

# RJH60D5DPM

600V - 37A – 绝缘栅双极晶体管

应用: 逆变器

R07DS0174CJ0200

修订版本 2.00

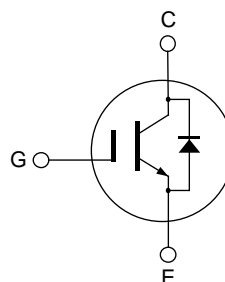
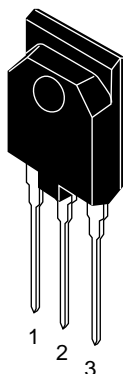
Jul 25, 2012

## 特点

- 短路承受时间 (5  $\mu$ s 典型值)
- 低集电极/发射极饱和电压  
 $V_{CE(sat)} = 1.6$  V 典型值 ( $I_C = 37$  A,  $V_{GE} = 15$  V,  $T_a = 25^\circ\text{C}$ )
- 内置快速恢复二极管 (100 ns 典型值) 于一封装
- 沟槽栅与薄晶圆技术
- 快速开关时间  
 $t_f = 40$  ns 典型值 ( $V_{CC} = 300$  V,  $V_{GE} = 15$  V,  $I_C = 37$  A,  $R_g = 5$   $\Omega$ ,  $T_a = 25^\circ\text{C}$ , 感性负载)

## 封装形式

RENESAS 封装代码: PRSS0003ZA-A  
 (封装名称: TO-3PFM)



1. 栅极
2. 集电极
3. 发射极

## 绝对最大额定值

( $T_a = 25^\circ\text{C}$ )

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	$V_{GES}$	$\pm 30$	V	
集电极电流	$T_c = 25^\circ\text{C}$	$I_C$	75	A
	$T_c = 100^\circ\text{C}$	$I_C$	37	A
集电极脉冲电流	$i_{C(\text{peak})}$ <sup>注1</sup>	150	A	
集电极/发射极二极管正向电流	$I_{DF}$	30	A	
集电极/发射极二极管正向脉冲电流	$i_{DF(\text{peak})}$ <sup>注1</sup>	120	A	
集电极最大容许功率损耗	$P_C$ <sup>注2</sup>	45	W	
结壳热阻 (绝缘栅双极晶体管)	$\theta_{j-c}$ <sup>注2</sup>	2.78	$^\circ\text{C}/\text{W}$	
结壳热阻 (二极管)	$\theta_{j-cd}$ <sup>注2</sup>	3.95	$^\circ\text{C}/\text{W}$	
结温	$T_j$	150	$^\circ\text{C}$	
储存温度	$T_{stg}$	-55 to +150	$^\circ\text{C}$	

- 注: 1. 在  $PW \leq 10$   $\mu$ s, 工作周期  $\leq 1\%$  的容许值  
 2. 在  $T_c = 25^\circ\text{C}$  的容许值

