SPECIFICATION

Device Name	:	IGBT Module
Type Name	:	1MBI600PX - 120 - 01
Spec. No.	:	MS5F4405

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	Sep. 9. '98	S. Toshinari	T. HOSEN
CHECKED	Sep. 9, '98	S. Miyata	

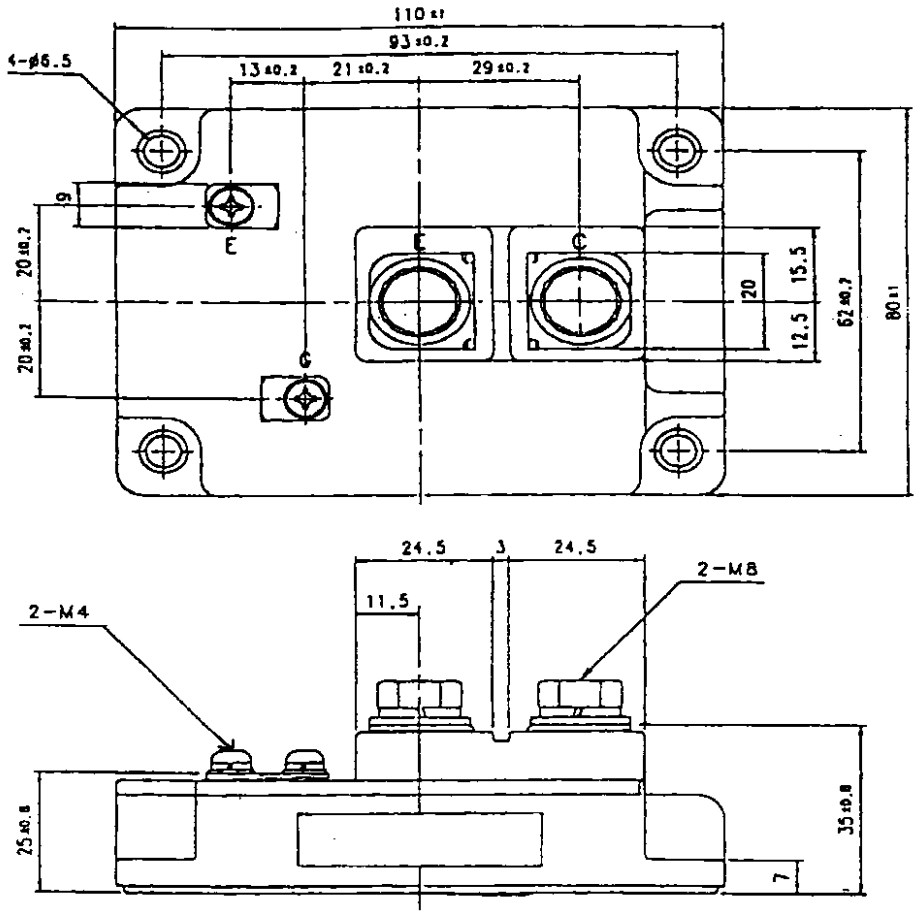
Fuji Electric Co.,Ltd.

DWG.NO. MS5F4405 1/8

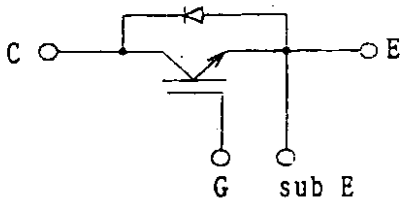
Revised Records

Date	Classification	Ind.	Content	Applied date	Drawn	Checked	Approved
Sep. 9-'98	enactment	-	-	Issued date	S. Yoshimatsu	N. Iyota	T. HOSEN

