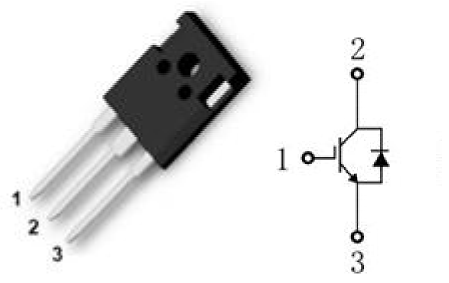
单管，采用高速沟槽栅/场终止 IGBT，超快速恢复二极管。

电气特性

- •低开关损耗
- •低饱和压降
- •扩展性的工作结温 $T_{vj\ op}$

典型应用

- •充电桩
- •电磁感应加热
- •太阳能控制器
- •UPS 电源



TO-247

初步数据

耐压	电流 @100°C	饱和压降 @25°C	二极管正向压降 @25°C	封装方式
650 V	75A	1.65V	1.4 V	TO-247

IGBT 最大额定值

参数	条件	符号	值	单位
集电极一发射极电压	T_{vj}=25°C	V_{CES}	650	V
连续集电极直流电流	T_C=100°C,$T_{vj\ max}$=175°C	$I_{C\ nom}$	75	A
集电极重复峰值电流	T_P=1ms	I_{CRM}	150	A
总功率损耗	T_C=25°C,$T_{vj\ max}$=175°C	P_{tot}	395	W
栅极一发射极峰值电压		V_{GES}	±30	V

二极管最大额定值

参数	条件	符号	值	单位
反向重复峰值电压	T_{vj}=25°C	V_{RRM}	650	V
连续正向直流电流		I_F	75	A
正向重复峰值电流	T_P=1ms	I_{FRM}	150	A

热阻特性

参数	条件	符号	值	单位
芯片对管壳热阻（IGBT）	Per IGBT	$R_{\Theta JC}$	0.38	°C/W
芯片对管壳热阻（FRD）	Per FRD	$R_{\Theta JC}$	0.48	°C/W

	条件	符号	Min.	Typ.	Max.	单位
集电极一发射极饱和电压	I_C = 75 A, V_{GE} = 15 V T_{vj} = 25°C I_C = 75 A, V_{GE} = 15 V T_{vj} = 150°C	$V_{CE\ sat}$		1.65 1.90		V V
栅极阈值电压	I_C = 750 µA, V_{CE} = V_{GE}, T_{vj} = 25°C	V_{GEth}	3.2	4.0	4.8	V
内部栅极电阻	T_{vj} = 25°C	R_{Gint}		0		Ω
输入电容	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25V, V_{GE} = 0 V	C_{ies}		3800		pF
输入电容	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25V, V_{GE} = 0 V	C_{oes}		80		pF
反向传输电容	f = 1 MHz, T_{vj} = 25°C, V_{CE} = 25V, V_{GE} = 0 V	C_{res}		17		pF
集电极-发射极截止电流	V_{CE} = 650 V, V_{GE} = 0 V, T_{vj} = 25°C	I_{CES}			75	µA
栅极-发射极漏电流	V_{CE} = 0 V, V_{GE} = 20 V, T_{vj} = 25°C	I_{GES}			100	nA
开通延迟时间(电感负载)	I_C = 75 A, V_{CE} = 400 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Gon} =8.0Ω T_{vj} = 150°C	$t_{d\ on}$		28		ns ns ns
上升时间(电感负载)	I_C = 75 A, V_{CE} = 400 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Gon} =8.0Ω T_{vj} = 150°C	t_r		33		ns ns ns
关断延迟时间(电感负载)	I_C = 75 A, V_{CE} = 400 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Goff} = 8.0Ω T_{vj} = 150°C	$t_{d\ off}$		174		ns ns ns
下降时间(电感负载)	I_C = 75 A, V_{CE} = 400 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Goff} = 8.0Ω T_{vj} = 150°C	t_f		41		ns ns ns
开通损耗能量（每脉冲)	I_C = 75 A, V_{CE} = 400 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Gon} = 8.0Ω T_{vj} = 150°C	E_{on}		2.25		mJ mJ mJ
关断损耗能量（每脉冲）	I_C = 75 A, V_{CE} = 400 V T_{vj} = 25°C V_{GE} = ±15 V T_{vj} = 125°C R_{Goff} =8.0Ω T_{vj} = 150°C	E_{off}		0.95		mJ mJ mJ
栅电荷	V_{GE} =15 V, V_{CC} = 520 V，I_C=75A	Q_g		160		nC
在开关状态下温度		$T_{vj\ op}$	-40		150	°C

