

SPECIFICATION

Device Name : IGBT Module

Type Name : 7MBR15SA120D-01

Spec. No. : MS6M 0546

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	T. Kikuyashi		DWG. NO.	MS6M 0546	1 / 10
CHECKED	June - 2 - 00	D. Miyata	T. Miyata			



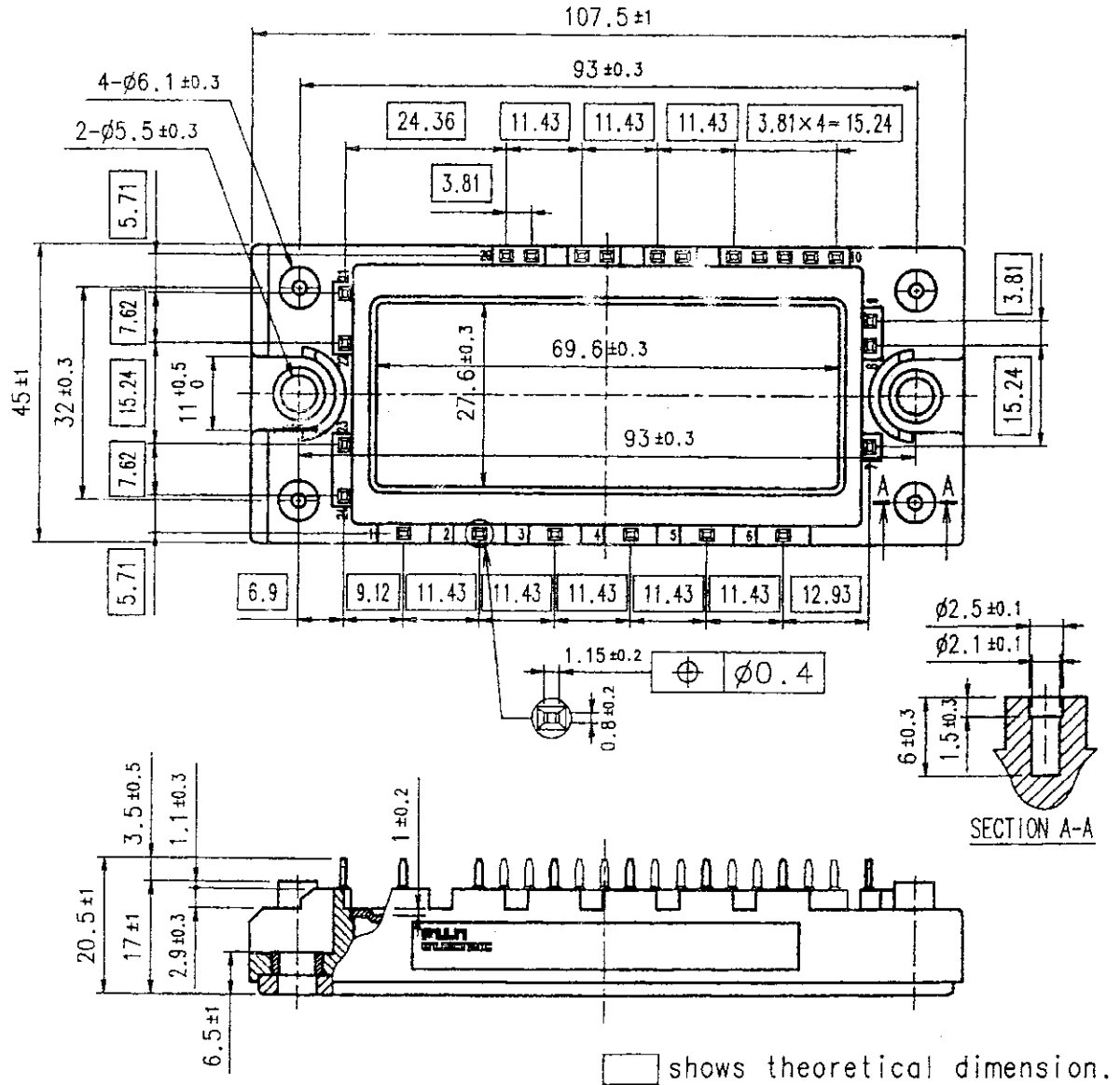
Revised Records

Date	Classification	Ind.	Content	Applied date	Drawn	Checked	Approved
	enactment	—	—	Issued date	—	S. Mytha	T. Miyasaka

