

SPECIFICATION

Device Name : IGBT Module

Type Name : 6MBI75S-140-01

Spec. No. : MS5F 4849

Date : Jun. - 02 - 2000

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Matsumoto Factory

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CHECKED	June - 2 - '00	S. Nishida	T. Nishida			

H04-004-05

Revised Records

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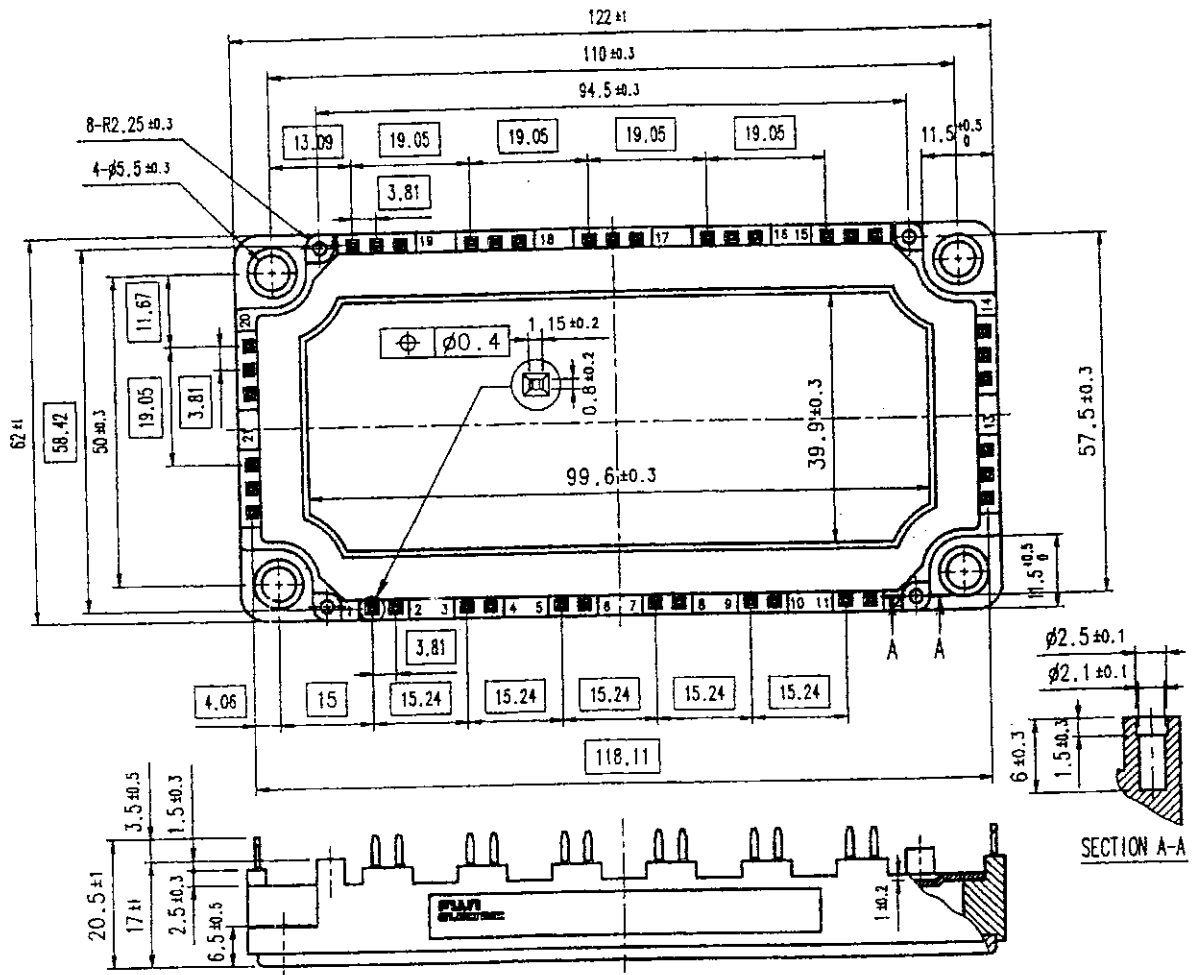
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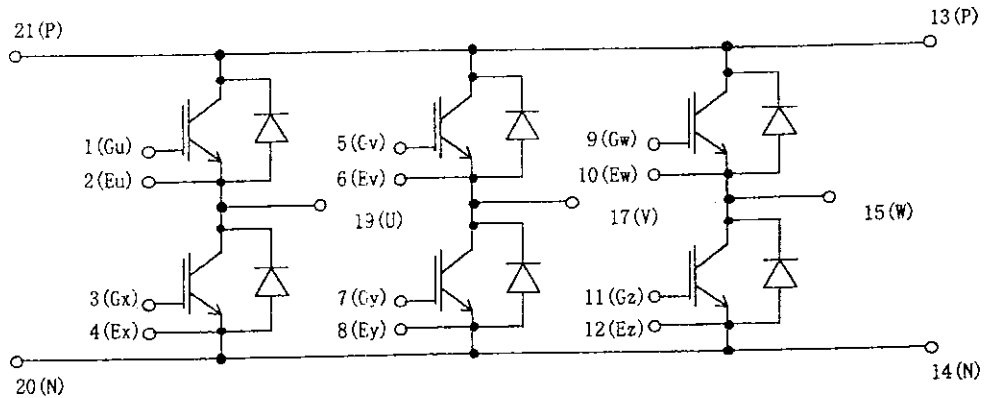
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1. Outline Drawing (Unit : mm)



