

SPECIFICATION

Device Name : Power Integrated Module

Type Name : 7 M B R 7 5 S B 0 6 0

Spec. No. : M S 6 M 0 4 1 6

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Matsumoto Factory

	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.	
DRAWN	Jan - 12 - '99	N. Arisawa		DWG. NO.	MS 6 M 0 4 1 6
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Revised Records

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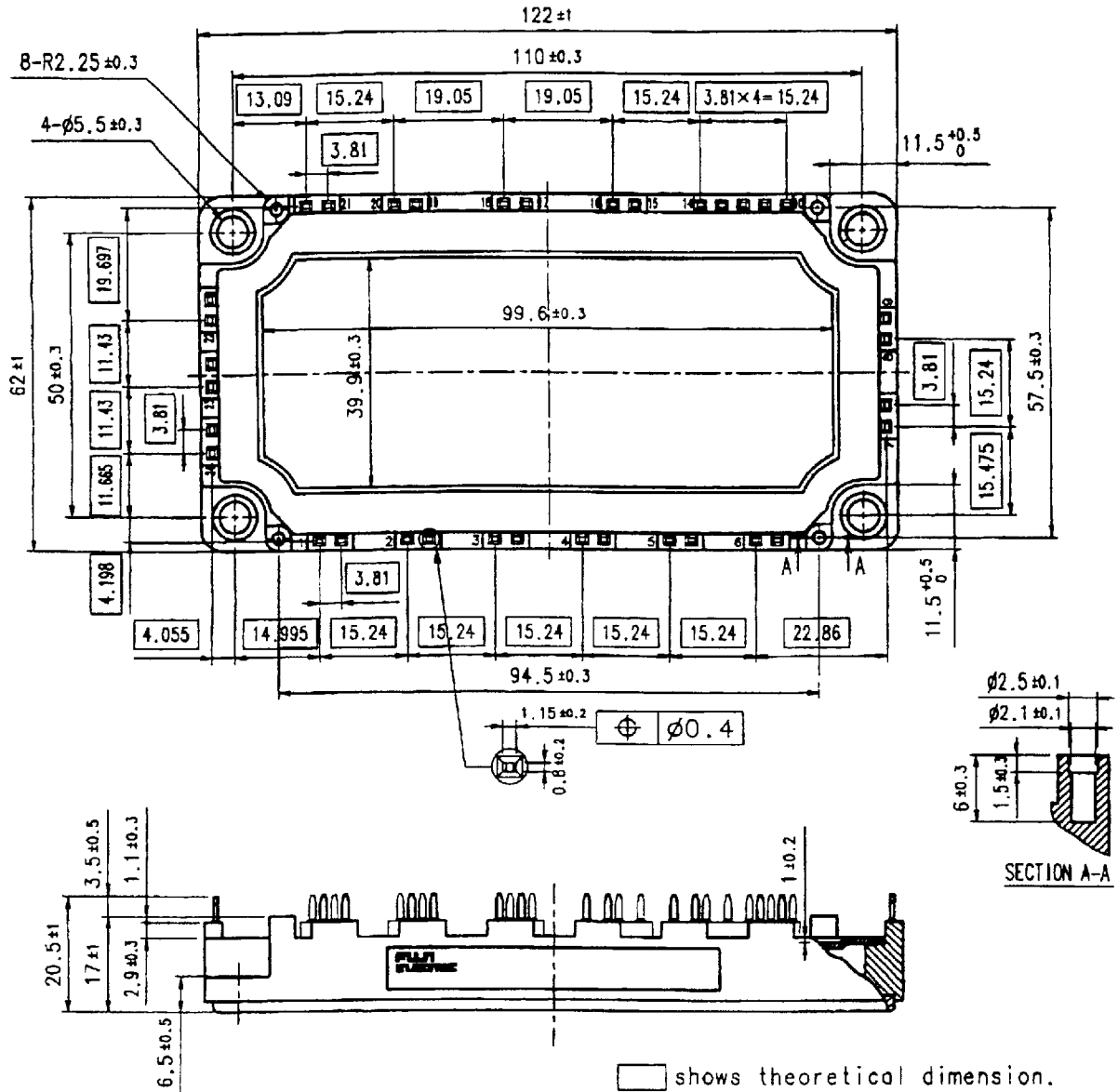
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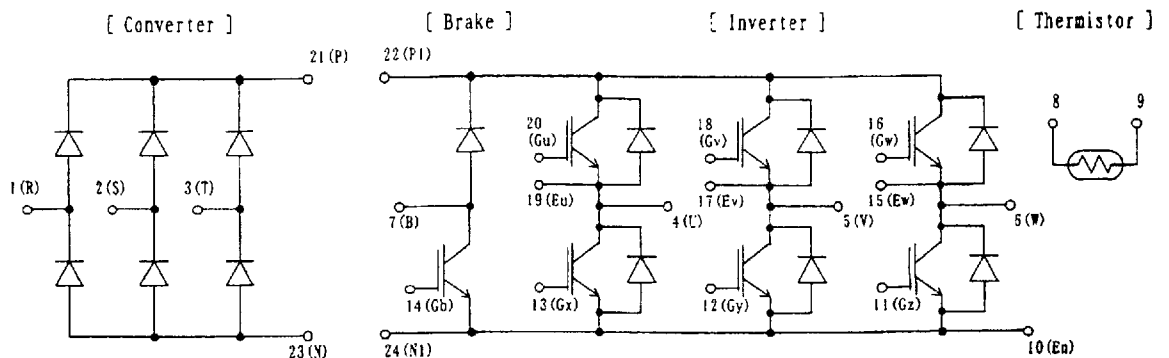
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7MBR75SB060

