

## RJK60S3DPP-E0

600V - 12A - 超结场效应晶体管  
快速电源开关

R07DS0637CJ0300

修订版本 3.00

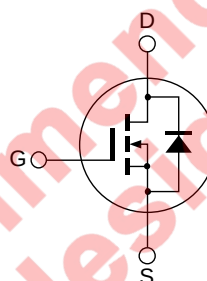
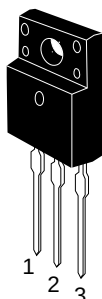
Nov 19, 2012

## 特点

- 超结场效应晶体管
- 低漏极/源极通态电阻  
 $R_{DS(on)} = 0.35 \Omega$  典型值 ( $I_D = 6 \text{ A}$ ,  $V_{GS} = 10 \text{ V}$ ,  $T_a = 25^\circ\text{C}$ )
- 快速开关时间  
 $t_f = 21 \text{ ns}$  典型值 ( $I_D = 6 \text{ A}$ ,  $V_{GS} = 10 \text{ V}$ ,  $R_L = 50 \Omega$ ,  $R_g = 10 \Omega$ ,  $T_a = 25^\circ\text{C}$ )

## 封装形式

RENESAS 封装代码: PRSS0003AG-A  
(封装名称: TO-220FP)



1. 栅极
2. 漏极
3. 源极

## 绝对最大额定值

(Ta = 25°C)

| 参数           | 符号                                      | 额定值         | 单位                 |
|--------------|-----------------------------------------|-------------|--------------------|
| 漏极/源极电压      | $V_{DSS}$                               | 600         | V                  |
| 栅极/源极电压      | $V_{GSS}$                               | +30, -20    | V                  |
| 漏极电流         | $T_c = 25^\circ\text{C}$<br>$I_D$ 注1,2  | 12.0        | A                  |
|              | $T_c = 100^\circ\text{C}$<br>$I_D$ 注1,2 | 7.6         | A                  |
| 脉冲漏极电流       | $I_D$ (pulse) 注1                        | 24          | A                  |
| 体二极管反向漏极电流   | $I_{DR}$ 注1                             | 12          | A                  |
| 体二极管反向脉冲漏极电流 | $I_{DR}$ (pulse) 注1                     | 24          | A                  |
| 雪崩电流         | $I_{AP}$ 注3                             | 3           | A                  |
| 雪崩能量         | $E_{AR}$ 注3                             | 0.49        | mJ                 |
| 沟道最大容许损耗     | $P_{ch}$ 注4                             | 27.7        | W                  |
| 沟道-外壳间热阻     | $\theta_{ch-c}$                         | 4.5         | $^\circ\text{C/W}$ |
| 沟道温度         | $T_{ch}$                                | 150         | $^\circ\text{C}$   |
| 储存温度         | $T_{stg}$                               | -55 to +150 | $^\circ\text{C}$   |

- 注:
1. 限于  $T_{ch}$  的最大值
  2. 最大工作周期为  $D = 0.75$
  3.  $ST_{ch} = 25^\circ\text{C}$ ,  $T_{ch} \leq 150^\circ\text{C}$
  4. 在  $T_c = 25^\circ\text{C}$  的容许值

## 电特性

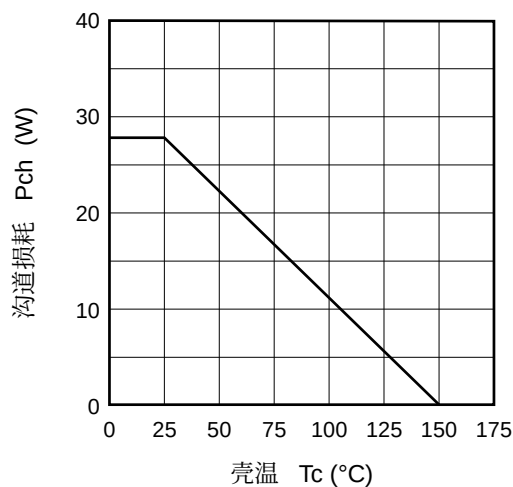
(Ta = 25°C)

