# RJH60A83RDPE

## 600V - 10A - 绝缘栅双极晶体管
## 应用：逆变器

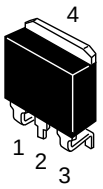
R07DS0806CJ0200
修订版本 2.00
Oct 09, 2012

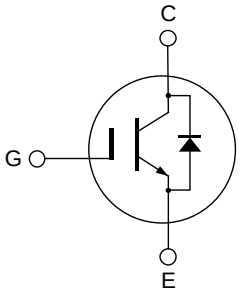
### 特点

- 逆导绝缘栅双极晶体管与单片二极管
- 短路承受时间 (5 µs 典型值)
- 低集电极/发射极饱和电压
  $V_{CE(sat)}$ = 2.1 V 典型值 ($I_C$ = 10 A, $V_{GE}$ = 15 V, Ta = 25°C)
- 内置快速恢复二极管 ($t_{rr}$ = 130 ns 典型值) 于一封装
- 沟槽栅与薄晶圆技术
- 快速开关时间
  $t_f$ = 45 ns 典型值 ($V_{CC}$ = 300 V, $V_{GE}$ = 15 V, $I_C$ = 10 A, Rg = 5 Ω, Ta = 25°C, 感性负载)

### 封装形式

RENESAS 封装代码: PRSS0004AE-B
(封装名称: LDPAK (S)-(1) )




1. 栅极
2. 集电极
3. 发射极
4. 集电极

### 绝对最大额定值

(Ta = 25°C)

| 参数 | | 符号 | 额定值 | 单位 |
|---|---|---|---|---|
| 集电极/发射极电压 或 二极管反向电压 | | $V_{CES}$ / $V_R$ | 600 | V |
| 栅极/发射极电压 | | $V_{GES}$ | ±30 | V |
| 集电极电流 | Tc = 25°C | $I_C$ | 20 | A |
| | Tc = 100°C | $I_C$ | 10 | A |
| 集电极脉冲电流 | | Ic(peak) 注 1 | 40 | A |
| 集电极/发射极二极管正向电流 | | $i_{DF}$ | 10 | A |
| 集电极/发射极二极管正向脉冲电流 | | $i_{DF}$(peak) 注 1 | 40 | A |
| 集电极最大容许功率损耗 | | $P_C$ 注 2 | 52 | W |
| 结壳热阻 | | θj-c 注 2 | 2.38 | °C/ W |
| 结温 | | Tj | 150 | °C |
| 储存温度 | | Tstg | –55 to +150 | °C |

注: 1. 在 PW ≤ 10 µs, 工作周期 ≤ 1% 的容许值
2. 在 Tc = 25°C 的容许值

## 电特性

(Ta = 25°C)

