

Messrs. Rockwell Automation

SPECIFICATION

Device Name : IGBT Module

Type Name : 1MB1600PX-140-03

Spec. No. : MS5F4851

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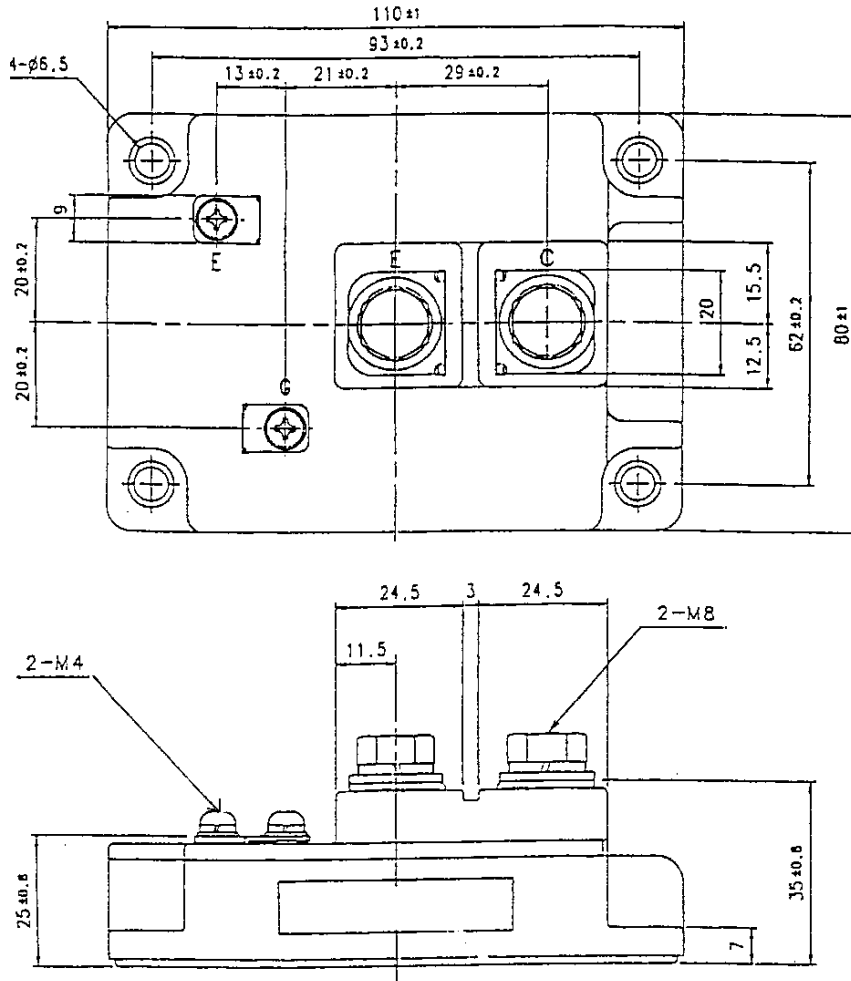
	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.	
DRAWN	May-31-'00	S. Yoshida	<i>T. Miyasaka</i>	DWG. NO.	MS5F4851
CHECKED	May-31-'00	S. Miyata			

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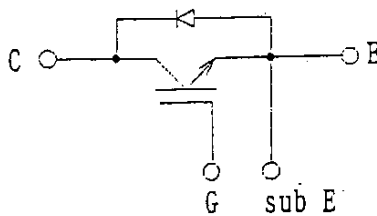
1MBI600PX-140-03

1. Outline Drawing

Unit : mm



2. Equivalent circuit



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

Items		Symbols	Ratings	Units
Collector-Emitter voltage		V _{CEs}	1400	V
Gate-Emitter voltage		V _{GEs}	±20	V
Collector current	Continuous	Tc=25°C	I _c	800
		Tc=80°C		600
	1ms	Tc=25°C	I _c pulse	1600
		Tc=80°C		1200
			-I _c	600
	1ms		-I _c pulse	1200
Max. power dissipation		P _C	4100	W
Operating temperature		T _j	+150	°C
Storage temperature		T _{stg}	-40~+125	°C
Isolation voltage		V _{is}	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°C 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} =1400V	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, I _c =600mA	V
Collector-Emitter saturation voltage	V _{CE(sat)}		2.85	3.2	V _{GE} =15V, I _c =600A	V
Input capacitance	C _{ies}		60		V _{GE} =0V	nF
Output capacitance	C _{oes}		9		V _{CE} =10V	
Reverse transfer capacitance	C _{res}		4		f=1MHz	
Turn-on time	t _{on}		750	1200	V _{cc} =600V	ns
	t _r		200	600	I _c =600A	
Turn-off time	t _{off}		650	1000	V _{GE} =±15V	
	t _f		100	300	R _G =2.0Ω	
Diode forward on voltage	V _F			3.4	I _F =600A, V _{GE} =0V	V
Reverse recovery time	t _{rr}			350	I _F =600A	ns