☐ 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	VCES			1400	V
Gate-Emitter voltage	VGES			+20	V
Collector current	Ic	Continuous	Tc=25C	100	A
			Tc=75C	75	
	Ic pulse	1ms	Tc=25C	200	
			Tc=75C	150	
	-Ic			75	
	-Ic pulse	1ms		150	
Collector Power Dissipation	Pc	1 device		520	W
Junction temperature	Tj			150	C
Storage temperature	Tstg			-40~ +125	C
Isolation voltage ^(*)	Viso	AC : 1min.		2500	V
Mounting Screw Torque ^{(*)2}				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	ICES	VGE 0 V, VCE 1400 V			1.0	mA
Gate-Emitter leakage current	IGES	VCE 0 V, VGE +20 V			200	nA
Gate-Emitter threshold voltage	VGE(th)	VCE 20 V, Ic = 75 mA	5.5	7.2	8.5	V
Collector-Emitter saturation voltage	VCE(sat)	VGE 15 V, Tj = 25 C		2.4	2.7	V
		Ic = 75 A, Tj = 125 C		3.0		
Input capacitance	Cies	VGE 0 V		9000		pF
Output capacitance	Coes	VCE 10 V		1875		
Reverse transfer capacitance	Cres	f = 1 MHz		1650		
Turn-on time	ton	Vcc = 800 V		0.35	1.2	us
	tr	Ic = 75 A		0.25	0.6	
	tr ₀	VGE +15 V		0.1		
Turn-off time	toff	RG = 16 ohm		0.45	1.0	
	tf			0.08	0.3	
Forward on voltage	VF	IF = 75 A, Tj = 25 C		2.6	3.4	V
		Tj = 125 C		2.2		
Reverse recovery time	trr	IF = 75 A			0.35	us

5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Thermal resistance (1 device)	Rth(j-c)	IGBT			0.24	C/W
		FWD			0.50	
Contact Thermal resistance	Rth(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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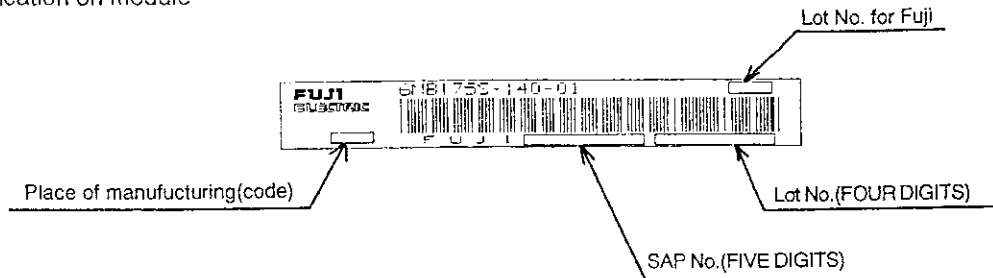
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6. Indication on module



