

SPECIFICATION

Device Name : IGBT Module

Type Name : 7MBR35SB120-01

Spec. No. : MS6M 0554

Date : Jun. - 02 - 2000

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Matsumoto Factory

	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.			
DRAWN	Jun. - 2 - '00	T. Kobayashi	<i>T. Kobayashi</i>	DWG. NO.	MS6M 0554	1 / 10	Q
CHECKED	June - 2 - 00	S. Matsu					

Revised Records

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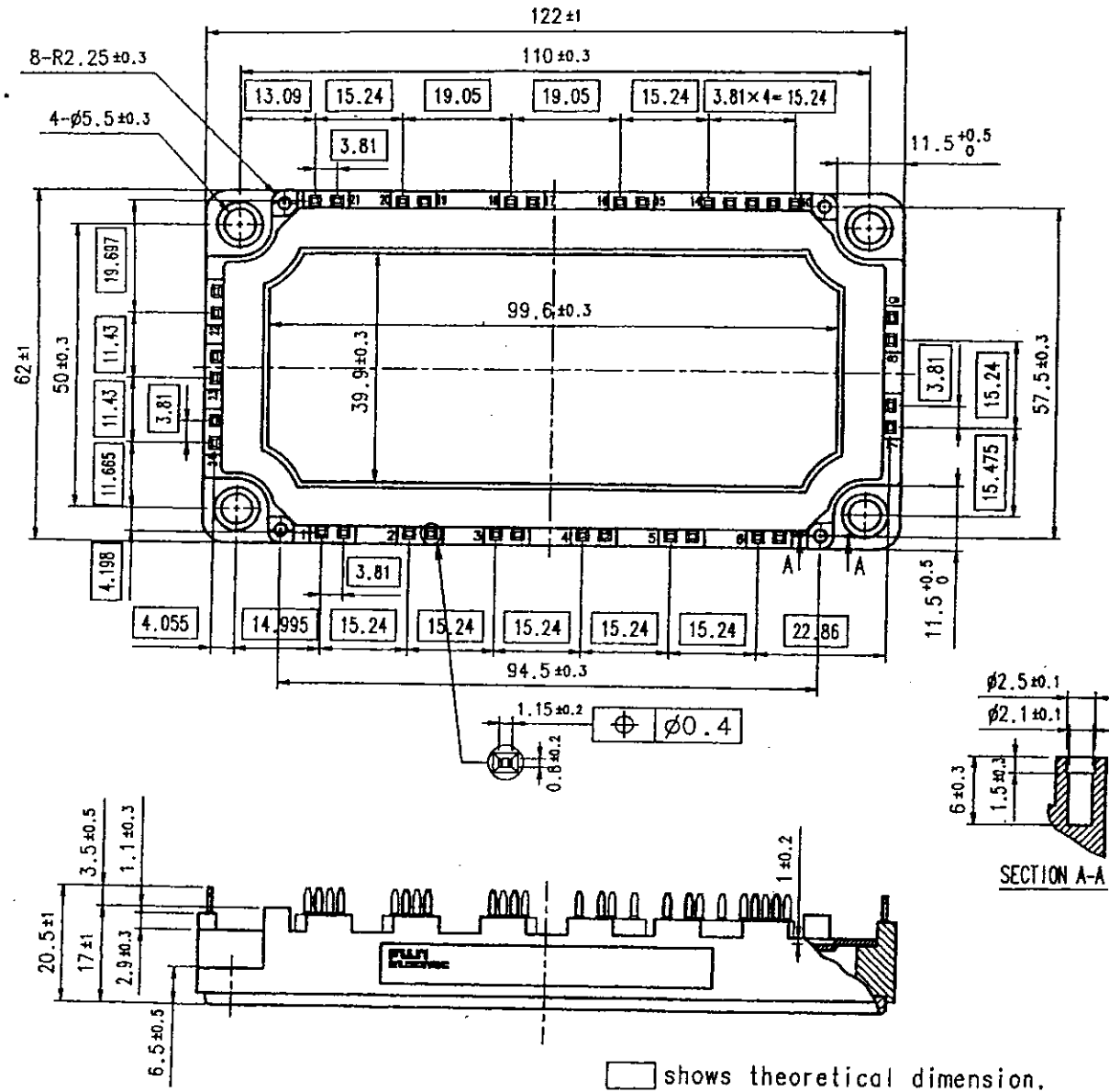
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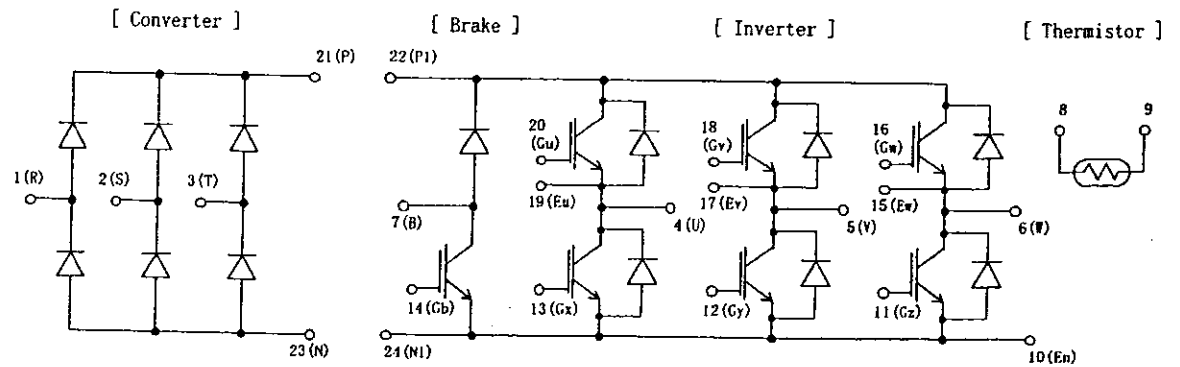
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1. Outline Drawing (Unit : mm)