| 参数          | 符号            | 最小值 | 典型值  | 最大值       | 单位            | 测定条件                                                                      |
|-------------|---------------|-----|------|-----------|---------------|---------------------------------------------------------------------------|
| 漏极/源极破坏电压   | $V_{(BR)DSS}$ | 600 | —    | —         | V             | $I_D = 10 \text{ mA}$ , $V_{GS} = 0$                                      |
| 漏极截止电流      | $I_{DSS}$     | —   | —    | 1         | mA            | $V_{DS} = 600 \text{ V}$ , $V_{GS} = 0$                                   |
| 栅极截止电流      | $I_{GSS}$     | —   | —    | $\pm 0.1$ | $\mu\text{A}$ | $V_{GS} = +30\text{V}$ , $-20 \text{ V}$ , $V_{DS} = 0$                   |
| 栅极/源极截止电压   | $V_{GS(off)}$ | 3   | —    | 5         | V             | $V_{DS} = 10 \text{ V}$ , $I_D = 1 \text{ mA}$                            |
| 静态漏极/源极通态电阻 | $R_{DS(on)}$  | —   | 0.35 | 0.44      | $\Omega$      | $I_D = 6 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>注5</sup>               |
|             | $R_{DS(on)}$  | —   | 0.87 | —         | $\Omega$      | Ta = 150°C<br>$I_D = 6 \text{ A}$ , $V_{GS} = 10 \text{ V}$ <sup>注5</sup> |
| 栅极电阻        | Rg            | —   | 2.5  | —         | $\Omega$      | f = 1 MHz<br>$V_{DS} = 25 \text{ V}$ , $V_{GS} = 0$                       |
| 输入电容        | Ciss          | —   | 720  | —         | pF            | $V_{DS} = 25 \text{ V}$                                                   |
| 输出电容        | Coss          | —   | 980  | —         | pF            | $V_{GS} = 0$                                                              |
| 反向传输电容      | Crss          | —   | 3.7  | —         | pF            | f = 100 kHz                                                               |
| 接通延迟时间      | $t_{d(on)}$   | —   | 13   | —         | ns            | $I_D = 6 \text{ A}$                                                       |
| 上升时间        | $t_r$         | —   | 18   | —         | ns            | $V_{GS} = 10 \text{ V}$                                                   |
| 关断延迟时间      | $t_{d(off)}$  | —   | 25   | —         | ns            | $R_L = 50 \Omega$                                                         |
| 下降时间        | $t_f$         | —   | 18   | —         | ns            | Rg = 10 $\Omega$ <sup>注5</sup>                                            |
| 栅极充电电荷量     | Qg            | —   | 13.6 | —         | nC            | $V_{DD} = 480 \text{ V}$                                                  |
| 栅极/源极充电电荷量  | Qgs           | —   | 4.8  | —         | nC            | $V_{GS} = 10 \text{ V}$                                                   |
| 栅极/漏极充电电荷量  | Qgd           | —   | 3.9  | —         | nC            | $I_D = 12 \text{ A}$ <sup>注5</sup>                                        |
| 体二极管正向电压    | $V_{DF}$      | —   | 1.0  | 1.6       | V             | $I_F = 12 \text{ A}$ , $V_{GS} = 0$ <sup>注5</sup>                         |
| 体二极管反向恢复时间  | $t_{rr}$      | —   | 320  | —         | ns            | $I_F = 12 \text{ A}$                                                      |
| 体二极管反向恢复电流  | $I_{rr}$      | —   | 20   | —         | A             | $V_{GS} = 0$                                                              |
| 体二极管反向恢复电荷  | $Q_{rr}$      | —   | 3.7  | —         | $\mu\text{C}$ | $di_F/dt = 100 \text{ A}/\mu\text{s}$ <sup>注5</sup>                       |