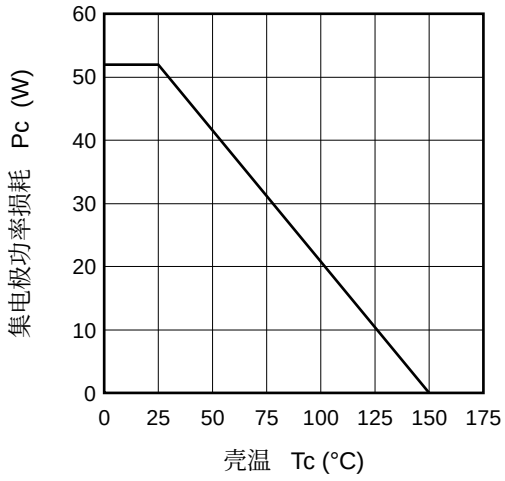
| 参数 | 符号 | 最小值 | 典型值 | 最大值 | 单位 | 测定条件 |
|---|---|---|---|---|---|---|
| 集电极/发射极破坏电压 | $V_{(BR)CES}$ | 600 | — | — | V | $I_C$ =10 μA, $V_{GE}$ = 0 |
| 集电极/发射极短路电流 或<br>二极管反向电流 | $I_{CES}$ / $I_R$ | — | — | 1 | μA | $V_{CE}$ = 600 V, $V_{GE}$ = 0 V |
| 栅极/发射极漏泄电流 | $I_{GES}$ | — | — | ±100 | nA | $V_{GE}$ = ±30 V, $V_{CE}$ = 0 V |
| 栅极/发射极截止电压 | $V_{GE(off)}$ | 4.5 | — | 7.5 | V | $V_{CE}$ = 10 V, $I_C$ = 1 mA |
| 集电极/发射极饱和电压 | $V_{CE(sat)}$ | — | 2.1 | 2.6 | V | $I_C$ = 10 A, $V_{GE}$ = 15 V 注 3 |
| | $V_{CE(sat)}$ | — | 3.1 | — | V | $I_C$ = 20 A, $V_{GE}$ = 15 V 注 3 |
| 输入电容 | Cies | — | 280 | — | pF | $V_{CE}$ = 25 V<br>$V_{GE}$ = 0 V<br>f = 1 MHz |
| 输出电容 | Coes | — | 19 | — | pF | |
| 反向传输电容 | Cres | — | 11 | — | pF | |
| 栅极充电电荷量 | Qg | — | 19.7 | — | nC | $V_{GE}$ = 15 V<br>$V_{CE}$ = 300 V<br>$I_C$ = 10 A |
| 栅极/发射极充电电荷量 | Qge | — | 3.4 | — | nC | |
| 栅极/集电极充电电荷量 | Qgc | — | 12.0 | — | nC | |
| 接通延迟时间 | $t_{d(on)}$ | — | 31 | — | ns | $V_{CC}$ = 300V<br>$V_{GE}$ = 15 V<br>$I_C$ = 10 A,<br>Rg = 5 Ω<br>感性负载 |
| 上升时间 | $t_r$ | — | 14 | — | ns | |
| 关断延迟时间 | $t_{d(off)}$ | — | 54 | — | ns | |
| 下降时间 | $t_f$ | — | 45 | — | ns | |
| 接通能量 | $E_{on}$ | — | 0.23 | — | mJ | |
| 关断能量 | $E_{off}$ | — | 0.16 | — | mJ | |
| 总开关能量 | $E_{total}$ | — | 0.39 | — | mJ | |
| 短路承受时间 | $t_{sc}$ | 3.0 | 5.0 | — | μs | $V_{CE}$ ≤ 360 V, $V_{GE}$ = 15 V<br>Tj=100°C |

| | | | | | | |
|---|---|---|---|---|---|---|
| 快速恢复二极管正向电压 | $V_F$ | — | 2.3 | — | V | $I_F$ = 10 A 注 3 |
| 快速恢复二极管反向恢复时间 | $t_{rr}$ | — | 130 | — | ns | $I_F$ = 10 A<br>$di_F/dt$ = 100 A/μs |
| 快速恢复二极管反向恢复电荷 | $Q_{rr}$ | — | 0.28 | — | μC | |
| 快速恢复二极管反向恢复脉冲电流 | $I_{rr}$ | — | 5.9 | — | A | |

