

SPECIFICATION

Device Name : IGBT Module

Type Name : 6MBI100S-140-01

Spec. No. : MS5F 4850

Date : Jun. - 02 - 2000

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Fuji Electric Co., Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.		
DRAWN	Jun. - 2 - '00	<i>M. Kobayashi</i>		DWG. NO.	MS5F 4850	1 / 8
CHECKED	June - 2 - 00	<i>S. Nishida</i>	<i>T. Hiyama</i>			

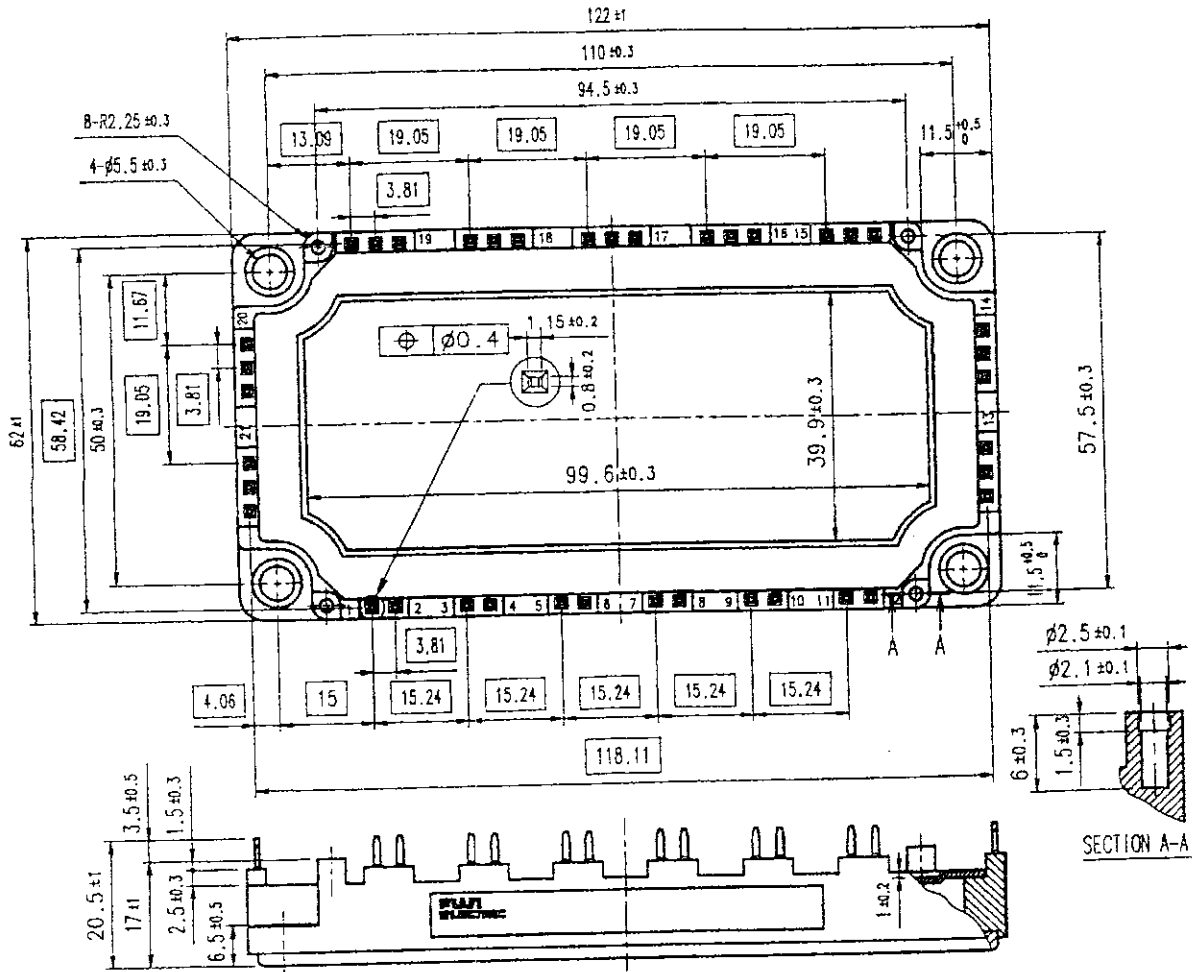
Revised Records

Date	Classi- fication	Ind.	Content	Applied date	Drawn	Checked	Approved
Jan.-2-'00	enactment	—	—————	Issued date	—	D. N. Matsu	T. Miyasaka