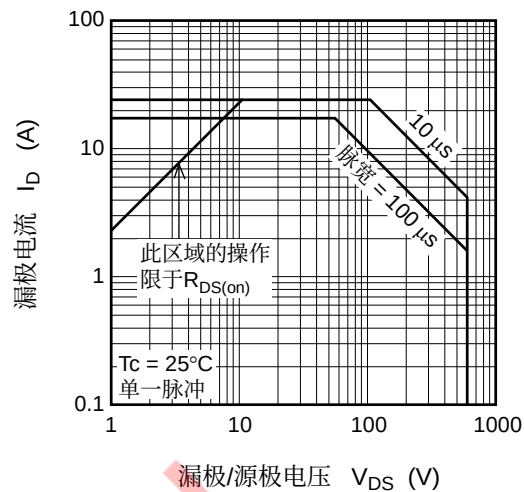
注: 5. 脉冲测试

## 主要特性

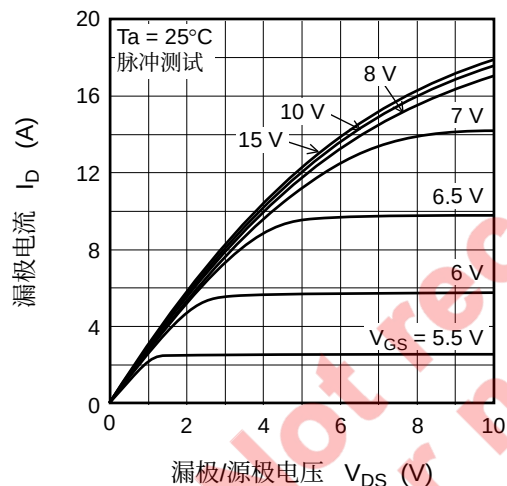
沟道损耗-壳温



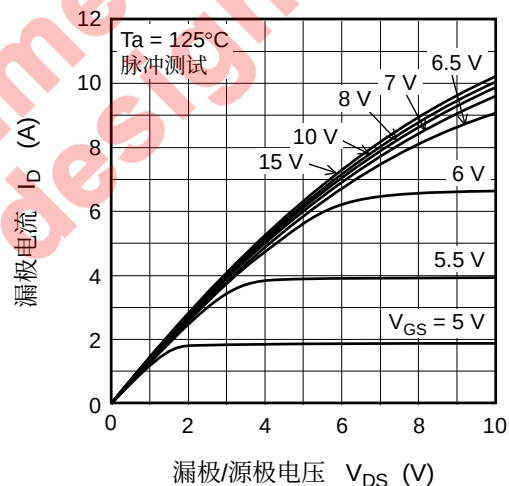
最大安全工作区域



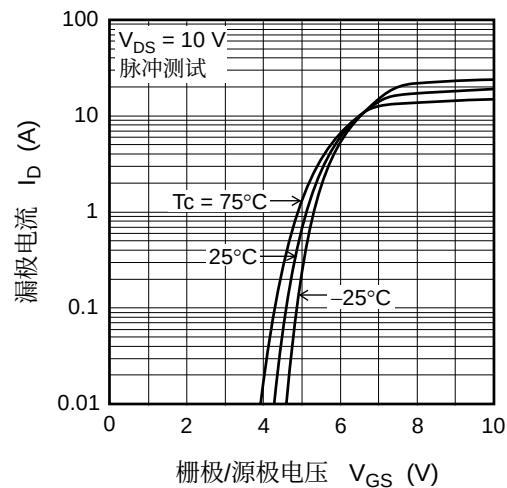
典型输出特性



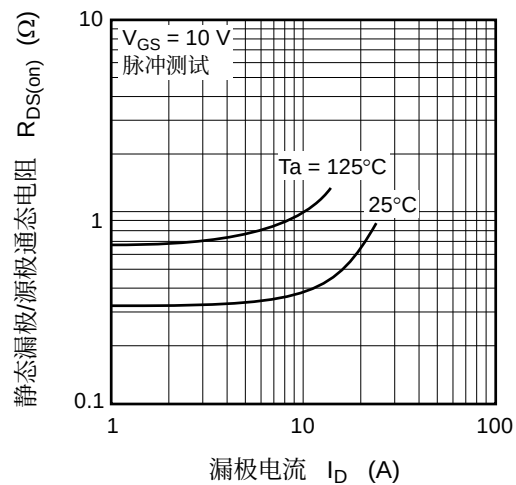
典型输出特性



