

# SPECIFICATION

Device Name : I G B T M o d u l e

Type Name : 6 M B I 5 0 S - 1 4 0

Spec. No. : M S 5 F 4 7 2 3

Fuji Electric Co., Ltd.  
Matsumoto Factory

		DATE	NAME	APPROVED	Fuji Electric Co., Ltd.		
DRAWN	Nov - 10 - '99		T. Kobayashi	T. Miyasaka	DWG. NO.	M S 5 F 4 7 2 3	1 / 8
CHECKED	Nov - 10 - '99		D. M. H. G.				

H04-004-07

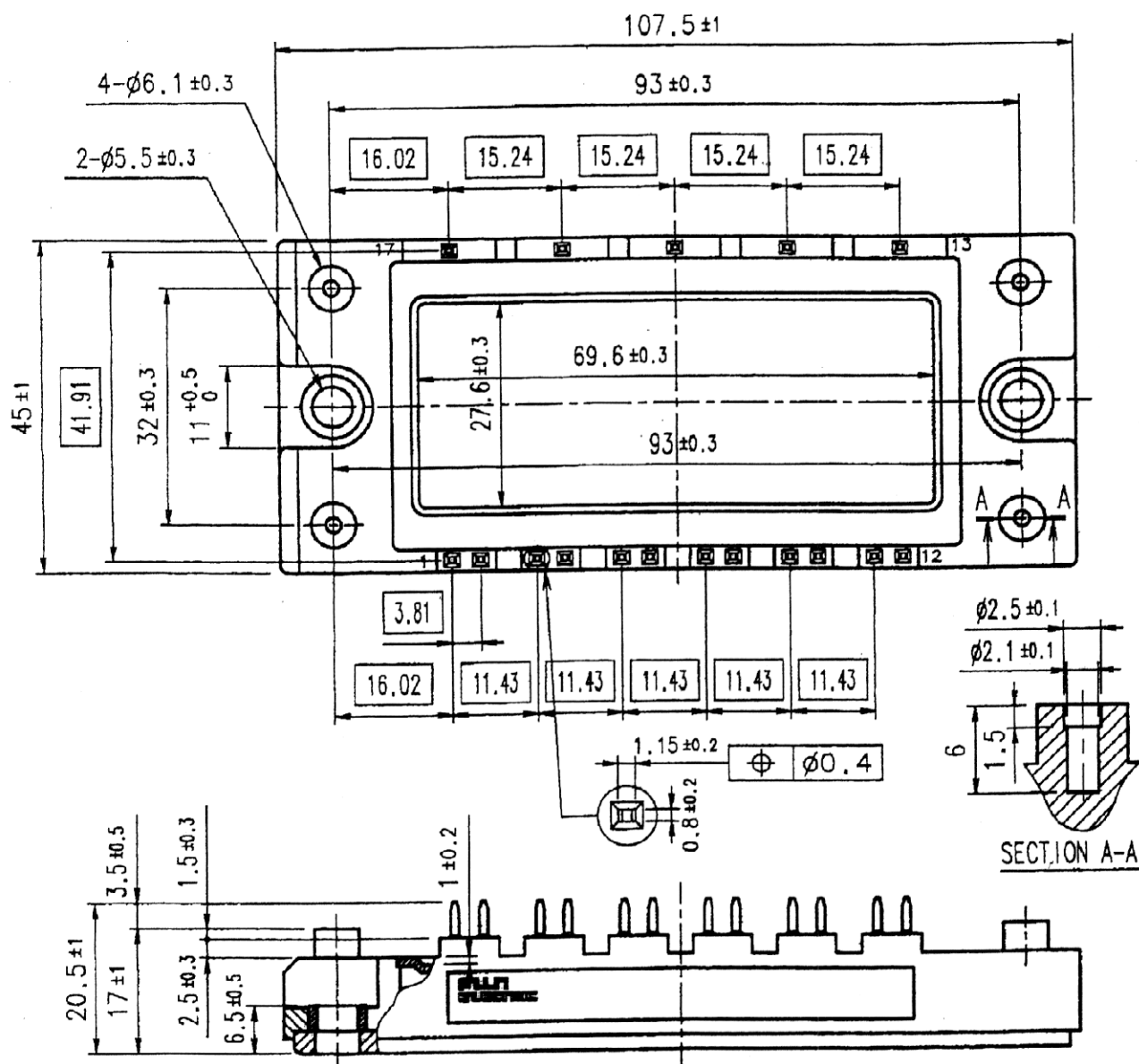
Revised Records

Date	Classi- fication	Ind.	Content	Applied date	Drawn	Checked	Approved
Nov, -10-'49	enactment	—	—	Issued date	—	S. M. A. a	T. M. J. S. / a