1. Outline Drawing
   Unit : mm



2. Equivalent circuit



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

Items			Symbols	Ratings	Units
Collector-Emitter voltage			V_{CES}	1200	V
Gate-Emitter voltage			V_{GES}	±20	V
Collector current	Continuous	Tc=25℃	Ic	800	A
		Tc=80℃		600	
	1ms	Tc=25℃	Ic pulse	1600	
		Tc=80℃		1200	
			-Ic	600	
	1ms		-Ic pulse	1200	
Max. power dissipation			PC	4100	W
Operating temperature			Tj	+150	℃
Storage temperature			Tstg	-40～+125	℃
Isolation voltage			Vis	AC 2500 (1min.)	V
Screw torque			Mounting *1	4.5	N・m
			Terminals *2	11.0	
			Terminals *3	1.7	

Note : *1 Recommendable value : 4.0±0.5 N・m (M6)
Note : *2 Recommendable value : 10.0±1.0 N・m (M8)
Note : *3 Recommendable value : 1.50±0.2 N・m (M4)

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

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Zero gate voltage Collector current	I_{CES}			2.0	V_{GE}=0V, V_{CE}=1200V	mA
Gate-Emitter leakage current	I_{GES}			±0.5	V_{CE}=0V, V_{GE}=±20V	μA
Gate-Emitter threshold voltage	$V_{GE(th)}$	6.0	8.0	9.0	V_{CE}=20V, Ic=600mA	V
Collector-Emitter saturation voltage	$V_{CE(sat)}$	2.5	2.85	3.0	V_{GE}=15V, Ic=600A	V
Input capacitance	Cies		60		V_{GE}=0V	nF
Output capacitance	Coes		9		V_{CE}=10V	
Reverse transfer capacitance	Cres		4		f=1MHz	
Turn-on time	ton		750	1200	Vcc=600V	ns
	tr		200	600	Ic=600A	
Turn-off time	toff		650	1000	V_{GE}=±15V	
	tf		100	300	R_G=2.0Ω	
Diode forward on voltage	V_F	2.0		3.4	I_F=600A, V_{GE}=0V	V
Reverse recovery time	trr			350	I_F=600A	ns

5. Thermal resistance characteristics

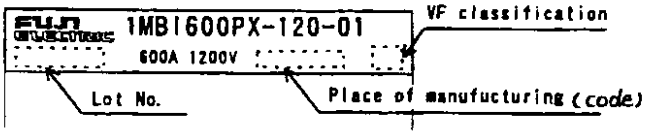
Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Thermal resistance	Rth(j-c)			0.03	IGBT	℃/W
	Rth(j-c)			0.06	Diode	
	※ Rth(c-f)		0.0063		the base to cooling fin	

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

6. VF class

class	VF range [V]
A	2.0 ～ 2.3
B	2.2 ～ 2.5
C	2.4 ～ 2.7
D	2.6 ～ 3.0
E	2.9 ～ 3.4

7. Indication module (モジュール表示)



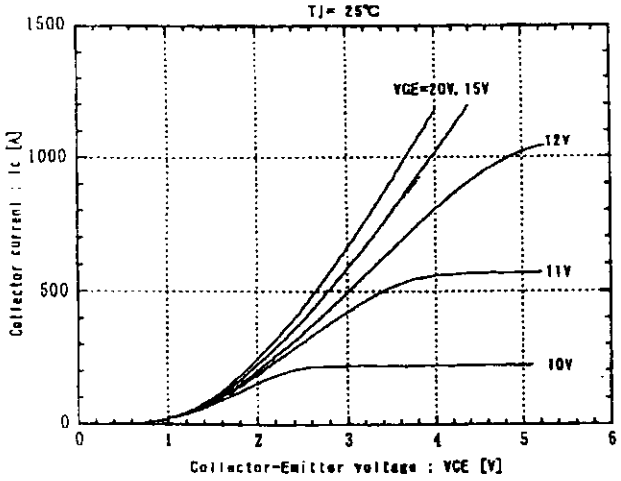
8. Applicable category (適用範囲)

