SPECIFICATION

Device Name	:	IGBT Module
Type Name	:	2MBI200SB-120
Spec. No.	:	MS5F 4921

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	Nov.-22-'00	Y. Kobayashi	
CHECKED	Nov.-22-'00	N. Mutta	T. Miyasaka

Fuji Electric Co.,Ltd.

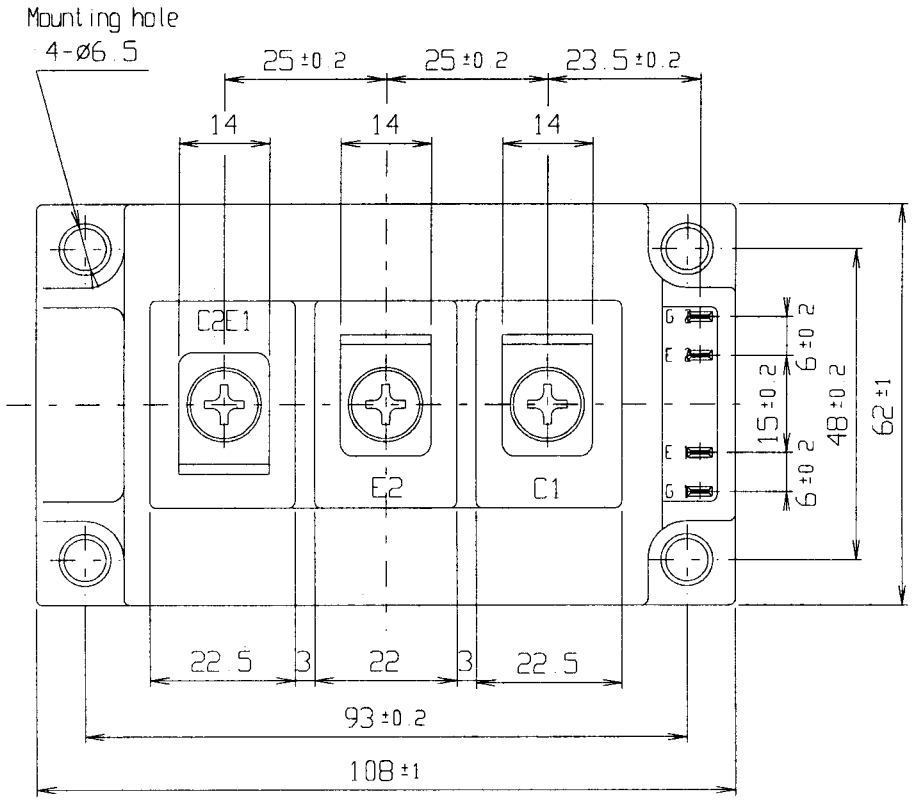
DWG.NO. MS5F 4921 1/8

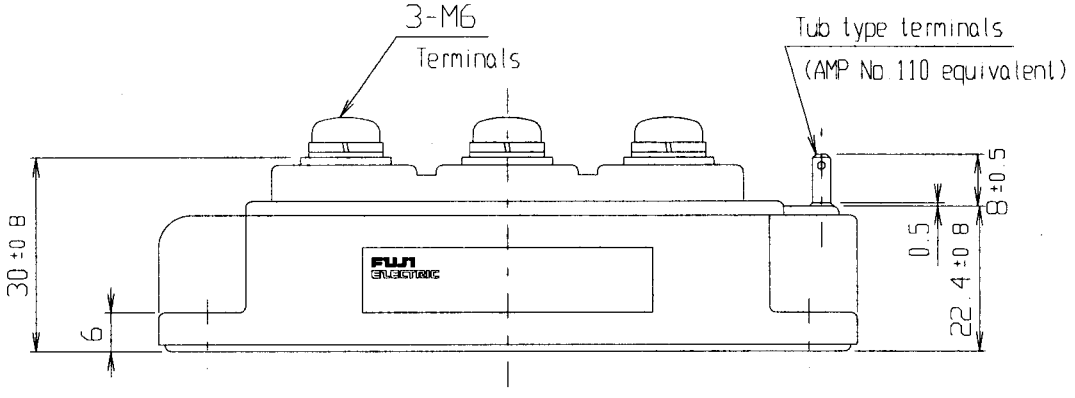
H04-004-07

Revised Records

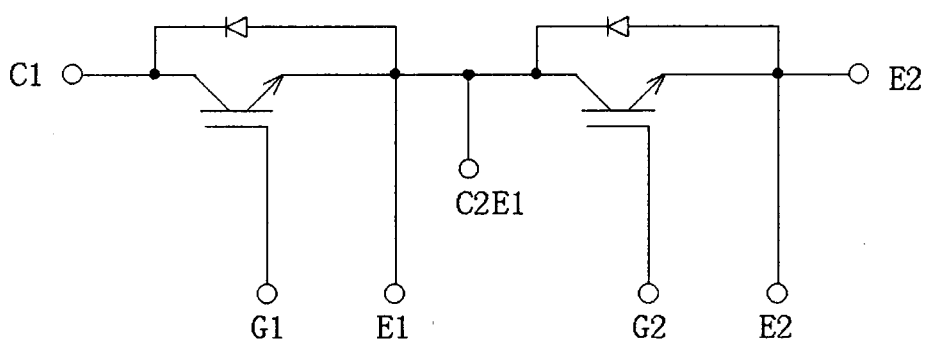
Date	Classi-fication	Ind.	Content	Applied date	Drawn	Checked	Approved
Nov.-22-'00	enactment	—	———	Issued date	—	N. Kubota	T. Miyasaka

1. Outline Drawing (Unit : mm)





2. Equivalent circuit



3. Absolute Maximum Ratings (at Tc= 25C unless otherwise specified)

Items	Symbols	Conditions		Maximum Ratings	Units
Collector-Emitter voltage	VCES			1200	V
Gate-Emitter voltage	VGES			±20	V
Collector current	Ic	Continuous	Tc=25C	300	A
			Tc=80C	200	
	Ic pulse	1ms	Tc=25C	600	
			Tc=80C	400	
	-Ic			200	
	-Ic pulse	1ms		400	
Collector Power Dissipation	Pc	1 device		1500	W
Junction temperature	Tj			150	C
Storage temperature	Tstg			-40~ +125	C
Isolation voltage(*1)	Viso	AC : 1min.		2500	V
Screw Torque	Mounting(*2)			3.5	N·m