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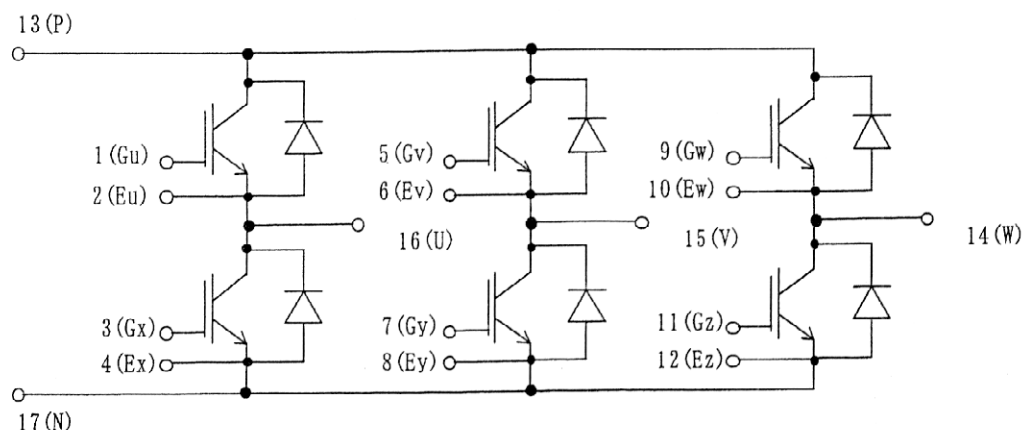
# 6MBI50S-140

## 1. Outline Drawing (Unit : mm)



shows theoretical dimension.

## 2. Equivalent circuit



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

Items	Symbols	Conditions	Maximum Ratings	Units
Collector-Emitter voltage	V <sub>CE</sub>		1400	V
Gate-Emitter voltage	V <sub>GE</sub>		±20	V
Collector current	I <sub>c</sub>	Continuous	Tc=25°C 75	A
			Tc=75°C 50	
	I <sub>c</sub> pulse	1ms	Tc=25°C 150	
			Tc=75°C 100	
	-I <sub>c</sub>		50	
	-I <sub>c</sub> pulse	1ms	100	
Collector Power Dissipation	P <sub>c</sub>	1 device	360	W
Junction temperature	T <sub>j</sub>		150	°C
Storage temperature	T <sub>stg</sub>		-40 ~ +125	°C
Isolation voltage <sup>(*1)</sup>	V <sub>iso</sub>	AC : 1min.	2500	V
Mounting Screw Torque <sup>(*2)</sup>			3.5	N·m

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

(\*2) Recommendable Value : 2.5~3.5 N·m (M5)

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

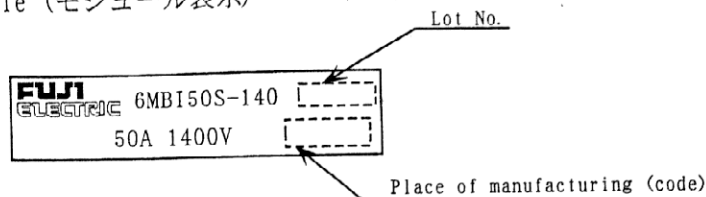
Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Zero gate voltage Collector current	I <sub>CE</sub>	V <sub>GE</sub> = 0 V, V <sub>CE</sub> = 1400 V			1.0	mA
Gate-Emitter leakage current	I <sub>GES</sub>	V <sub>CE</sub> = 0 V, V <sub>GE</sub> = ±20 V			200	nA
Gate-Emitter threshold voltage	V <sub>GE(th)</sub>	V <sub>CE</sub> = 20 V, I <sub>c</sub> = 50 mA	5.5	7.2	8.5	V
Collector-Emitter saturation voltage	V <sub>CE(sat)</sub>	V <sub>GE</sub> = 15 V, T <sub>j</sub> = 25 °C		2.4	2.75	V
		I <sub>c</sub> = 50 A, T <sub>j</sub> = 125 °C		3.0		
Input capacitance	C <sub>ies</sub>	V <sub>GE</sub> = 0 V		6000		pF
Output capacitance	C <sub>oes</sub>	V <sub>CE</sub> = 10 V		1250		
Reverse transfer capacitance	C <sub>res</sub>	f = 1 MHz		1100		
Turn-on time	t <sub>on</sub>	V <sub>cc</sub> = 800 V		0.35	1.2	μs
	t <sub>r</sub>	I <sub>c</sub> = 50 A		0.25	0.6	
	t <sub>r(i)</sub>	V <sub>GE</sub> = ±15 V		0.1		
Turn-off time	t <sub>off</sub>	R <sub>G</sub> = 24 Ω		0.45	1.0	
	t <sub>f</sub>			0.08	0.3	
Forward on voltage	V <sub>F</sub>	I <sub>F</sub> = 50 A, T <sub>j</sub> = 25 °C		2.6	3.4	V
		T <sub>j</sub> = 125 °C		2.2		
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> = 50 A			0.35	μs

