SPECIFICATION

Device Name : IGBT module

Type Name : 7MBR30NF060

Spec. No. : MS6M0255

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	Oct.-3-'95	S.Miyashita	S.Kobayashi
CHECKED	Oct.-3-'95	T.HOSEN	

Fuji Electric Co.,Ltd.

DWG.NO. MS6M0255 1/10

Revised Records

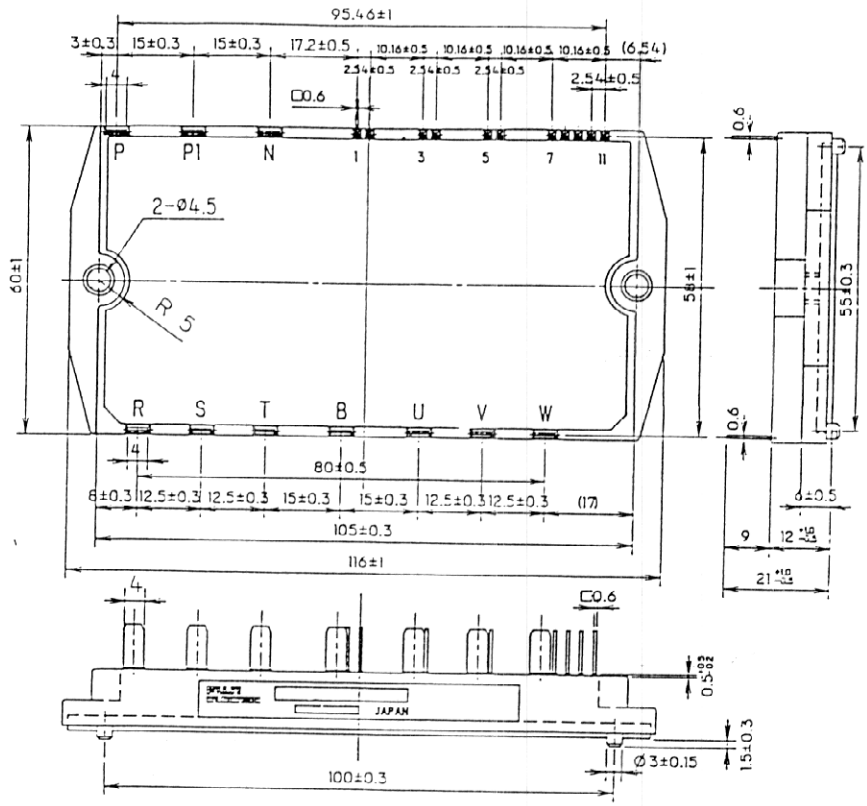
Date	Classi-fication	Ind.	Content	Applied date	Drawn	Checked	Approved
Oct.-3-'95	enactment	—	———	Issued date	—	T.HOSEN	S.Kobayashi

7MBR30NF060

1. Outline Drawing

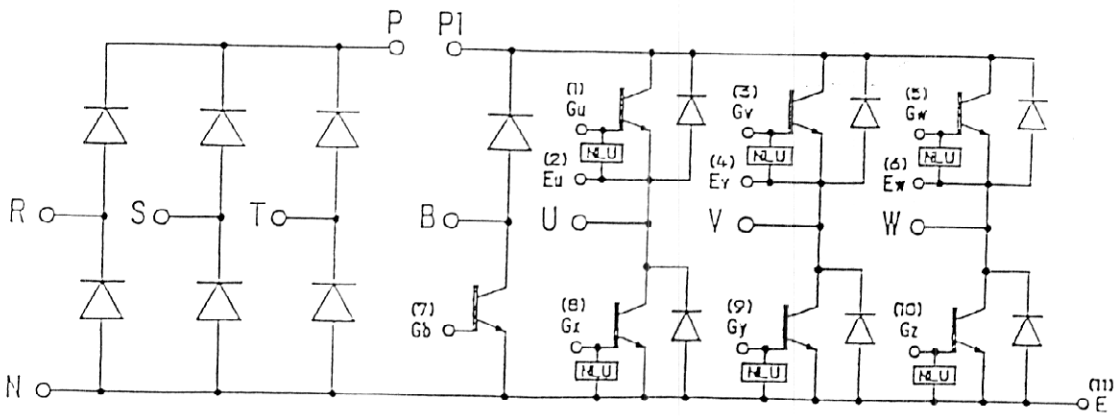
Unit : mm

*Isolation Voltage (Terminal to Case) : AC 2500V 1 minute



2. Equivalent Circuit of Module

[Converter] [Brake] [Inverter]