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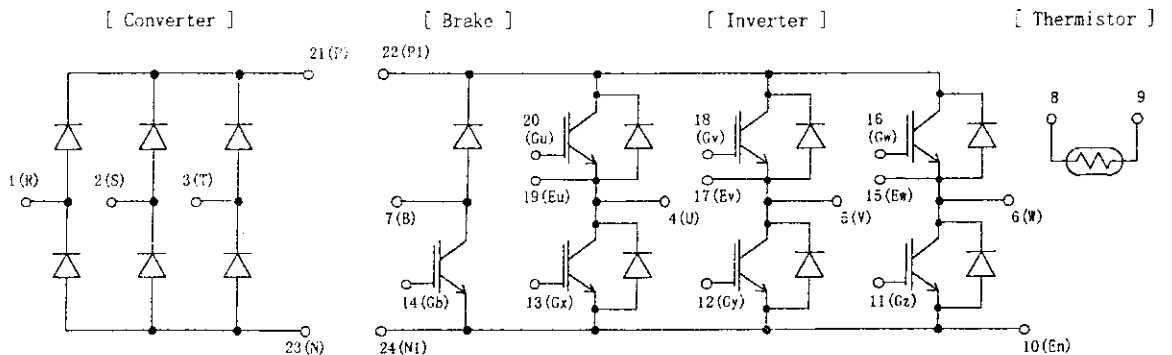
7MBR15SA120D-01

1. Outline Drawing (Unit : mm)



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2. Equivalent circuit



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	25	A
				Tc=80C	15	
		Icp	1ms	Tc=25C	50	A
				Tc=80C	30	
	-Ic			15	A	
Collector Power Dissipation	Pc	1 device	110	W		
Brake	Collector-Emitter voltage	VCES		1200	V	
	Gate-Emitter voltage	VGES		+20	V	
	Collector current	Ic	Continuous	Tc=25C	25	A
				Tc=80C	15	
		Icp	1ms	Tc=25C	50	A
				Tc=80C	30	
	Collector Power Dissipation	Pc	1 device	110	W	
Repetitive peak reverse Voltage(Diode)	VRRM		1200	V		
Repetitive peak reverse Voltage	VRRM		1600	V		
Converter	Average Output Current	Io	50Hz/60Hz sine wave	25	A	
	Surge Current (Non-Repetitive)	IFSM	Tj=150C, 10ms	260	A	
	I ² t (Non-Repetitive)	I ² t	half sine wave		338	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	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 Tj= 25C 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 = 15 mA	5.5	7.2	8.5	V
	Collector-Emitter saturation voltage	VCE(sat)	VGE 15 V, chip Ic = 15 A terminal		2.1	2.6	V
	Input capacitance	Cies	VGE 0 V, VCE 10 V f = 1 MHz		1800		pF
	Turn-on time	ton	Vcc= 600 V		0.35	1.2	us
		tr	Ic = 15 A		0.25	0.6	
		tr(0)	VGE +-15 V		0.1		
	Turn-off time	toff	RG = 82 ohm		0.45	1.0	us
		tf			0.08	0.3	
Forward on voltage	VF	IF = 15 A chip terminal		2.3	3.2	V	
Reverse recovery time	trr	IF = 15 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, chip Ic = 15 A terminal		2.1	2.6	V
	Turn-on time	ton	Vcc= 600 V		0.35	1.2	us
		tr	Ic = 15 A		0.25	0.6	
	Turn-off time	toff	VGE +-15 V		0.45	1.0	us
		tf	RG = 82 ohm		0.08	0.3	
Reverse current	IRRM	VR = 1200 V			1.0	mA	
Converter	Forward on voltage	VFM	IF = 15 A chip terminal		0.9	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