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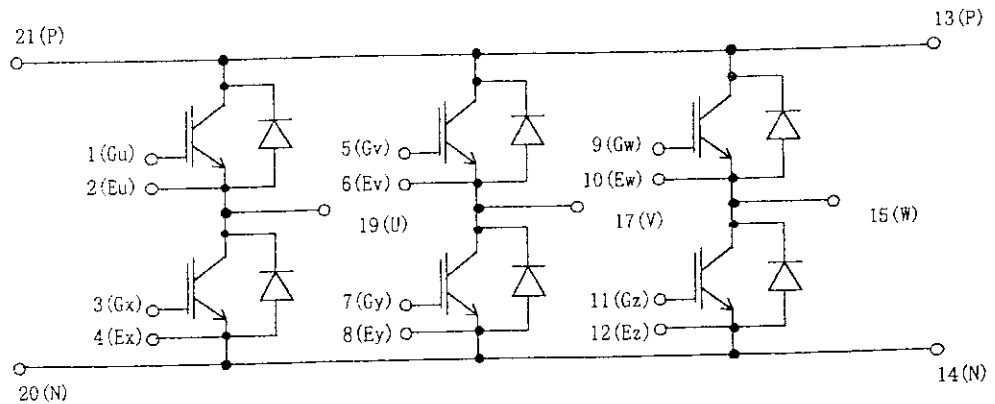
1. Outline Drawing (Unit : mm)

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□ shows theoretical dimension.

2. Equivalent circuit



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

Items	Symbols	Conditions	Maximum Ratings		Units
Collector-Emitter voltage	V _{CES}		1400		V
Gate-Emitter voltage	V _{GES}		+20		V
Collector current	I _c	Continuous	T _c =25C	150	A
			T _c =75C	100	
	I _c pulse	1ms	T _c =25C	300	
			T _c =75C	200	
	-I _c			100	
-I _c pulse	1ms		200		
Collector Power Dissipation	P _c	1 device	700		W
Junction temperature	T _j		150		C
Storage temperature	T _{stg}		-40~ +125		C
Isolation voltage ^(*)	V _{iso}	AC : 1min.	2500		V
Mounting Screw Torque ^(*)			3.5		Nm

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

(*2) Recommendable Value : 2.5~3.5 Nm (M5)

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

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Zero gate voltage Collector current	I _{CES}	V _{GE} 0 V, V _{CE} 1400 V			1.0	mA
Gate-Emitter leakage current	I _{GES}	V _{CE} 0 V, V _{GE} +20 V			200	nA
Gate-Emitter threshold voltage	V _{GE(th)}	V _{CE} 20 V, I _c = 100 mA	5.5	7.2	8.5	V
Collector-Emitter saturation voltage	V _{CE(sat)}	V _{GE} 15 V I _c = 100 A	T _j = 25 C	2.4	2.7	V
			T _j = 125 C	3.0		
Input capacitance	C _{ies}	V _{GE} 0 V		12000		pF
Output capacitance	C _{oes}	V _{CE} 10 V		2500		
Reverse transfer capacitance	C _{res}	f = 1 MHz		2200		
Turn-on time	ton	V _{cc} = 800 V		0.35	1.2	us
	tr	I _c = 100 A		0.25	0.6	
	tr ₍₀₎	V _{GE} +15 V		0.1		
Turn-off time	toff	R _G = 12 ohm		0.45	1.0	us
	tf			0.08	0.3	
Forward on voltage	V _F	I _F = 100 A	T _j = 25 C	2.6	3.4	V
			T _j = 125 C	2.2		
Reverse recovery time	t _{rr}	I _F = 100 A			0.35	us