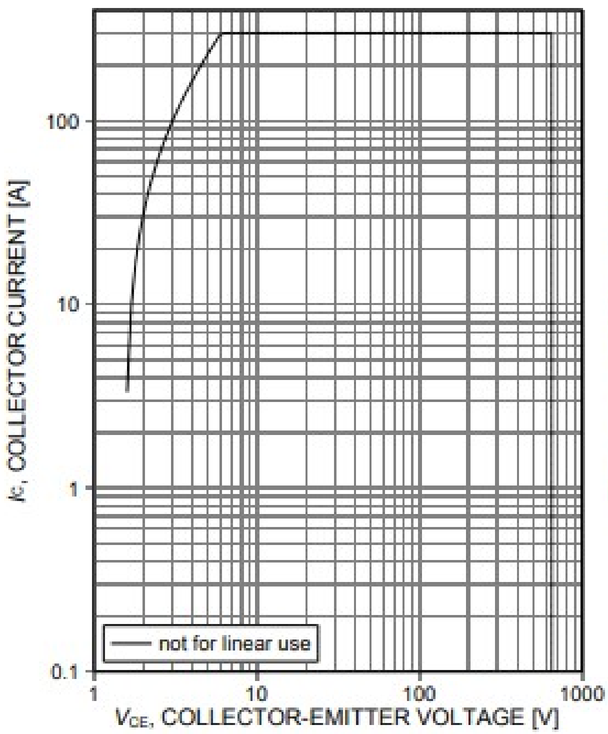


Figure 1. **Forward bias safe operating area**
(D=0, T_C=25°C, T_{vj}≤175°C, V_{GE}=15V, t_p=1μs, I_{Cmax} defined by design - not subject to production test)

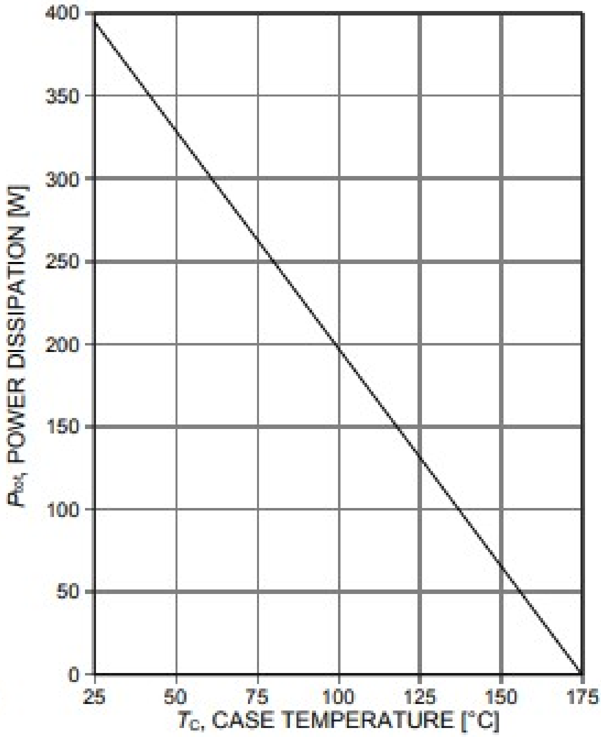


Figure 2. **Power dissipation as a function of case temperature**
(T_{vj}≤175°C)

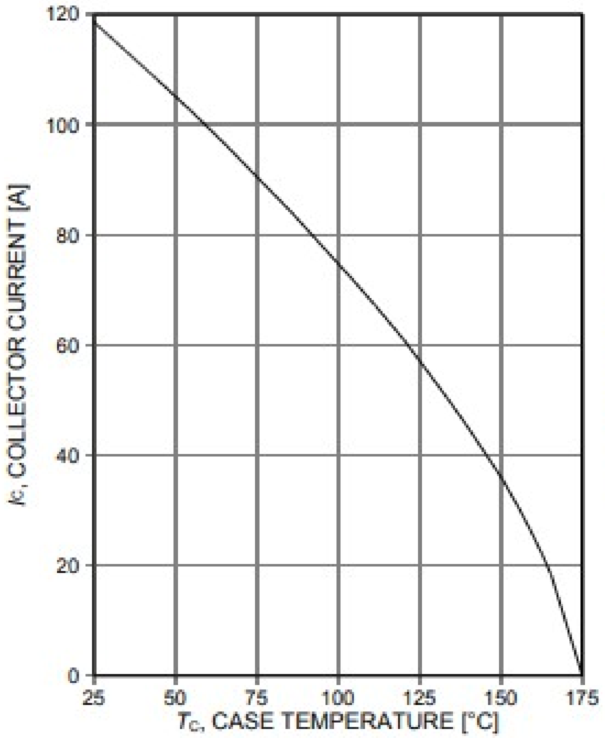


Figure 3. **Collector current as a function of case temperature**
(V_{GE}≥15V, T_{vj}≤175°C)