2. Equivalent circuit



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

Items		Symbols	Conditions		Maximum Ratings	Units
Inverter	Collector-Emitter voltage	VCES			1200	V
	Gate-Emitter voltage	VGES			+20	V
	Collector current	Ic	Continuous	Tc=25C	50	A
				Tc=80C	35	
		Icp	1ms	Tc=25C	100	A
				Tc=80C	70	
	-Ic			35	A	
Collector Power Dissipation	Pc	1 device		240	W	
Brake	Collector-Emitter voltage	VCES			1200	V
	Gate-Emitter voltage	VGES			+20	V
	Collector current	Ic	Continuous	Tc=25C	35	A
				Tc=80C	25	
		Icp	1ms	Tc=25C	70	A
				Tc=80C	50	
	Collector Power Dissipation	Pc	1 device		180	W
Repetitive peak reverse Voltage(Diode)	VRRM			1200	V	
Converter	Repetitive peak reverse Voltage	VRRM			1600	V
	Average Output Current	Io	50Hz/60Hz sine wave		35	A
	Surge Current (Non-Repetitive)	IFSM	Tj=150C,10ms		360	A
	I ² t (Non-Repetitive)	I ² t	half sine wave		648	A ² s
	Junction temperature		Tj			150
Storage temperature		Tstg			-40~ +125	C
Isolation voltage	between terminal and copper base ^(*)	Viso	AC : 1min.		2500	V
	between thermistor and others ^{(*)2}				2500	V
Mounting Screw Torque ^{(*)3}					3.5	Nm

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

(*2) Terminal 8 and 9 should be connected together. Terminal 1 to 7 and 10 to 24 should be connected together and shorted to copper base.

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

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4. Electrical characteristics (at $T_j = 25^\circ\text{C}$ unless otherwise specified)

Items		Symbols	Conditions	Characteristics			Units		
				min.	typ.	Max.			
Inverter	Zero gate voltage Collector current	ICES	VGE = 0 V, VCE= 1200 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 = 35 mA	5.5	7.2	8.5	V		
	Collector-Emitter saturation voltage	VCE(sat)	VGE = 15 V, Ic = 35 A		2.1	2.25	2.7	V	
	Input capacitance	Cies	VGE = 0 V, VCE= 10 V f= 1 MHz		4200		pF		
	Turn-on time	ton	Vcc= 600 V		0.35	1.2	us		
		tr	Ic = 35 A		0.25	0.6			
		tr0	VGE = +15 V		0.1				
	Turn-off time	toff	RG = 33 ohm		0.45	1.0			
		tf			0.08	0.3			
	Forward on voltage	VF	IF = 35 A	chip terminal		2.3 2.45		3.3 3.3	V
Reverse recovery time	trr	IF = 35 A				350	ns		
Brake	Zero gate voltage Collector current	ICES	VGE= 0 V, VCE= 1200 V			1.0	mA		
	Gate-Emitter leakage current	IGES	VCE = 0 V, VGE= +20 V			200	nA		
	Collector-Emitter saturation voltage	VCE(sat)	VGE 15 V, Ic = 25 A	chip terminal		2.1 2.25		2.7	V
	Turn-on time	ton	Vcc= 600 V		0.35	1.2	us		
		tr	Ic = 25 A		0.25	0.6			
	Turn-off time	toff	VGE = +15 V		0.45	1.0			
		tf	RG = 51 ohm		0.08	0.3			
Reverse current	IRRM	VR =1200 V				1.0	mA		
Converter	Forward on voltage	VFM	IF = 35 A	chip terminal		1.1 1.2		1.5	V
	Reverse current	IRRM	VR =1600 V				1.0	mA	
Thermistor	Resistance	R	T = 25C		5000			ohm	
			T =100C	465	495	520			
	B value	B	T = 25/50C	3305	3375	3450	K		