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	Conditions	Maximum Ratings	Units
Inverter	Collector-Emitter voltage	VCES		600	V
	Gate-Emitter voltage	VGES		±20	V
	Collector current	Ic	Continuous	75	A
		Icp	1ms	150	A
		-Ic		75	A
	Collector Power Dissipation	Pc	1 device	300	W
Brake	Collector-Emitter voltage	VCES		600	V
	Gate-Emitter voltage	VGES		±20	V
	Collector current	Ic	Continuous	50	A
		Icp	1ms	100	A
	Collector Power Dissipation	Pc	1 device	200	W
	Repetitive peak reverse Voltage(Diode)	VRRM		600	V
Converter	Repetitive peak reverse Voltage	VRRM		800	V
	Average Output Current	Io	50Hz/60Hz sine wave	75	A
	Surge Current (Non-Repetitive)	IFSM	Tj=150°C, 10ms	525	A
	I ² t (Non-Repetitive)	I ² t	half sine wave	1378	A ² s
Junction temperature		Tj		150	°C
Storage temperature		Tstg		-40~ +125	°C
Isolation voltage	between terminal and copper base ^{(*)1}	Viso	AC : 1min.	2500	V
	between thermistor and others ^{(*)2}			2500	V
Mounting Screw Torque ^{(*)3}				3.5	N·m

(*)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 N·m (M5)

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

	Items	Symbols	Conditions	Characteristics			Units
				min.	typ.	Max.	
Inverter	Zero gate voltage Collector current	ICES	VGE = 0 V, VCE = 600 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	7.8	8.5	V
	Collector-Emitter saturation voltage	VCE(sat)	VGE = 15 V, chip		1.8		V
			Ic = 75 A, terminal		2.1	2.55	
	Input capacitance	Cies	VGE = 0 V, VCE = 10 V f = 1 MHz		7500		pF
	Turn-on time	ton	Vcc = 300 V		0.45	1.2	μs
		tr	Ic = 75 A		0.25	0.6	
		tr(tl)	VGE = ±15 V		0.08		
	Turn-off time	toff	RG = 33 Ω		0.40	1.0	μs
		tf			0.05	0.35	
Brake	Forward on voltage	VF	IF = 75 A, chip		1.7		V
			terminal		2.0	2.7	
	Reverse recovery time	trr	IF = 75 A			300	ns
	Zero gate voltage Collector current	ICES	VGE = 0 V, VCE = 600 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, chip		1.8		V
			Ic = 50 A, terminal		2.05	2.5	
	Turn-on time	ton	Vcc = 300 V		0.45	1.2	μs
		tr	Ic = 50 A		0.25	0.6	
	Turn-off time	toff	VGE = ±15 V		0.40	1.0	
		tf	RG = 51 Ω		0.05	0.35	
Converter	Reverse current	IRRM	VR = 600 V			1.0	mA
	Forward on voltage	VFM	IF = 75 A, chip		1.1		V
			terminal		1.2	1.5	
	Reverse current	IRRM	VR = 800 V			1.0	mA
Thermistor	Resistance	R	T = 25°C		5000		Ω
			T = 100°C	465	495	520	
	B value	B	T = 25/50°C	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			0.42	°C/W
		Inverter FWD			0.90	
		Brake IGBT			0.63	
		Converter Diode			2.00	
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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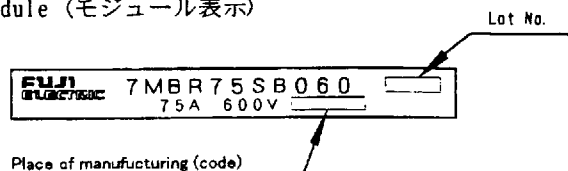
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6. Indication on module (モジュール表示)



