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2015 年 3 月

FGPF4565

650 V 场截止沟槽 IGBT

特性

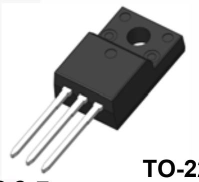
- 高电流能力
- 低饱和电压：$V_{CE(sat)}$ =1.5 V(典型值)@ I_C = 30 A
- 高输入阻抗
- 符合 RoHS 标准

应用

- IPL (强脉冲光)

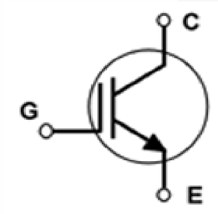
概述

通过利用创新型场截止 IGBT 技术， Fairchild 的新系列场截止槽 IGBT 可以为 IPL （强度脉冲光）提供最优性能。



G C E

TO-220F
(Retractable)



绝对最大额定值 TC = 25°C 除非另有说明

符号	描述		额定值	单位
V_{CES}	集电极－发射极之间电压		650	V
V_{GES}	栅极－发射极间电压		± 25	V
$I_{C\ pulse\ (1)}$*	集电极脉冲电流	@ T_C = 25°C	170	A
P_D	最大功耗	@ T_C = 25°C	30	W
	最大功耗	@ T_C = 100°C	12	W
T_J	工作结温		-55 至 +150	°C
T_{stg}	存储温度范围		-55 至 +150	°C
T_L	用于焊接的最大引脚温度，距离外壳 1/8"，持续 5 秒		300	°C

热性能

符号	参数	典型值	最大值	单位
$R_{\theta JC}$	结至外壳热阻最大值	-	4.1	°C/W
$R_{\theta JA}$	结至环境热阻最大值	-	62.5	°C/W

注：

1. 半正弦波：D< 0.01, 脉宽 < 1usec,

* Ic 脉宽 受限于最大 Tj

封装标识与定购信息

器件编号	顶标	封装	包装方法	卷尺寸	带宽	数量
FGPF4565	FGPF4565	TO-220F	塑料管	不适用	不适用	50

IGBT 电气特性 T_C = 25°C 除非另有说明

符号	参数	测试条件	最小值	典型值	最大值	单位
关断特性						
BV_{CES}	集电极－发射极击穿电压	V_{GE} = 0 V, I_C = 1 mA	650	-	-	V
$\Delta BV_{CES}/\Delta T_J$	击穿电压温度系数电压	V_{GE} = 0 V, I_C = 1 mA	-	0.65	-	V/°C
I_{CES}	集电极切断电流	V_{CE} = V_{CES}, V_{GE} = 0 V	-	-	250	μA
I_{GES}	G-E 漏电流	V_{GE} = V_{GES}, V_{CE} = 0 V	-	-	±400	nA
导通特性						
$V_{GE(th)}$	G-E 阈值电压	I_C = 250 μA, V_{CE} = V_{GE}	3.0	4.0	5.0	V
$V_{CE(sat)}$	集电极－发射极间饱和电压	I_C = 20 A, V_{GE} = 15 V	-	1.35	-	V
		I_C = 30 A, V_{GE} = 15 V		1.50	1.88	V
		I_C = 30 A, V_{GE} = 15 V, T_C = 150°C	-	1.75	-	V
动态特性						
C_{ies}	输入电容	V_{CE} = 30 V, V_{GE} = 0 V, f = 1 MHz	-	1650	-	pF
C_{oes}	输出电容		-	34	-	pF
C_{res}	反向传输电容		-	17	-	pF
开关特性						
$t_{d(on)}$	导通延迟时间	V_{CC} = 400 V, I_C = 30 A, R_G = 5 Ω, V_{GE} = 15 V, 感性负载，T_C = 25°C	-	11.2	-	ns
t_r	上升时间		-	44.8	-	ns
$t_{d(off)}$	关断延迟时间		-	40.8	-	ns
t_f	下降时间		-	153	-	ns
$t_{d(on)}$	导通延迟时间	V_{CC} = 400 V, I_C = 30 A, R_G = 5 Ω, V_{GE} = 15 V, 感性负载，T_C = 150°C	-	12.8	-	ns
t_r	上升时间		-	59.2	-	ns
$t_{d(off)}$	关断延迟时间		-	40.8	-	ns
t_f	下降时间		-	202	-	ns
Q_g	总栅极电荷	V_{CE} = 400 V, I_C = 30 A, V_{GE} = 15 V	-	40.3	-	nC
Q_{ge}	栅极－发射极间电荷		-	8.8	-	nC
Q_{gc}	栅极－集电极间电荷		-	10.4	-	nC