	Terminals(*2)			4.5	

(*1) All terminals should be connected together when isolation test will be done.

(*2) Recommendable Value : Mounting 2.5~3.5 N·m (M5 or M6) / Terminal 3.5~4.5 Nm (M6)

4. Electrical characteristics (at Tj= 25C unless otherwise specified)

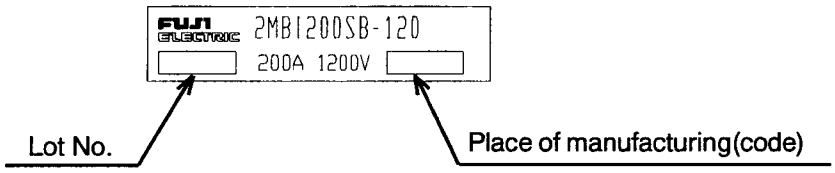
Items	Symbols	Conditions		Characteristics min.	typ.	Max.	Units
Zero gate voltage Collector current	ICES	VGE 0 V, VCE 1200 V		-	-	1.0	mA
Gate-Emitter leakage current	IGES	VCE 0 V, VGE ±20 V		-	-	0.4	uA
Gate-Emitter threshold voltage	VGE(th)	VCE 20 V, Ic = 200 mA		5.5	7.2	8.5	V
Collector-Emitter saturation voltage	VCE(sat)	VGE 15 V	Tj = 25 C	-	2.3	2.6	V
		Ic = 200 A	Tj = 125 C	-	2.8	-	
Input capacitance	Cies	VGE = 0 V		-	24000	-	pF
Output capacitance	Coes	VCE 10 V		-	5000	-	
Reverse transfer capacitance	Cres	f = 1 MHz		-	4400	-	
Turn-on time	ton	Vcc = 600 V		-	0.35	1.2	us
	tr	Ic = 200 A		-	0.25	0.6	
	$tr_{(i)}$	VGE ±15 V		-	0.1	-	
Turn-off time	toff	RG = 4.7 Ω		-	0.45	1.0	
	tf			-	0.08	0.3	
Forward on voltage	VF	IF = 200 A	Tj = 25 C	-	2.3	3.0	V
			Tj = 125 C	-	2.0	-	
Reverse recovery time	trr	IF = 200 A		-	-	0.35	us