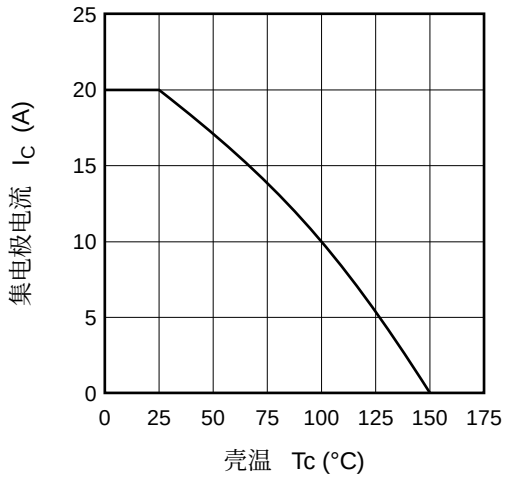
注: 3. 脉冲测试

## 主要特性

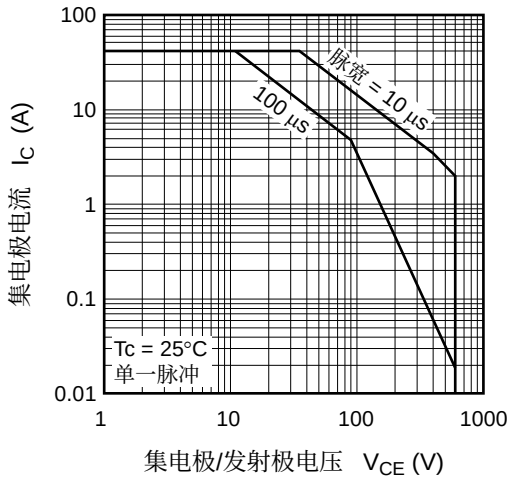
集电极功率损耗-壳温



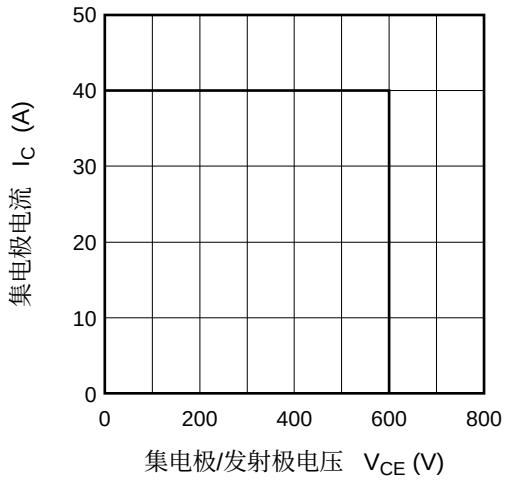

集电极最大直流电流-壳温



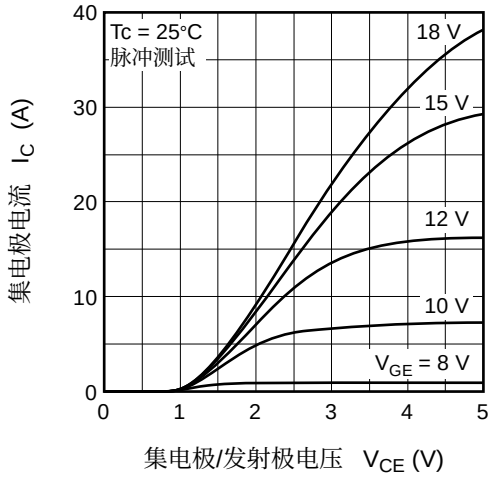

最大安全工作区域



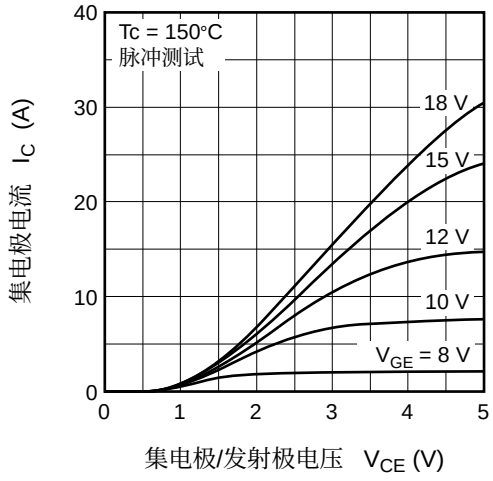

关断安全工作区域



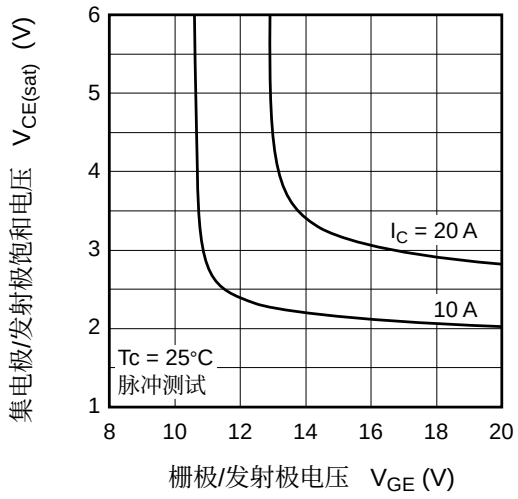