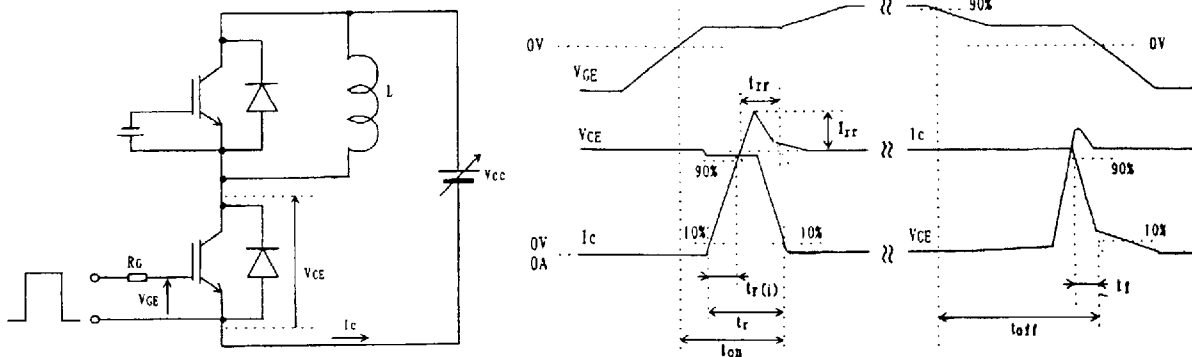
7. Applicable category (適用範囲)