### 5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Thermal resistance (1 device)	R <sub>th(j-c)</sub>	IGBT			0.35	°C/W
		FWD			0.75	
Contact Thermal resistance	R <sub>th(c-f)</sub>	with Thermal Compound (※)		0.05		

※ This is the value which is defined mounting on the additional cooling fin

## 6. Indication on module (モジュール表示)



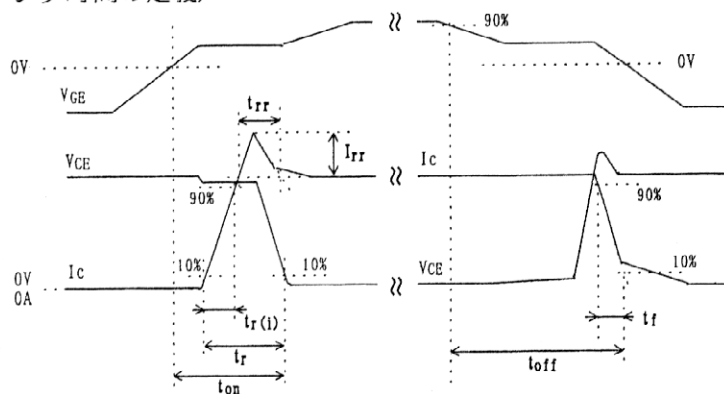
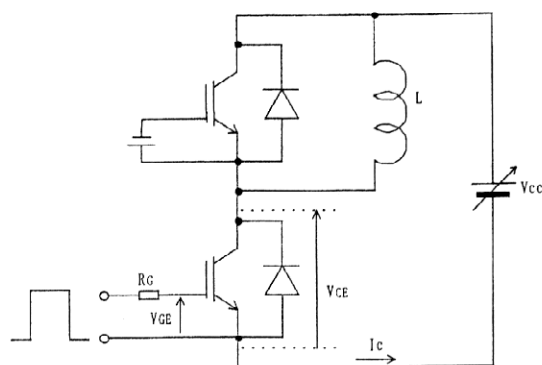
## 7. Applicable category (適用範囲)

This specification is applied to IGBT Module named 6MBI50S-140 .  
 本納入仕様書は IGBTモジュール 6MBI50S-140 に適用する。