5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics min.	typ.	Max.	Units
Thermal resistance (1 device)	Rth(j-c)	IGBT	-	-	0.085	C/W
		FWD	-	-	0.18	
Contact Thermal resistance	Rth(c-f)	with Thermal Compound (*)	-	0.025	-	

* This is the value which is defined mounting on the additional cooling fin with thermal compound.

6. Indication on module



7. Applicable category (適用範囲)

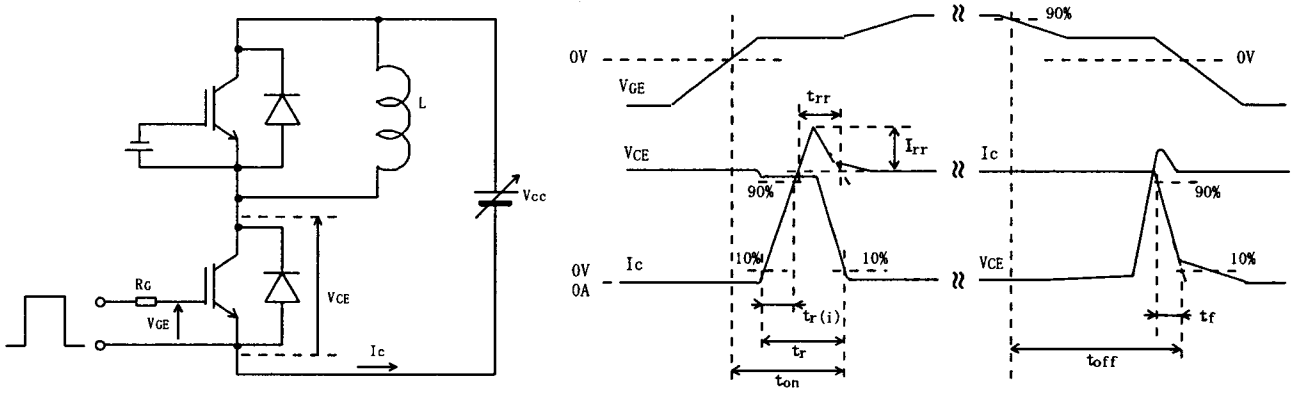
This specification is applied to IGBT Module named 2MBI200SB-120.

本納入仕様書は ＩＧＢＴモジュール 2MBI200SB-120 に適用する。

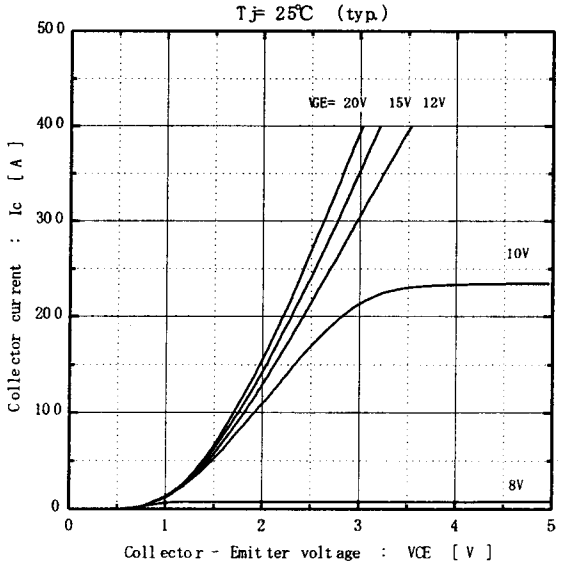
8. Storage and transportation notes (保管・運搬上の注意事項)