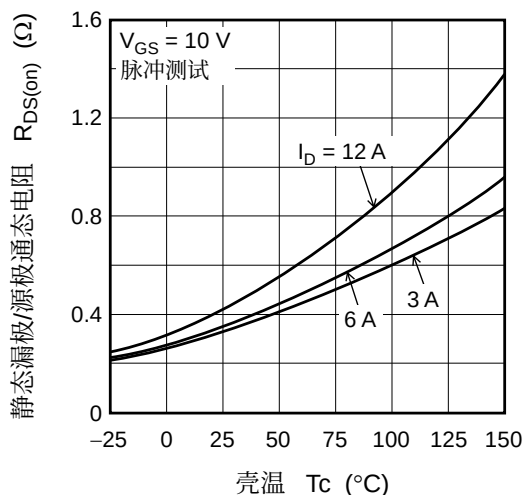
典型传输特性



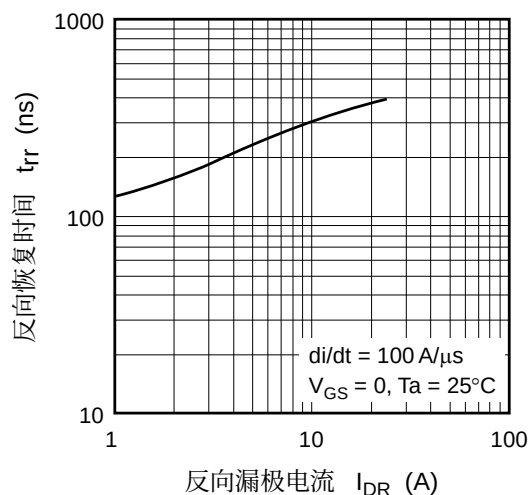
静态漏极/源极通态电阻-漏极电流 (典型)



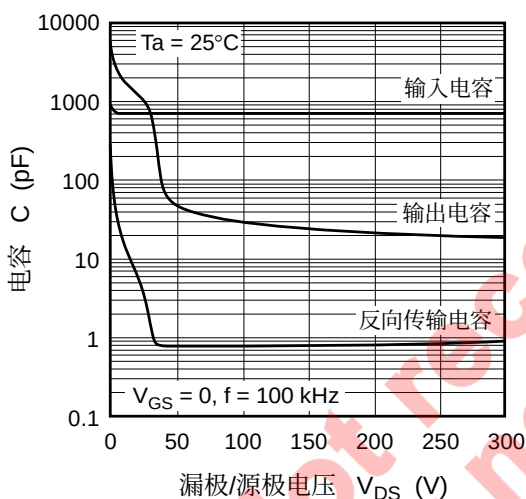
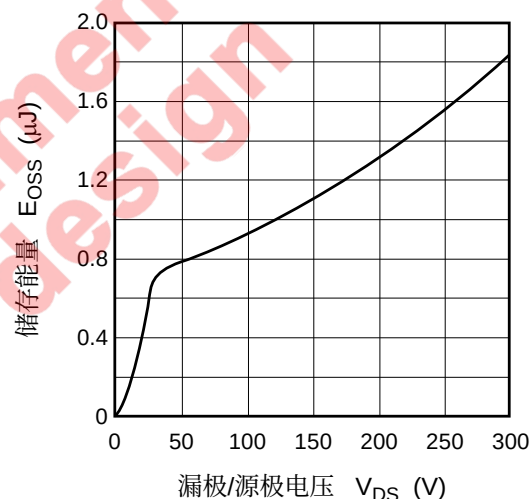
静态漏极/源极通态电阻-亮温 (典型)



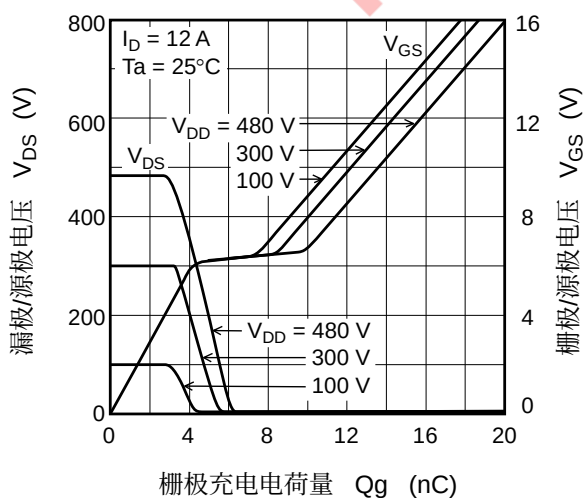
体二极管反向恢复时间 (典型)