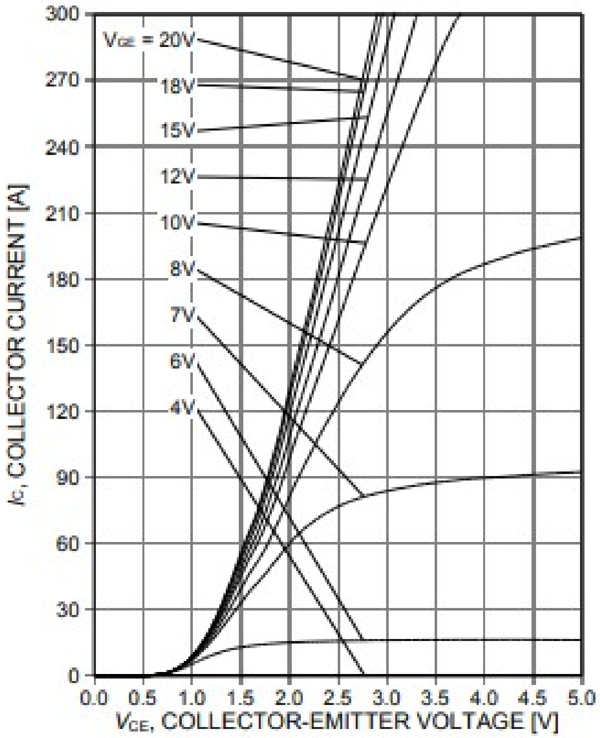


Figure 4. **Typical output characteristic**
(T_{vj}=25°C)

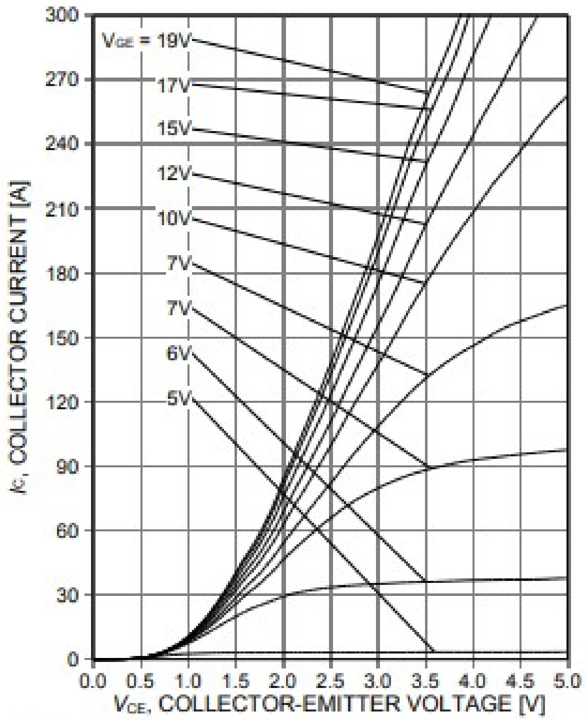


Figure 5. **Typical output characteristic**
(T_{vj}=150°C)

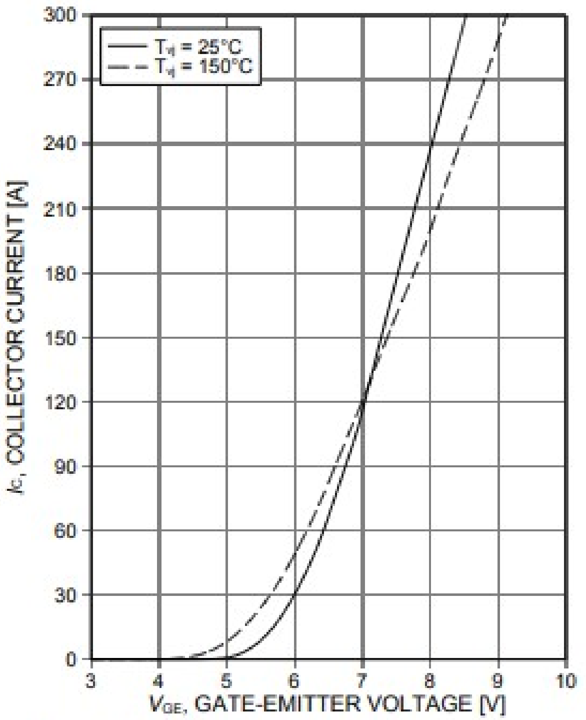


Figure 6. **Typical transfer characteristic**
(V_{CE}=20V)