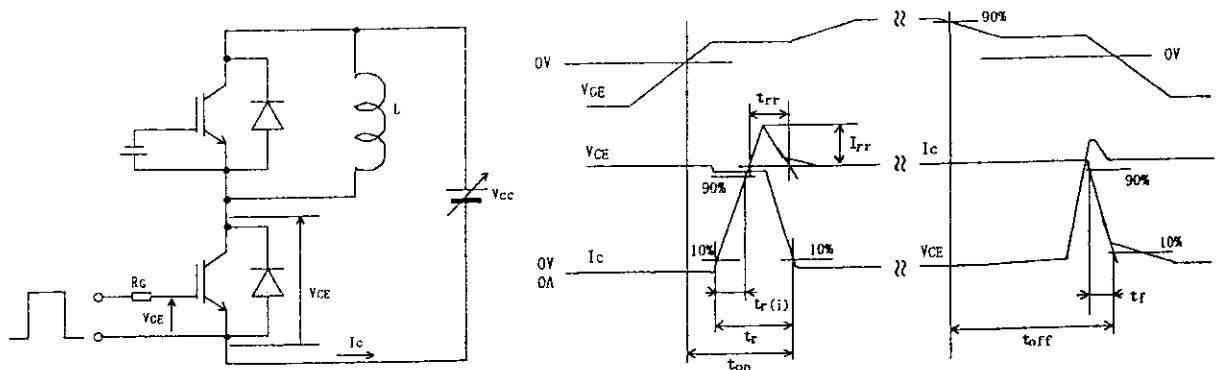
7. Applicable category

This specification is applied to IGBT Module named 6MBI75S-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.