5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Thermal resistance (1 device)	R _{th(j-c)}	IGBT			0.18	C/W
		FWD			0.36	
Contact Thermal resistance	R _{th(c-f)}	with Thermal Compound ^(*)		0.05		

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

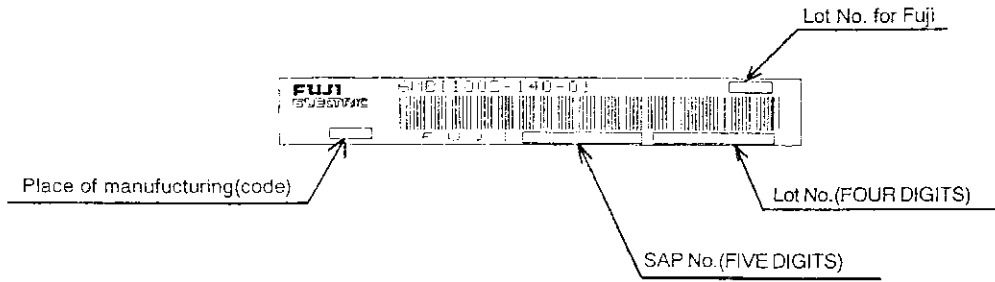
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DWG.NO.

MS5F 4850

4/8

6. Indication on module



7. Applicable category

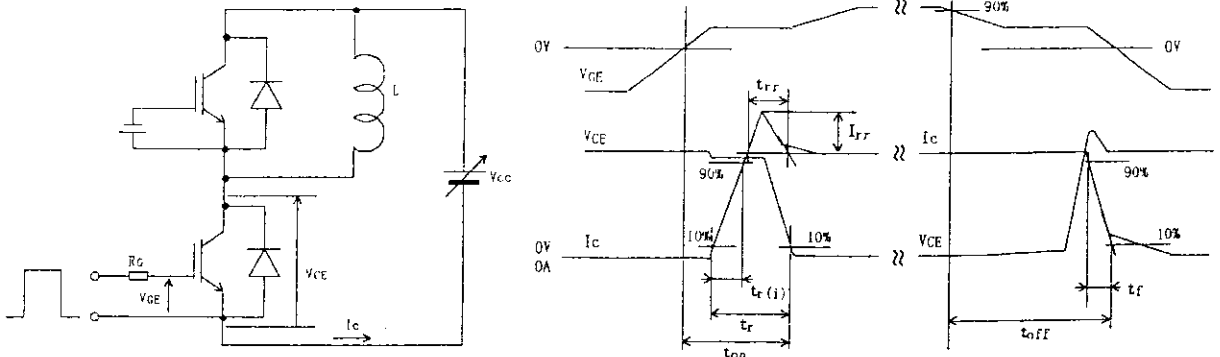
This specification is applied to IGBT Module named 6MBI100S-140-01.

8. Storage and transportation notes

- The module should be stored at a standard temperature of 5 to 35°C and humidity of 45 to 75% .
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
- Avoid exposure to corrosive gases and dust.
- Avoid excessive external force on the module.
- Store modules with unprocessed terminals.
- Do not drop or otherwise shock the modules when transporting.
- Please connect adequate fuse or protector of circuit between three-phase line and this product to prevent the equipment from causing secondary destruction.