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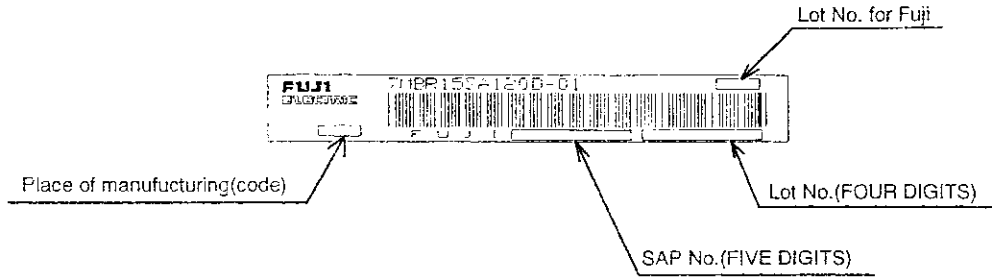
5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	Max.	
Thermal resistance (1 device)	Rth(j-c)	Inverter IGBT			1.14	C/W
		Inverter FWD			1.85	
		Brake IGBT			1.14	
		Converter Diode			1.30	
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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6. Indication on module



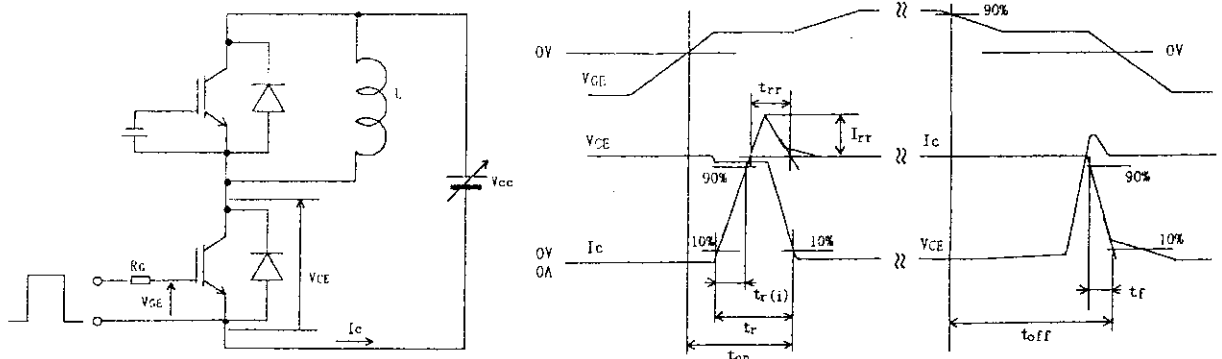
7. Applicable category (適用範囲)

This specification is applied to Power Integrated Module named 7MBR15SA120D-01 .