5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Thermal resistance (1 device)	Rth(j-c)	Inverter IGBT			0.52	C/W
		Inverter FWD			0.90	
		Brake IGBT			0.69	
		Converter Diode			0.75	
Contact Thermal resistance	Rth(c-f)	with Thermal Compound (*)		0.05		C/W

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

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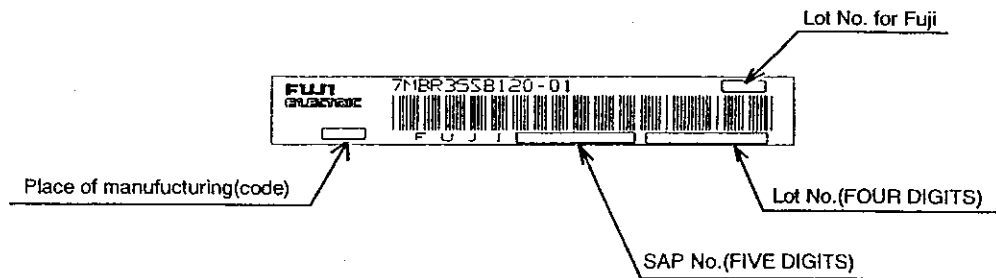
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6. Indication on module



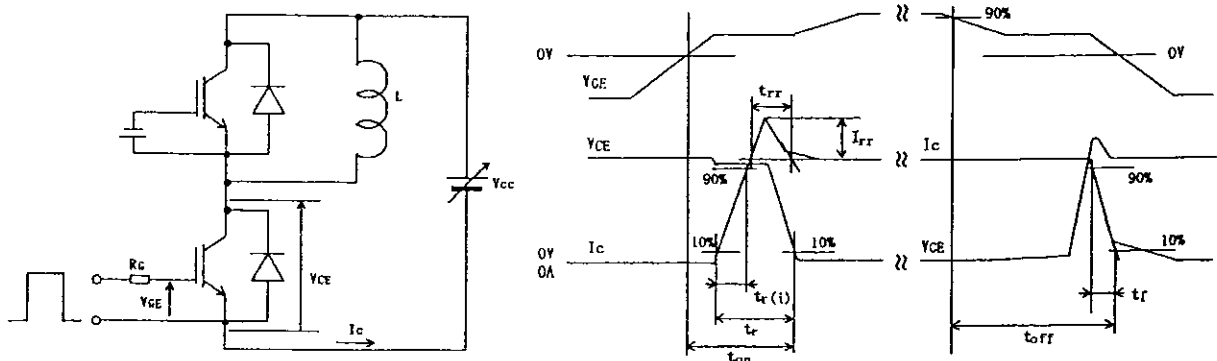
7. Applicable category

This specification is applied to Power Integrated Module named 7MBR35SB120-01 .