This specification is applied to IGBT module named 1MBI600PX-120-01.
本納入仕様書は、ＩＧＢＴモジュール1ＭＢＩ６００ＰＸ－１２０－０１に適用する。

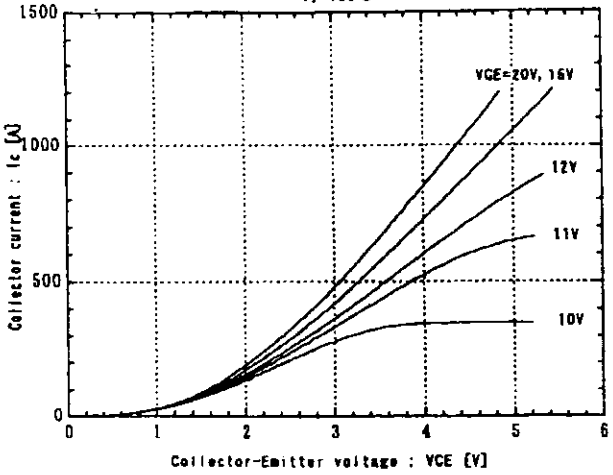
9. Storage and transportation notes (保管，運搬上の注意事項)

- This IGBT module should be stored at a standard temperature of 5 to 35℃ and humidity of 45℃ to 75%.
  常温保存が望ましい。
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
  急激な温度変化の無きこと。(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 transporting.
  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。

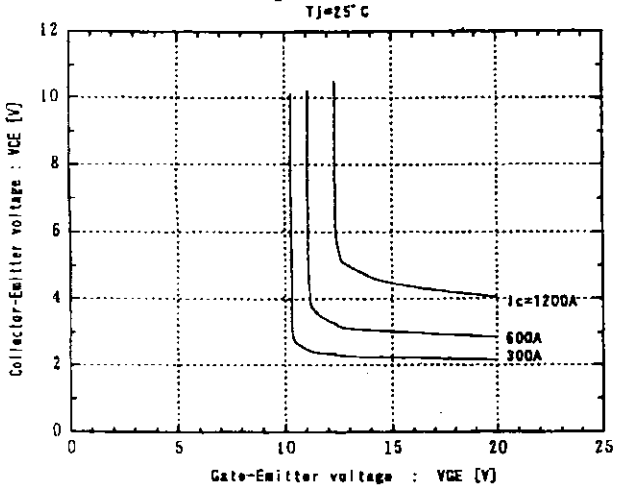
Collector current vs. Collector-Emitter voltage
Tj= 25℃



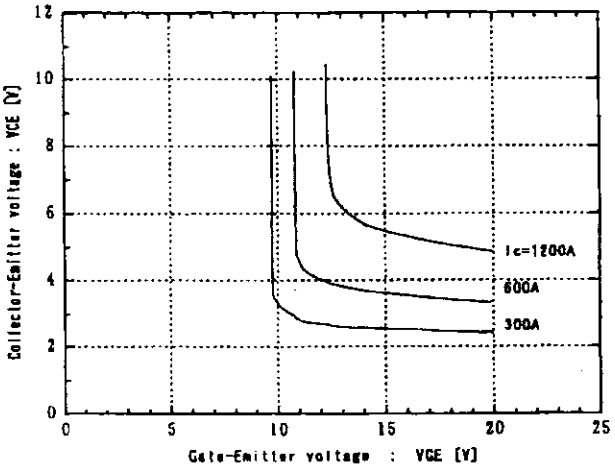
Collector current vs. Collector-Emitter voltage
Tj=125℃