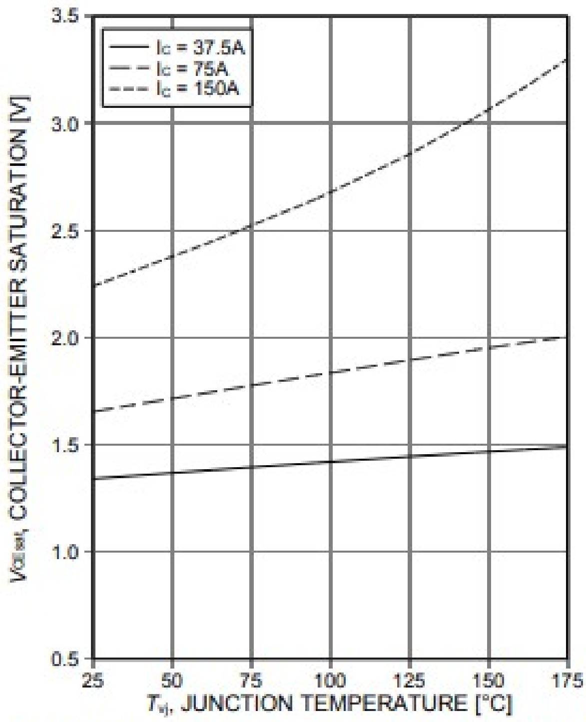


Figure 7. **Typical collector-emitter saturation voltage as a function of junction temperature**
(V_{GE}=15V)

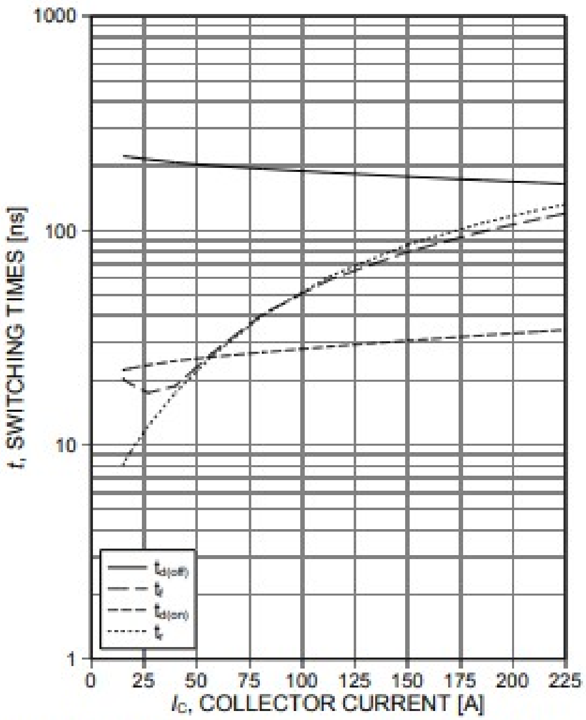


Figure 8. **Typical switching times as a function of collector current**
(inductive load, T_{vj}=150°C, V_{CE}=400V, V_{GE}=0/15V, $R_{G(on)}$=8Ω, $R_{G(off)}$=8Ω, dynamic test circuit in Figure E)