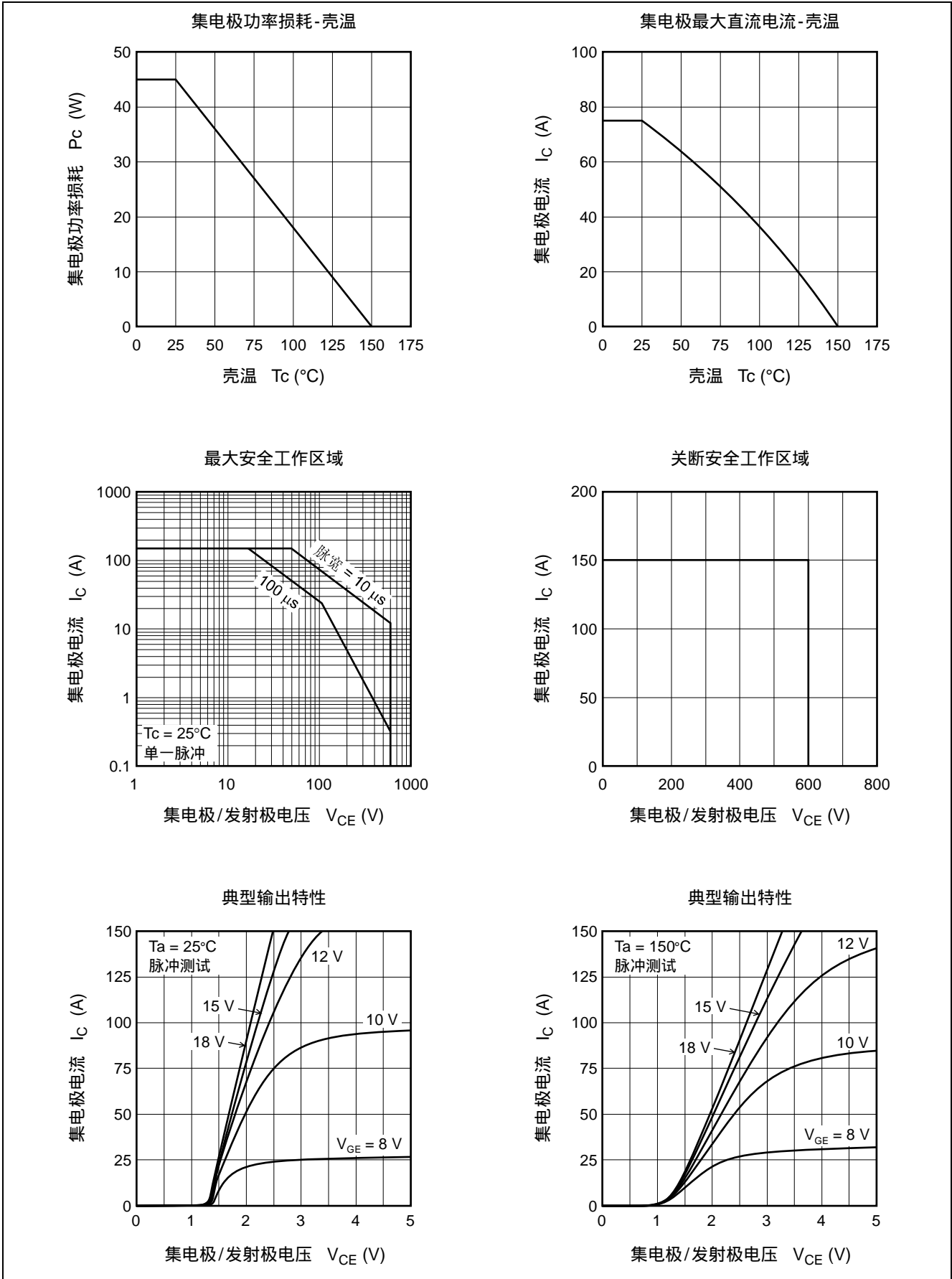
## 电特性

(Ta = 25°C)

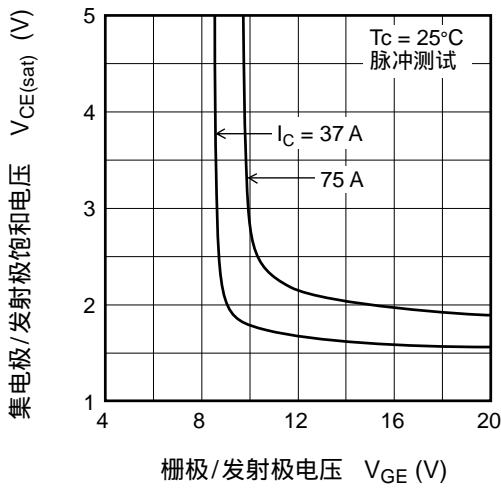
参数	符号	最小值	典型值	最大值	单位	测定条件
集电极/发射极破坏电压	$V_{BR(CES)}$	600	—	—	V	$I_C = 10 \mu A, V_{GE} = 0$
集电极/发射极断路电流 或 二极管反向电流	$I_{CES} / I_R$	—	—	5	$\mu A$	$V_{CE} = 600 V, V_{GE} = 0$
栅极/发射极漏泄电流	$I_{GES}$	—	—	$\pm 1$	$\mu A$	$V_{GE} = \pm 30 V, V_{CE} = 0$
栅极/发射极截止电压	$V_{GE(off)}$	4.0	—	6.0	V	$V_{CE} = 10 V, I_C = 1 mA$
集电极/发射极饱和电压	$V_{CE(sat)}$	—	1.6	2.2	V	$I_C = 37 A, V_{GE} = 15 V$ 注3
	$V_{CE(sat)}$	—	2.0	—	V	$I_C = 75 A, V_{GE} = 15 V$ 注3
输入电容	$C_{ies}$	—	1900	—	pF	$V_{CE} = 25 V$
输出电容	$C_{oes}$	—	120	—	pF	$V_{GE} = 0$
反向传输电容	$C_{res}$	—	50	—	pF	$f = 1 MHz$
栅极充电电荷量	$Q_g$	—	78	—	nC	$V_{GE} = 15 V$
栅极/发射极充电电荷量	$Q_{ge}$	—	12	—	nC	$V_{CE} = 300 V$
栅极/集电极充电电荷量	$Q_{gc}$	—	32	—	nC	$I_C = 37 A$
接通延迟时间	$t_{d(on)}$	—	50	—	ns	$V_{CC} = 300 V$
上升时间	$t_r$	—	40	—	ns	$V_{GE} = 15 V$
关断延迟时间	$t_{d(off)}$	—	135	—	ns	$I_C = 37 A$
下降时间	$t_f$	—	40	—	ns	$R_g = 5 \Omega$
接通能量	$E_{on}$	—	0.65	—	mJ	感性负载
关断能量	$E_{off}$	—	0.27	—	mJ	
总开关能量	$E_{total}$	—	0.92	—	mJ	
短路承受时间	$t_{sc}$	3.0	5.0	—	$\mu s$	$V_{CC} \leq 360 V, V_{GE} = 15 V$
快速恢复二极管正向电压	$V_F$	—	1.4	1.9	V	$I_F = 30 A$ 注3
快速恢复二极管反向恢复时间	$t_{rr}$	—	100	—	ns	$I_F = 30 A$
快速恢复二极管反向恢复电荷	$Q_{rr}$	—	0.18	—	$\mu C$	$di_F/dt = 100 A/\mu s$
快速恢复二极管反向恢复电流	$I_{rr}$	—	4.2	—	A	