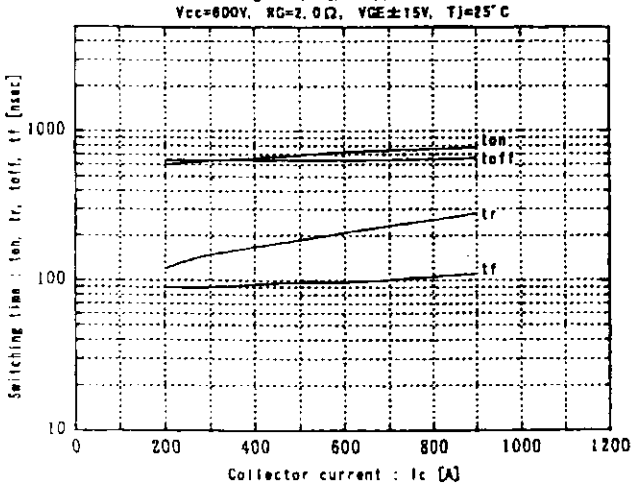
Gate-Emitter voltage vs. Collector-Emitter voltage
Tj=25°C



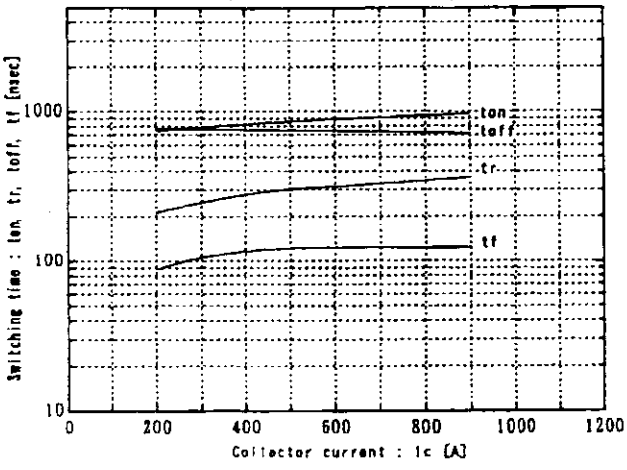
Gate-Emitter voltage vs. Collector-Emitter voltage
Tj=125°C



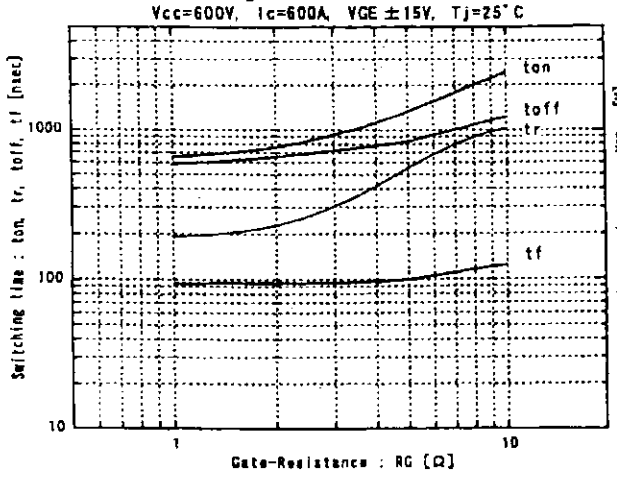
Switching time vs. Collector current
Vcc=600V, RG=2.0Ω, VGE=±15V, Tj=25°C



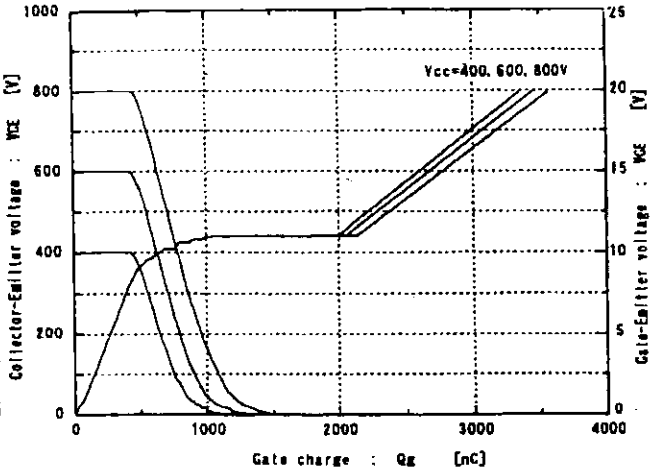
Switching time vs. Collector current
Vcc=600V, RG=2.0Ω, VGE=±15V, Tj=125°C