This specification is applied to Power Integrated Module named 7MBR75SB060.
本納入仕様書は パワー集積モジュール 7MBR75SB060 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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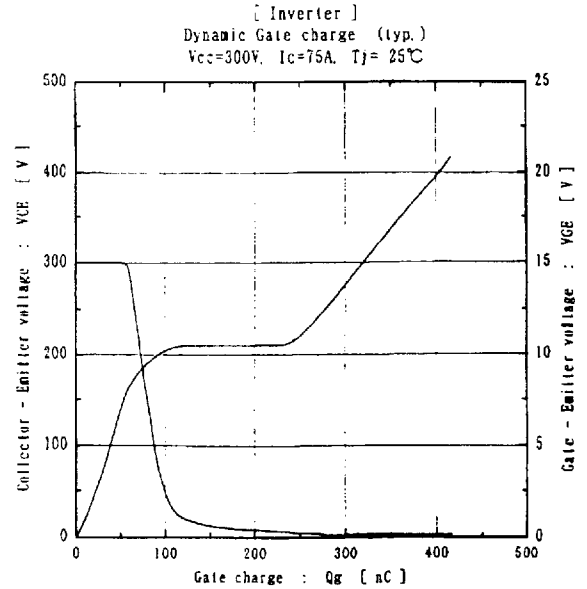
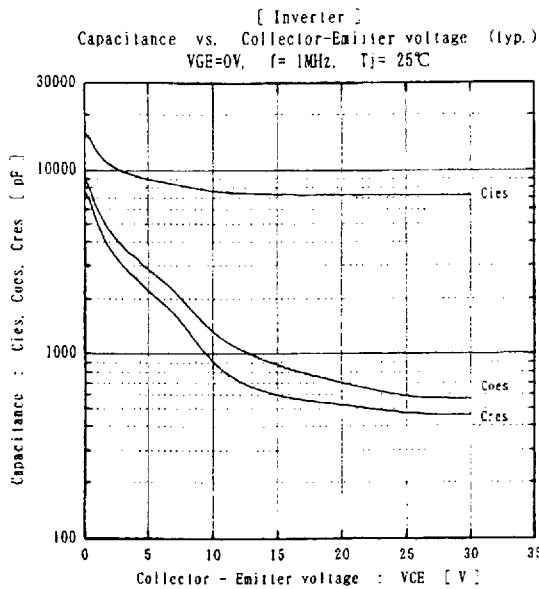
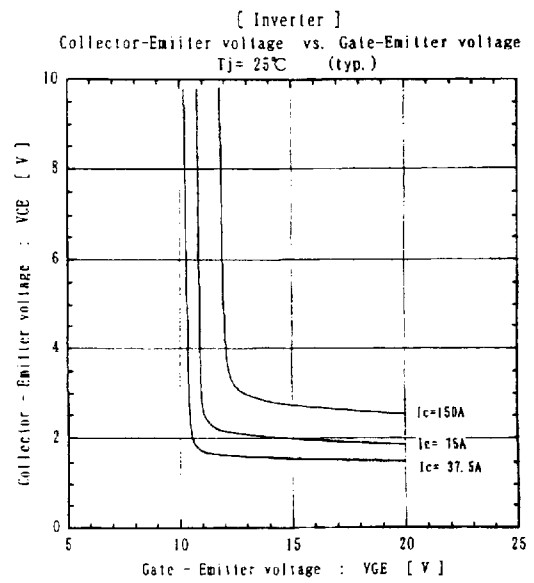