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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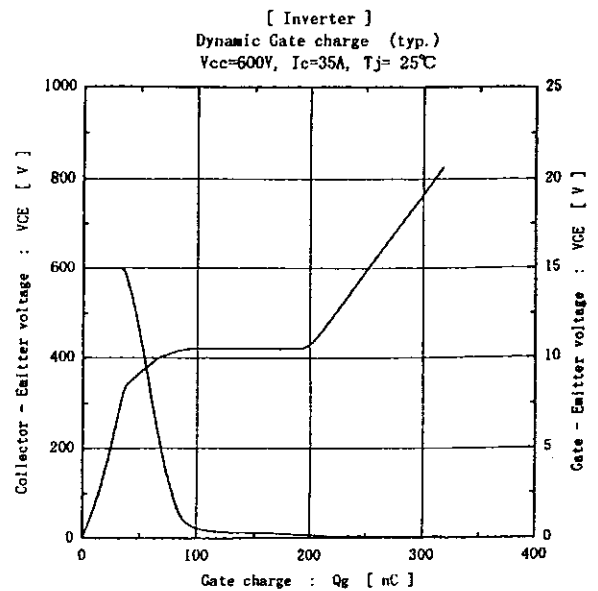
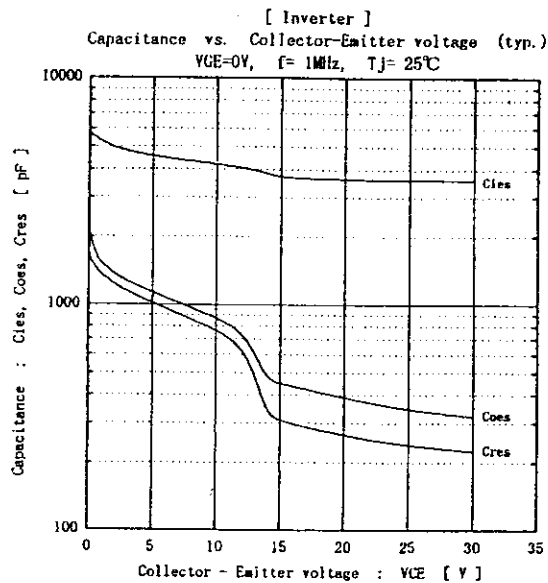
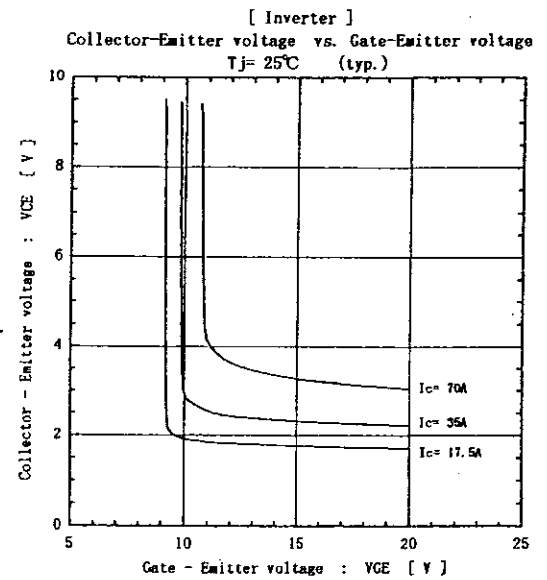
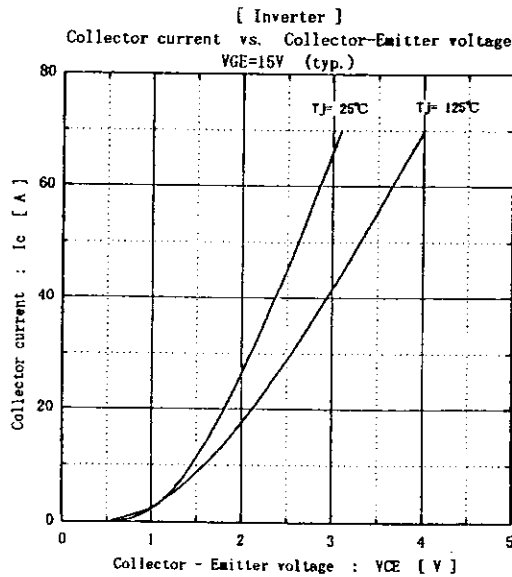