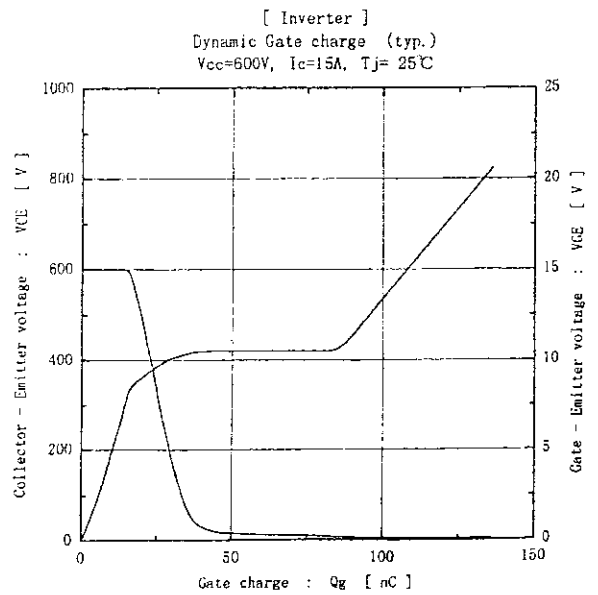
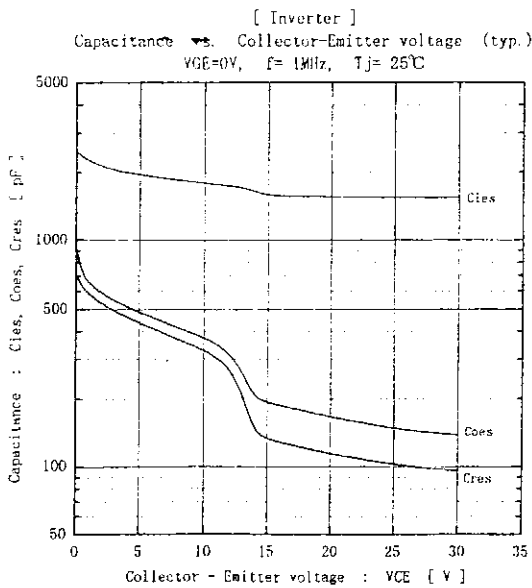
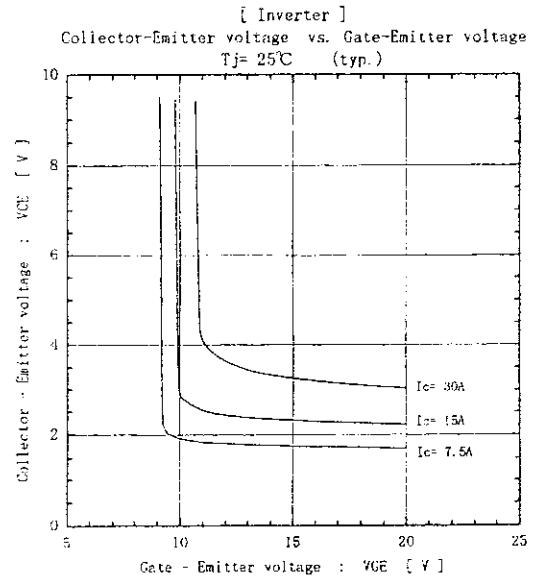