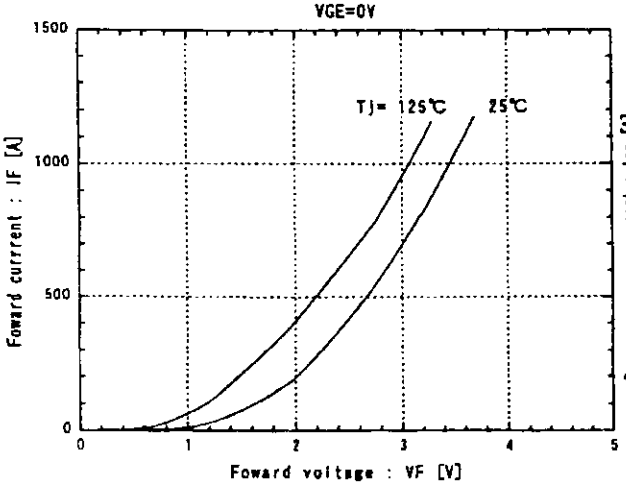
Switching time vs. Gate-Resistance
Vcc=600V, Ic=600A, VGE ±15V, Tj=25°C



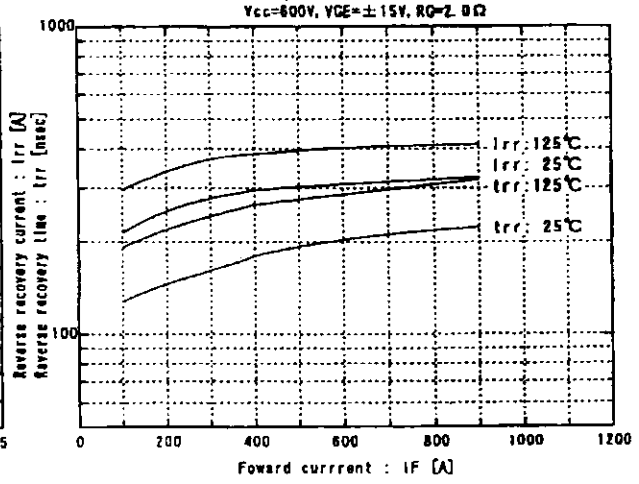
Dynamic input characteristics
Tj=25°C



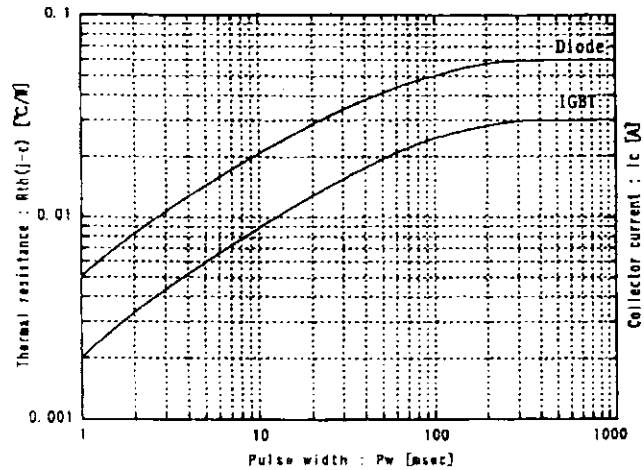
Foward currrent vs. Foward voltage
VGE=0V



Reverse recovery characteristics(trr, Irr vs. IF)
Vcc=600V, VGE=±15V, RG=2.0Ω



Transient thermal resistance



Reverse biased safty operating area
TJ=25～125°C, +VGE=15V, -VGE≦15V, RG≧2.0Ω