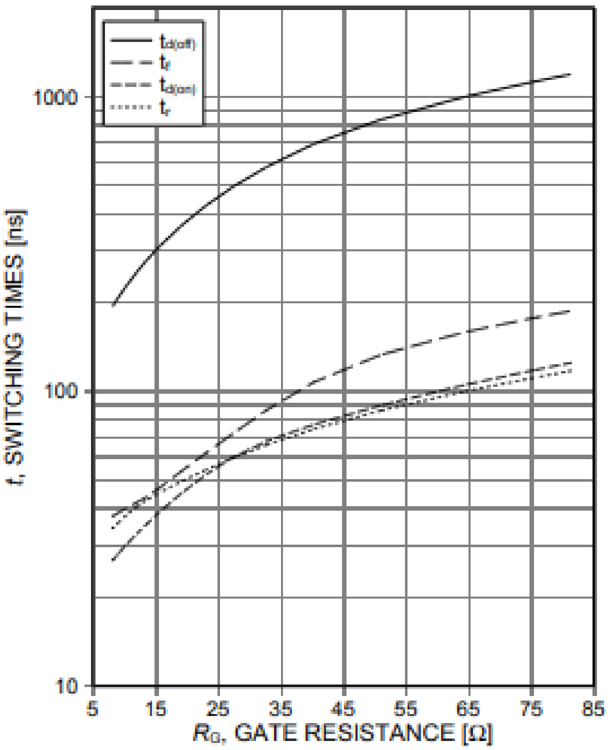


Figure 9. **Typical switching times as a function of gate resistance**
(inductive load, T_{vj}=150°C, V_{CE}=400V, V_{GE}=0/15V, I_C=75A, dynamic test circuit in Figure E)

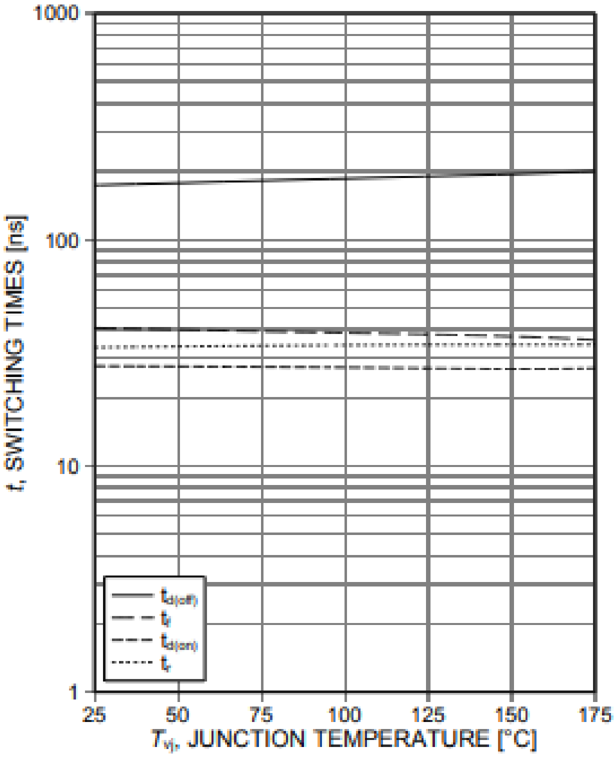


Figure 10. **Typical switching times as a function of junction temperature**
(inductive load, V_{CE}=400V, V_{GE}=0/15V, I_C=75A, $R_{G(on)}$=8Ω, $R_{G(off)}$=8Ω, dynamic test circuit in Figure E)

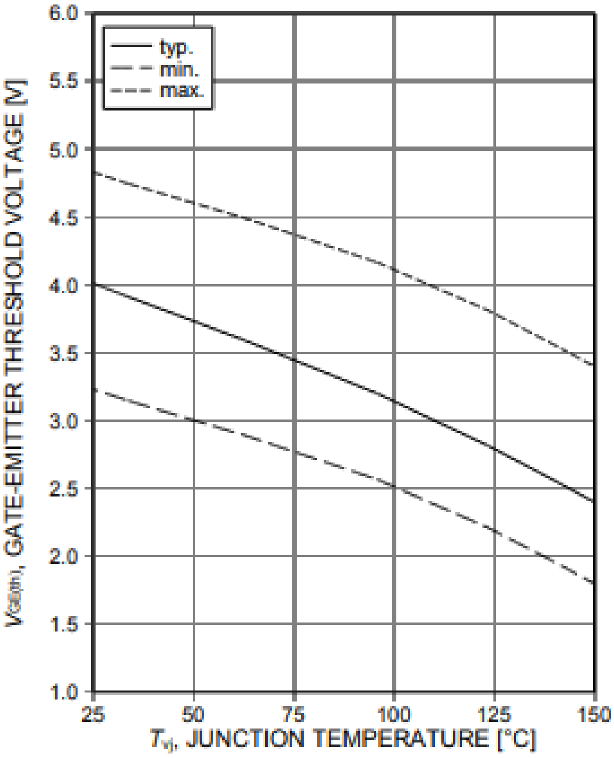


Figure 11. **Gate-emitter threshold voltage as a function of junction temperature**
(I_C=0.75mA)