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9. Definitions of switching time



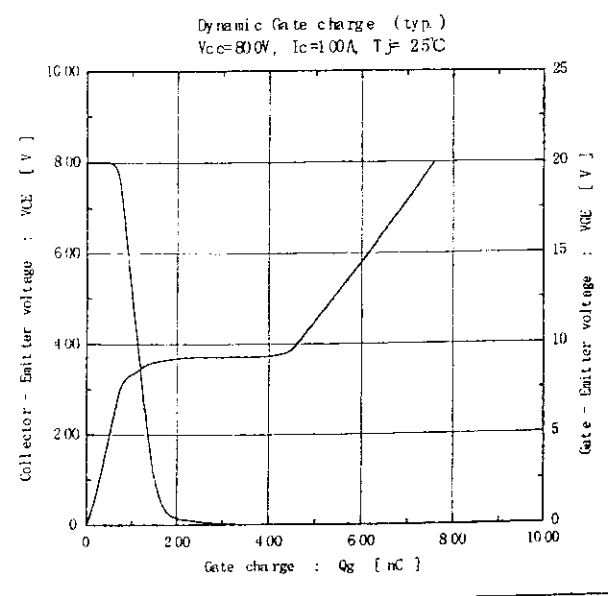
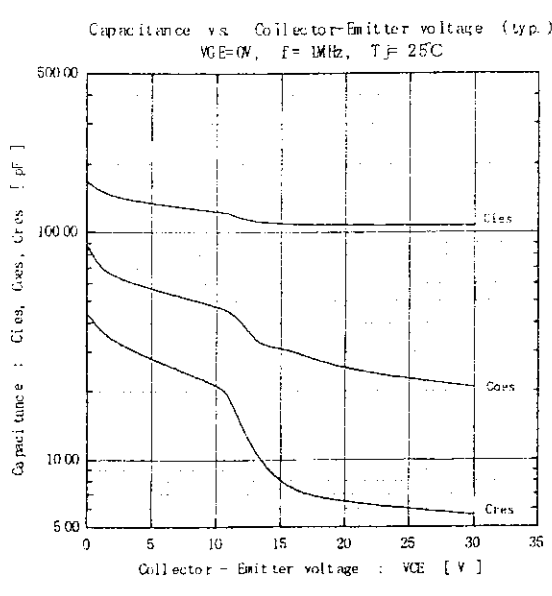
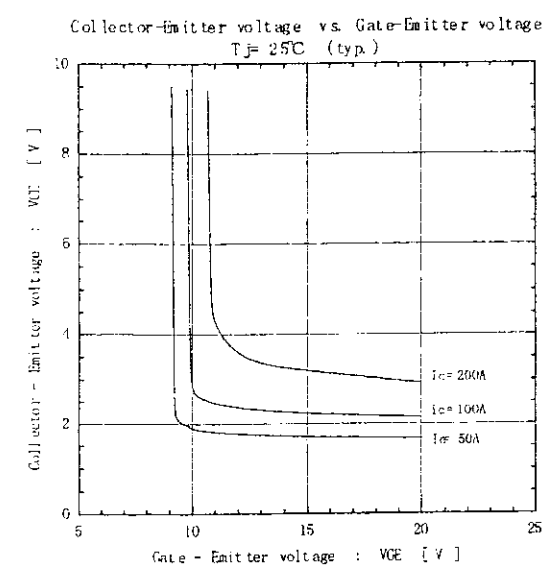
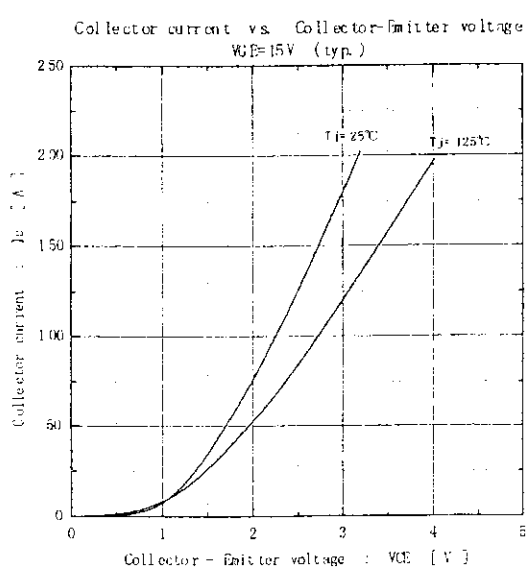
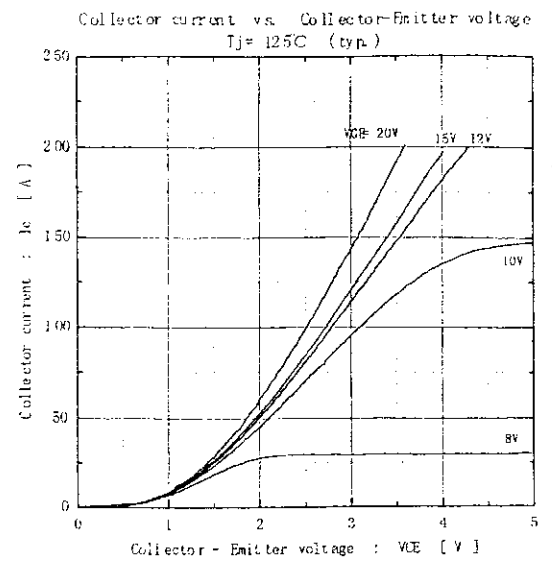
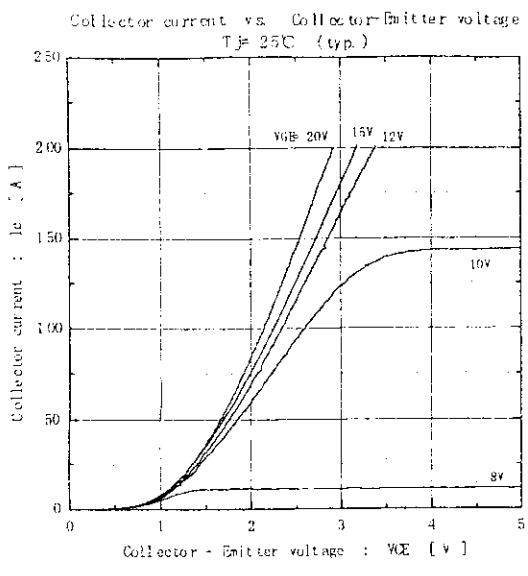
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5 / 8