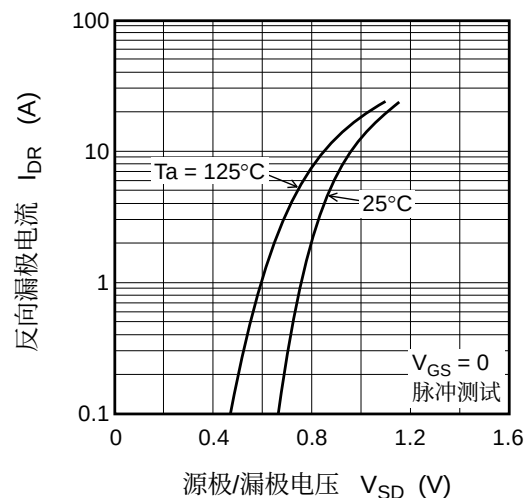
典型电容-漏极/源极电压

输出电容 ( $C_{OSS}$ ) 储存能量 (典型)

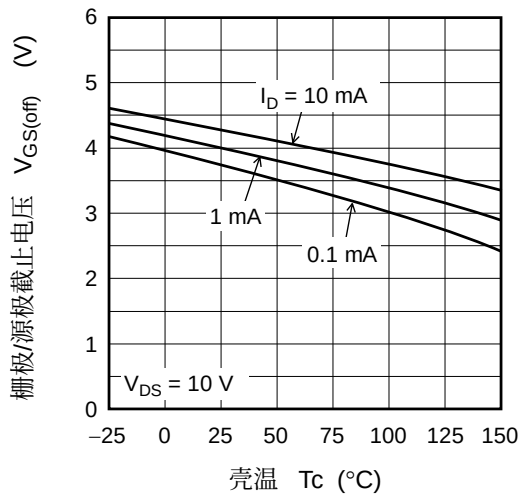
输入时序特性 (典型)



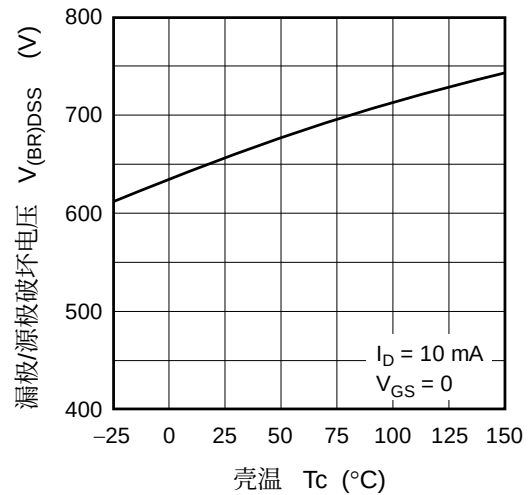
反向漏极电流-源极/漏极电压 (典型)



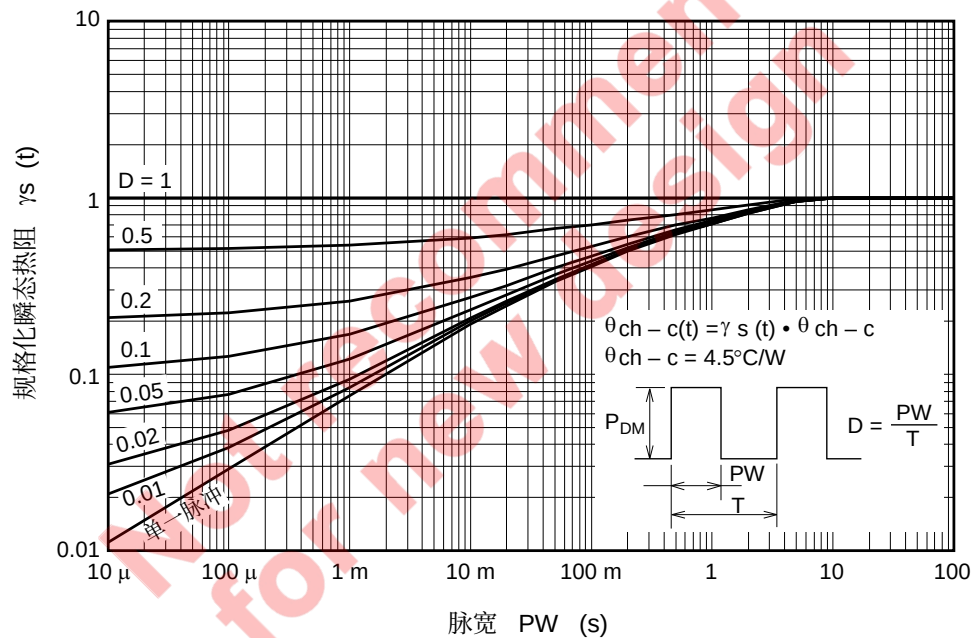
栅极/源极截止电压-壳温 (典型)