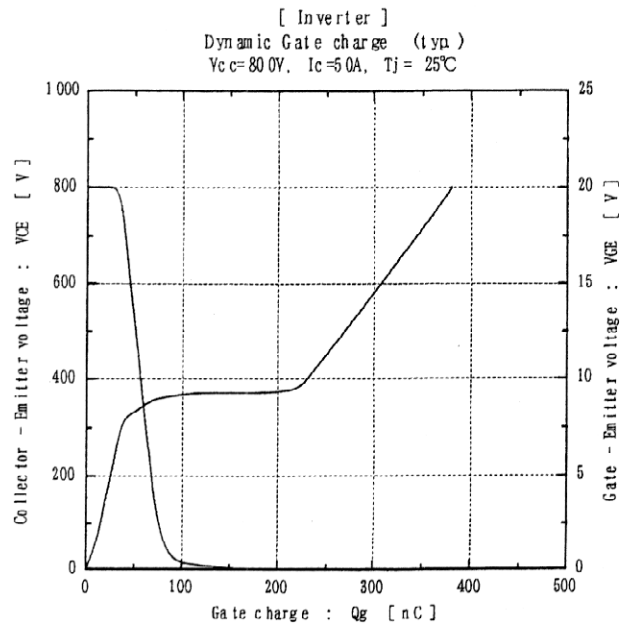
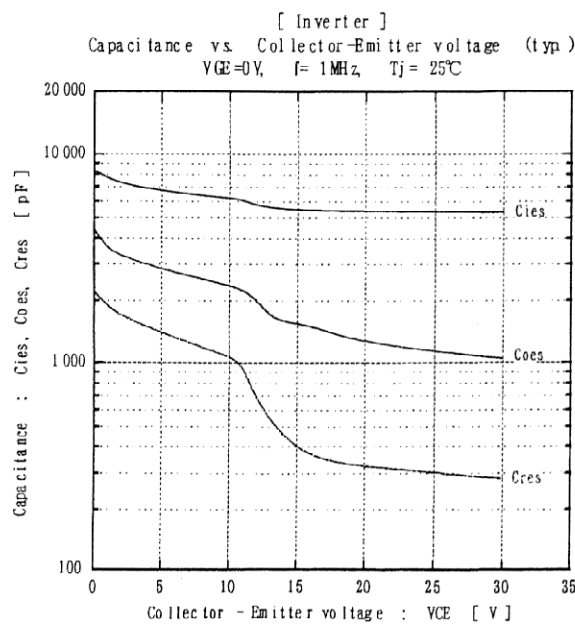
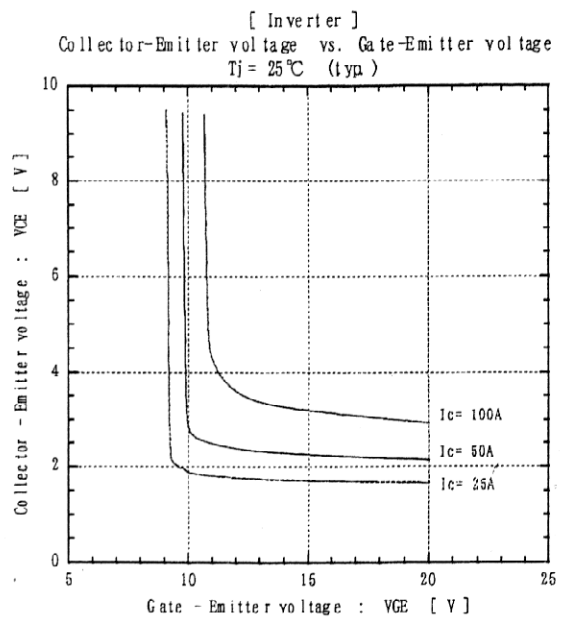
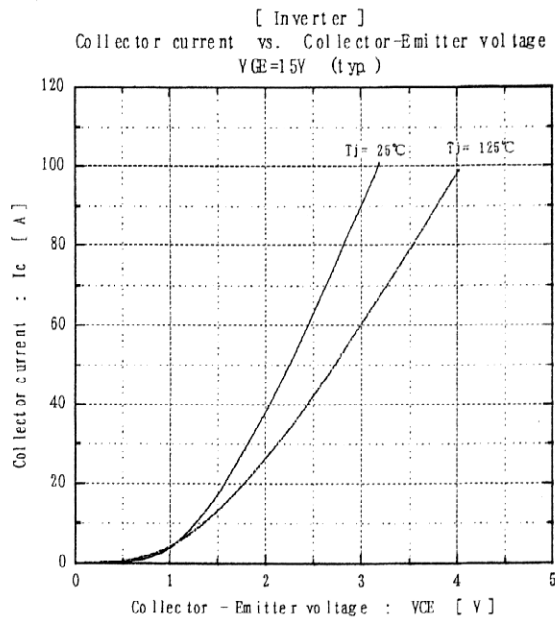
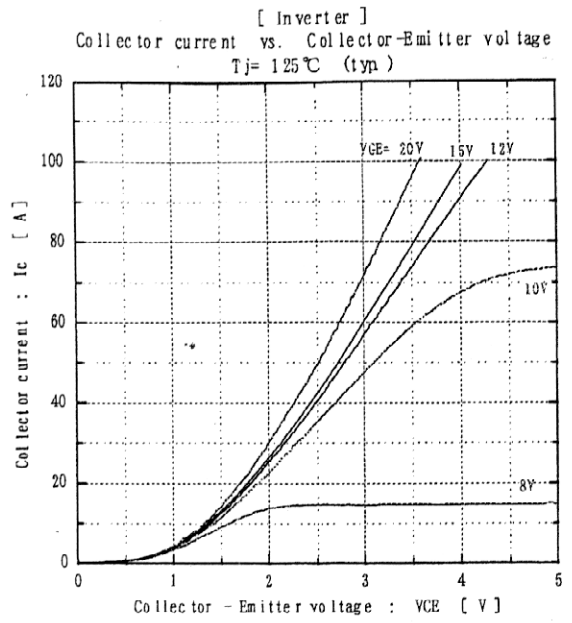
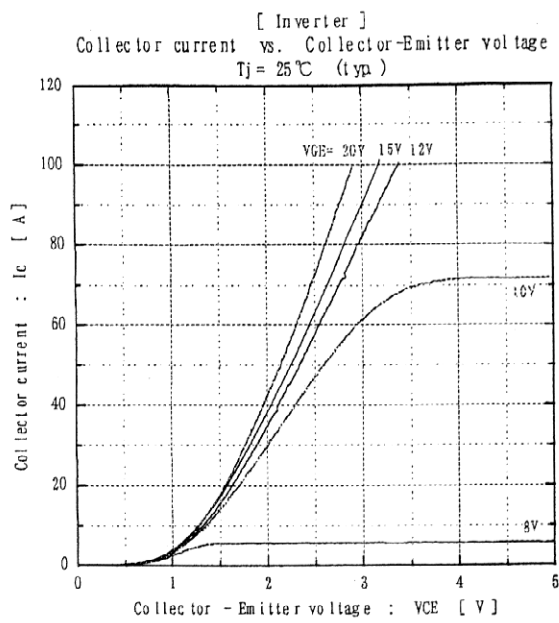
## 8. Storage and transportation notes (保管・運搬上の注意事項)