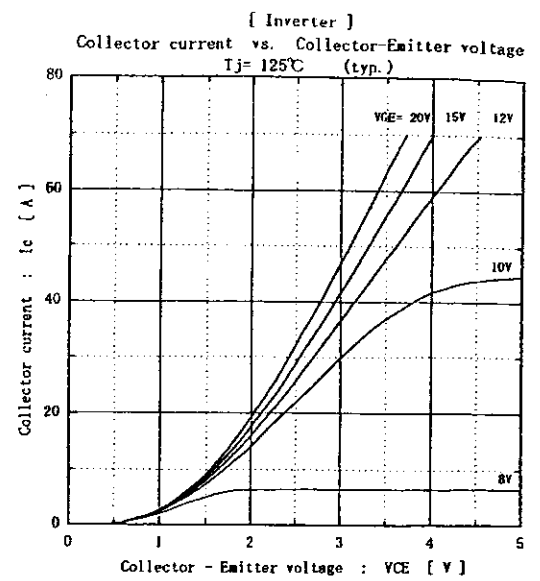
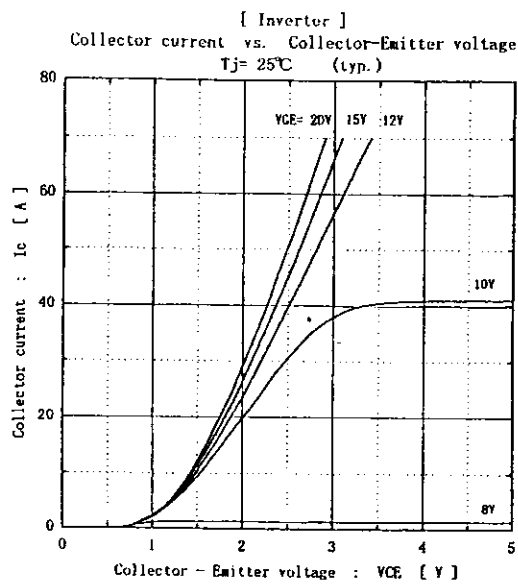
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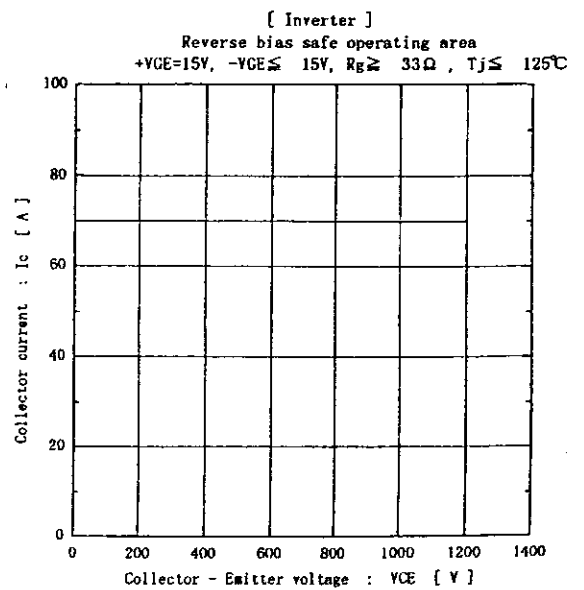
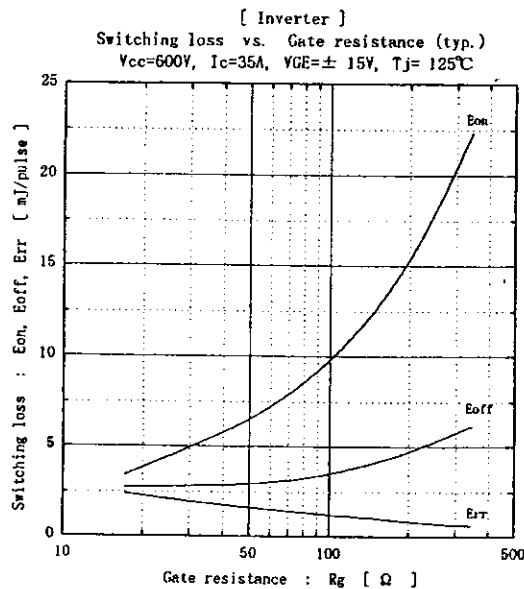