- The module should be stored at a standard temperature of 5 to 35C and humidity of 45 to 75% .
  常温・常湿保存が望ましい。（ 5～35℃, 45～75%）
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
  急激な温度変化のなきこと。（モジュール表面が結露しないこと）
- Avoid exposure to corrosive gases and dust.
  腐蝕性ガスの発生場所，塵埃の多い場所は避けること。
- Avoid excessive external force on the module.
  製品に荷重がかからないように 十分注意すること。
- Store modules with unprocessed terminals.
  モジュールの端子は未加工の状態で保管すること。
- Do not drop or otherwise shock the modules when tranporting.
  製品の運搬時に衝撃を与えたり、落下させたりしないこと。
- Please conect adequate fuse or protector of circuit between three-phase line and this product to prevent the equipment from causing secondary destruction.
  万一の不慮の事故で素子が破壊した場合を考慮し、商用電源と本製品の間に適切な容量のヒューズ又はブレーカーを必ず付けて２次破壊を防いでください。

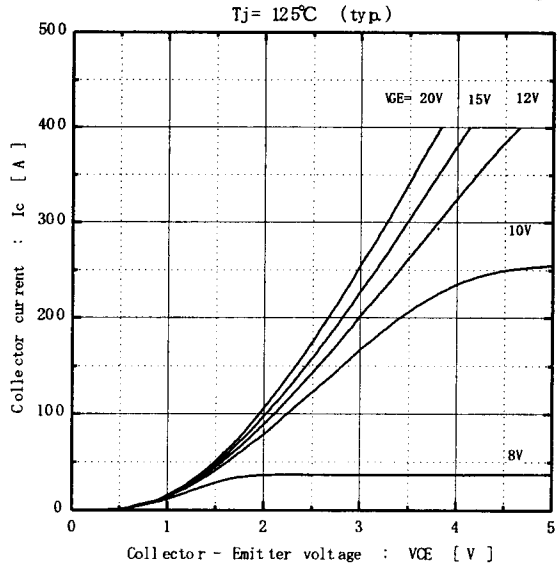
9. Definitions of switching time



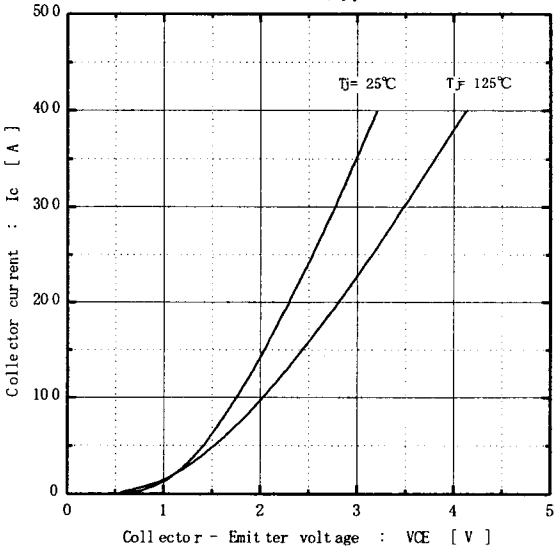
Collector current vs. Collector-Emiiter voltage
Tj= 25℃ (typ.)



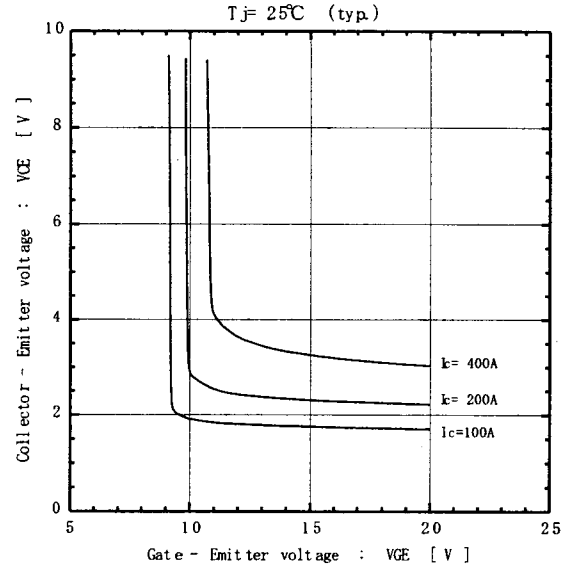
Collector current vs. Collector-Emiiter voltage
Tj= 125℃ (typ.)