- The module should be stored at a standard temperature of 5 to 35°C and humidity of 45 to 75% .  
 常温・常湿保存が望ましい。(5~35°C, 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 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。

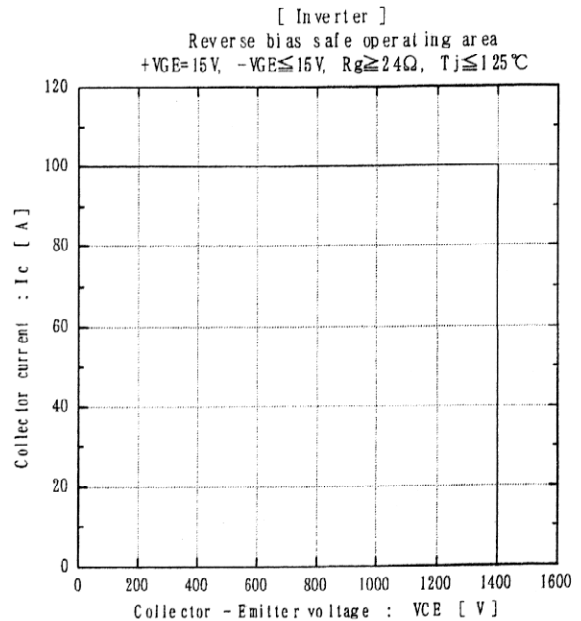