典型性能特征

图 1. 典型输出特性

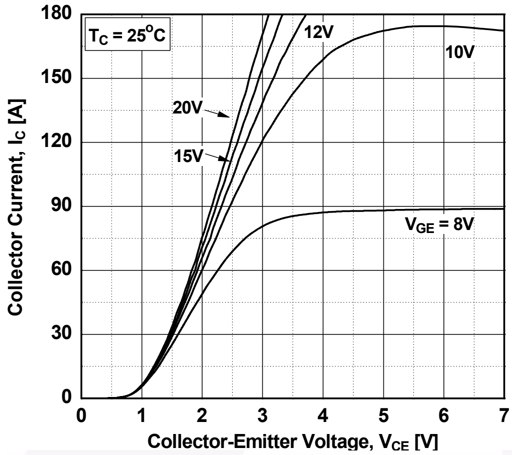


图 2. 典型输出特性

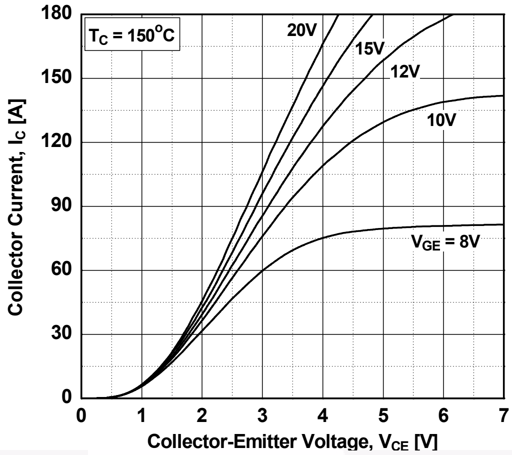


图 3. 典型饱和电压特性

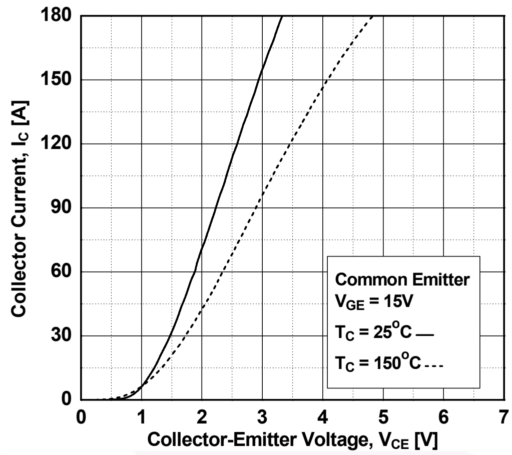


图 4. 饱和电压与可变电流强度下壳温的关系

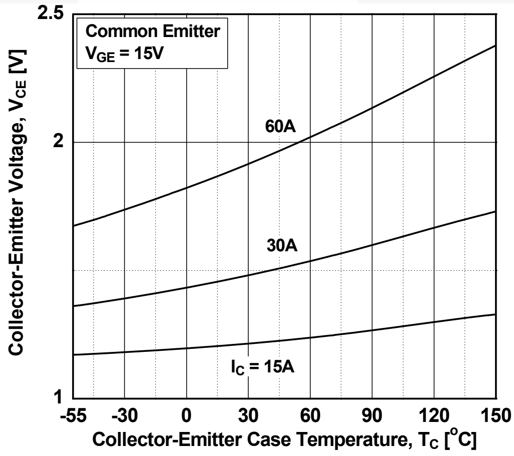


图 5. 饱和电压与 V_{GE} 的关系

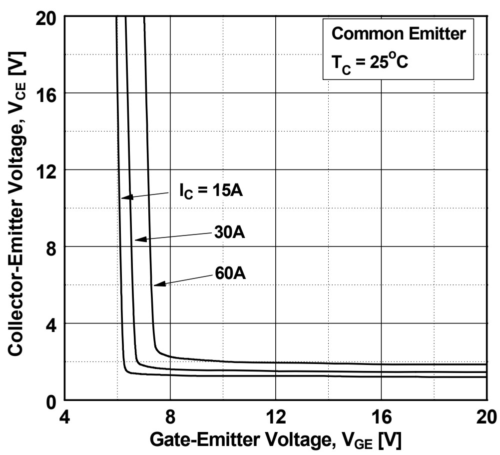
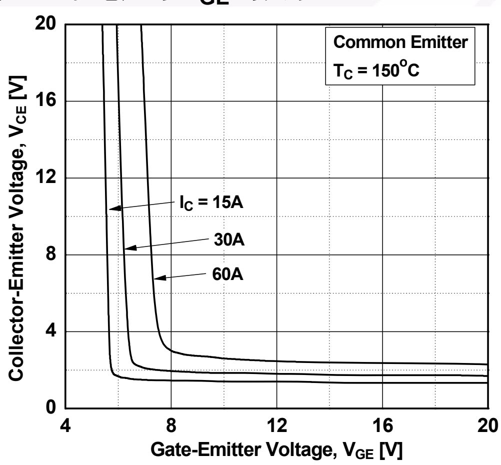