典型输出特性



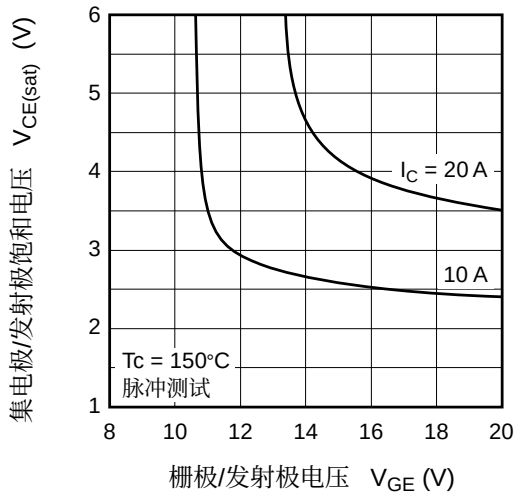

典型输出特性



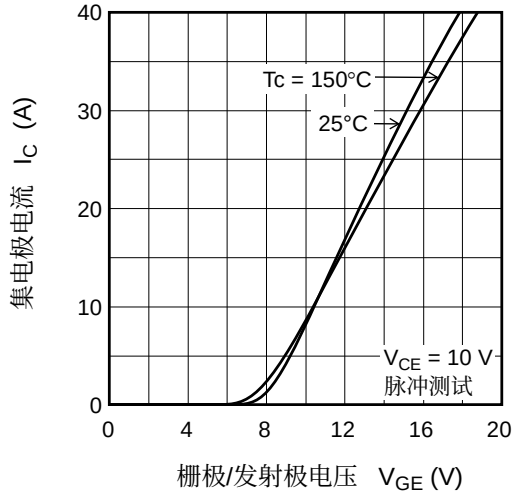
集电极/发射极饱和电压-
栅极/发射极电压 (典型)



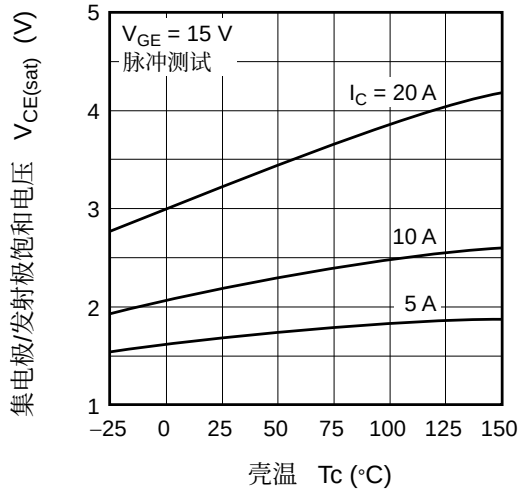

集电极/发射极饱和电压-
栅极/发射极电压 (典型)



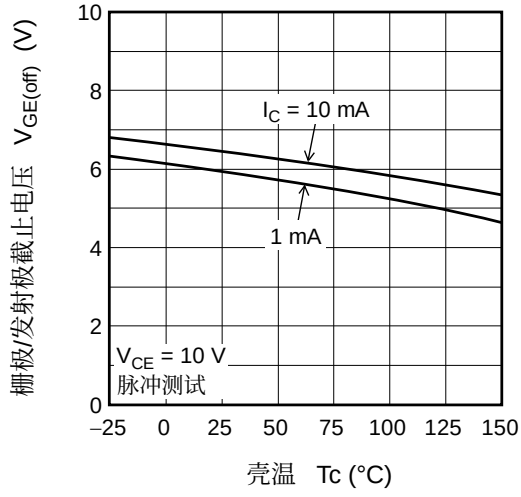

典型传输特性



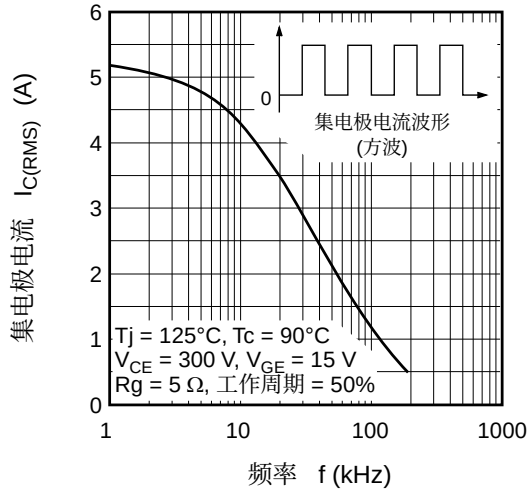

集电极/发射极饱和电压-壳温 (典型)