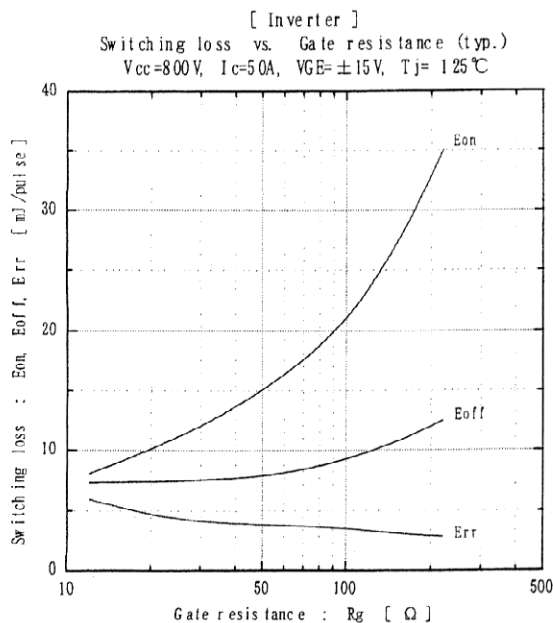
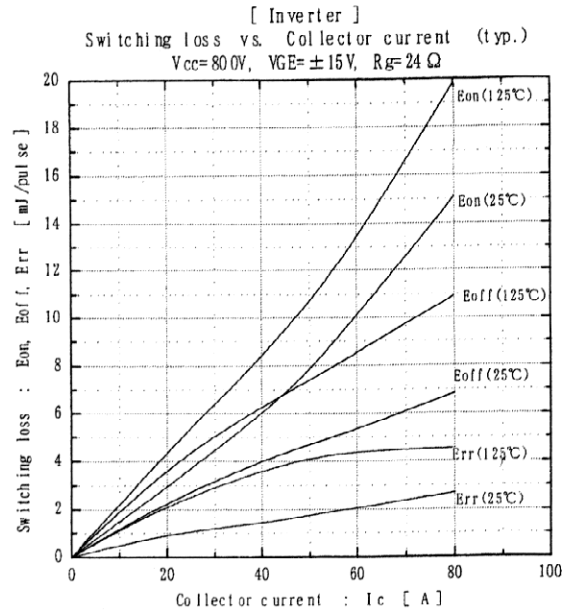
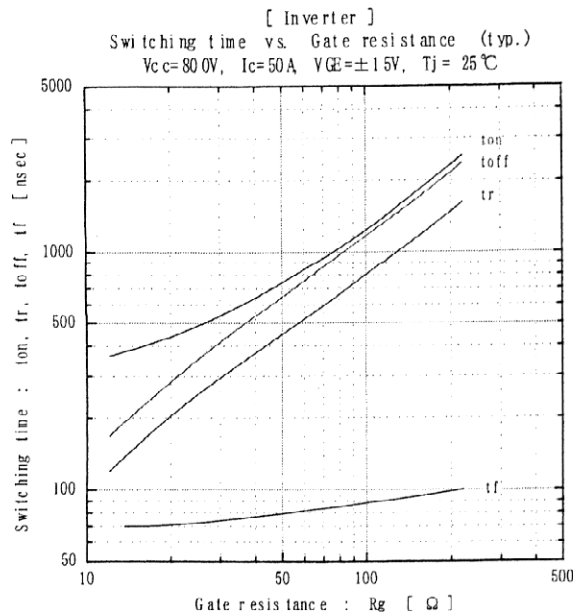
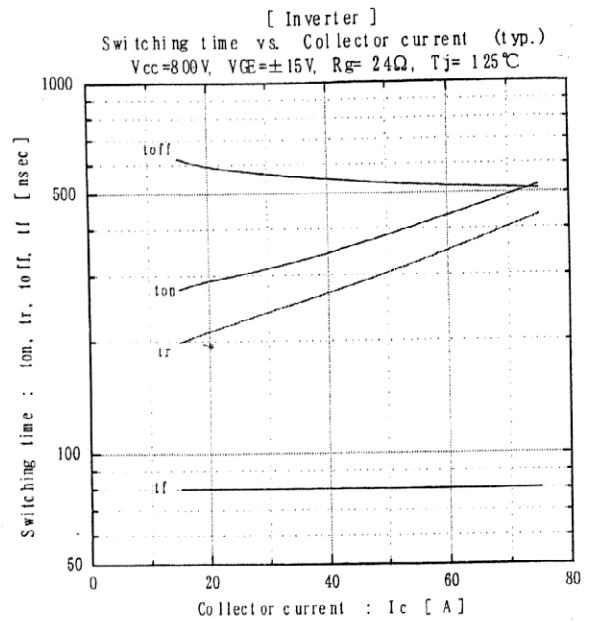
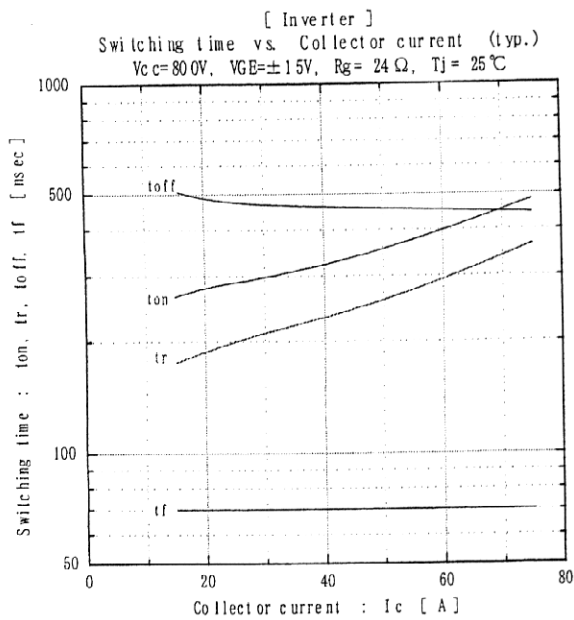
## 9. Definitions of switching time (スイッチング時間の定義)