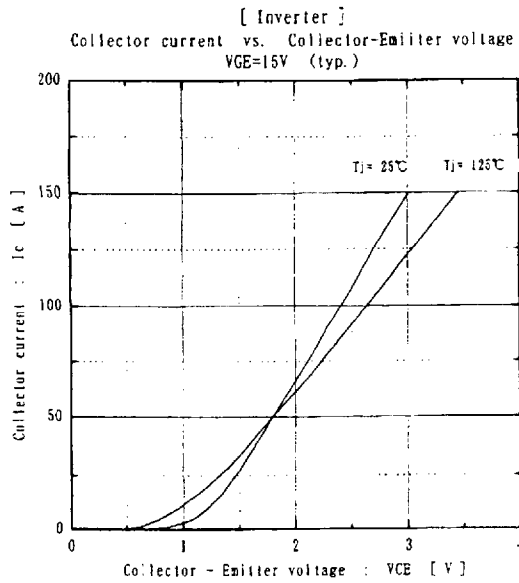
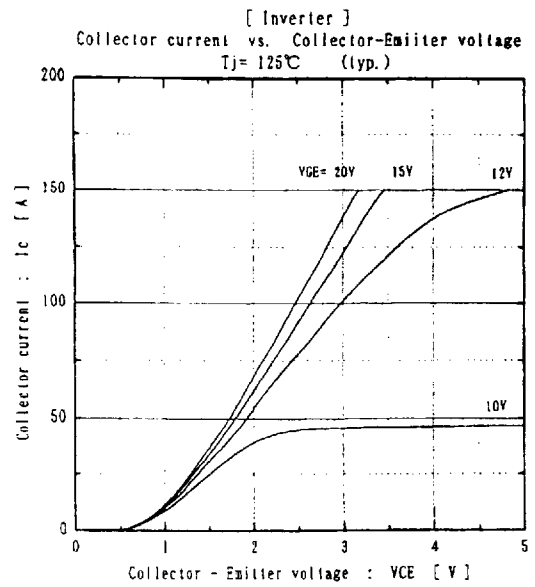
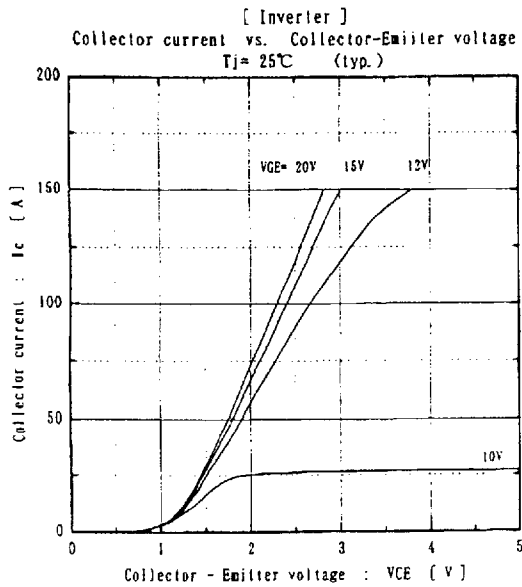
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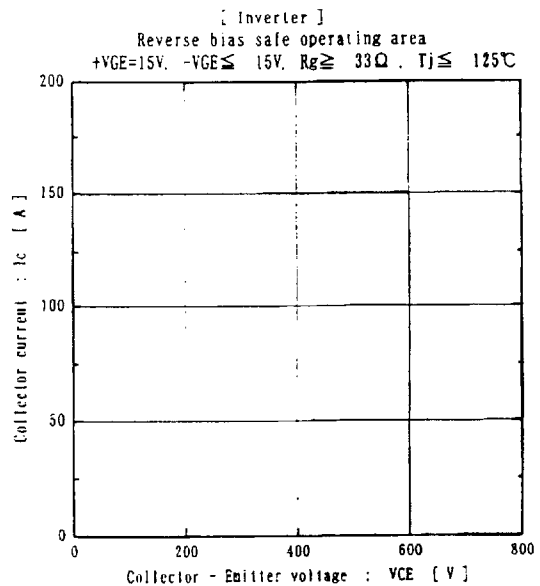
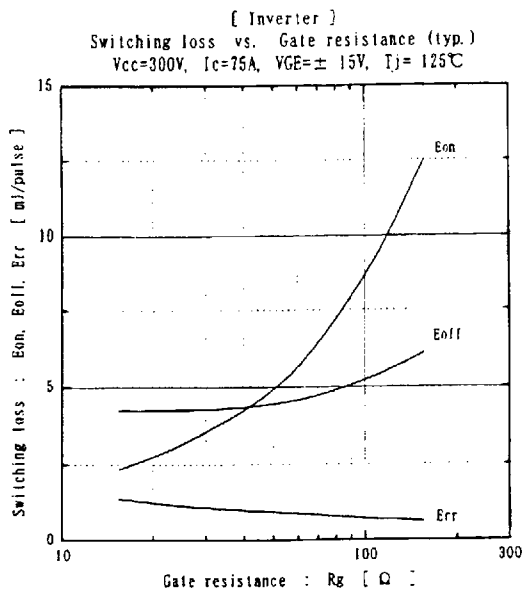
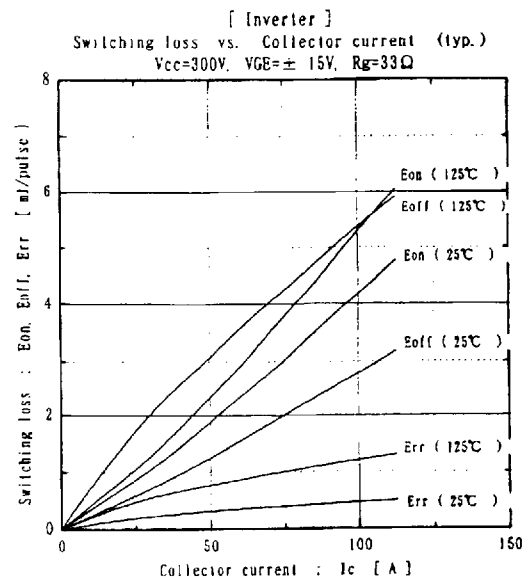