注: 3. 脉冲测试

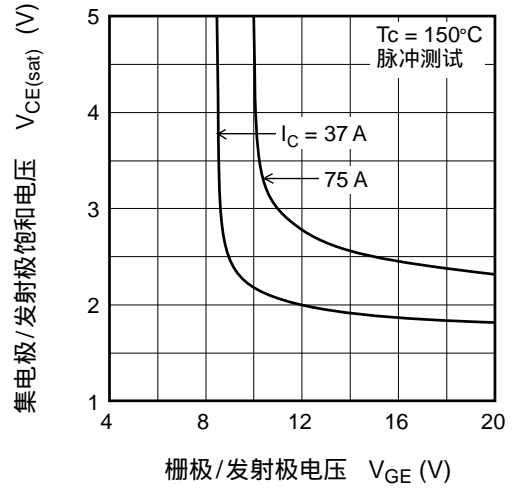
主要特性



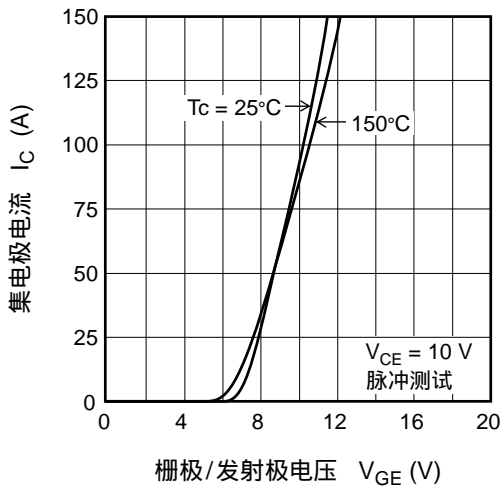
集电极/发射极饱和电压-  
栅极/发射极电压 (典型)



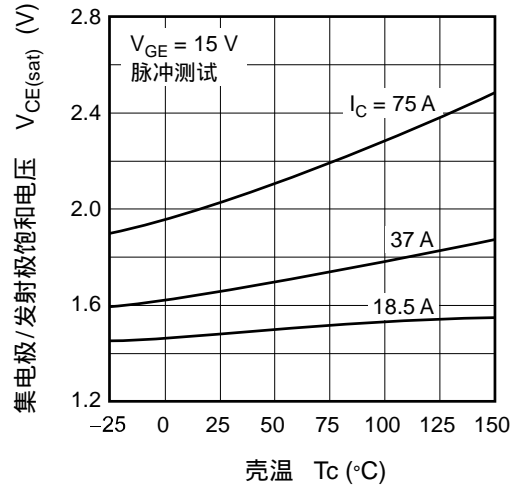
集电极/发射极饱和电压-  
栅极/发射极电压 (典型)