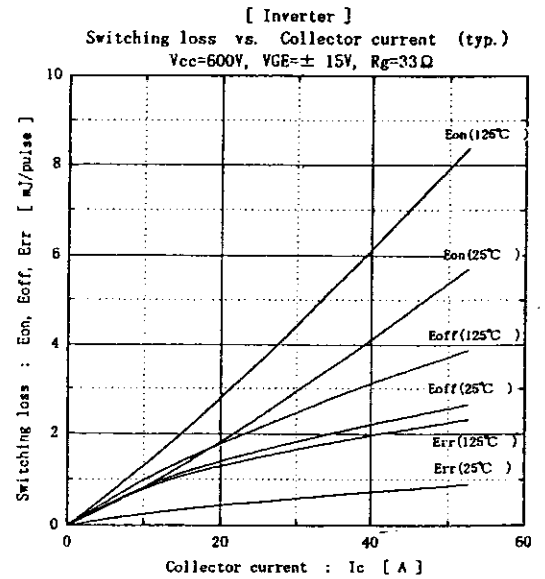
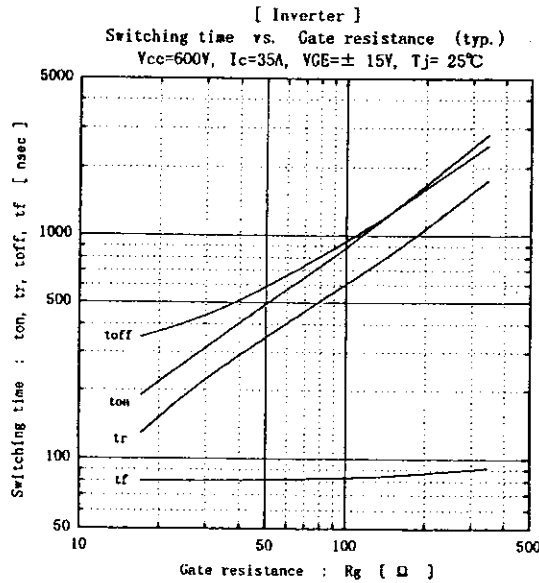
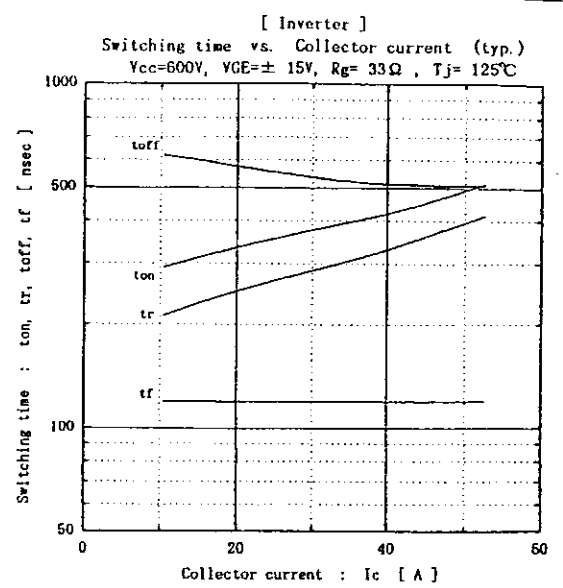
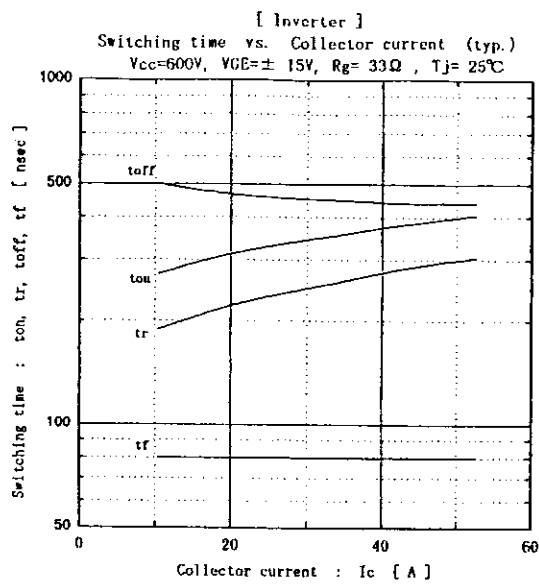
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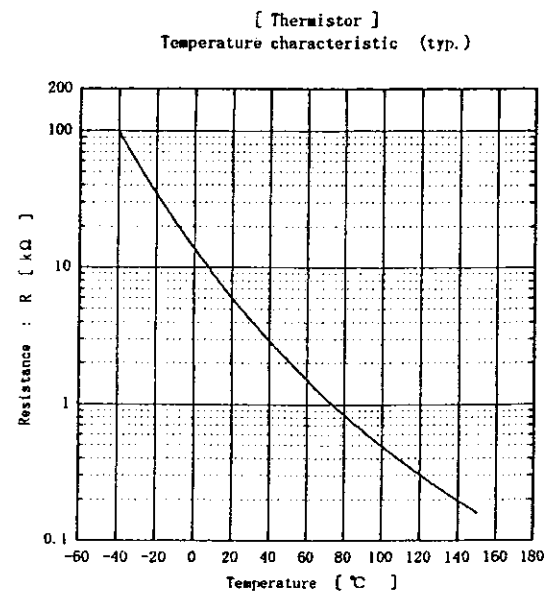