* NLU (Over current Limiting circuit)

3. Absolute Maximum Ratings (Tc=25℃ unless without specified)

	Items	Symbols	Conditions	Maximum Ratings	Units
Inverter	Collector-Emitter Voltage	V_{CES}		600	V
	Gate-Emitter Voltage	V_{GES}		±20	V
	Collector Current	I_C	Continuous	30	A
		I_{CP}	1ms	60	A
		$-I_C$		30	A
	Collector Power Disspation	P_C	1 device	120	W
Brake	Collector-Emitter Voltage	V_{CES}		600	V
	Gate-Emitter Voltage	V_{GES}		±20	V
	Collector Current	I_C	Continuous	30	A
		I_{CP}	1ms	60	A
	Collector power Disspation	Pc	1 device	120	W
	Repetitive peak Reverse Voltage	V_{RRM}		600	V
	Average Forward Current	$I_{F(AV)}$		1	A
	Surge Current	I_{FSM}	10ms	50	A
Converter	Repetitive Peak Reverse Voltage	V_{RRM}		800	V
	Non-Repetitive Peak Reverse Voltage	V_{RSM}		900	V
	Average Output Current	I_O	50Hz/60Hz sine wave	50	A
	Surge Current (Non-Repetitive)	I_{FSM}	Tj=150℃, 10ms	350	A
	I^2t (Non-Repetitive)		Tj=150℃, 10ms	648	A^2s
Operating Junction Temperature		Tj		+ 150	℃
Storage Temperature		Tstg		-40 ～ +125	℃
Isolation Voltage		Viso	AC : 1 minute	AC 2500	V
Mounting Screw Torque (*1)				1.7	N・m

Note : (*1) Recommendable Value : 1.3 ～ 1.7 N・m (M4)

4. Electrical Characteristics (Tj=25℃ unless without specified)

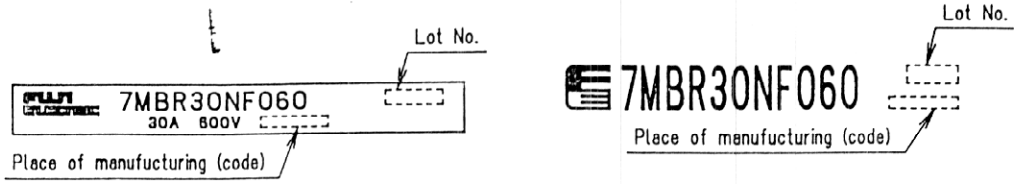
	Characteristics	Symbols	Conditions	min.	max.	Units
Inverter	Zero gate voltage collector current	I_{CES}	V_{CE} = 600V V_{GE} = 0V		1.0	mA
	Gate-emitter leakage current	I_{GES}	V_{CE}= 0V V_{GE}=±20V		20	μA
	Gate-emitter threshold voltage	$V_{GE(th)}$	V_{CE}=20V Ic =30mA	4.5	7.5	V
	Collector-emitter saturation Voltage	$V_{CE(sat)}$	V_{GE}=15V Ic =30A		2.8	V
	Collector-Emitter Voltage	$-V_{CE}$	-Ic=30A		3.0	
	Input capacitance	Cies	V_{GE}=0V V_{CE}=10V f=1MHz	1980 (typ.)		pF
	Switching Time	ton	V_{CC}= 300V Ic = 30A V_{GE}=±15V R_G = 82Ω		1.2	μs
		tr			0.6	
		toff			1.0	
		tf			0.35	
	Reverse Recovery Time of FRD	trr	I_F = 30A		300	ns
Brake	Zero gate voltage collector current	I_{CES}	V_{CES}= 600V V_{GE} = 0V		1.0	mA
	Gate-emitter leakage current	I_{GES}	V_{CE}= 0V V_{GE}=±20V		100	nA
	Collector-emitter Saturation Voltage	$V_{CE(sat)}$	Ic = 30A V_{GE}=15V		2.8	V
	Switching Time	ton	V_{CC}= 300V Ic = 30A V_{GE}=±15V R_G = 82Ω		0.8	μs
		tr			0.6	
		toff			1.0	
		tf			0.35	
	Reverse Current	I_{RRM}	V_R = 600V		1	mA
	Reverse Recovery Time	trr			600	ns