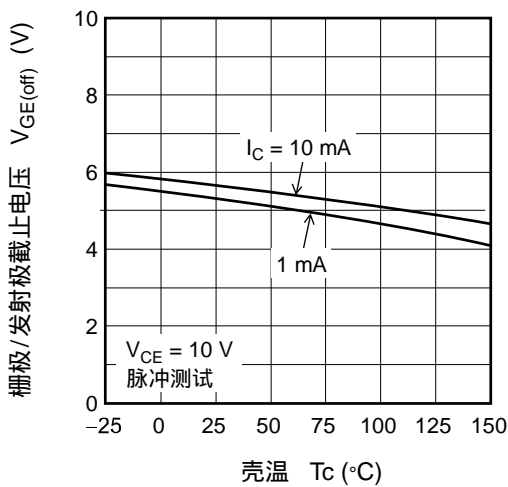
典型传输特性



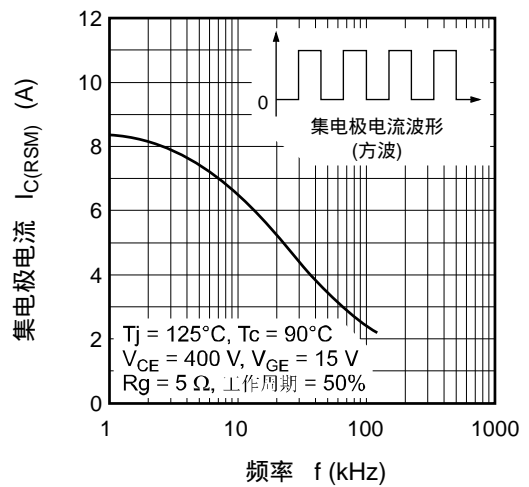
集电极/发射极饱和电压-壳温 (典型)



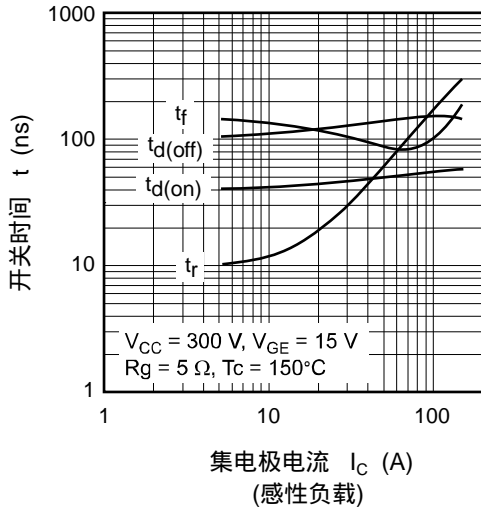
栅极/发射极截止电压-壳温 (典型)



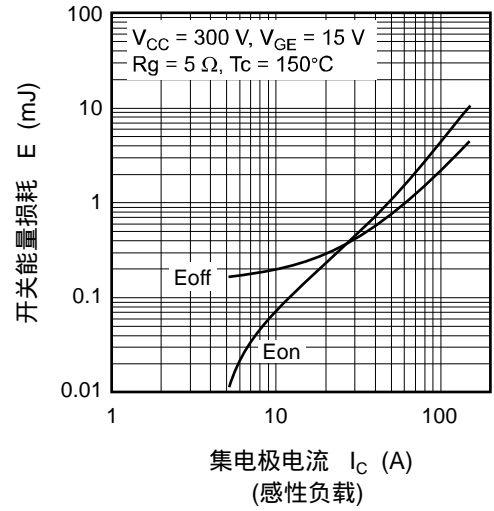
频率特性 (典型)



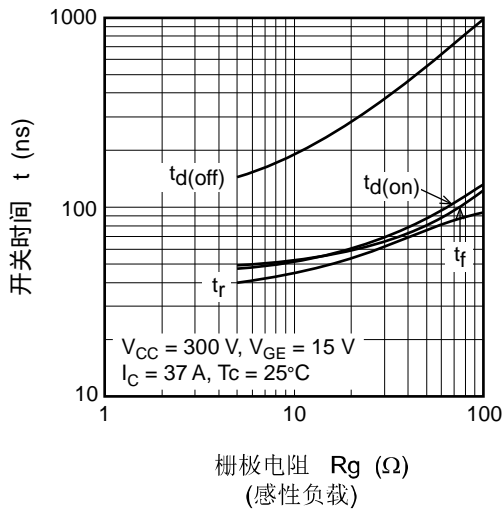
开关特性 (典型) (1)