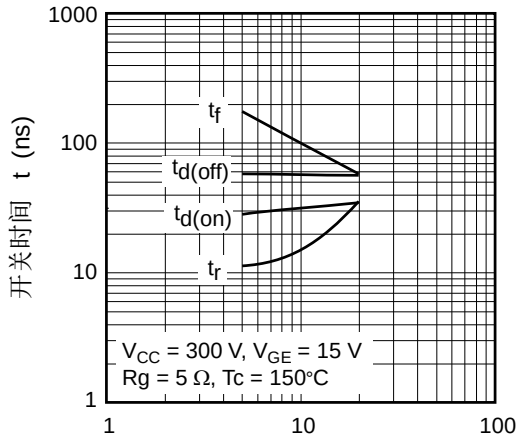

栅极/发射极截止电压-壳温 (典型)




频率特性 (典型)

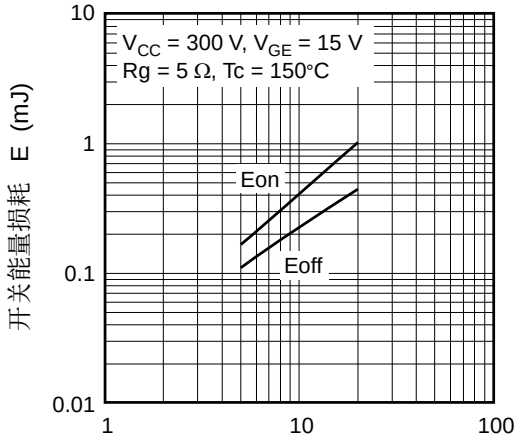


开关特性 (典型) (1)



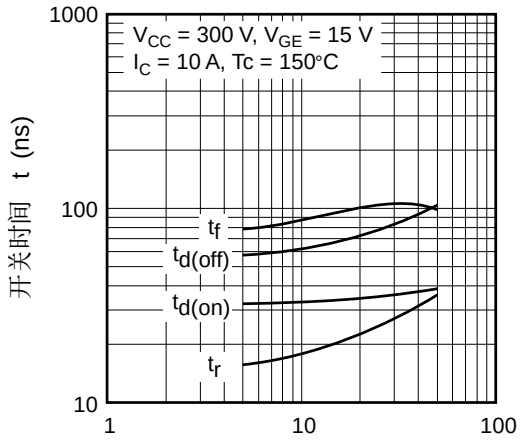

集电极电流 $I_C$ (A)
(感性负载)

开关特性 (典型) (2)



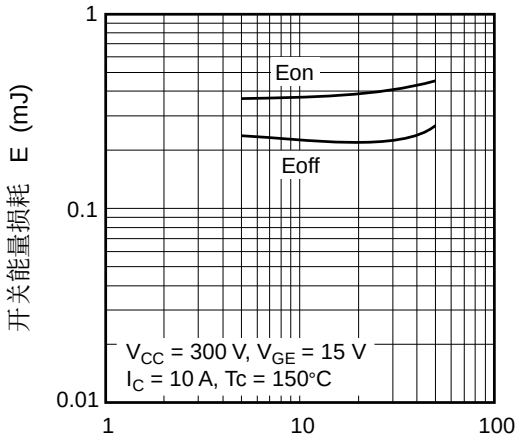

集电极电流 $I_C$ (A)
(感性负载)

开关特性 (典型) (3)



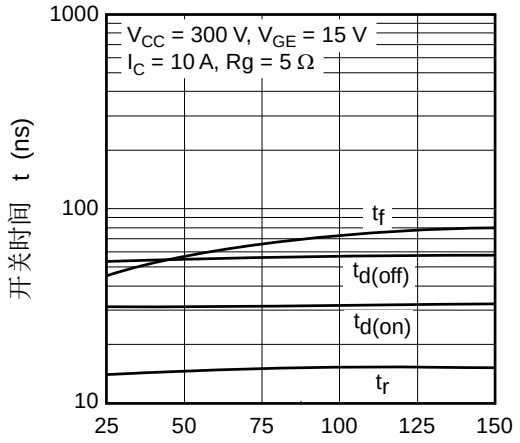

栅极电阻 Rg (Ω)
(感性负载)