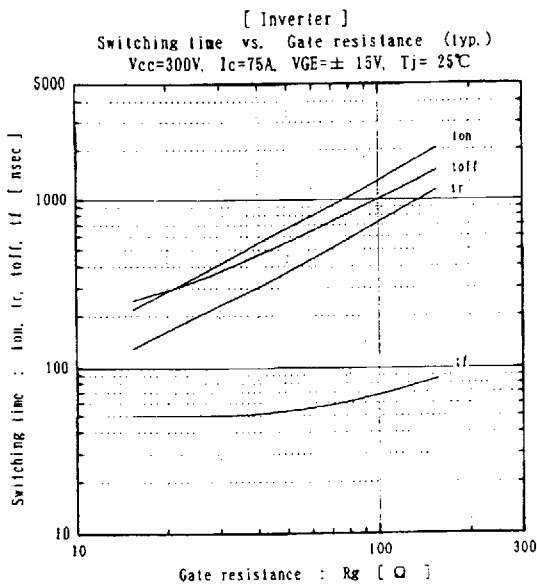
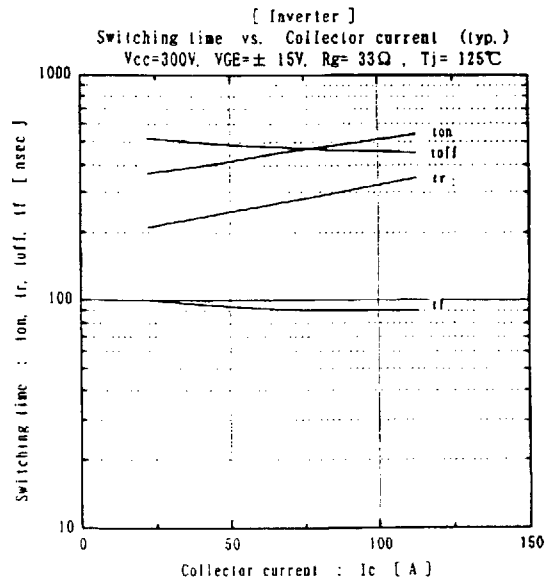
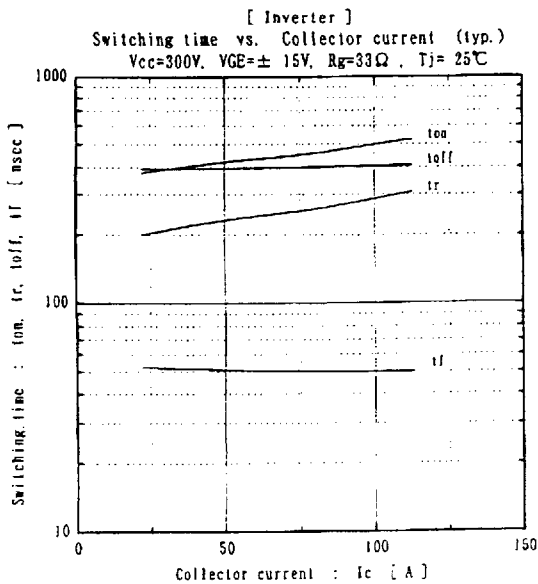
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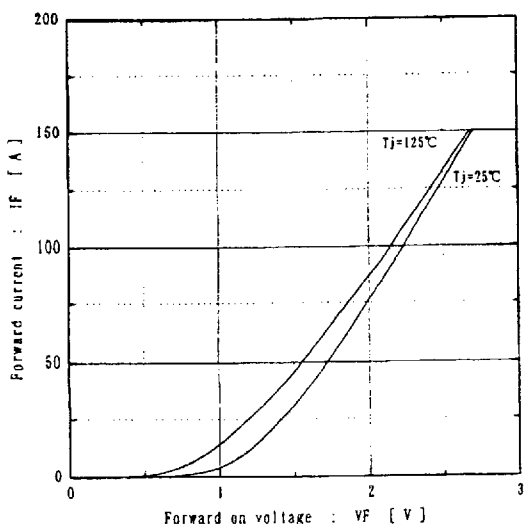
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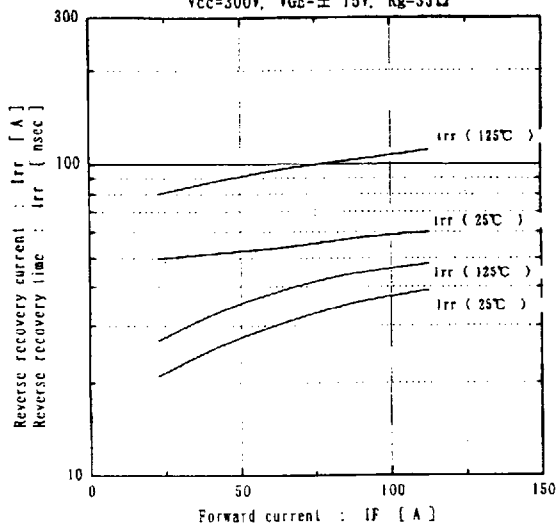