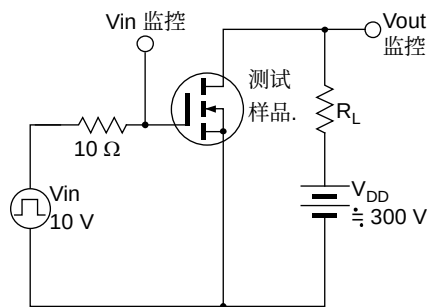
漏极/源极破坏电压-壳温 (典型)



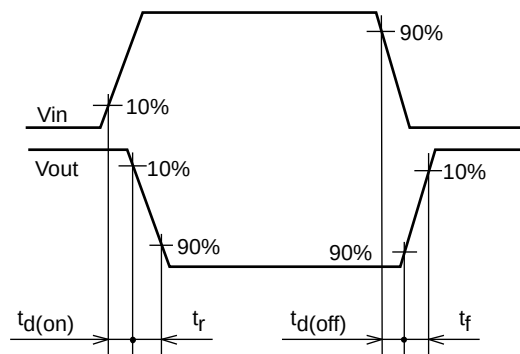
瞬态热阻特性规格化



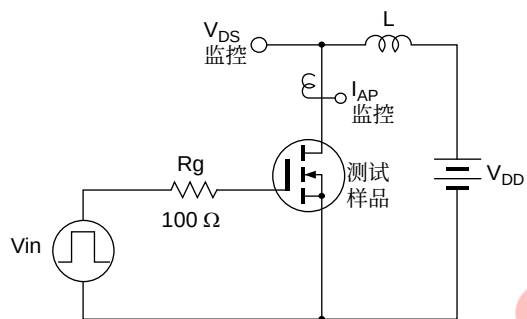
开关时间测定电路



波形

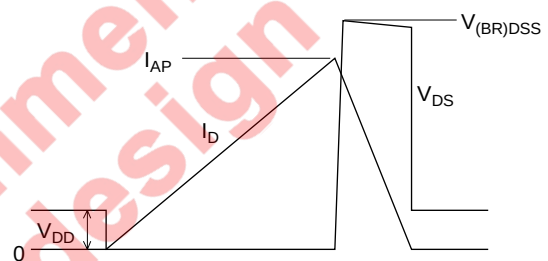


雪崩测定电路



雪崩波形

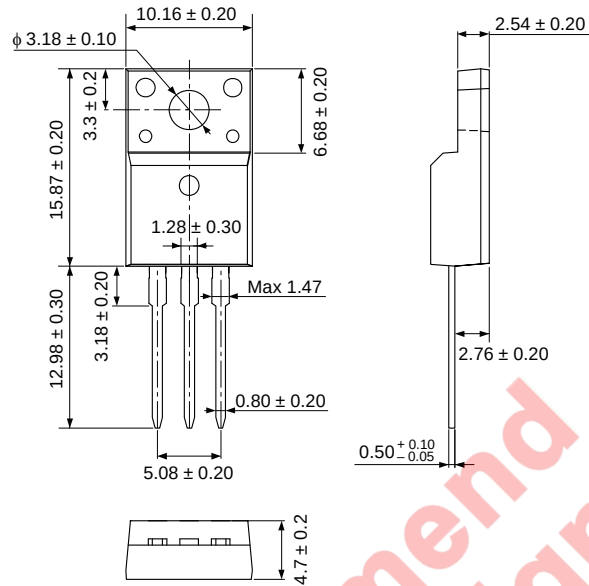
$$E_{AR} = \frac{1}{2} L \cdot I_{AP}^2 \cdot \frac{V_{DSS}}{V_{DSS} - V_{DD}}$$



## 封装尺寸

| 封装名称     | JEITA 封装代码 | RENESAS 代码   | 旧代码 | 重量[典型] |
|----------|------------|--------------|-----|--------|
| TO-220FP | —          | PRSS0003AG-A | —   | 1.9g   |

单位: mm



## 订购信息

| 订购型号             | 数量     | 运输包装        |
|------------------|--------|-------------|
| RJK60S3DPP-E0#T2 | 1000 枚 | 纸盒包装 (管状容器) |

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