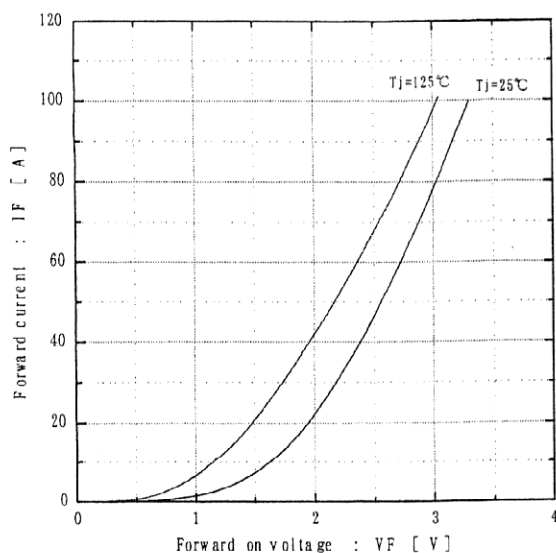
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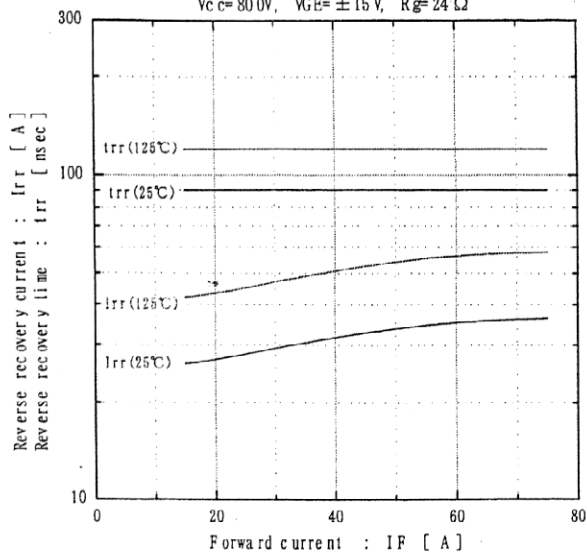


Forward current vs. Forward on voltage (typ.)

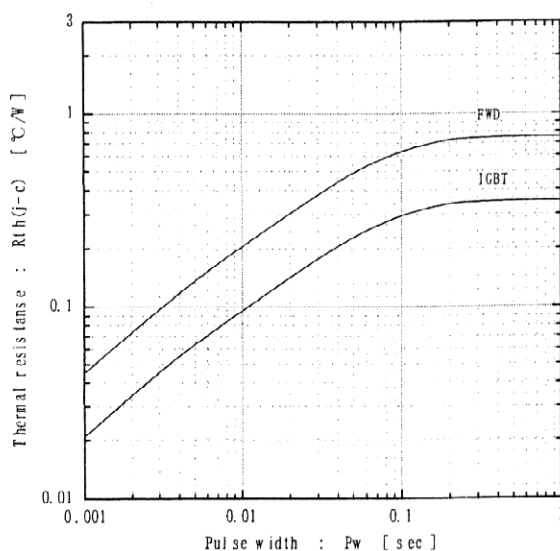


Reverse recovery characteristics (typ.)

$V_{CE} = 80\text{ V}$ ,  $V_{GE} = \pm 15\text{ V}$ ,  $R_g = 24\ \Omega$



Transient thermal resistance



Fuji Electric Co., Ltd.

DWG. NO.

MS5F 4723

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