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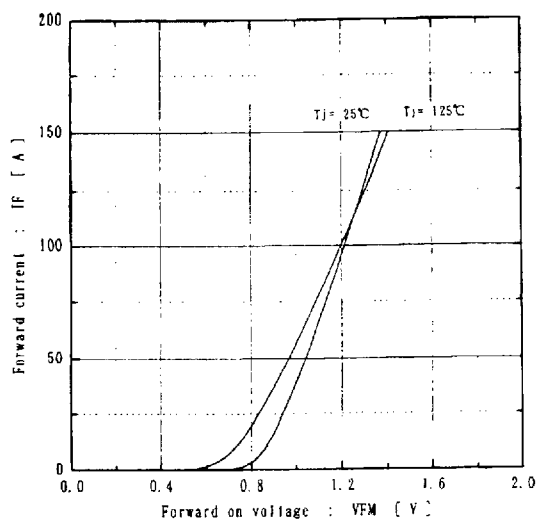
[Inverter]
Forward current vs. Forward on voltage (typ.)



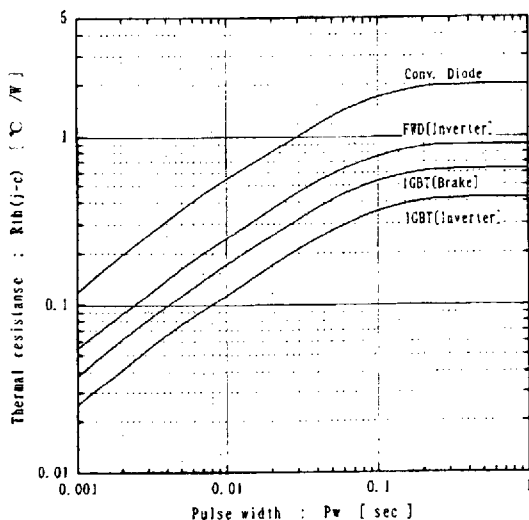
[Inverter]
Reverse recovery characteristics (typ.)
 $V_{CC}=300V$, $V_{GE}=\pm 15V$, $R_g=33\Omega$