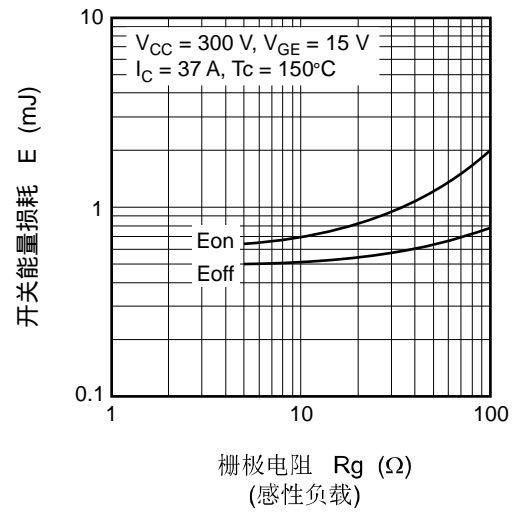
开关特性 (典型) (2)



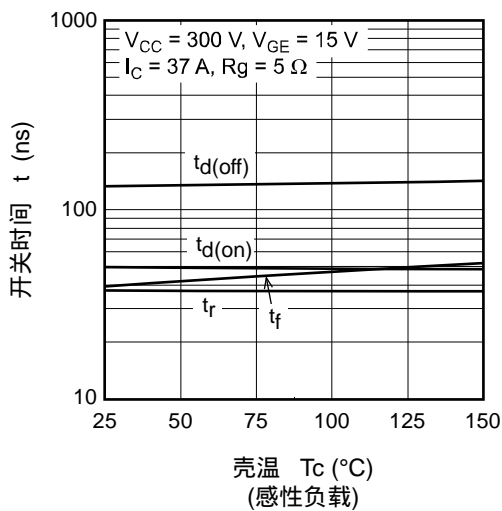
开关特性 (典型) (3)



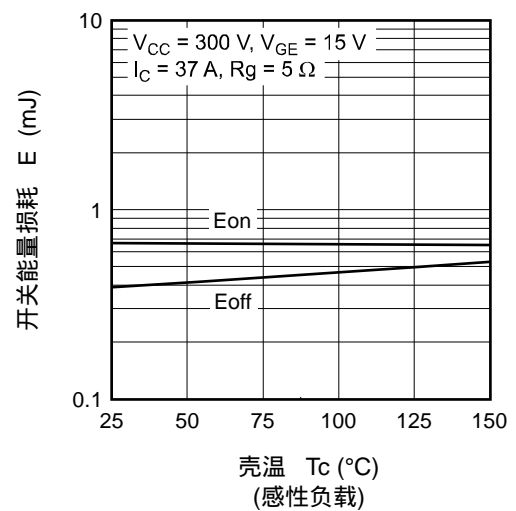
开关特性 (典型) (4)



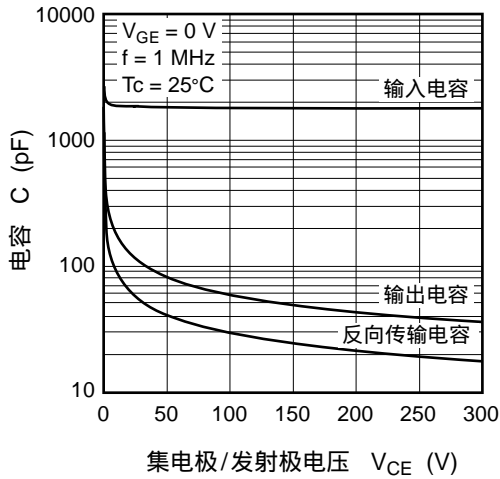
开关特性 (典型) (5)



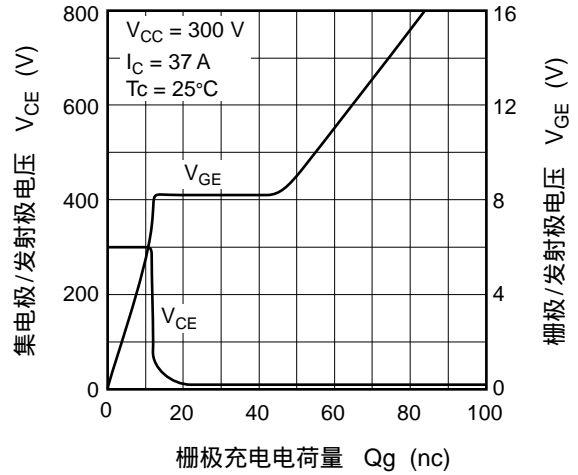
开关特性 (典型) (6)