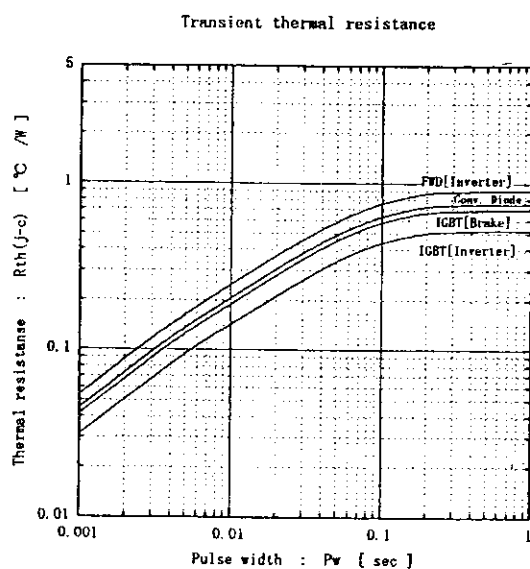
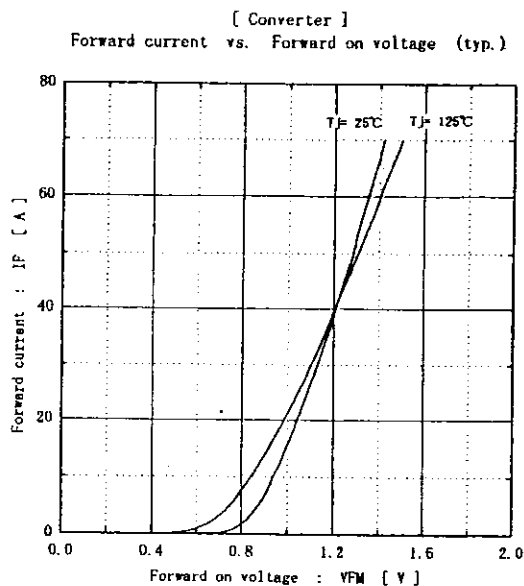
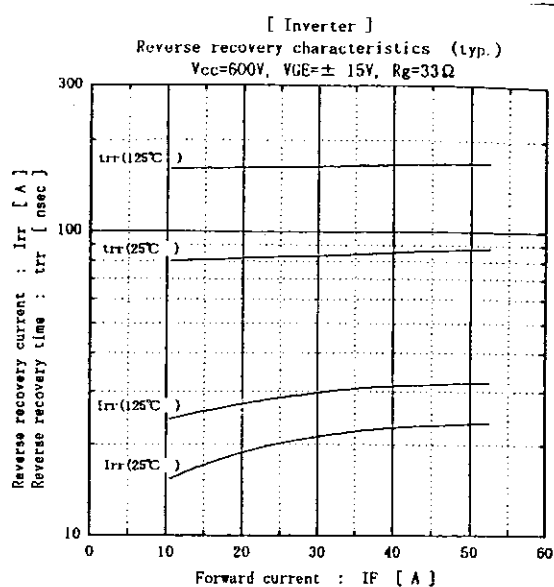
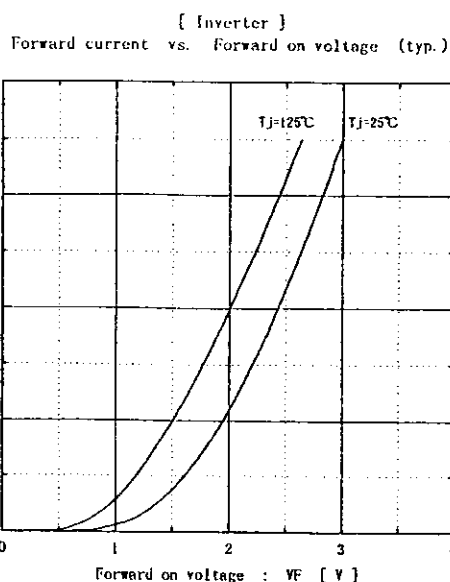
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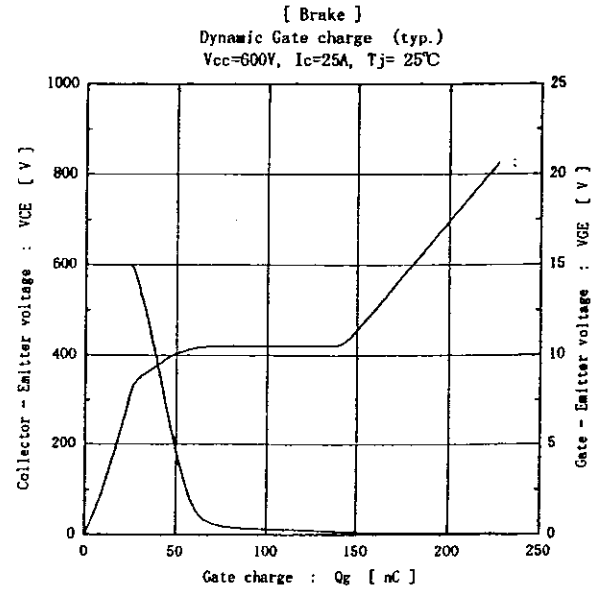