5. Thermal resistance characteristics

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Thermal resistance	R _{th(j-c)}			0.03	IGBT	°C/W
	R _{th(j-c)}			0.06	Diode	
	※		0.0063		the base to cooling fin	
	R _{th(c-f)}					

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

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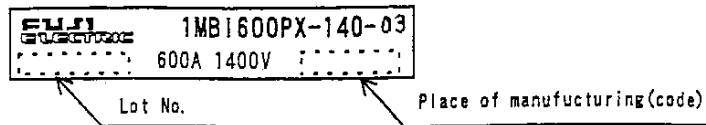
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6. Indication on module (モジュール表示)



7. Applicable category (適用範囲)

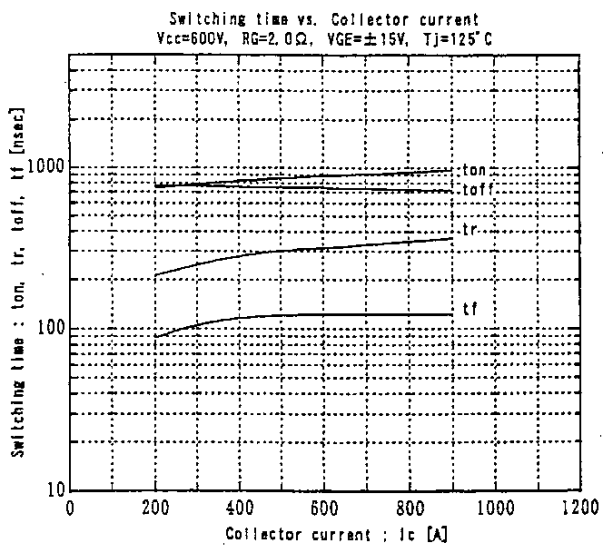
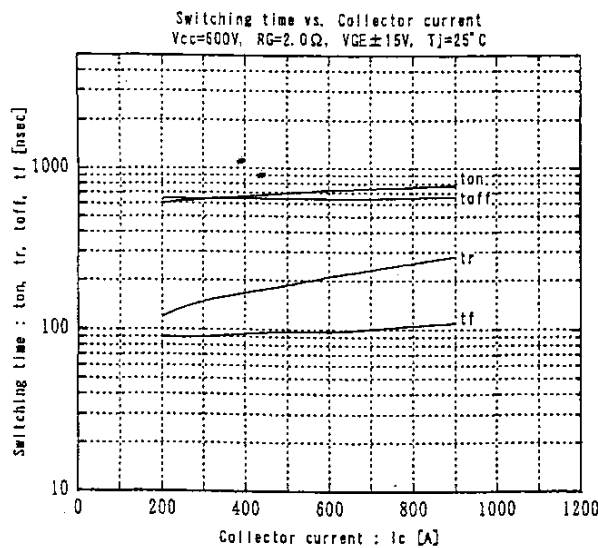
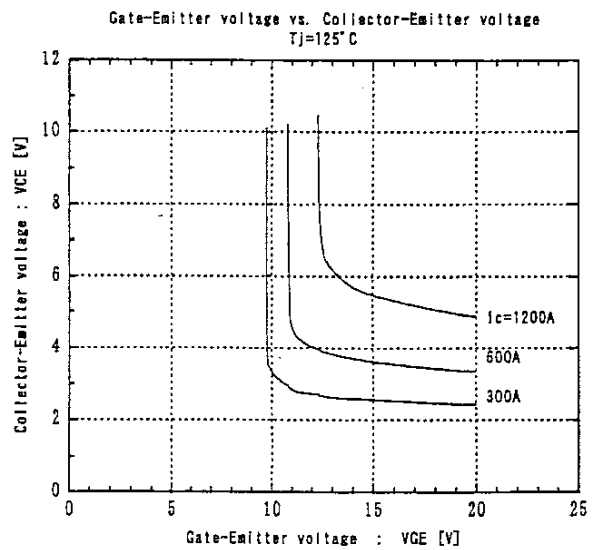
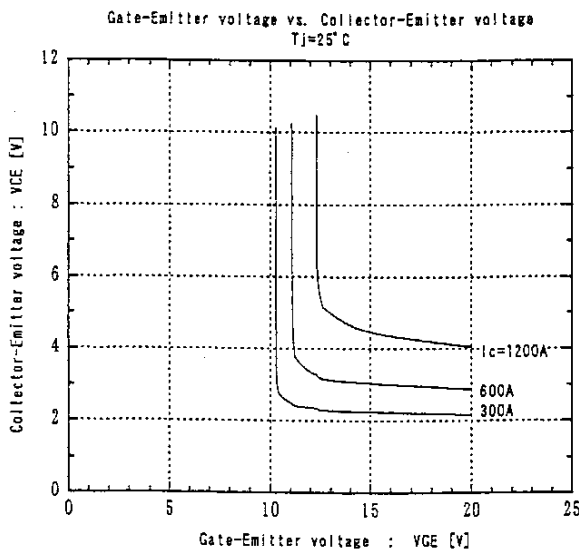
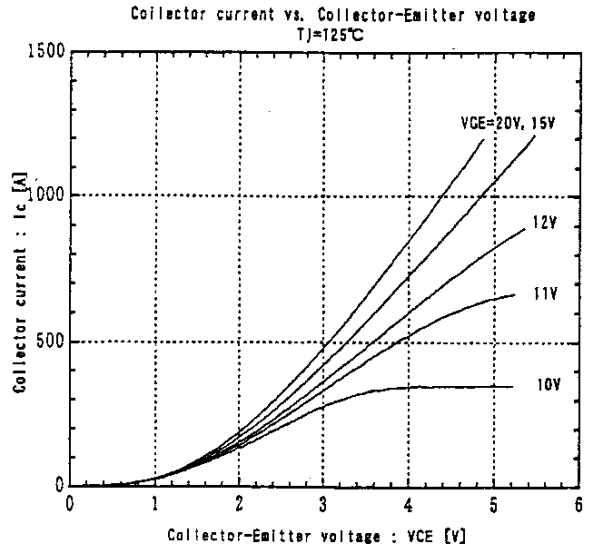
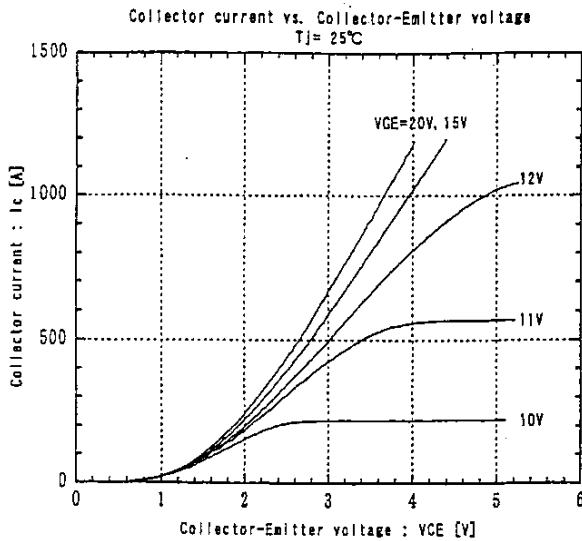
This specification is applied to IGBT module named 1MBI600PX-140-03
本納入仕様書は、IGBTモジュール 1MBI600PX-140-03 に適用する。