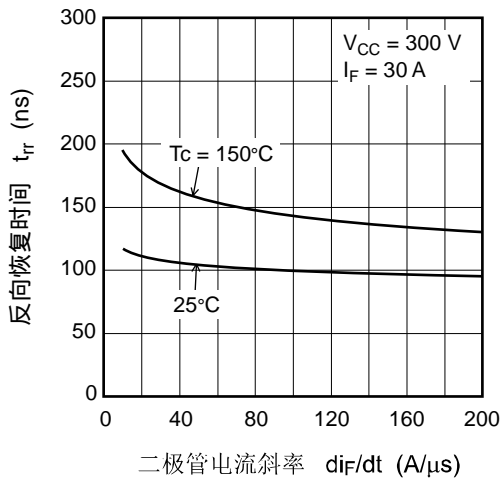
典型电容-集电极/发射极电压



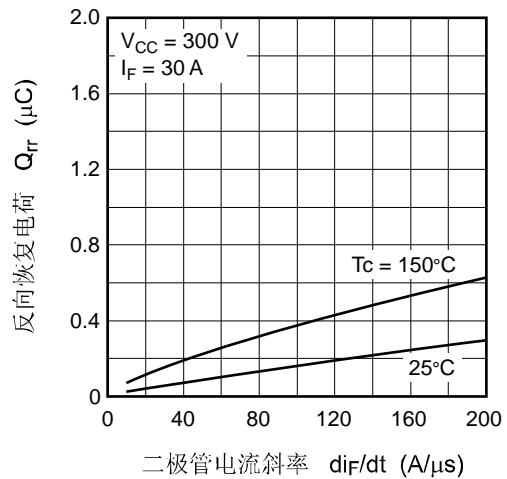
输入时序特性 (典型)



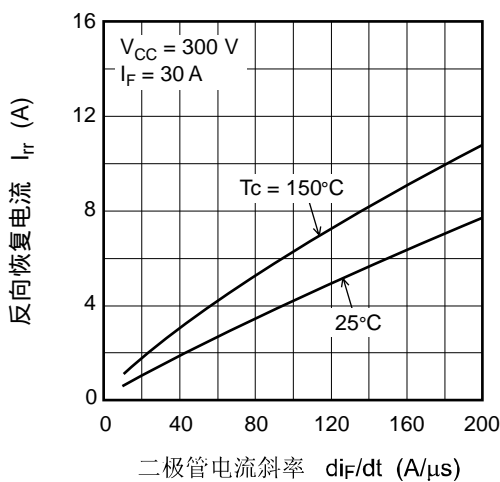
反向恢复时间-二极管电流斜率 (典型)



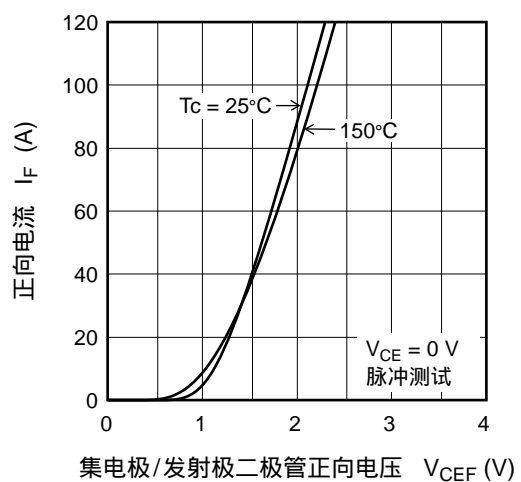
反向恢复电荷-二极管电流斜率 (典型)



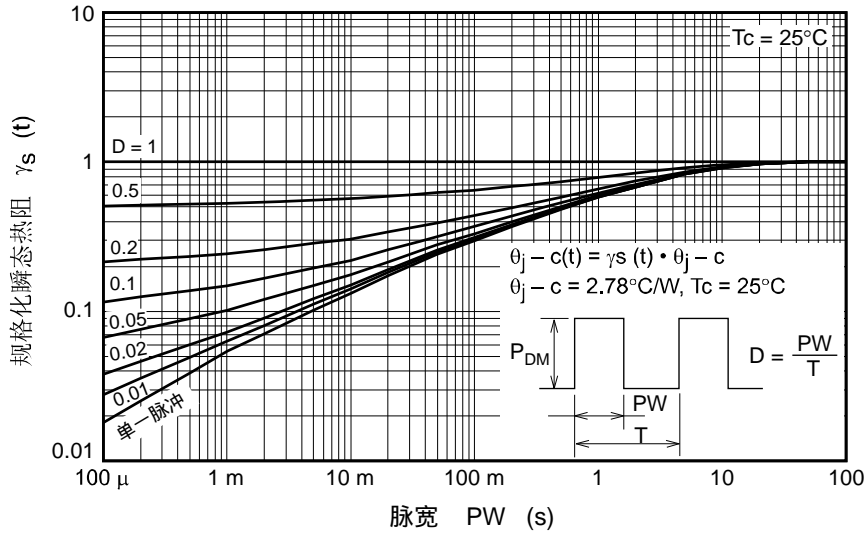
反向恢复电流-二极管电流斜率 (典型)