Characteristics		Symbols	Conditions	min.	max.	Units
Converter	Forward Voltage	V_{FM}	I_F = 50A		1.55	V
	Reverse Current	I_{RRM}	V_R = 800V		1	mA

5. Thermal Characteristics

Characteristics	Symbols	Conditions	min.	max.	Units
Thermal Resistance (1 device)	Rth(j-c)	Inverter IGBT		1.04	℃/W
		Inverter FRD		2.22	
		Brake IGBT		1.04	
		Converter Diode		2.1	
Contact Thermal Resistance	Rth(c-f)	With Thermal Compound	(typ)	0.05	

6. Indication on module (モジュール表示)



7. Applicable category (適用範囲)

This specification is applied to IGBT module named 7MBR30NF060.
本納入仕様書は、IGBTモジュール7ＭＢＲ３０ＮＦ０６０に適用する。

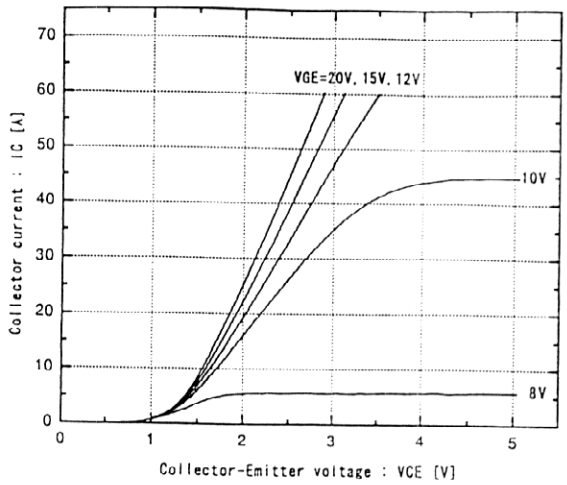
8. ＵＬ recognition (ＵＬ承認)

This product is recognized by Underwriters Laboratories Inc., the file No. is E82988.
本製品は、ファイルNo.Ｅ８２９８８にてＵＬより承認されている。

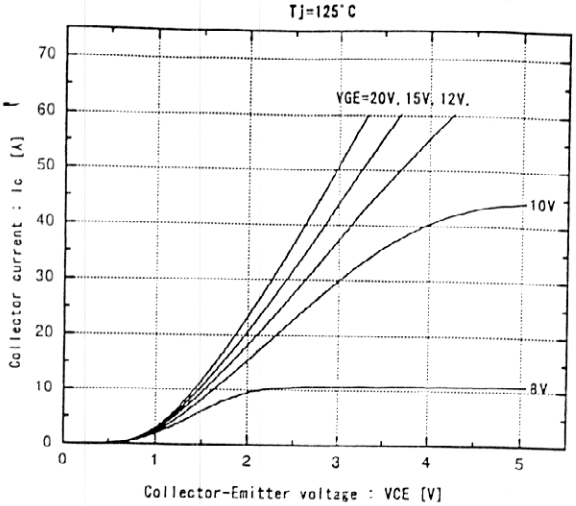
9. Storage and transportation notes (保管、運搬上の注意事項)

- The IGBT module should be stored at a standard temperature of 5 to 35℃ and humidity of 45 to 75%.
  常温保存が望ましい。(5～35℃、45～75%)
- Store modules in a place with few temperature changes in order to avoid condensation on the module surface.
  急激な温度変化の無きこと。(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。

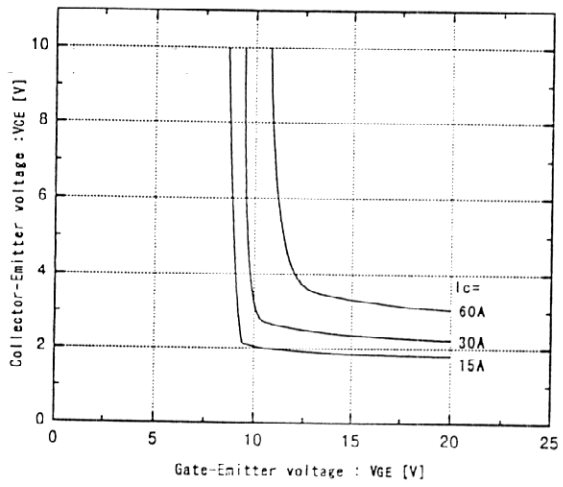
Collector current vs. Collector-Emitter voltage
Tj=25°C