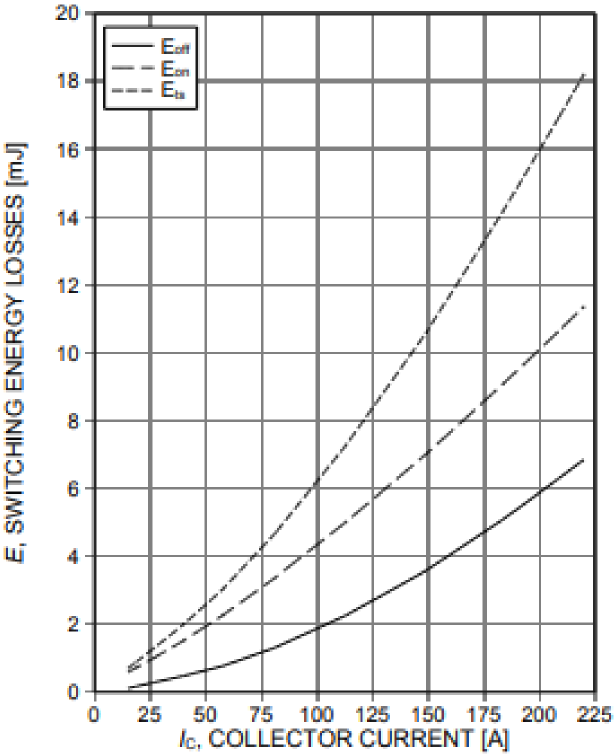


Figure 12. **Typical switching energy losses as a function of collector current**
(inductive load, T_{vj}=150°C, V_{CE}=400V, V_{GE}=0/15V, $R_{G(on)}$=8Ω, $R_{G(off)}$=8Ω, dynamic test circuit in Figure E)

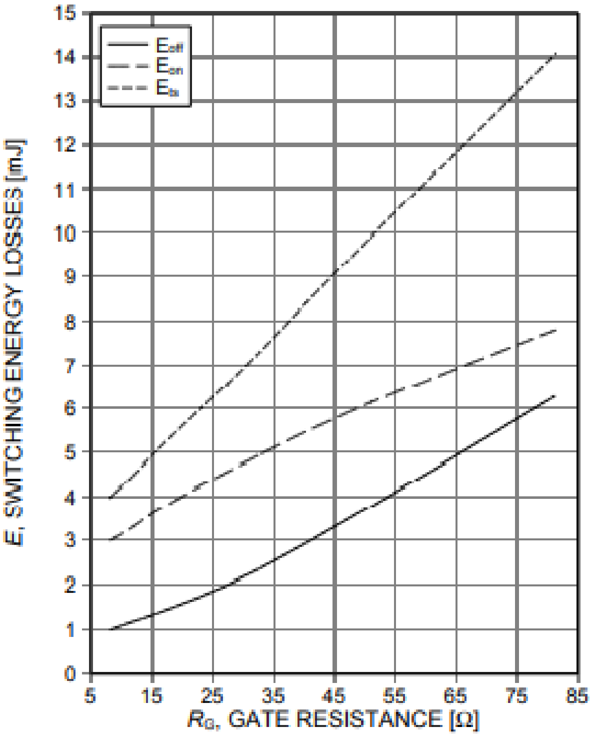


Figure 13. **Typical switching energy losses as a function of gate resistance**
(inductive load, T_{vj}=150°C, V_{CE}=400V, V_{GE}=0/15V, I_C=75A, dynamic test circuit in Figure E)

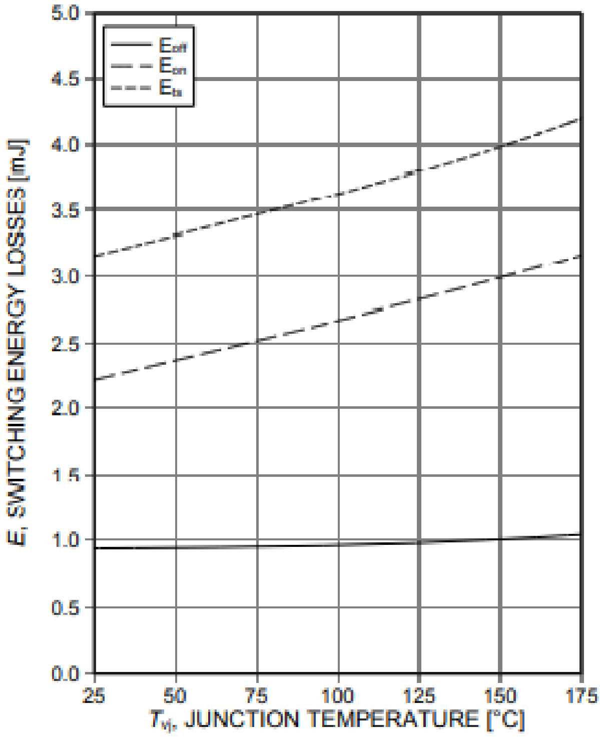


Figure 14. **Typical switching energy losses as a function of junction temperature**
(inductive load, V_{CE}=400V, V_{GE}=0/15V, I_C=75A, $R_{G(on)}$=8Ω, $R_{G(off)}$=8Ω, dynamic test circuit in Figure E)