9. Definitions of switching time



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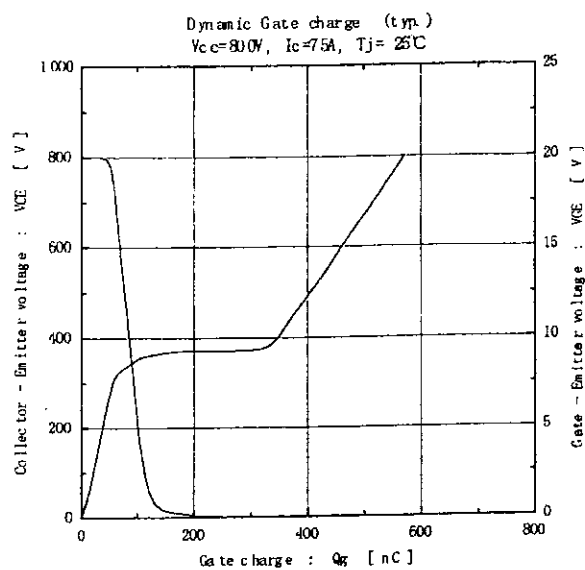
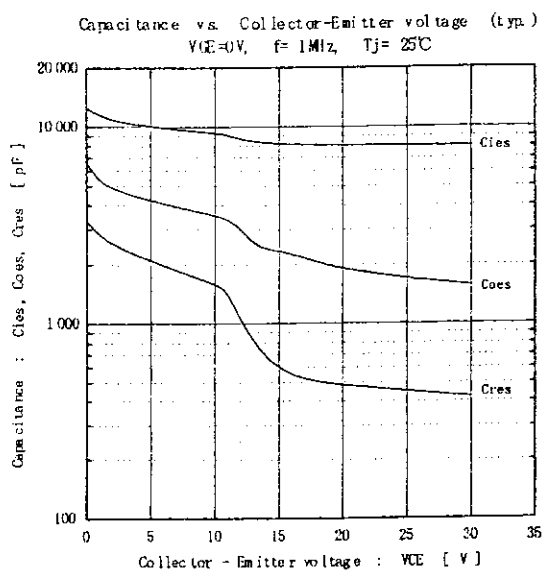
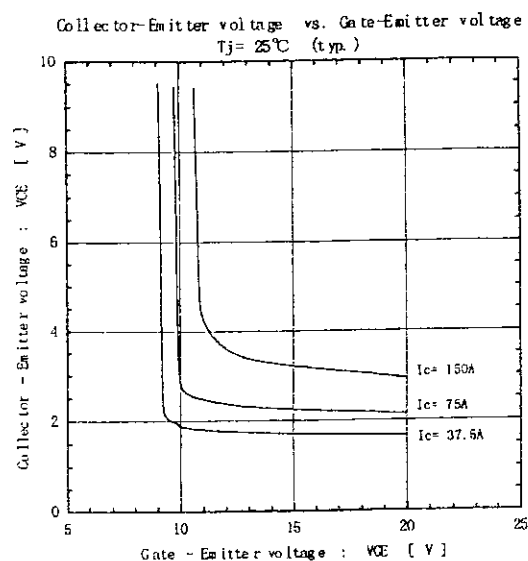
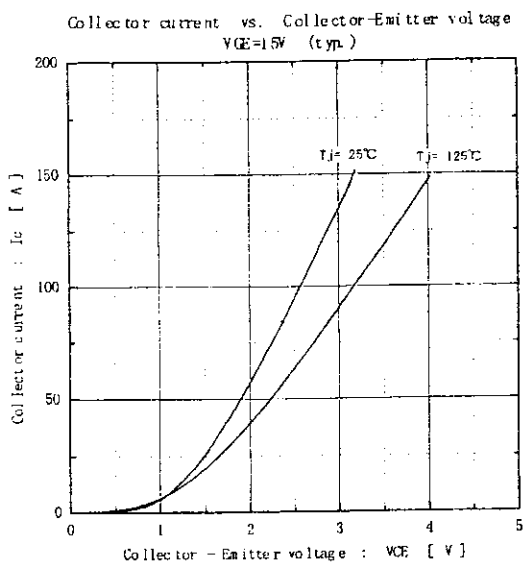
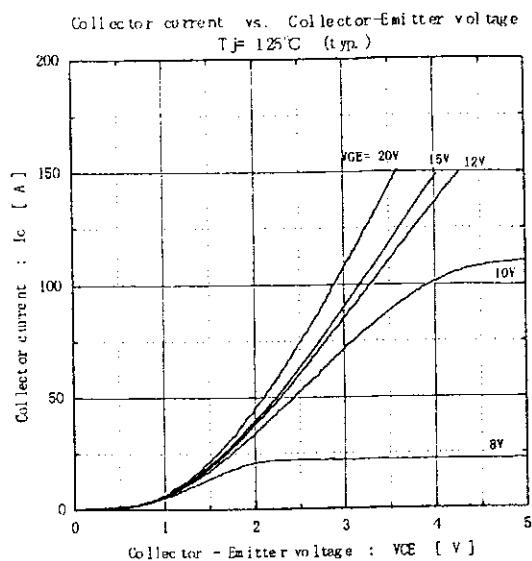
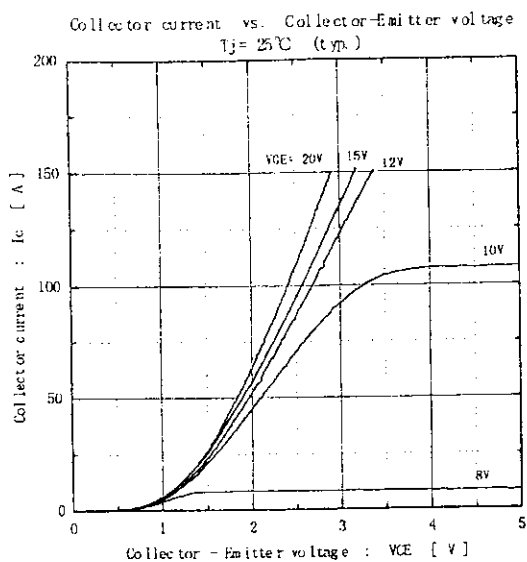
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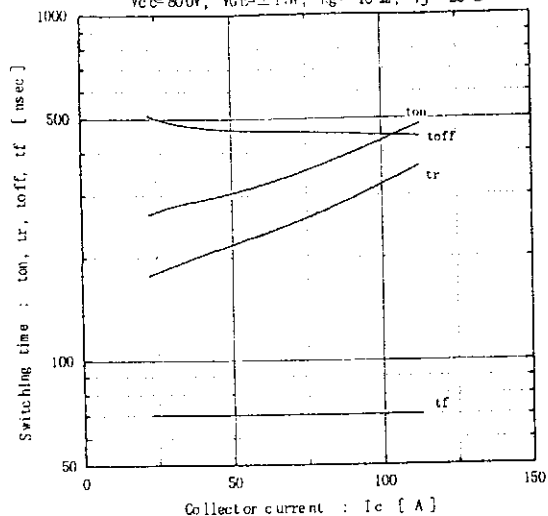
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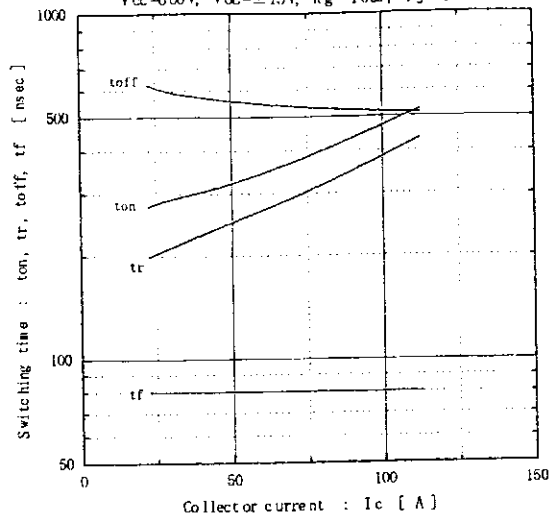
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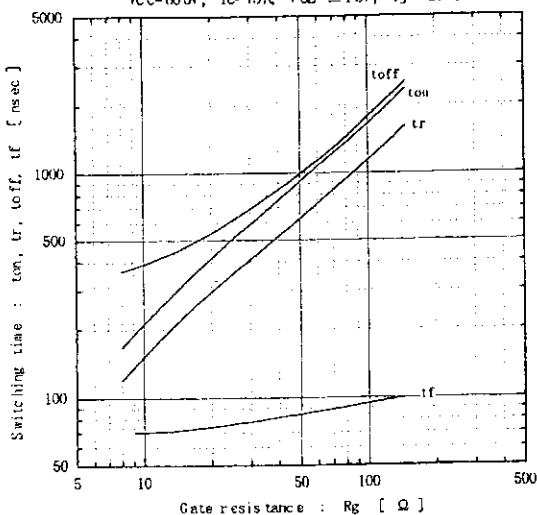
Switching time vs. Collector current (typ.)
 $V_{CC}=80V$, $V_{GE}=\pm 15V$, $R_g=16\Omega$, $T_j=25^\circ C$



