SPECIFICATION

Device Name : IGBT module

Type Name : 1MBI200NB-120

Spec. No. : MS5F3239

Fuji Electric Co., Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	Dec.-3-'95	S. Miyashita	
CHECKED	Dec.-3-'95	T. HOSEN	S. Kobayashi

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Revised Records

Date	Classification	Ind.	Content	Applied date	Drawn	Checked	Approved
Dec.-3-'95	enactment	—	———	Issued date	—	T. HOSEN	S. Kobayashi

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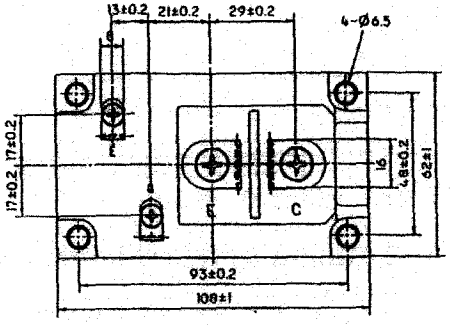
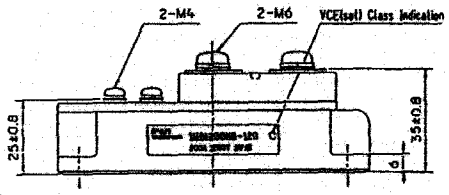
Ratings and characteristics of Fuji IGBT Module

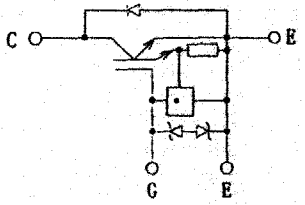
1MBI200NB-120

1. Outline Drawing
Unit : mm





2. Equivalent circuit



*NLU (Over Current Limiting Circuit)

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

Items		Symbols	Ratings	Units
Collector-Emitter voltage		VCES	1200	V
Gate-Emitter voltage		VGES	±20	V
Collector current	Continuous	Ic	200	A
	1ms	Ic pulse	400	
		-Ic	200	
	1ms	-Ic pulse	400	
Max. power dissipation		PC	1500	W
Operating temperature		Tj	+150	℃
Storage temperature		Tstg	-40~+125	℃
Isolation voltage		Vis	AC 2500 (1min.)	V
Screw torque		Mounting *1	3.5	N・m
		Terminals *2	4.5	
		Terminals *3	1.7	

Note : *1 Recommendable value : 2.5~3.5 N・m (M5) or (M6)
*2 Recommendable value : 3.5~4.5 N・m (M5)
*3 Recommendable value : 1.3~1.7 N・m (M4)

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

Items	Symbols	Characteristics min.	typ.	max.	Conditions	Units
Zero gate voltage Collector current	ICES			4.0	VGE=0V, VCE=1200V	mA
Gate-Emitter leakage current	IGES			60	VCE=0V, VGE=±20V	μA
Gate-Emitter threshold voltage	VGE(th)	4.5		7.5	VCE=20V, Ic=200mA	V
Collector-Emitter saturation voltage	VCE(sat)			3.3	VGE=15V, Ic=200A	V
Input capacitance	Cies		32000		VCE=0V	pF
Output capacitance	Coes		11600		VCE=10V	
Reverse transfer capacitance	Cres		10320		f=1MHz	
Turn-on time	ton		0.65	1.2	Vcc=600V	μs
	tr		0.25	0.6	Ic=200A	
Turn-off time	toff		0.85	1.5	VGE=±15V	
	tf		0.35	0.5	Rg=4.7Ω	
Diode forward on voltage	VF			3.0	IF=200A, VGE=0V	V
Reverse recovery time	trr			350	IF=200A	ns

5. Thermal resistance characteristics

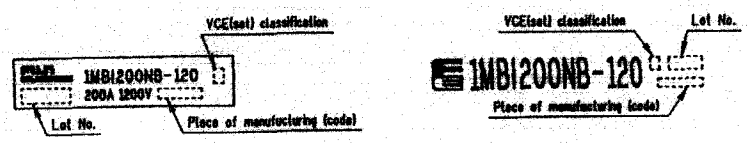
Items	Symbols	Characteristics min.	typ.	max.	Conditions	Units
Thermal resistance	Rth(j-c)			0.065	IGBT	℃/W
	Rth(j-c)			0.22	Diode	
	※ Rth(c-f)		0.0125		the base to cooling fin	