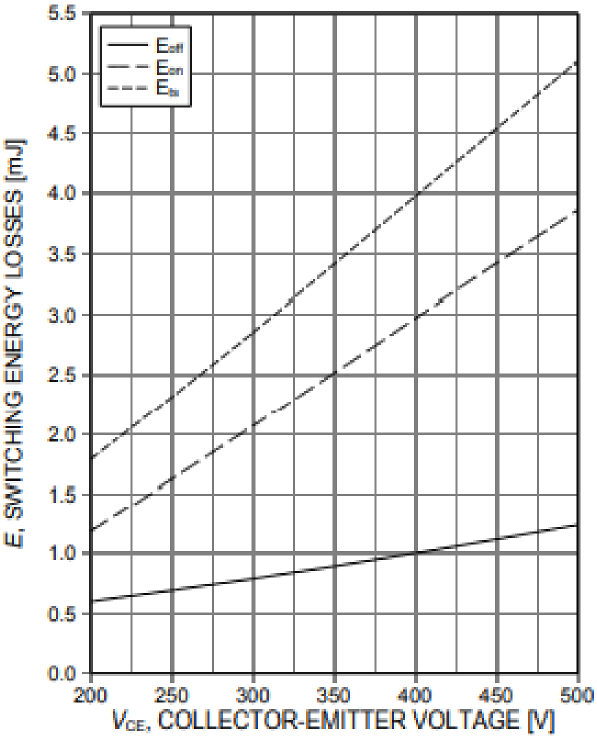


Figure 15. **Typical switching energy losses as a function of collector emitter voltage**
(inductive load, T_{vj}=150°C, V_{GE}=0/15V, I_C=75A, $R_{G(on)}$=8Ω, $R_{G(off)}$=8Ω, dynamic test circuit in Figure E)

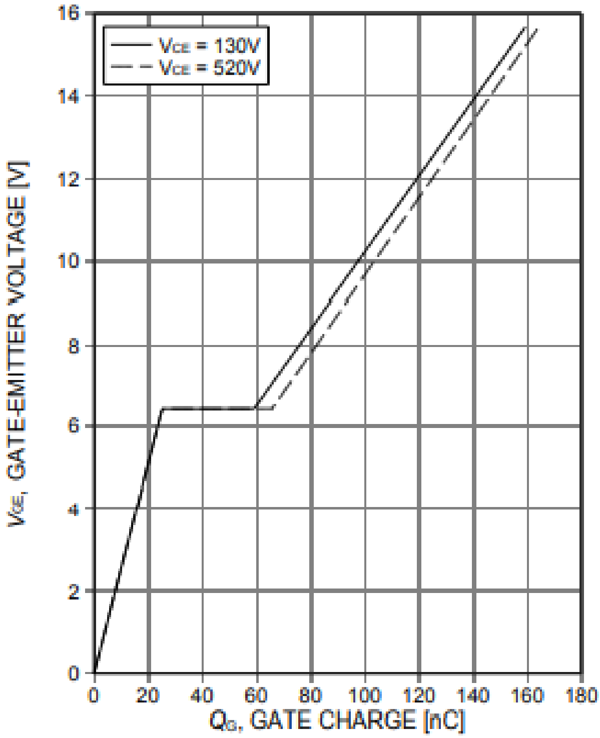


Figure 16. **Typical gate charge**
(I_C=75A)