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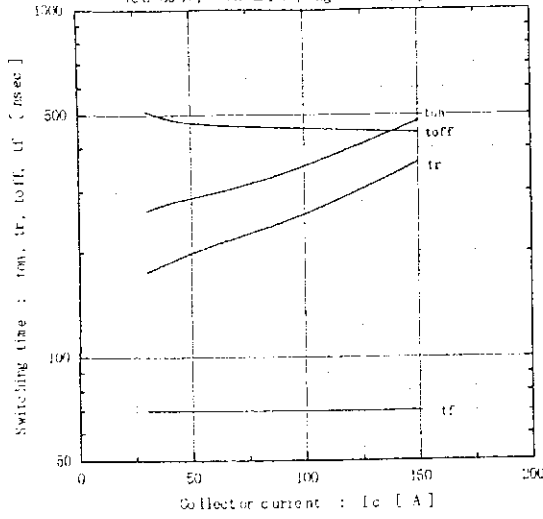
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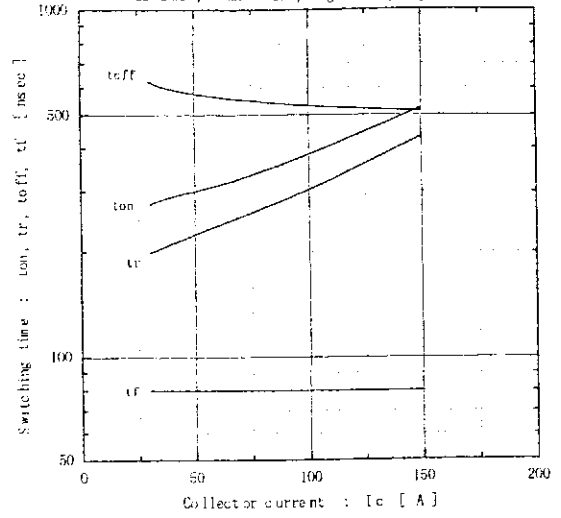
6/8