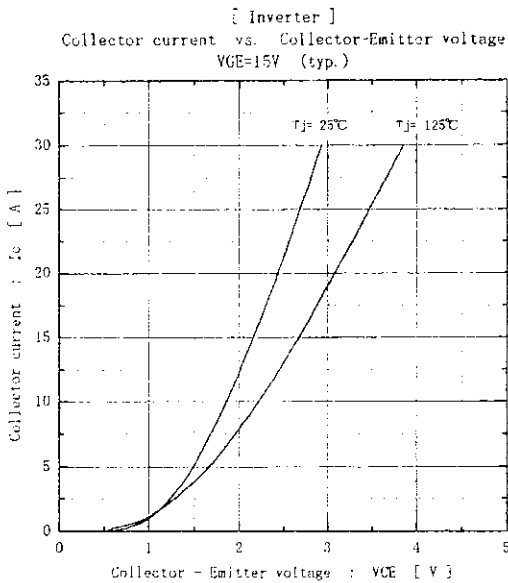
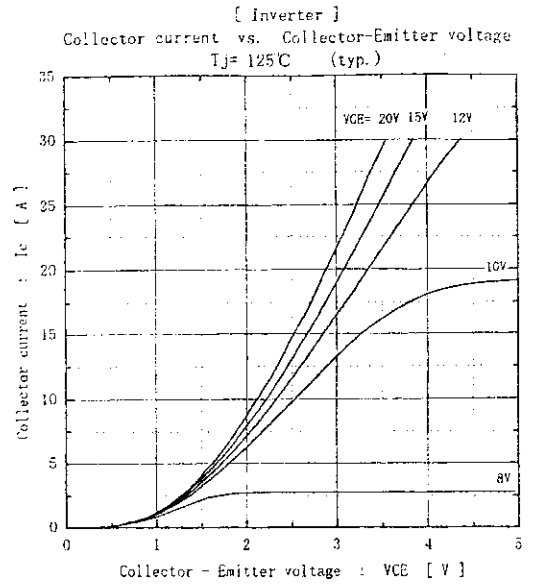
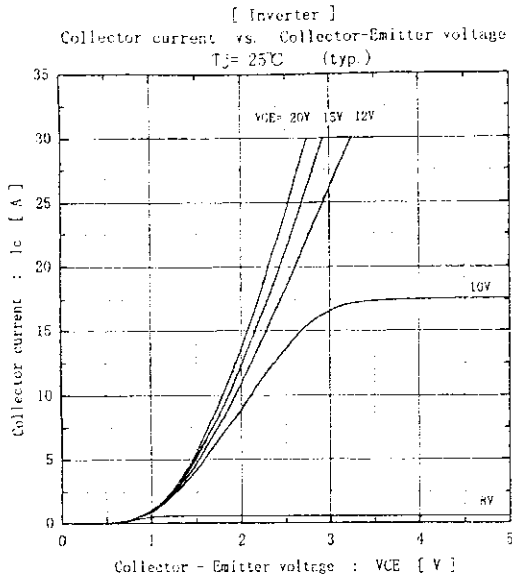
8. Storage and transportation notes

