI_T/dt$           | 通态电流临界上升率 | $I_G=2 \cdot I_{GT}$ , $t_r \leq 10\text{ns}$ , $F=120\text{Hz}$ ,<br>$T_j=125^{\circ}C$ | 100       | $A/\mu s$ |
| $I_{GM}$            | 门极峰值电流    | $t_p=20\mu s$ , $T_j=125^{\circ}C$   | 5         | A         |
| $P_{G(AV)}$         | 门极平均功率    | $T_j=125^{\circ}C$   | 1         | W         |
| $T_{STG}$           | 存储温度      |  | -40—+150  | °C        |
| $T_j$               | 工作结温      |  | -40—+125  |           |

**●产品电性能**

| 符号                  | 参数        | 测试条件  | 数值  |     |     | 单位         |
|---------------------|-----------|---|-----|-----|-----|------------|
|                     |           |   | 最小值 | 典型值 | 最大值 |            |
| $I_{GT}$            | 门极触发电流    | $V_D=12V,$<br>$R_L=33\Omega, T_j=25^\circ C, \text{Fig. 6}$ | 5   | -   | 35  | mA         |
| $V_{GT}$            | 门极触发电压    |   | -   | -   | 1.3 | V          |
| $V_{GD}$            | 门极不触发电压   | $V_D=V_{DRM},$<br>$R_L=3.3k\Omega, T_j=125^\circ C$         | 0.2 | -   | -   | V          |
| $I_H$               | 维持电流      | $I_T=500mA, \text{Fig. 6}$                                  | -   | -   | 120 | mA         |
| $I_L$               | 擎住电流      | $I_G=1.2I_{GT}$   | -   | -   | 150 | mA         |
| $dV_D/dt$           | 断态电压临界上升率 | $V_D=67\%V_{DRM},$<br>门极开路 $T_j=125^\circ C$                | 800 | -   | -   | V/ $\mu s$ |
| $V_{TM}$            | 通态压降      | $I_T=80A, tp=380\mu s,$<br>$T_j=25^\circ C, \text{Fig. 4}$  | -   | -   | 1.6 | V          |
| $I_{DRM} / I_{RRM}$ | 断态重复峰值电流  | $V_D=V_{DRM}/V_{RRM}, T_j=25^\circ C$                       | -   | -   | 10  | $\mu A$    |
|                     |           | $V_D=V_{DRM}/V_{RRM}, T_j=125^\circ C$                      | -   | -   | 5   | mA         |

**●热阻:**

| 符号        | 参数          | 数值     | 单位                  |
|-----------|-------------|--------|---------------------|
| Rth (j-c) | 结到管壳的热阻(AC) | TO-247 | 0.6<br>$^\circ C/W$ |
| Rth (j-a) | 结到环境的热阻     | TO-247 | 50<br>$^\circ C/W$  |

**●型号、标识说明:**

|  |   |
|--|---|
| <p><b>RC 12 55 U</b></p> <p>宇芯单向可控硅内部识别码</p> <p>断态重复峰值电压</p> <p>12: <math>\geq 1200V</math></p> <p>16: <math>\geq 1600V</math></p> | <p>U: TO-247封装</p> <p><math>I_{T(RMS)}=55A</math></p> |
|--|---|

●参数特性曲线

FIG.1 最大功耗与均方根电流关系曲线图

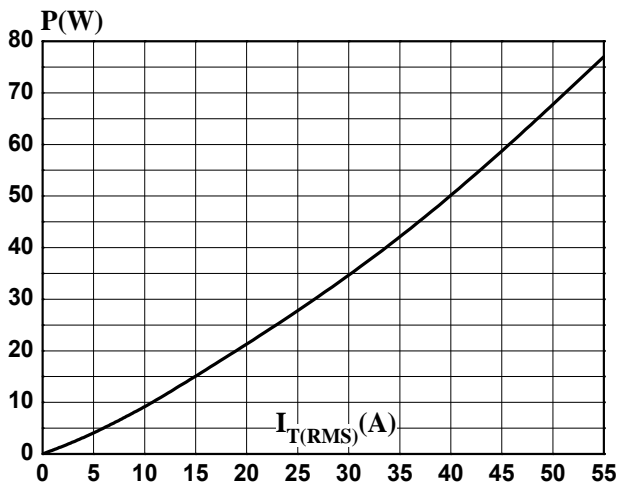


FIG.2: RMS current vs. case temperature graph. The y-axis is RMS current  $I_{T(RMS)}$ (A) from 0 to 60. The x-axis is case temperature  $T_c$ (°C) from -50 to 150. The current is constant at 55A until  $T_c \approx 80^\circ\text{C}$ , then decreases to 0A at  $T_c \approx 125^\circ\text{C}$ .