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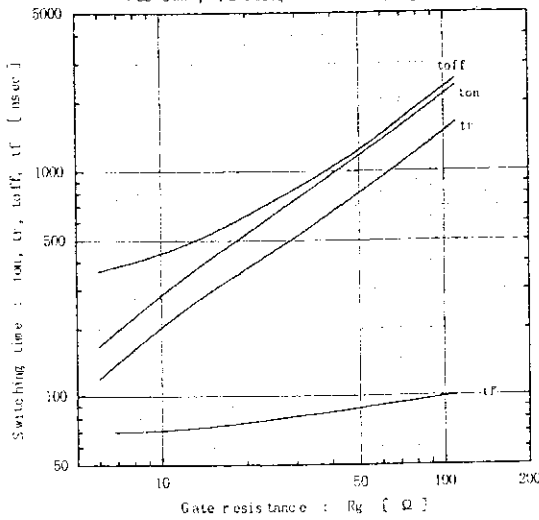
Switching time vs. Collector current (typ.)
 $V_{cc}=800V, V_{GE}=\pm 15V, R_g=12\Omega, T_j=25^\circ C$



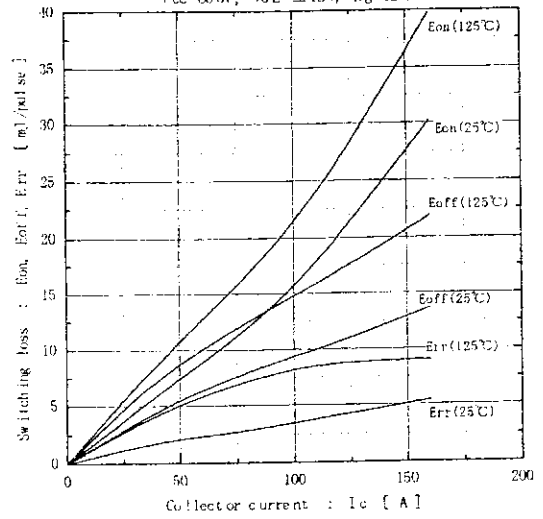
Switching time vs. Collector current (typ.)
 $V_{cc}=800V, V_{GE}=\pm 15V, R_g=12\Omega, T_j=125^\circ C$



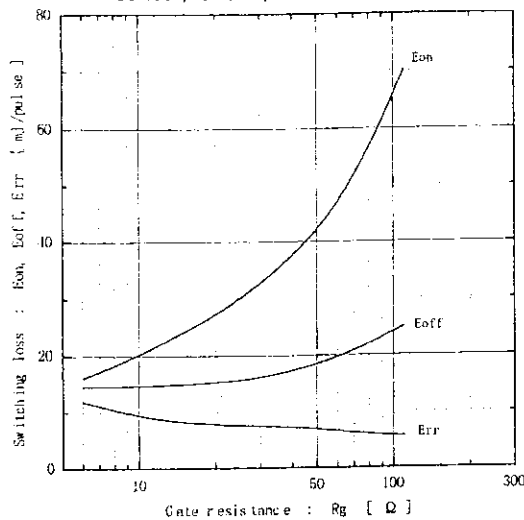
Switching time vs. Gate resistance (typ.)
 $V_{cc}=800V, I_c=100A, V_{GE}=\pm 15V, T_j=25^\circ C$



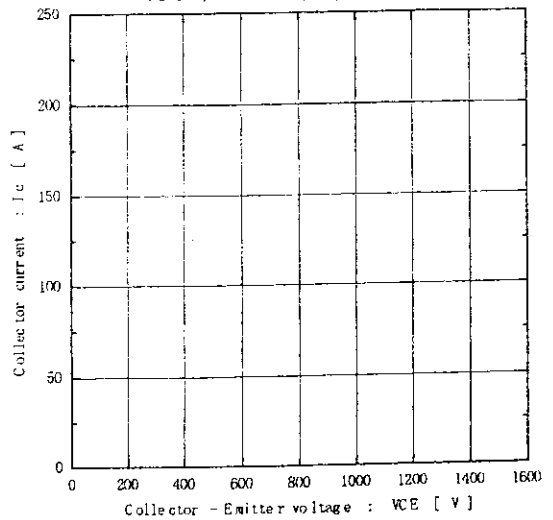
Switching loss vs. Collector current (typ.)
 $V_{cc}=800V, V_{GE}=\pm 15V, R_g=12\Omega$