- 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.

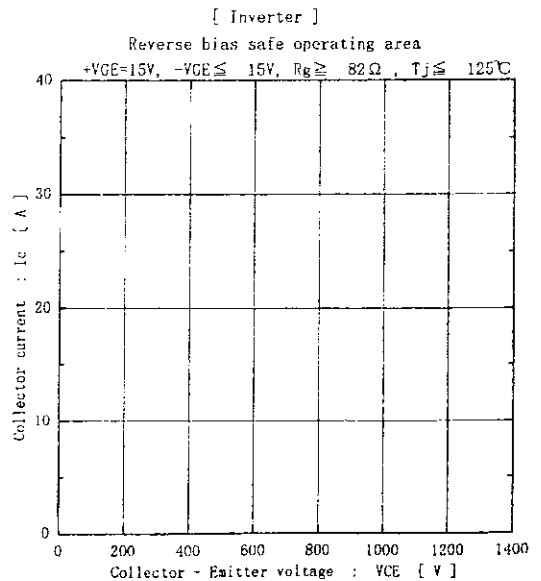
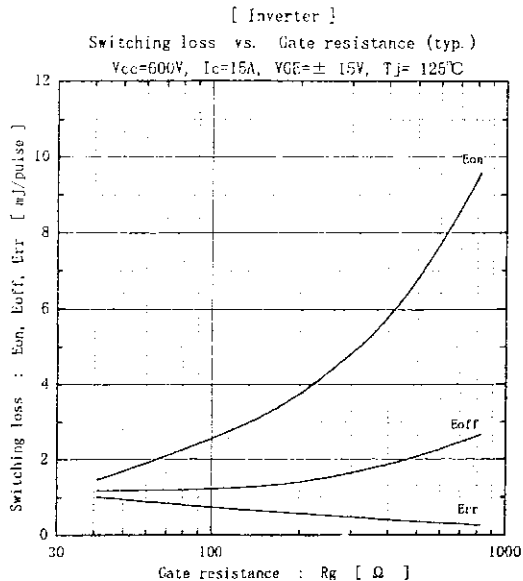
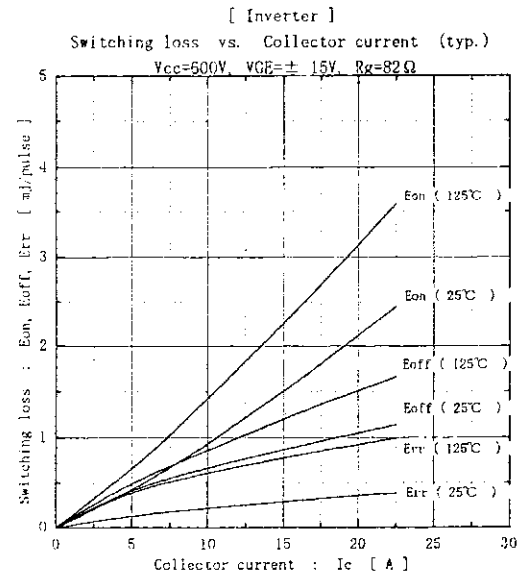
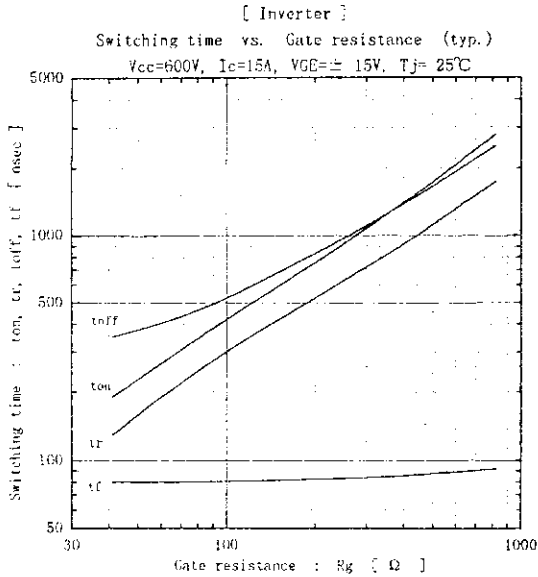
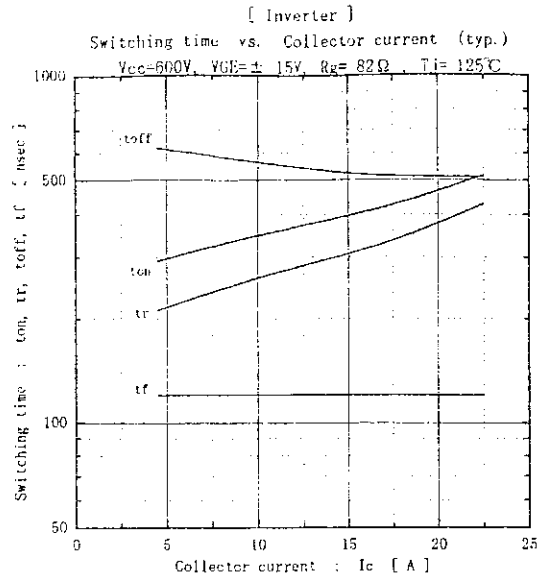
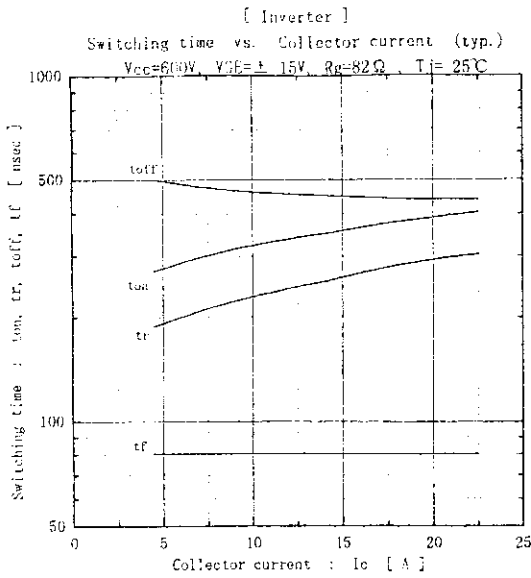
9. Definitions of switching time