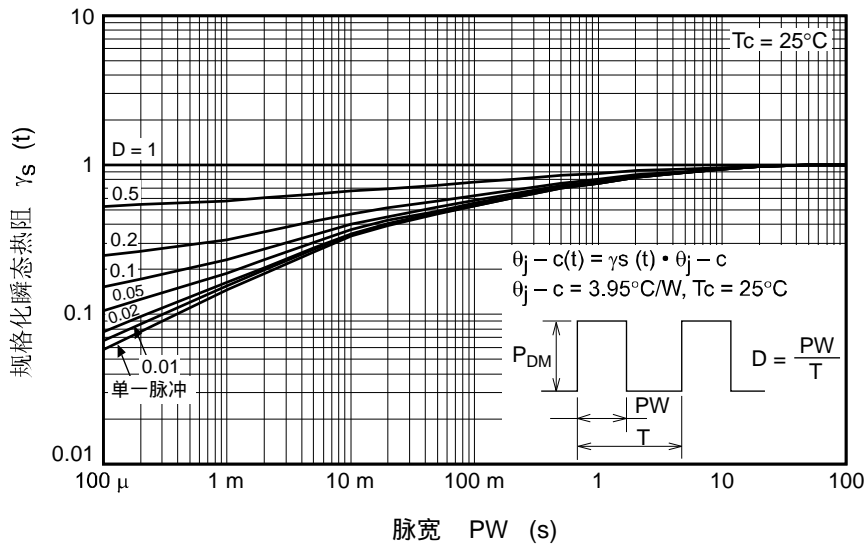
正向电流-正向电压 (典型)



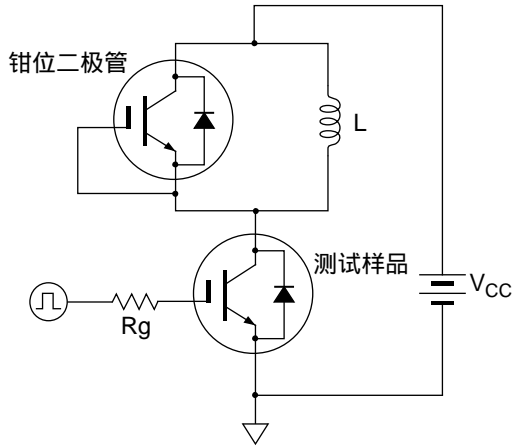
瞬态热阻特性规格化 (绝缘栅双极晶体管)



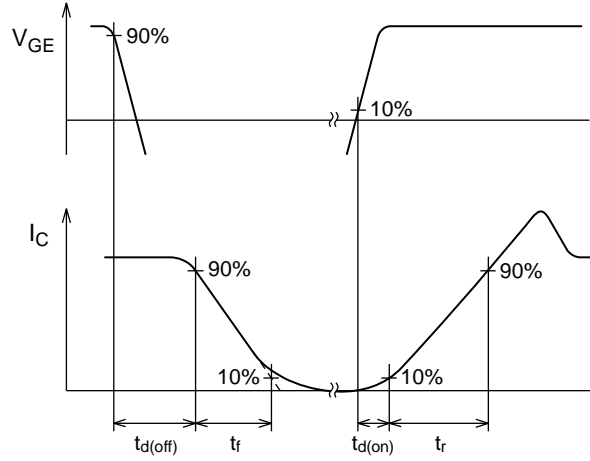
瞬态热阻特性规格化 (二极管)