8. 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°C 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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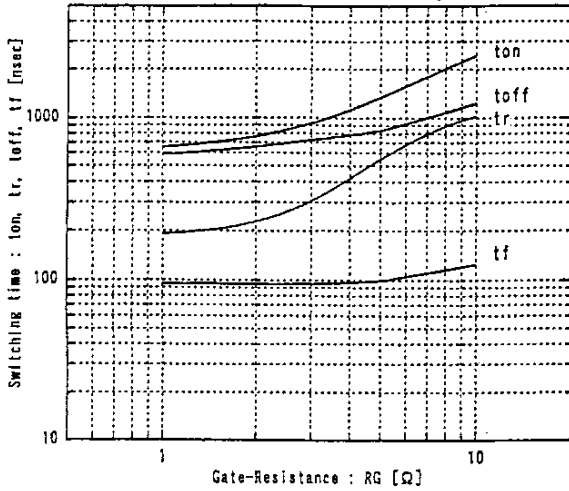
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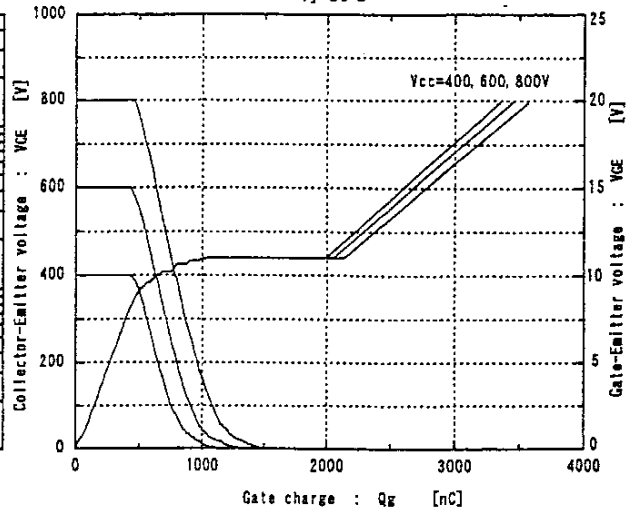
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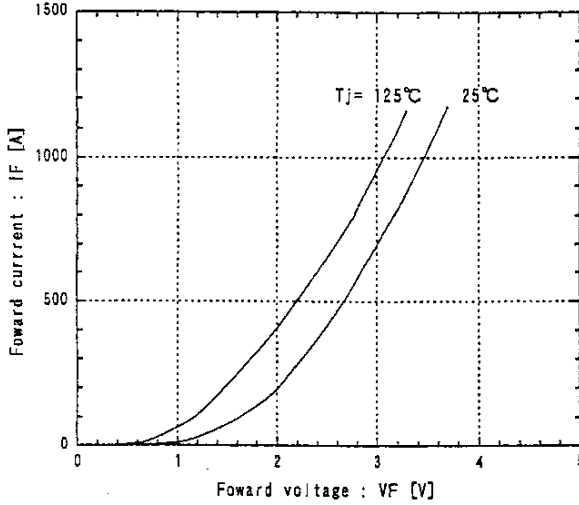
Switching time vs. Gate-Resistance
 $V_{cc}=600V, I_c=600A, V_{GE} \pm 15V, T_j=25^\circ C$



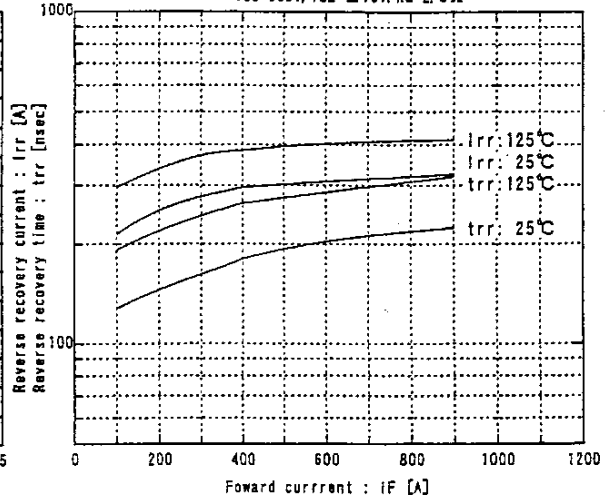
Dynamic input characteristics
 $T_j=25^\circ C$