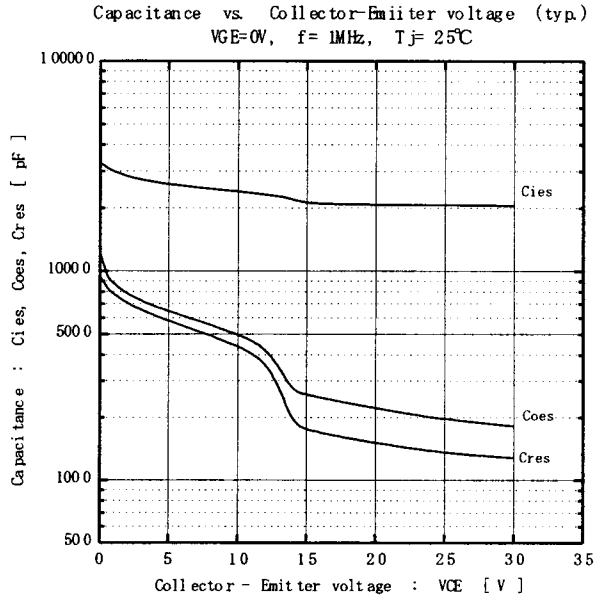
Collector current vs. Collector-Emiiter voltage
VGE=15V (typ.)



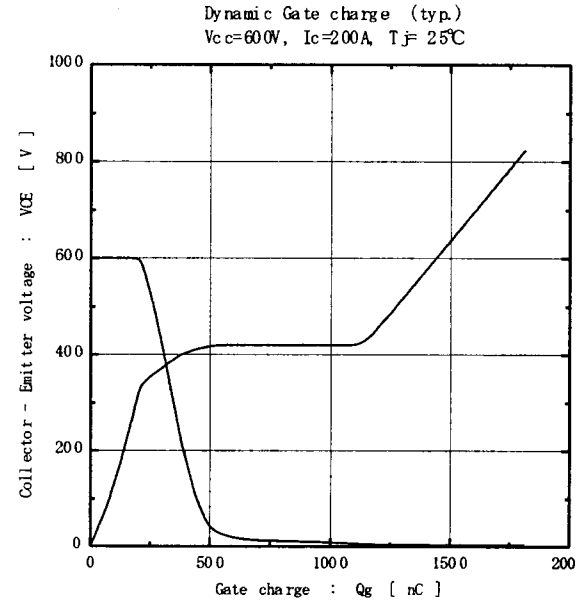
Collector-Emiiter voltage vs. Gate-Emitter voltage
Tj= 25℃ (typ.)



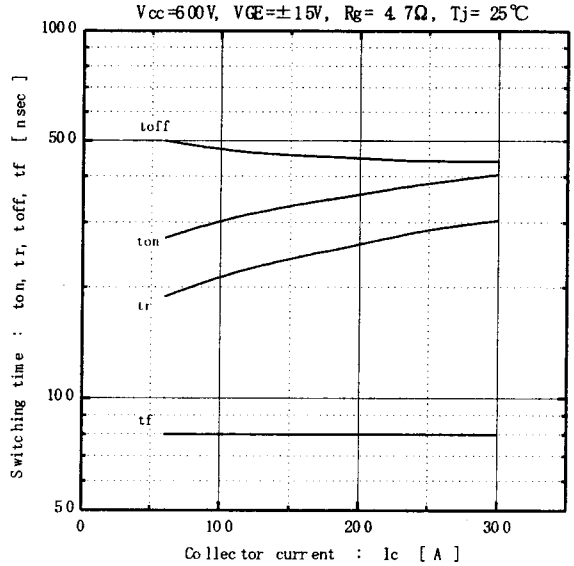
Capacitance vs. Collector-Emiiter voltage (typ.)
VGE=0V, f= 1MHz, Tj= 25℃