图 6. 饱和电压与 V_{GE} 的关系



典型性能特征

图 7. 电容特性

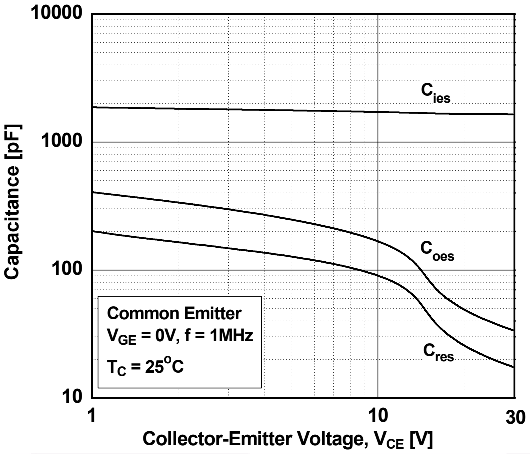


图 8. 栅极电荷特性

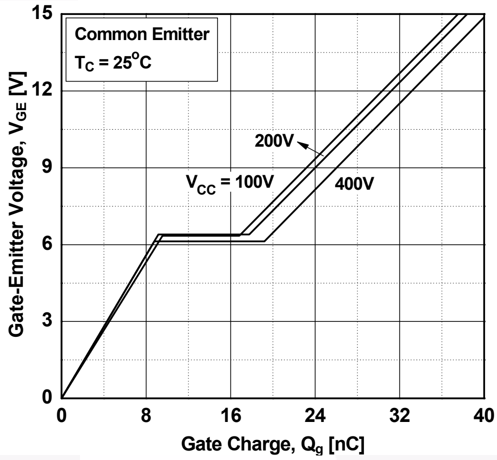


图 9. 关断特性与栅极电阻的关系

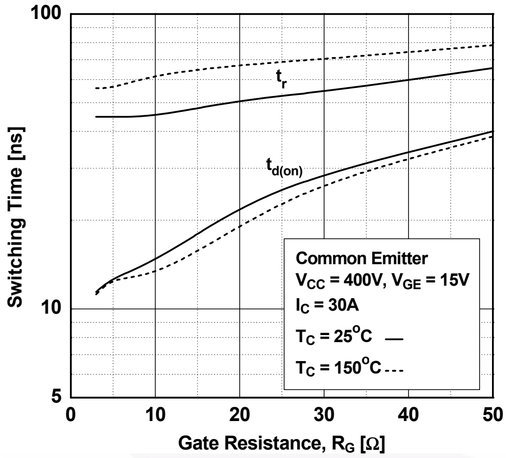


图 10. 导通特性与栅极电阻的关系

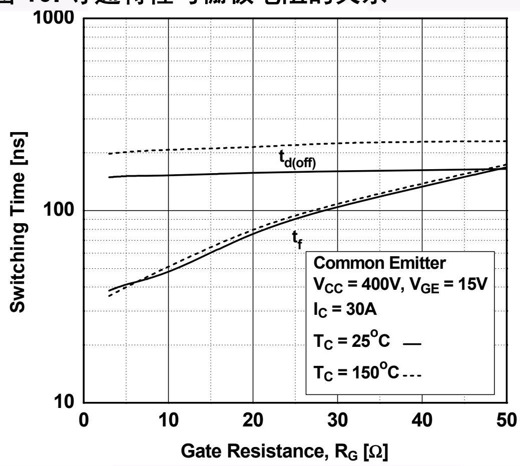


图 11. 开关损耗与栅极电阻的关系

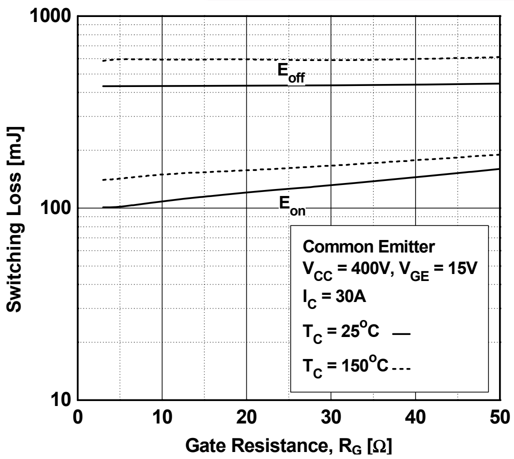