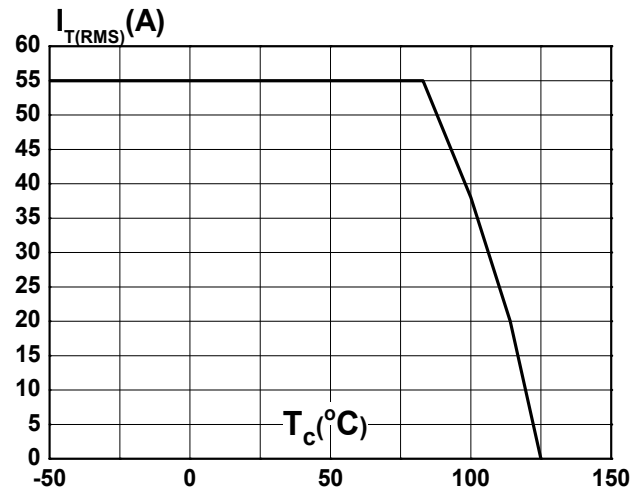


FIG.3: Peak surge current vs. number of cycles graph. The y-axis is peak surge current  $I_{TSM}$ (A) from 0 to 560. The x-axis is Number of cycles from 1 to 1000 on a log scale. The current starts at 560A for 1 cycle and decreases to approximately 80A for 1000 cycles.

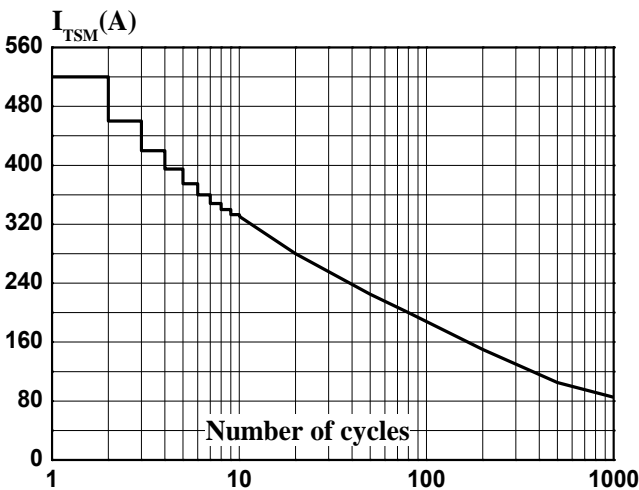


FIG.4: Output characteristic graph (maximum value). The y-axis is  $I_{TM}$ (A) from 1 to 600 on a log scale. The x-axis is  $V_{TM}$ (V) from 0.0 to 4.5. Two curves are shown: a red curve for  $T_j = T_{jmax}$  and a black curve for  $T_j = 25^\circ\text{C}$ .

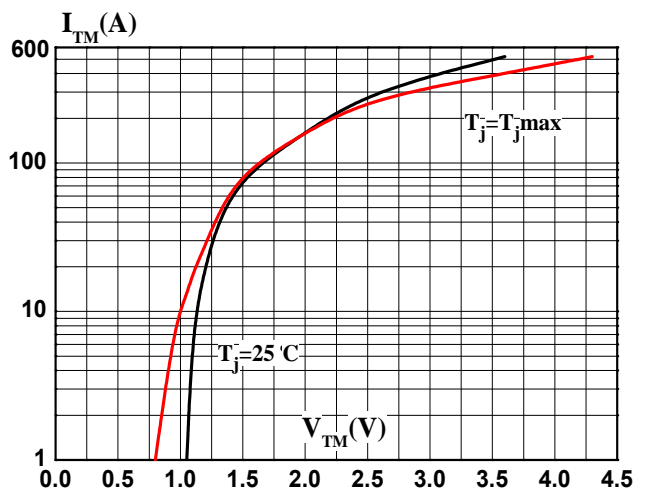


FIG.5: Non-repeating peak surge current vs. sine pulse width graph. The y-axis is  $I_{TSM}$ (A) from 10 to 5000 on a log scale. The x-axis is pulse width  $tp$ (ms) from 0.01 to 10 on a log scale. The current increases to a peak of 5000A at  $tp = 0.1$ ms and then decreases.