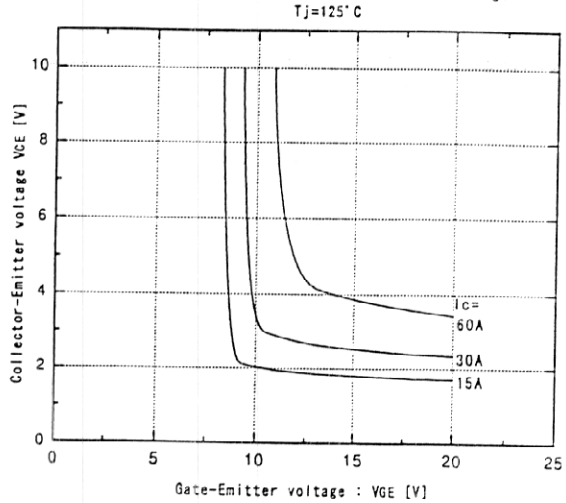
Collector current vs. Collector-Emitter voltage
Tj=125°C



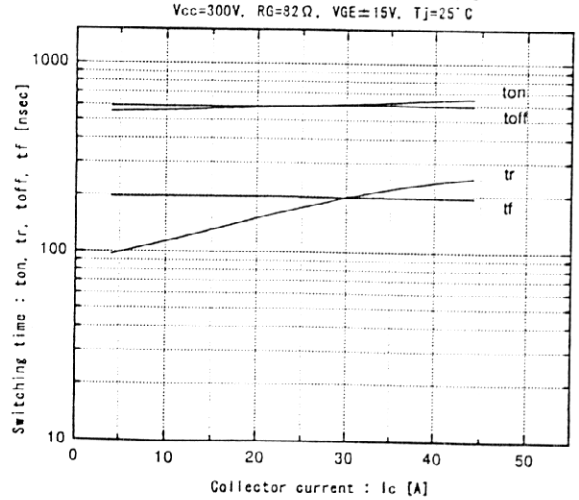
Collector-Emitter vs. Gate-Emitter voltage
Tj=25°C



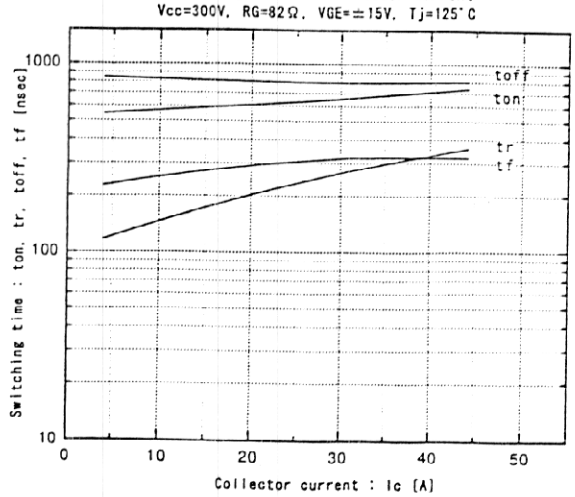
Collector-Emitter vs. Gate-Emitter voltage
Tj=125°C



Switching time vs. Collector current
Vcc=300V, RG=82Ω, VGE=±15V, Tj=25°C



Switching time vs. Collector current
Vcc=300V, RG=82Ω, VGE=±15V, Tj=125°C



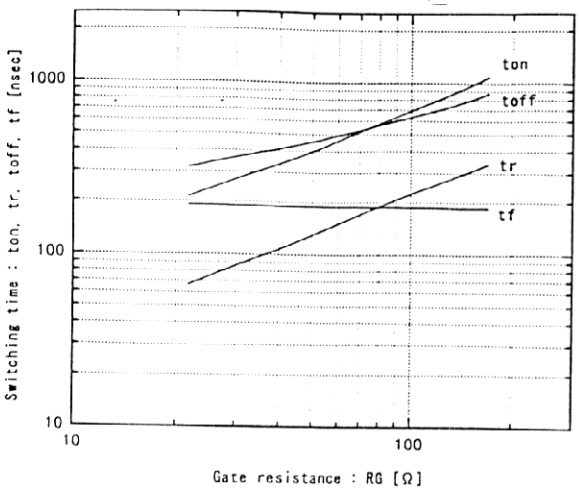
Fuji Electric Co.,Ltd.