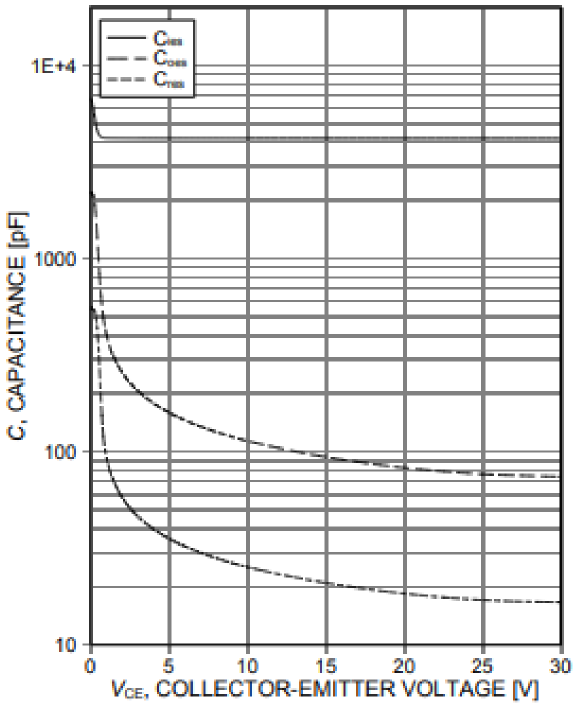


Figure 17. **Typical capacitance as a function of collector-emitter voltage**
(V_{GE}=0V, f=1MHz)

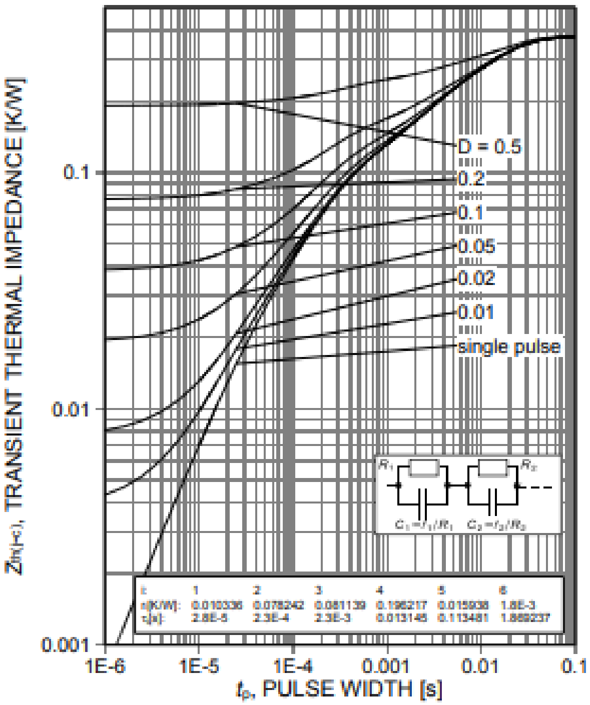
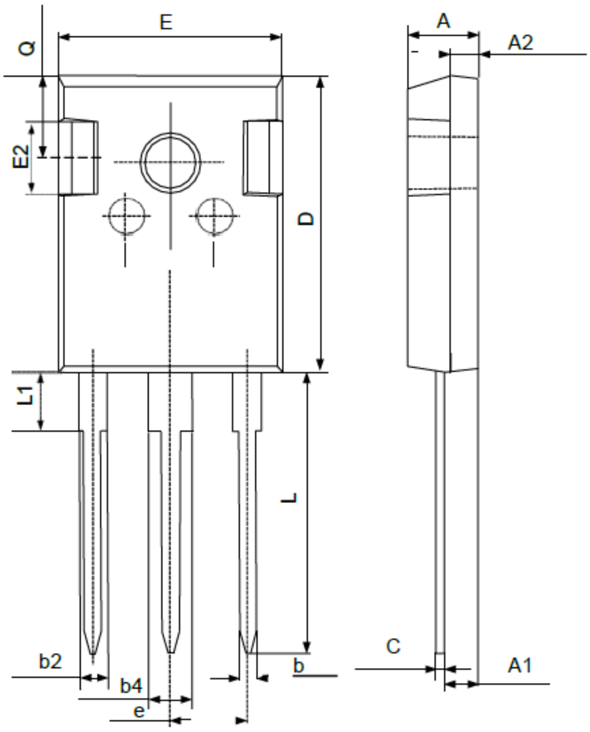


Figure 18. **IGBT transient thermal impedance**
($D=t_p/T$)

封装尺寸

单位：mm



SYMBOL	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	---	1.36
b2	1.91	---	2.25
b4	2.91	---	3.25
c	0.51	---	0.75
D	20.80	21.00	21.30
E	15.50	15.80	16.10
E2	4.40	5.00	5.20
e		5.44 BSC	
L	19.72	19.92	20.22
L1	---	---	4.30
Q	5.60	5.80	6.00

使用条款

产品说明书包含了基本数据和适用范围。技术人员必须评估产品数据并正确使用产品。

规范中的所有信息均真实可靠。如果您对产品数据有任何超出规格的要求或对我们的产品有任何疑问，请联系负责您的销售办事处。

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