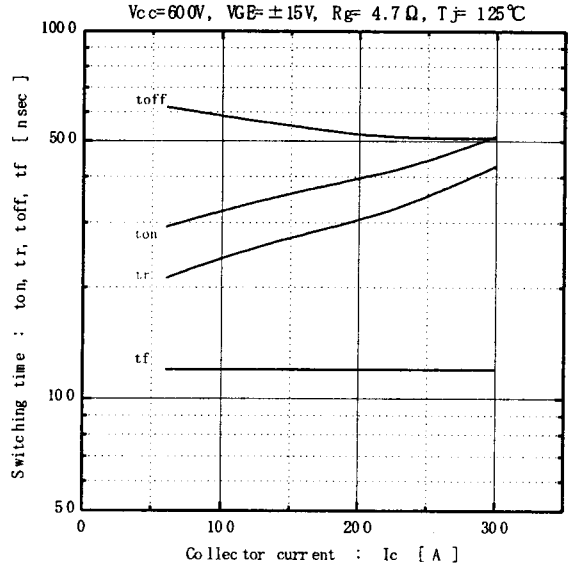
Dynamic Gate charge (typ.)
Vcc=600V, Ic=200A, Tj= 25℃



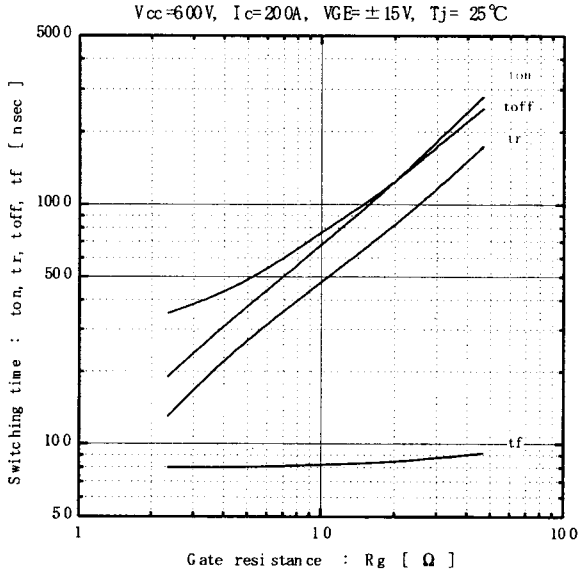
Switching time vs. Collector current (typ.)
Vcc=600V, VGE=±15V, Rg= 4.7Ω, Tj= 25℃



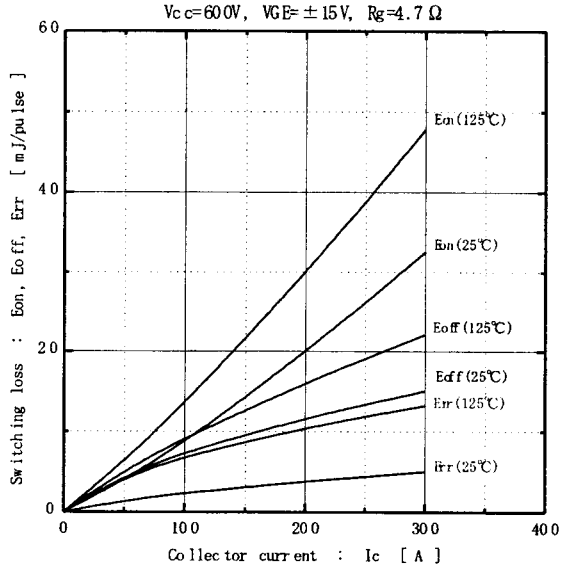
Switching time vs. Collector current (typ.)
Vcc=600V, VGE=±15V, Rg= 4.7Ω, Tj= 125℃



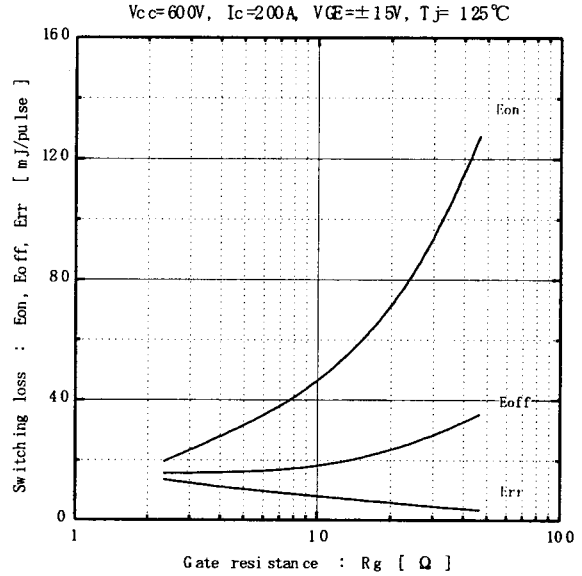
Switching time vs. Gate resistance (typ.)
Vcc=600V, Ic=200A, VGE=±15V, Tj= 25℃