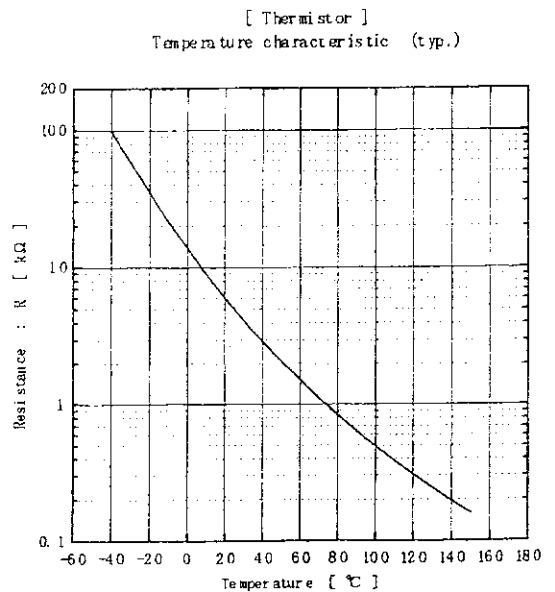
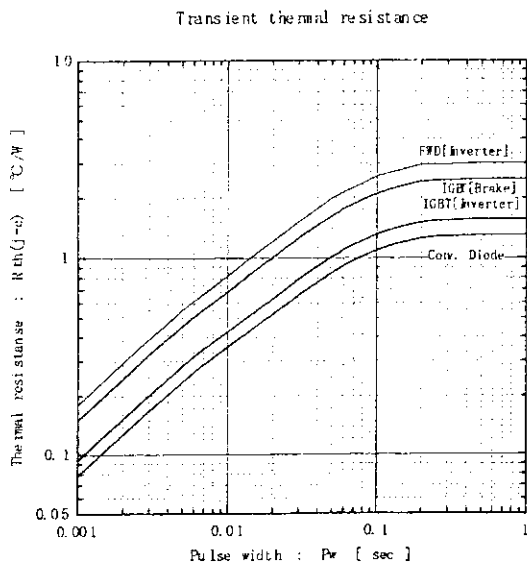
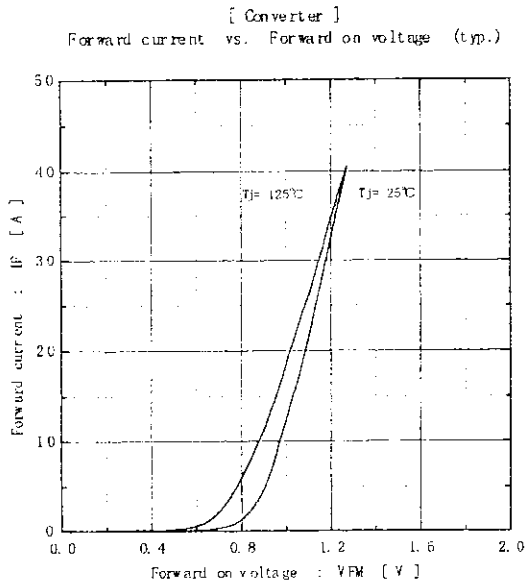
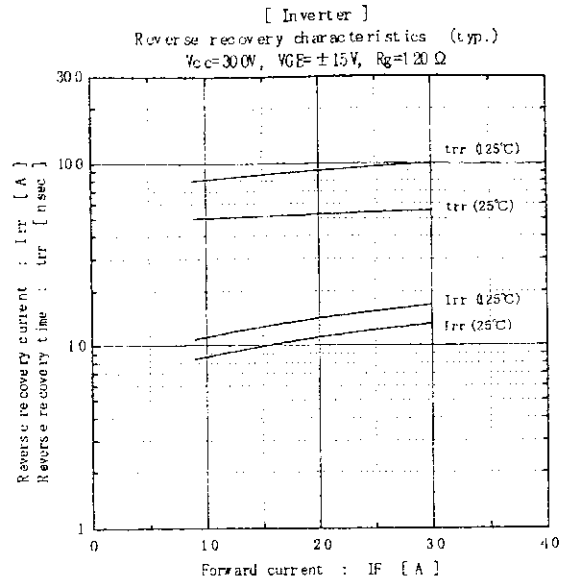
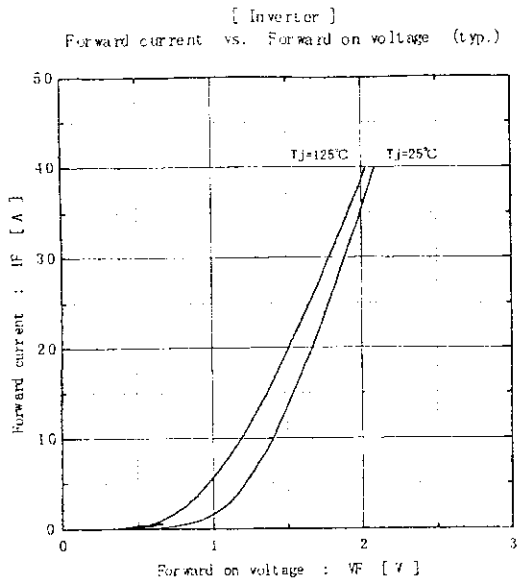
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