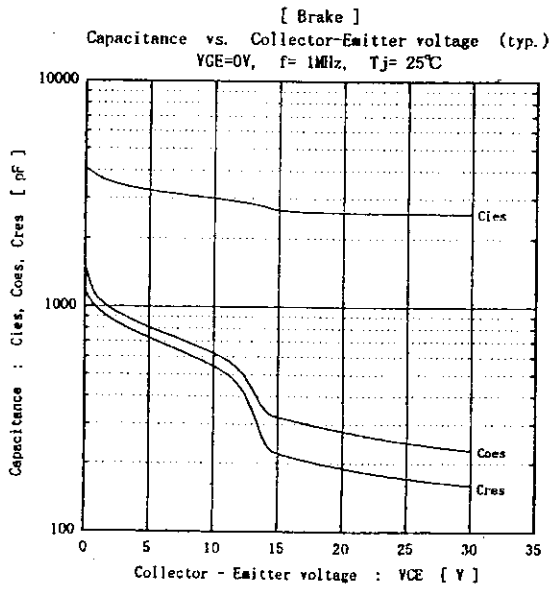
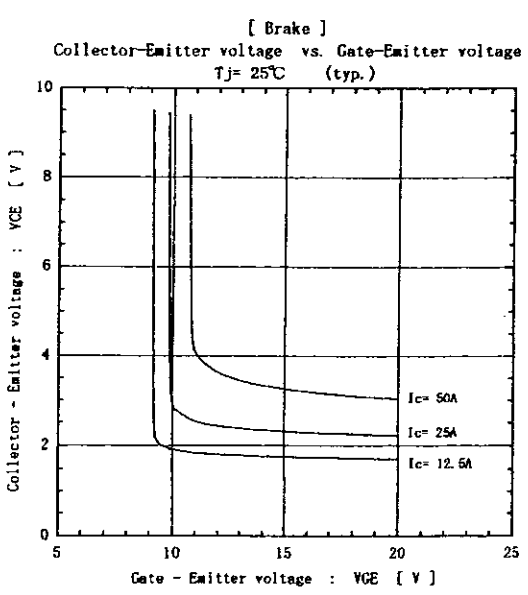
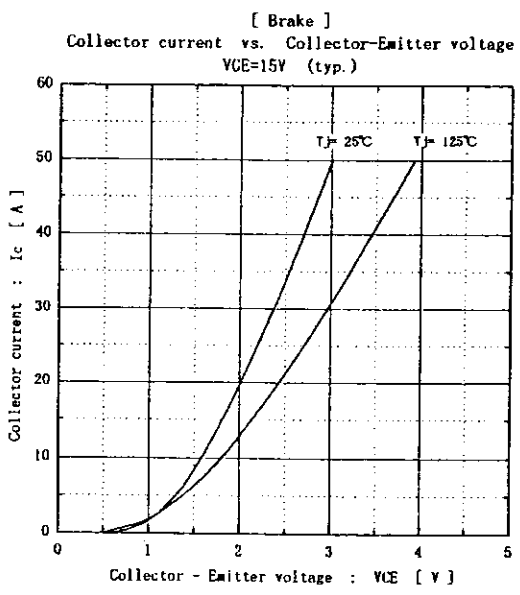
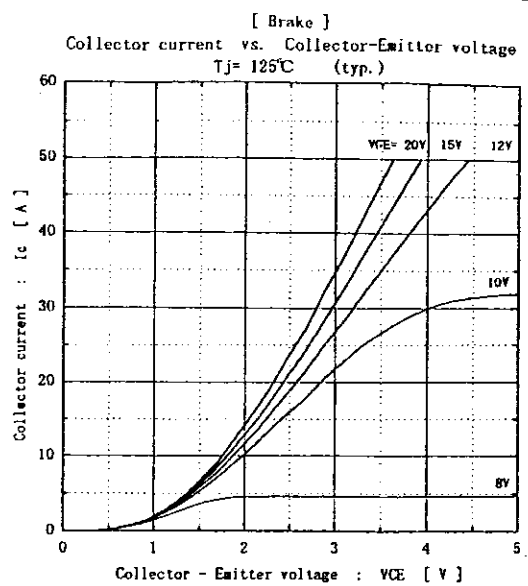
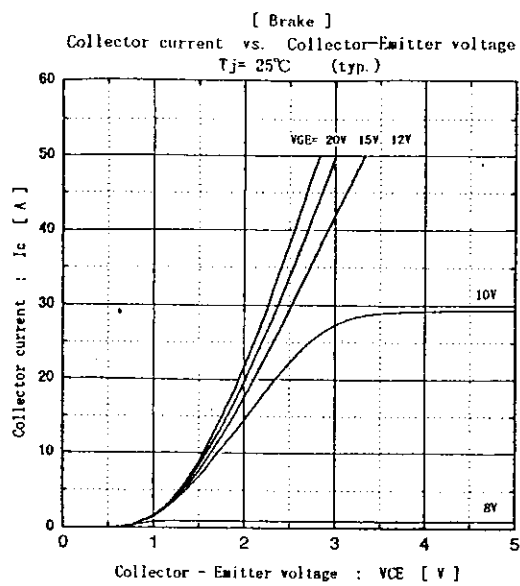
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