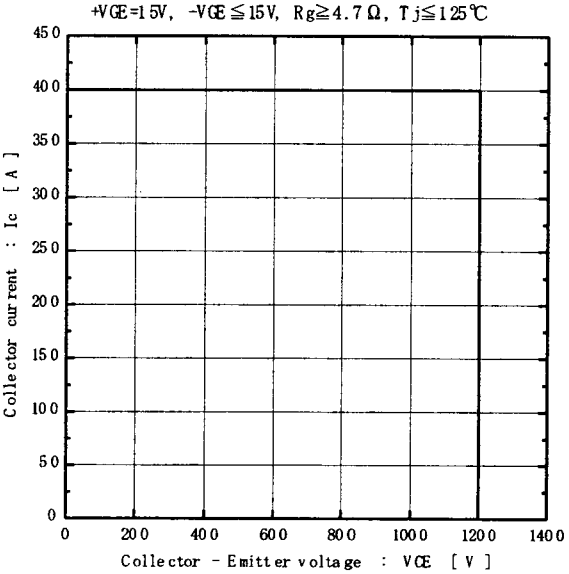
Switching loss vs. Collector current (typ.)
Vcc=600V, VGE=±15V, Rg=4.7Ω



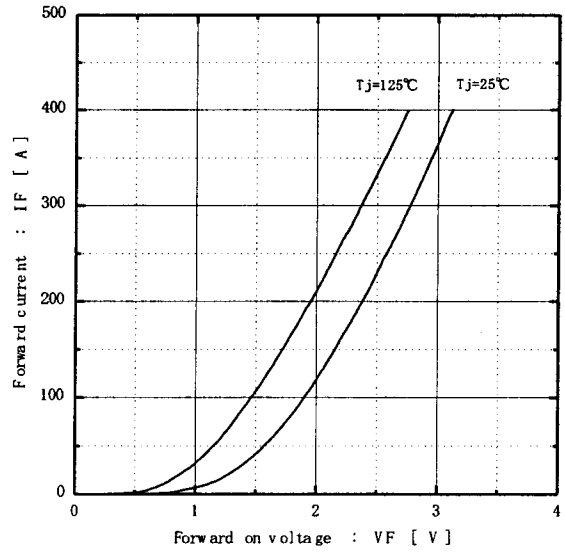
Switching loss vs. Gate resistance (typ.)
Vcc=600V, Ic=200A, VGE=±15V, Tj= 125℃



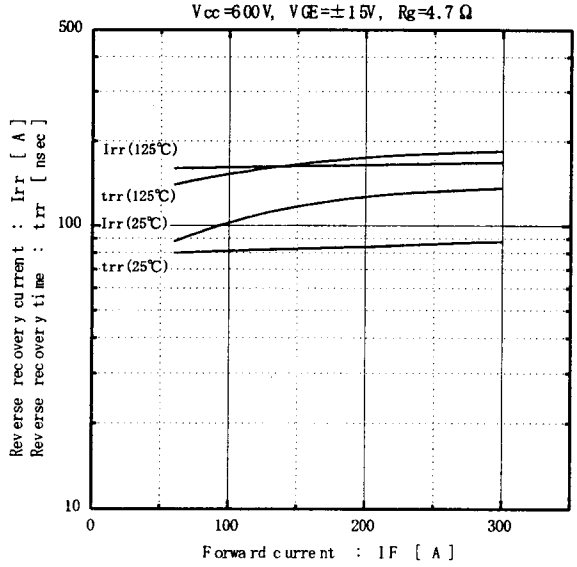
Reverse bias safe operating area
+VGE=15V, -VGE≦15V, Rg≧4.7Ω, Tj≦125℃



Forward current vs. Forward on voltage (typ.)



Reverse recovery characteristics (typ.)
Vcc=600V, VGE=±15V, Rg=4.7Ω



Transient thermal resistance