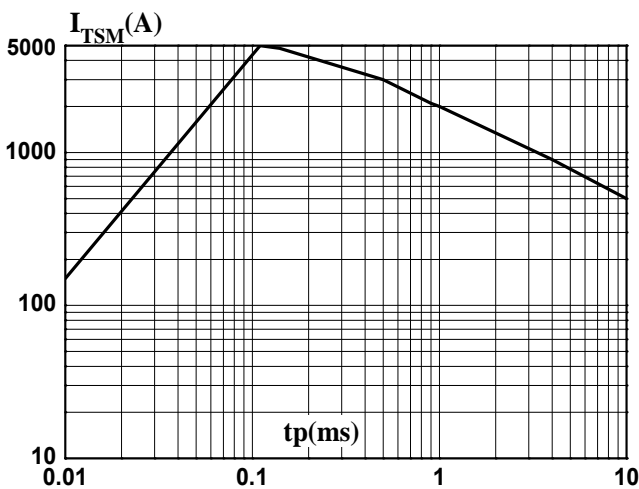
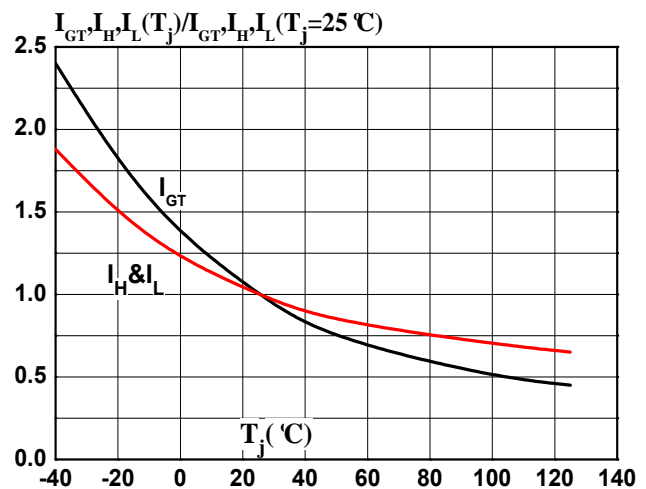
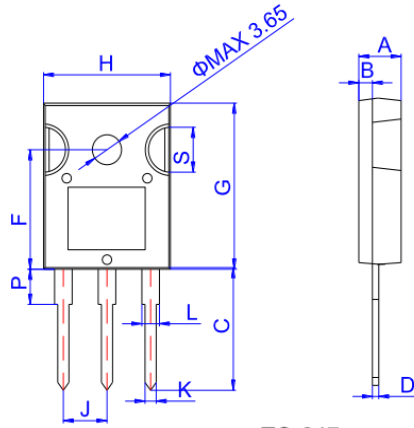


FIG.6: Gate trigger current, holding current, latching current vs. junction temperature graph. The y-axis is  $I_{GT}, I_H, I_L(T_j) / I_{GT}, I_H, I_L(T_j = 25^\circ\text{C})$  from 0.0 to 2.5. The x-axis is junction temperature  $T_j$ (°C) from -40 to 140. Three curves are shown:  $I_{GT}$  (black),  $I_H$  (red), and  $I_L$  (black).



**●封装外形尺寸**
**TO-247**


TO-247

| Ref. | Dimensions  |      |      |        |      |       |
|------|-------------|------|------|--------|------|-------|
|      | Millimeters |      |      | Inches |      |       |
|      | Min.        | Typ. | Max. | Min.   | Typ. | Max.  |
| A    | 4.9         |      | 5.4  | 0.193  |      | 0.213 |
| B    | 1.6         |      | 2.0  | 0.063  |      | 0.079 |
| C    | 14.35       |      | 15.4 | 0.565  |      | 0.606 |
| D    | 0.5         |      | 0.8  | 0.020  |      | 0.031 |
| F    | 14.4        |      | 15.1 | 0.567  |      | 0.594 |
| G    | 19.7        |      | 20.6 | 0.775  |      | 0.811 |
| H    | 15.4        |      | 16.2 | 0.606  |      | 0.638 |
| J    | 5.3         |      | 5.6  | 0.209  |      | 0.220 |
| K    | 1.3         |      | 1.5  | 0.051  |      | 0.059 |
| L    | 2.8         |      | 3.3  | 0.110  |      | 0.130 |
| P    | 3.7         |      | 4.2  | 0.146  |      | 0.165 |
| S    | 5.35        |      | 5.65 | 0.211  |      | 0.222 |

**●修订记录:**

| 日期         | 修订次数 | 修订内容       |
|------------|------|------------|
| 2016-11-01 | 2    | 重新修订了特性曲线图 |
| 2016-08-15 | 1    | 第一版        |