开关特性 (典型) (4)



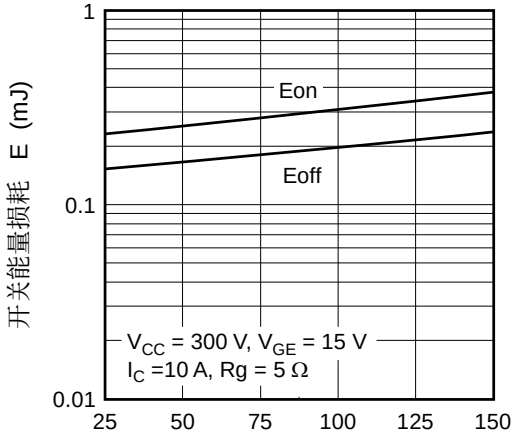

栅极电阻 Rg (Ω)
(感性负载)

开关特性 (典型) (5)



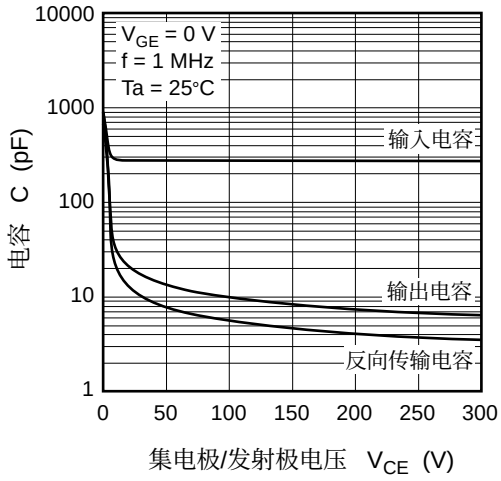

壳温 Tc (°C)
(感性负载)

开关特性 (典型) (6)

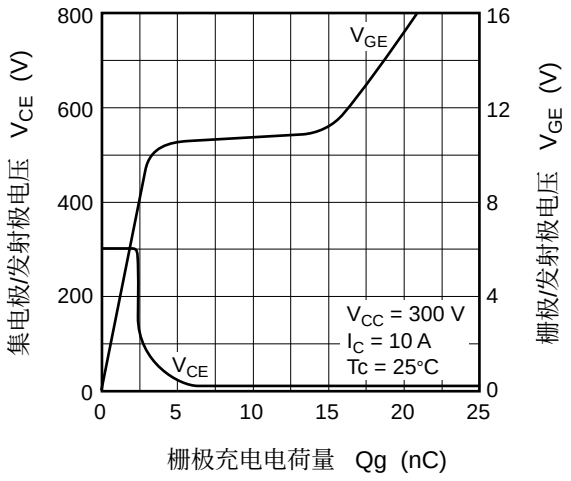



壳温 Tc (°C)
(感性负载)

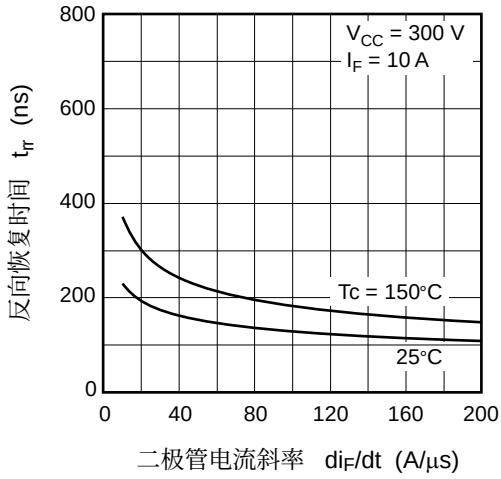
典型电容-集电极/发射极电压



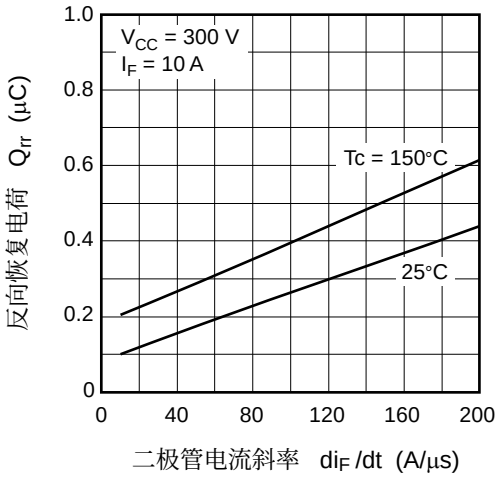

输入时序特性 (典型)