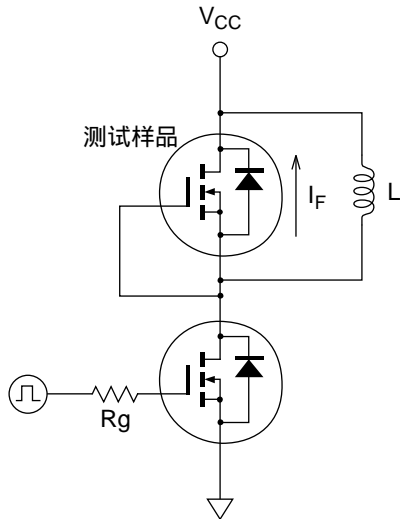
开关时间测定电路



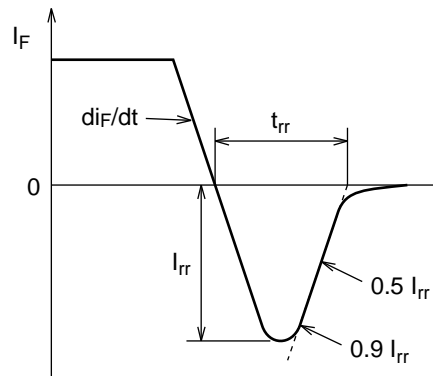
波形



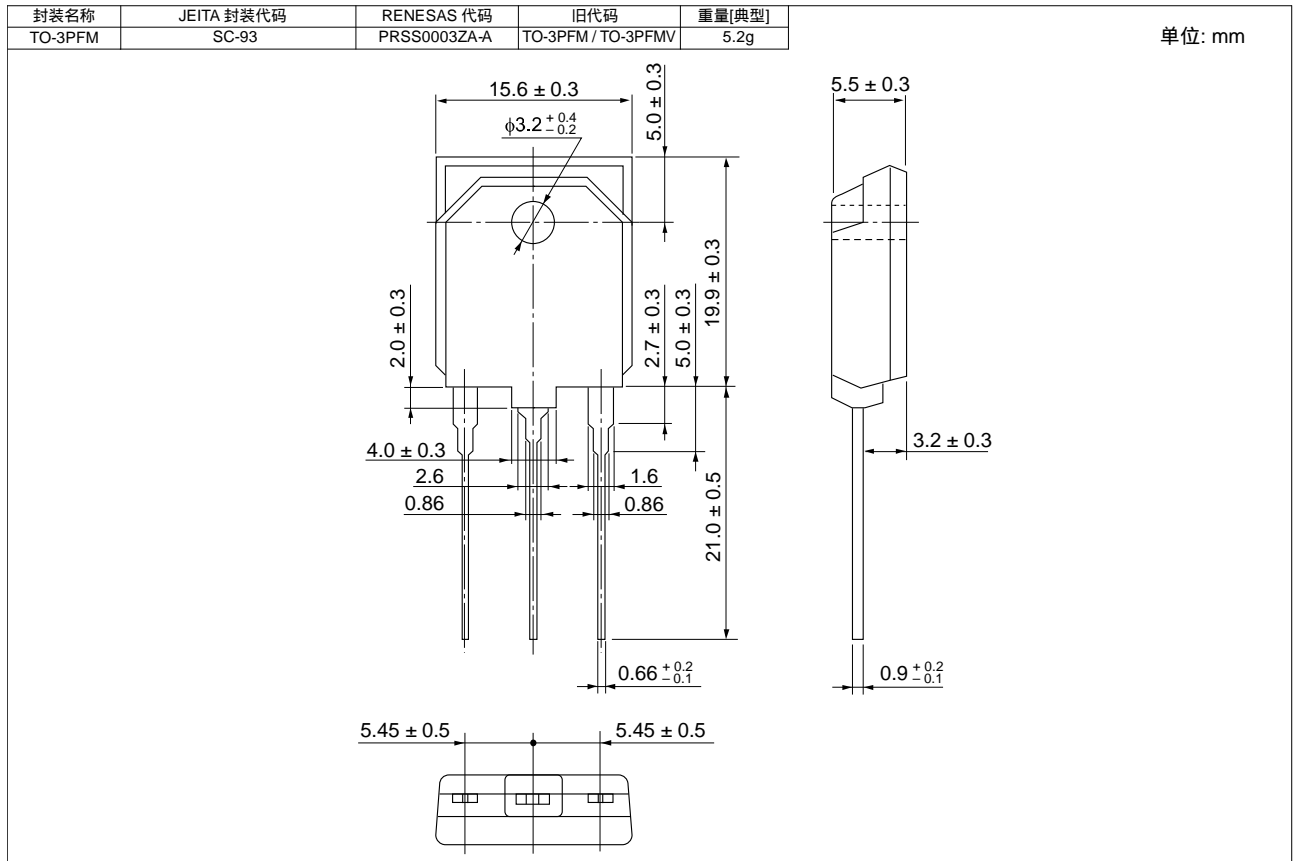
二极管反向恢复时间测定电路



波形



封装尺寸



订购信息

订购型号	数量	运输包装
RJH60D5DPM-00#T1	360 枚	纸盒包装 (管状容器)

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