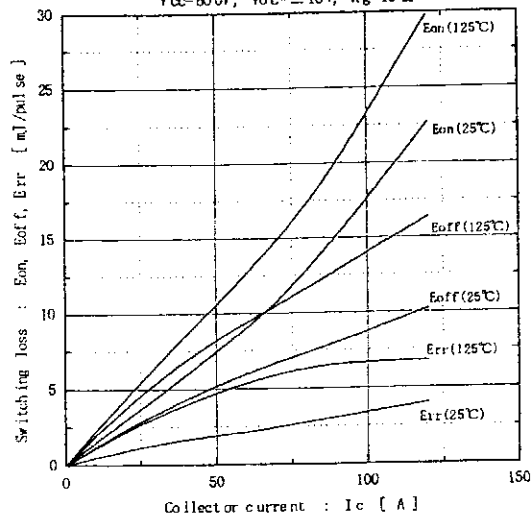
Switching time vs. Collector current (typ.)
 $V_{CC}=80V$, $V_{GE}=\pm 15V$, $R_g=16\Omega$, $T_j=125^\circ C$



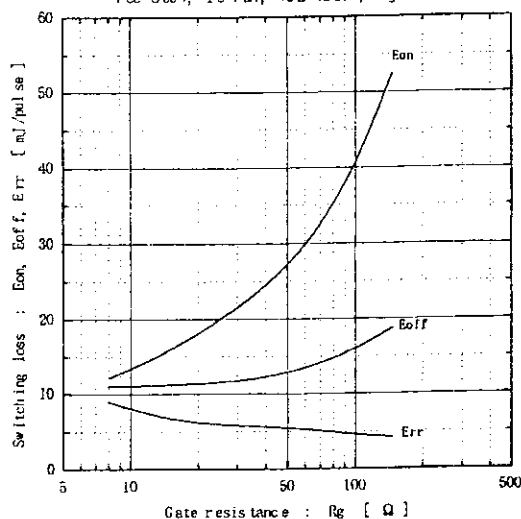
Switching time vs. Gate resistance (typ.)
 $V_{CC}=80V$, $I_c=75A$, $V_{GE}=\pm 15V$, $T_j=25^\circ C$