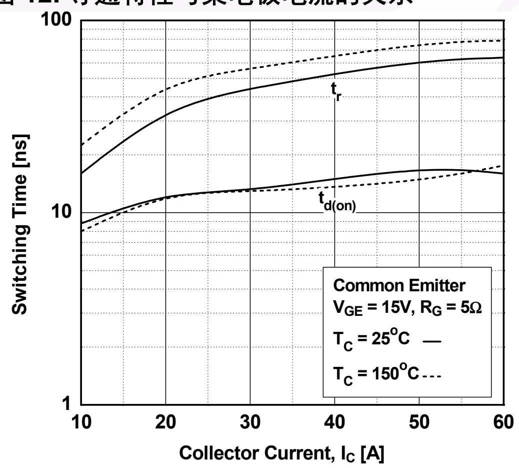


图 12. 导通特性与集电极电流的关系



典型性能特征

图 13. 关断特性与集电极电流的关系

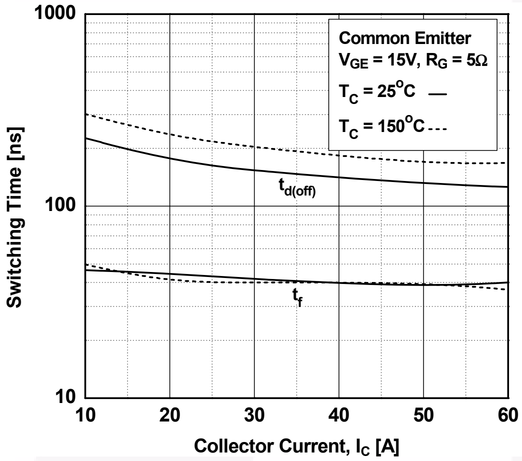


图 14. 开关损耗与集电极电流的关系

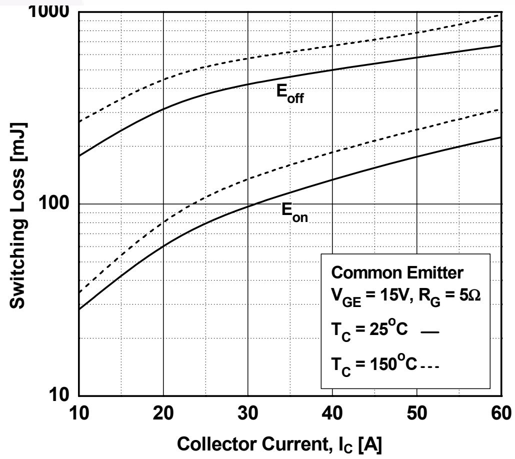
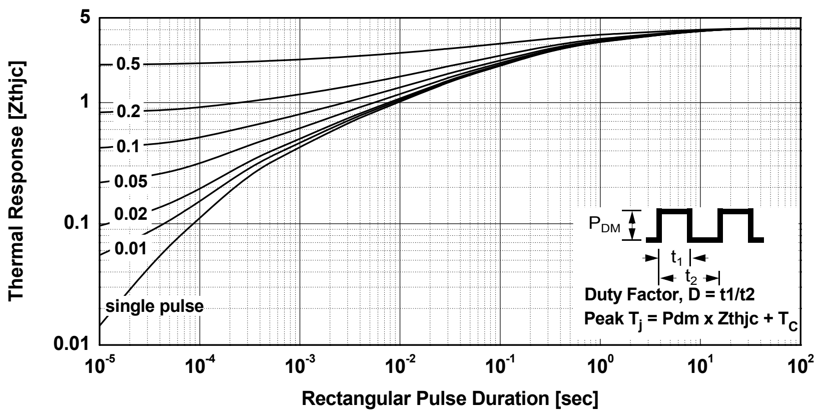


图 25. IGBT 瞬态热阻抗



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