Switching loss vs. Gate resistance (typ.)
 $V_{cc}=800V, I_c=100A, V_{GE}=\pm 15V, T_j=125^\circ C$



Reverse bias safe operating area
 $+V_{GE}=15V, -V_{GE}\leq 15V, R_g\geq 12\Omega, T_j\leq 125^\circ C$



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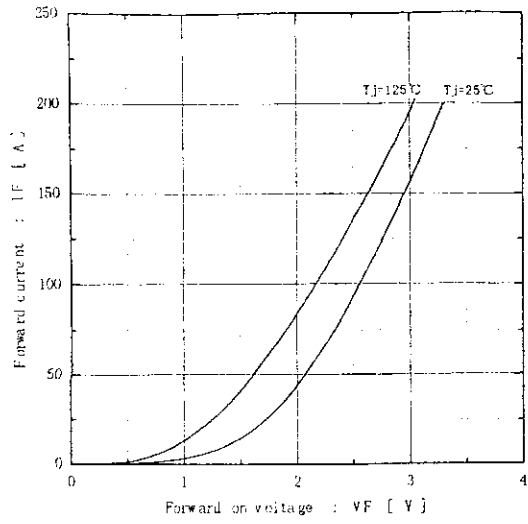
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7/8

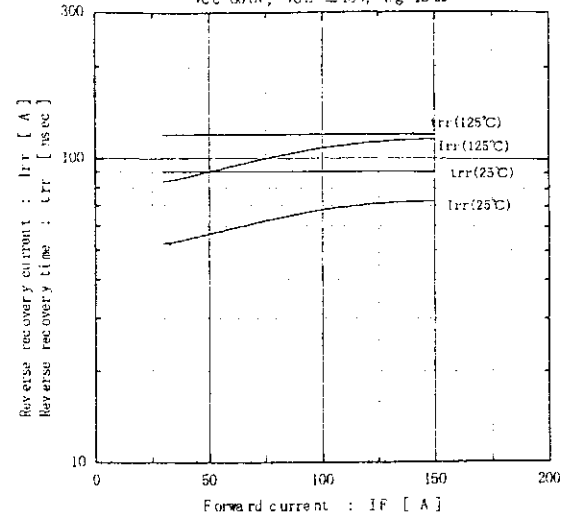
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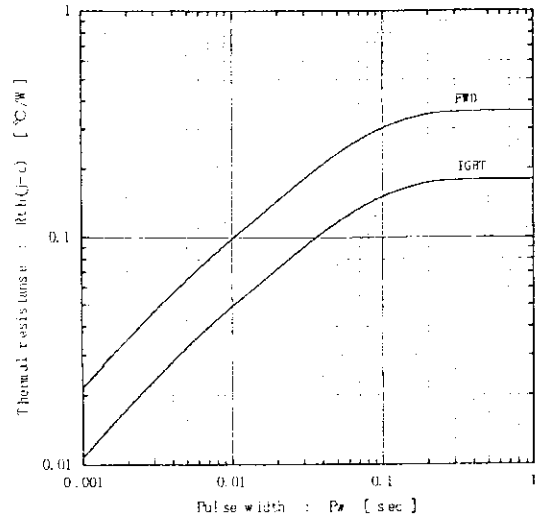
Forward current vs. Forward on voltage (typ.)



Reverse recovery characteristics (typ.)
 $V_{CC}=80V$, $V_{CE}=\pm 15V$, $R_g=12\Omega$



Transient thermal resistance



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8/8