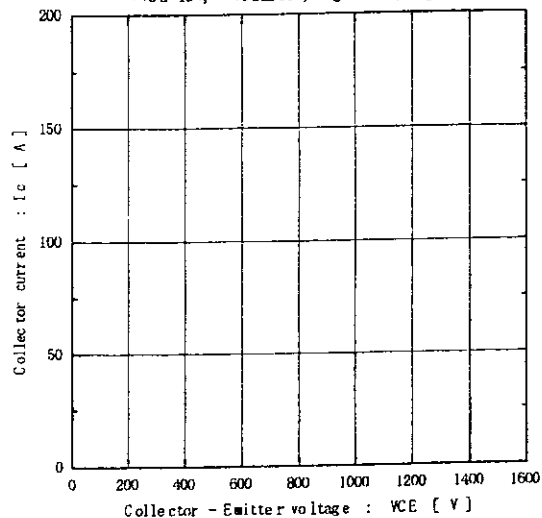
Switching loss vs. Collector current (typ.)
 $V_{CC}=80V$, $V_{GE}=\pm 15V$, $R_g=16\Omega$



Switching loss vs. Gate resistance (typ.)
 $V_{CC}=80V$, $I_c=75A$, $V_{GE}=\pm 15V$, $T_j=125^\circ C$



Reverse bias safe operating area
 $+V_{GE}=15V$, $-V_{GE}\leq 15V$, $R_g\geq 16\Omega$, $T_j\leq 125^\circ C$



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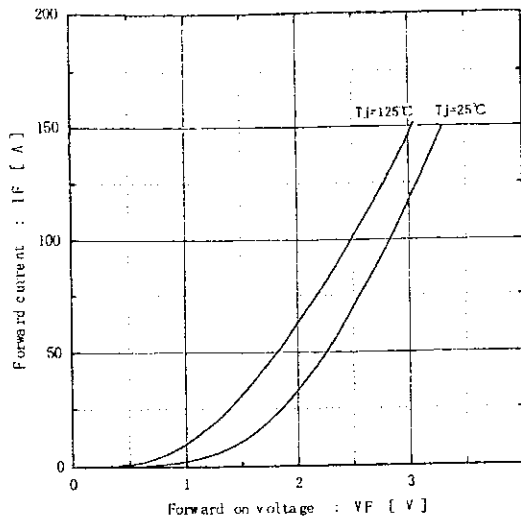
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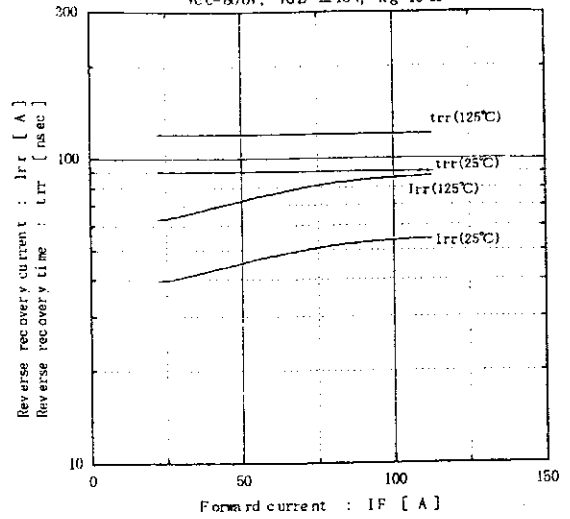
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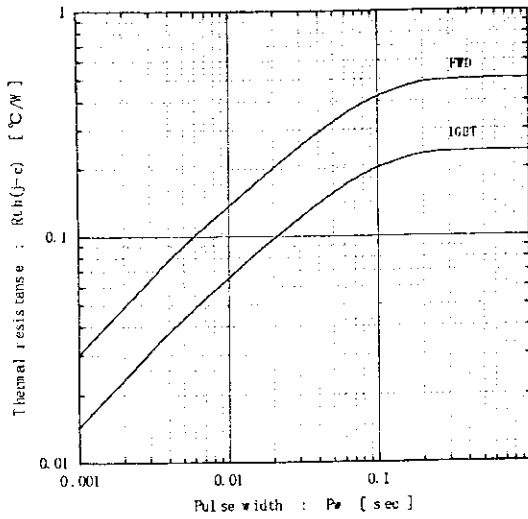
Forward current vs. Forward on voltage (typ.)



Reverse recovery characteristics (typ.)
Vc=800V, VGE=±15V, Rg=16Ω



Transient thermal resistance



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