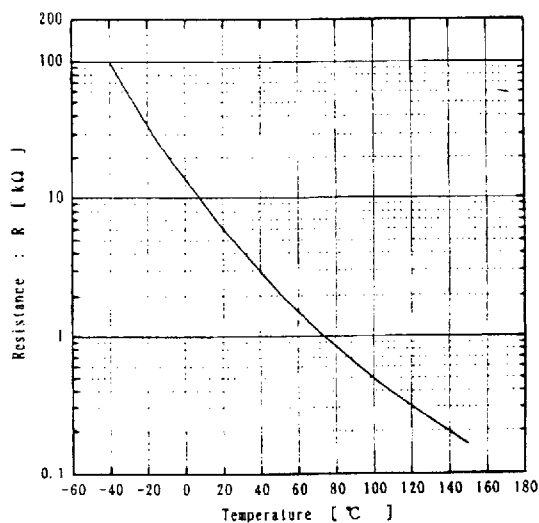
[Converter]
Forward current vs. Forward on voltage (typ.)



Transient thermal resistance



[Thermistor]
Temperature characteristic (typ.)



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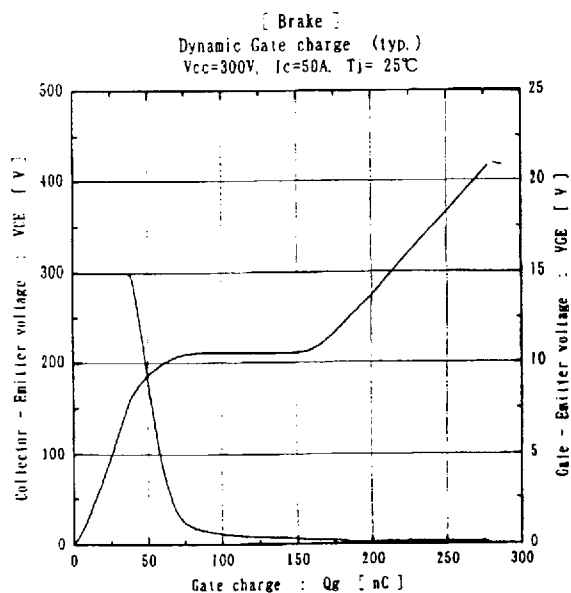
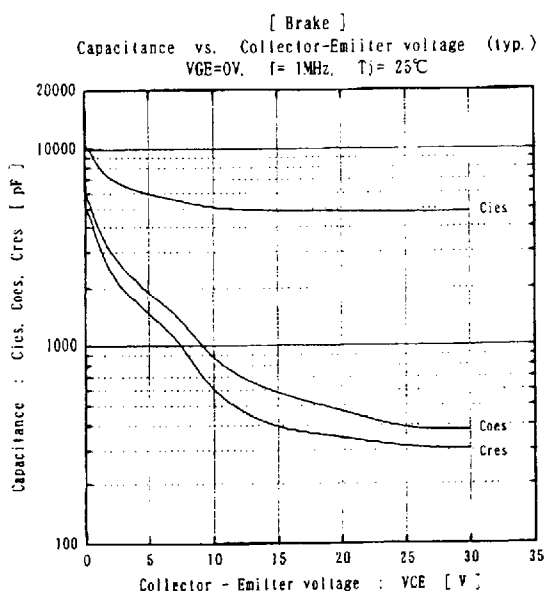
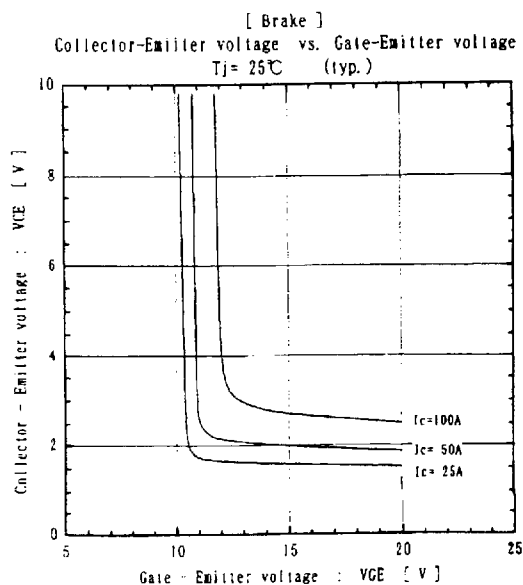
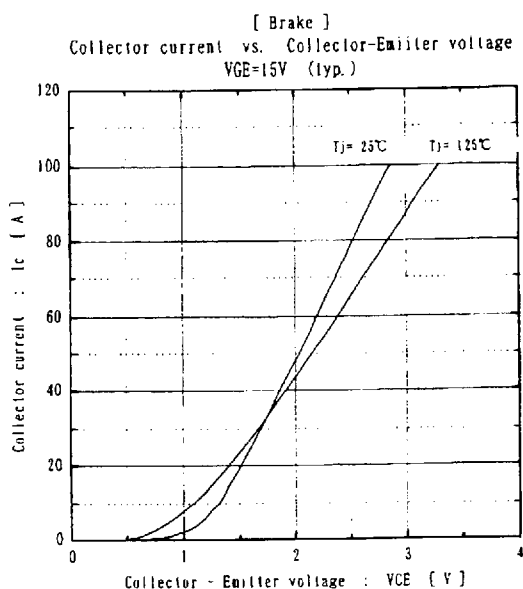
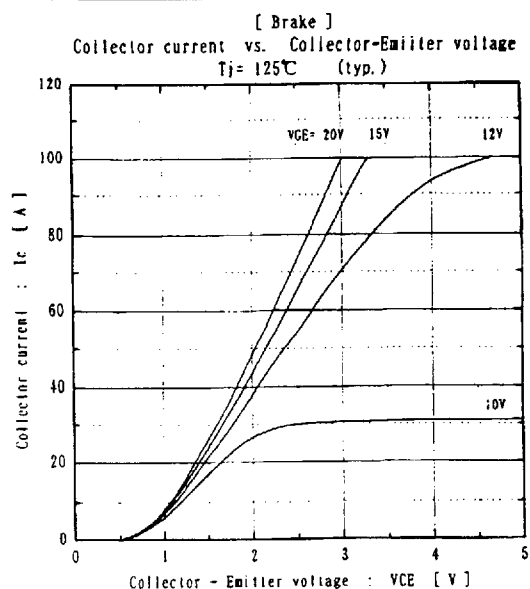
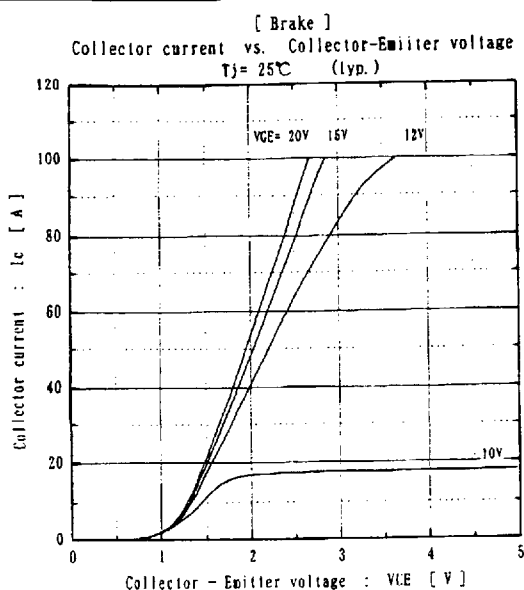
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