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

6. VCE(sat) class

Class	VCE(sat) range (V)
F	2.25 ~ 2.5
A	2.4 ~ 2.65
B	2.55 ~ 2.8
C	2.7 ~ 2.95
D	2.85 ~ 3.1
E	3.0 ~ 3.3

7. Indication on module (モジュール表示)



8. Applicable category (適用範囲)

This specification is applied to IGBT module named 1MBI200NB-120.
本納入仕様書は、IGBTモジュール1MBI200NB-120に適用する。

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

- The 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。(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。

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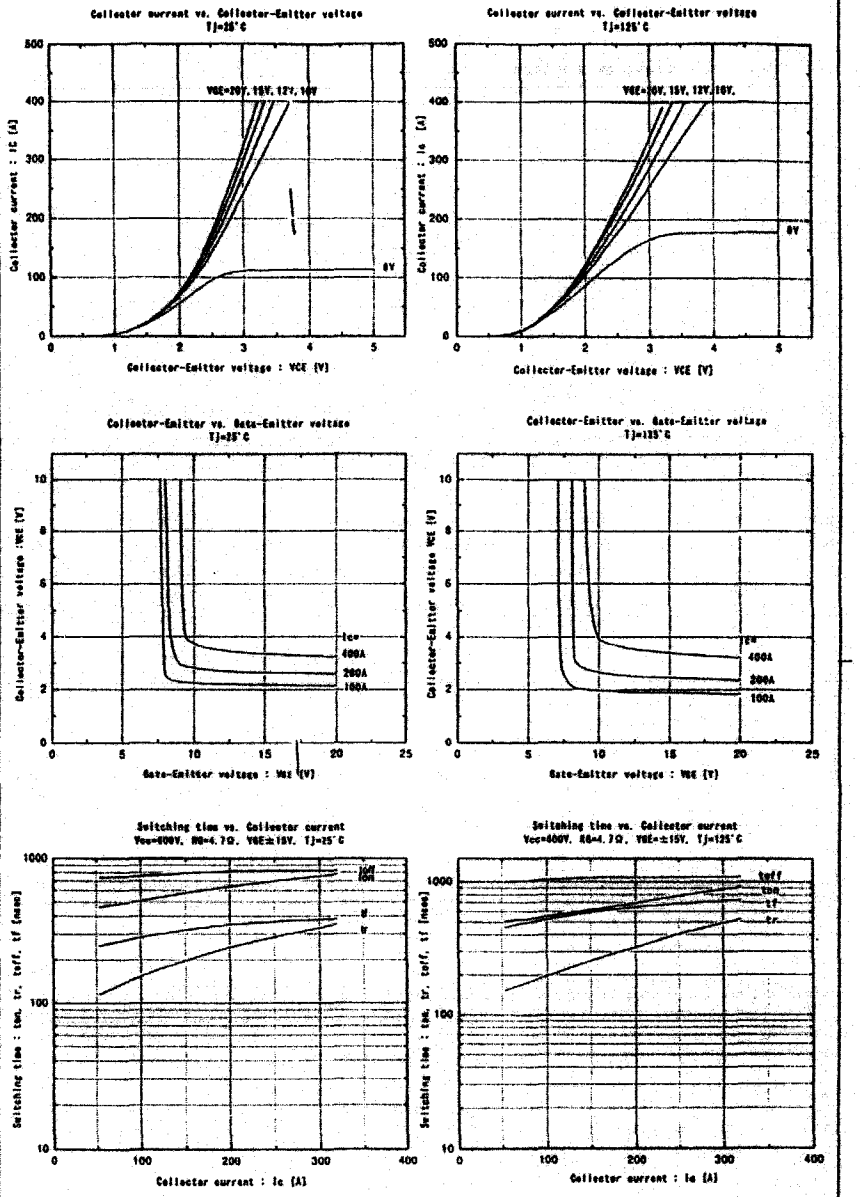
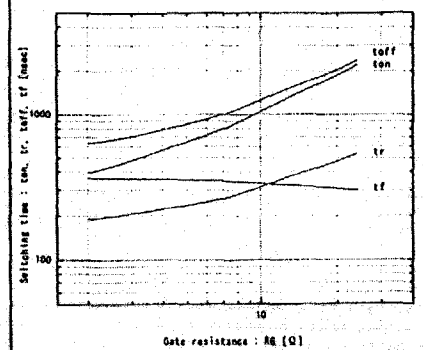
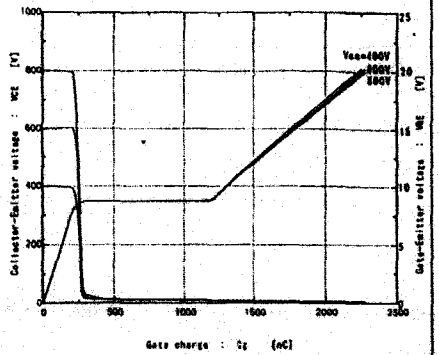