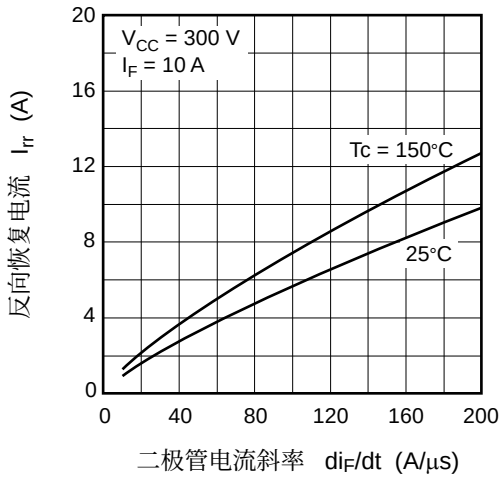

反向恢复时间-二极管电流斜率 (典型)



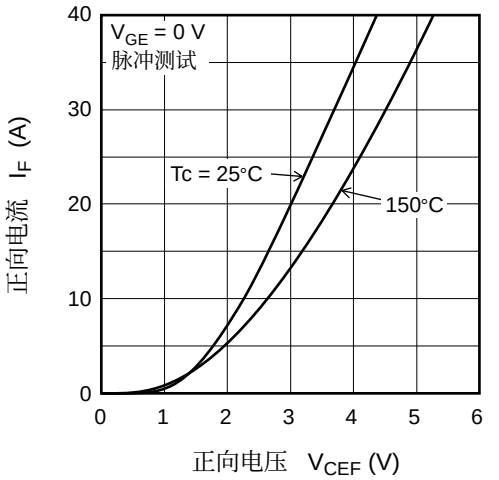

反向恢复电荷-二极管电流斜率 (典型)



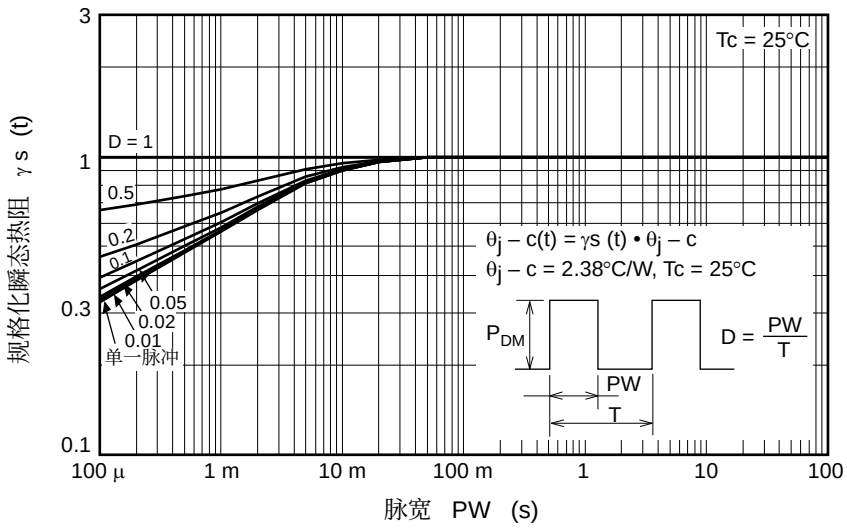

反向恢复电流-二极管电流斜率 (典型)



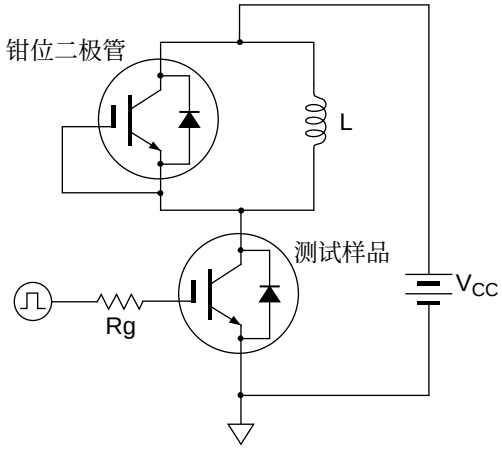

正向电流-正向电压 (典型)