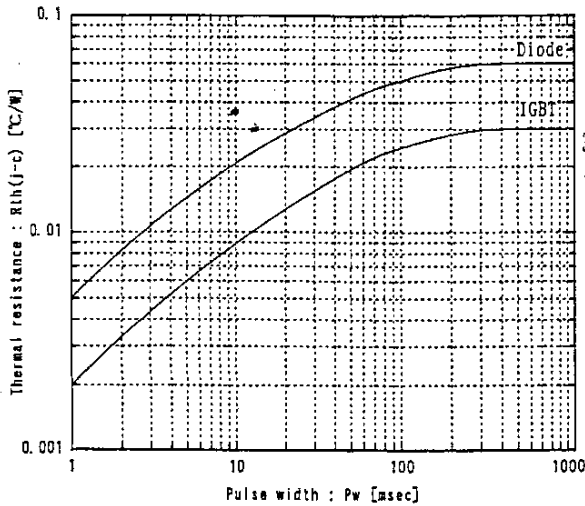
Forward current vs. Forward voltage
 $V_{GE}=0V$



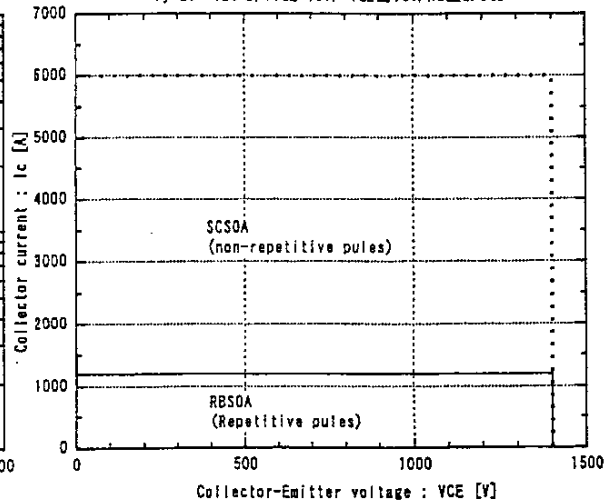
Reverse recovery characteristics (t_{rr}, I_{rr} vs. I_F)
 $V_{cc}=600V, V_{GE} \pm 15V, R_G=2.0\Omega$



Transient thermal resistance



Reverse biased safety operating area
 $T_j=25\sim 125^\circ C, +V_{GE}=15V, -V_{GE} \le 15V, R_G \ge 2.0\Omega$



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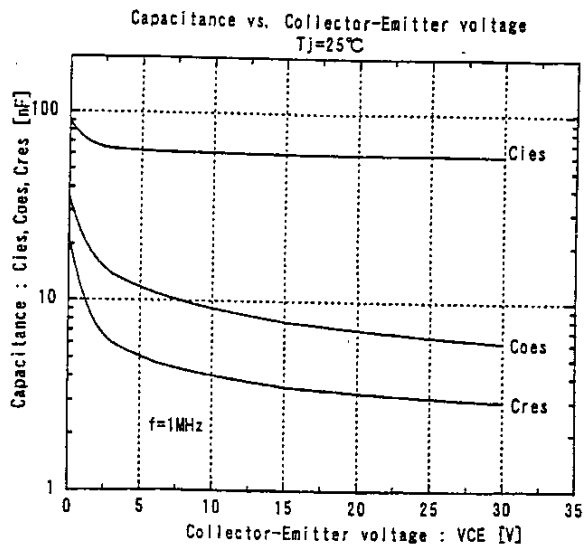
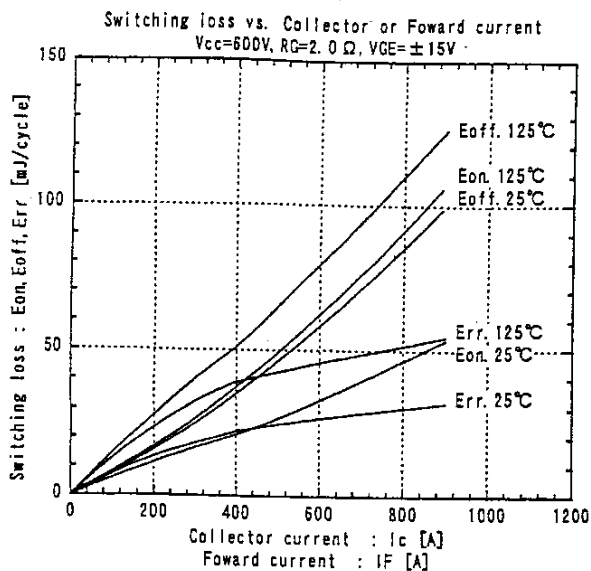
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