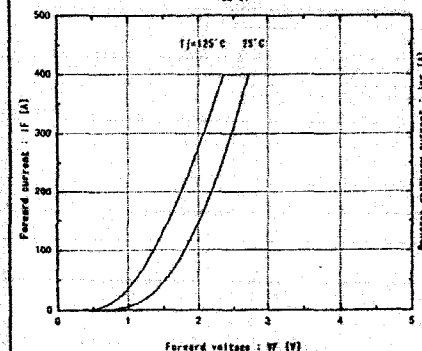
Switching time vs. RG
Vcc=600V, Ic=200A, VGE=±15V, Tj=25°C



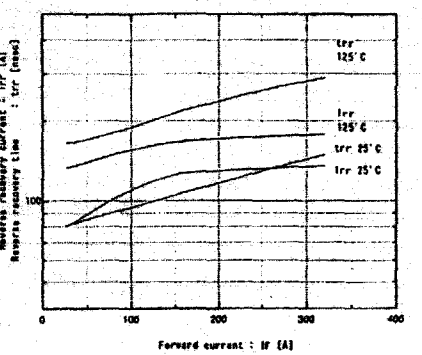
Dynamic input characteristics
Tj=25°C



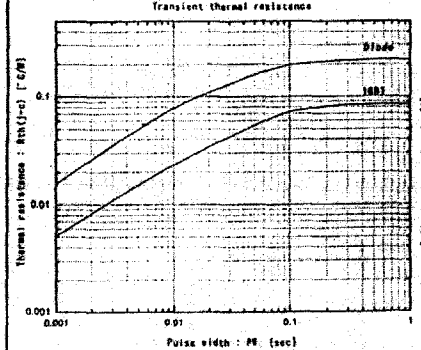
Forward current vs. Forward voltage
VGE=0V



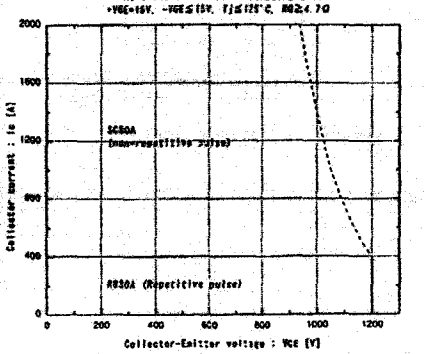
Reverse recovery characteristics
trr, Irr vs. IF



Transient thermal resistance



Reversed biased safe operating area
+VGE=15V, -VGE≤15V, Tj≤125°C, RG≥4.7Ω



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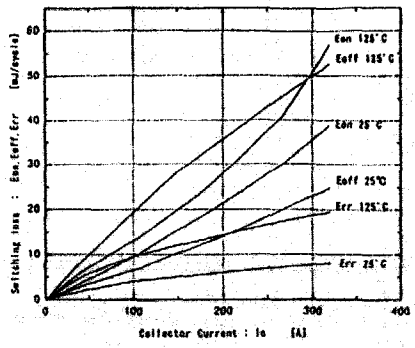
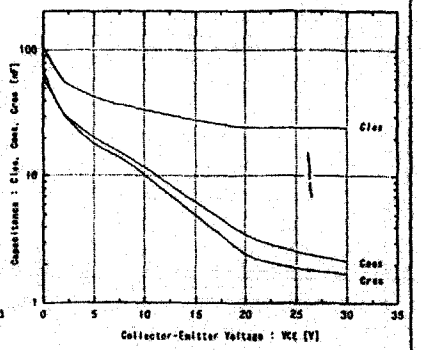
Switching loss vs. Collector current
Vcc=600V, RG=4.7Ω , VGE=±15V



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



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