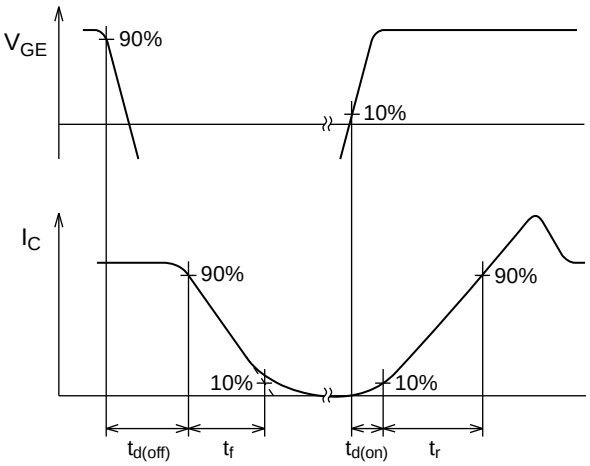
瞬态热阻特性规格化 (绝缘栅双极晶体管)



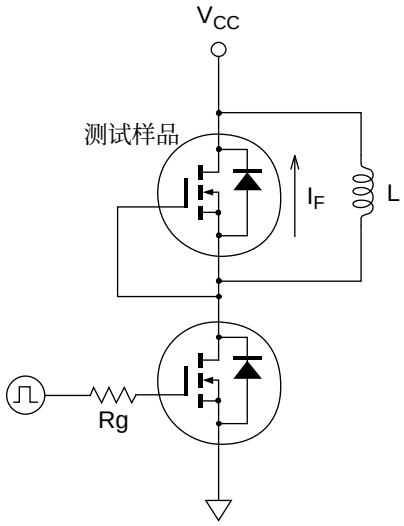

开关时间测定电路



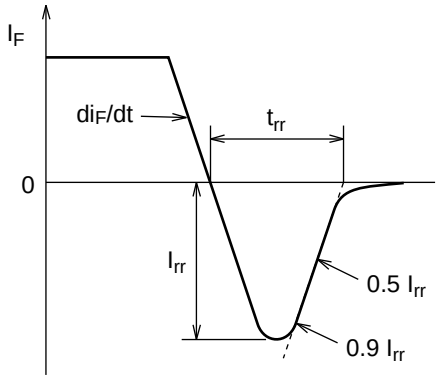

波形




二极管反向恢复时间测定电路



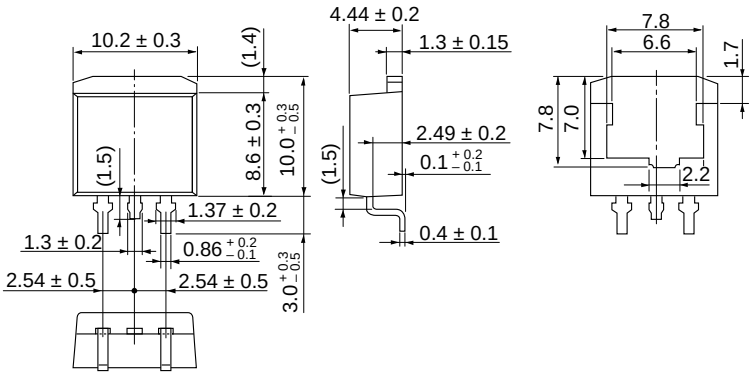

波形



## 封装尺寸

| 封装名称 | JEITA 封装代码 | RENESAS 代码 | 旧代码 | 重量[典型] |
|---|---|---|---|---|
| LDPAK(S)-(1) | SC-83 | PRSS0004AE-B | LDPAK(S)-(1) / LDPAK(S)-(1)V | 1.30g |

单位: mm




## 订购信息

| 订购型号 | 数量 | 运输包装 |
|---|---|---|
| RJH60A83RDPE-00#J3 | 1000 枚 | 带卷包装 |

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