DWG.NO. MS6M0255

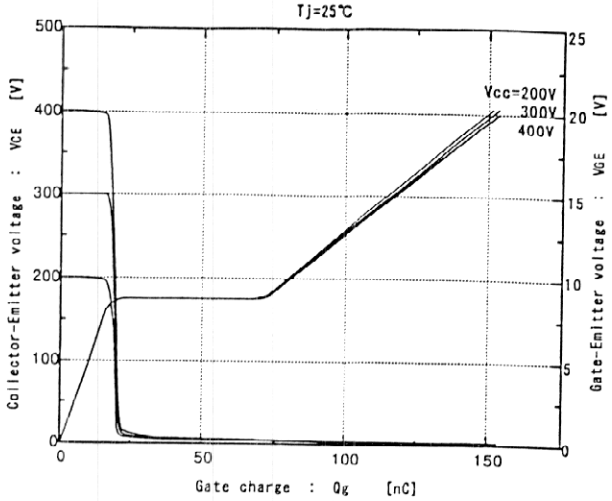
9/10

H04-004-03

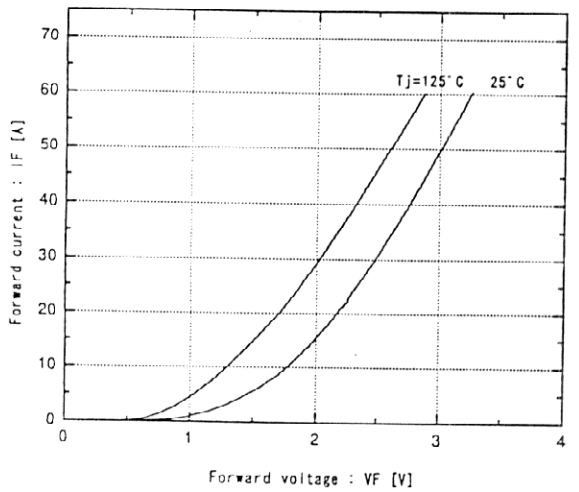
Switching time vs. RG
Vcc=300V, Ic=30A, VGE=±15V, Tj=25°C



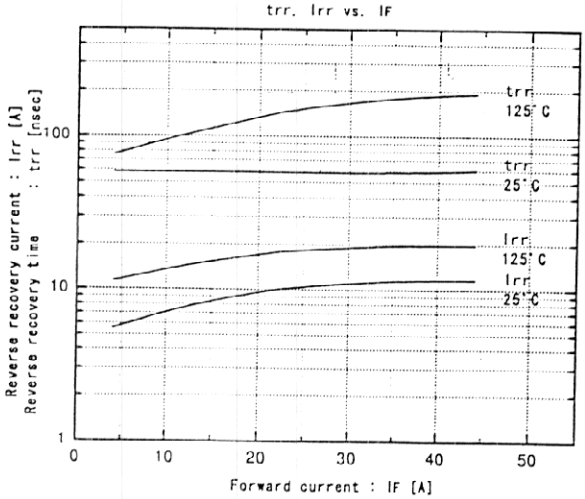
Dynamic input characteristics
Tj=25°C



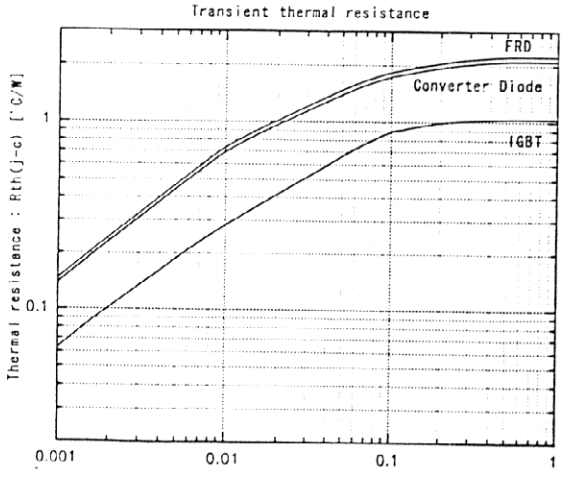
FRD
Forward current vs. Forward voltage
VGE=0V



Reverse recovery characteristics
trr, Irr vs. IF



Transient thermal resistance



Reversed biased safe operating area
+VGE=15V, -VGE≤15V, Tj≤125°C, RG≥32Ω