SPECIFICATION

Device Name : Power Integrated Module

Type Name : 7MBR100U4B120

Spec. No. : MS6M 0856

	DATE	NAME	APPROVED
DRAWN	Feb.- 02 -'05	S.Miyashita	Y.Seki
CHECKED	Feb.- 02 -'05	M.Watanabe	
CHECKED	- -	K.Yamada	

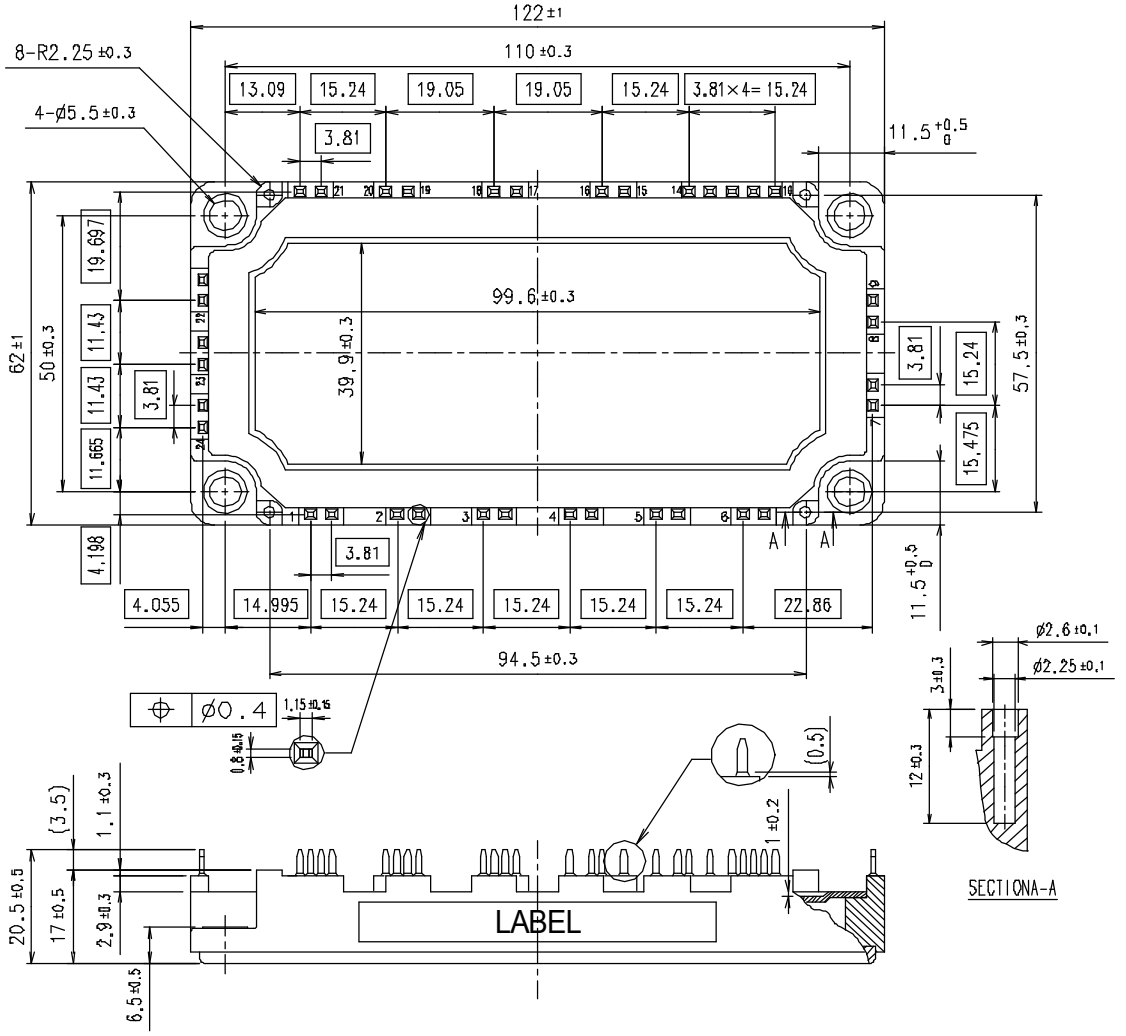
Fuji Electric Device Technology Co.,Ltd.

DWG.NO. MS6M0856

Revised Records

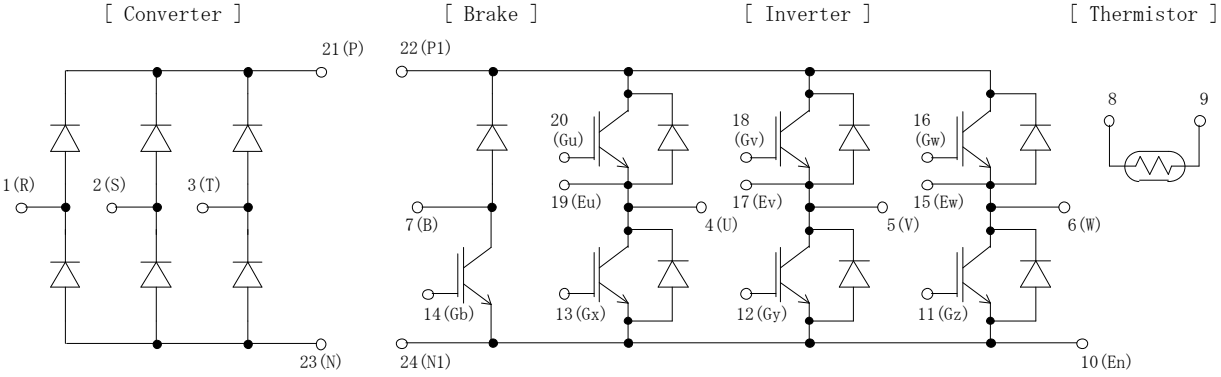
Date	Classi-fication	Ind.	Content	Applied date	Drawn	Checked	Checked	Approved
Feb.-02 -'05	Enactment	—	————	Issued date	—	M.Watanabe	K.Yamada	Y.Seki

1. Outline Drawing (Unit : mm)



shows theoretical dimension.
( ) shows reference dimension.

2. Equivalent circuit



3.Absolute Maximum Ratings (at Tc= 25°C 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=25°C	100	A
				Tc=80°C	75	
		Icp	1ms	Tc=25°C	200	
				Tc=80°C	150	
		-Ic			100	
		-Ic pulse	1ms		200	
	Collector Power Dissipation	Pc	1 device		390	W
Brake	Collector-Emitter voltage	VCES			1200	V
	Gate-Emitter voltage	VGES			±20	V
	Collector current	Ic	Continuous	Tc=25°C	50	A
				Tc=80°C	35	
		Icp	1ms	Tc=25°C	100	
				Tc=80°C	70	
	Collector Power Dissipation	Pc	1 device		205	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		100	A
	Surge Current (Non-Repetitive)	IFSM	Tj=150°C, 10ms half sine wave		520	A
	I^2t (Non-Repetitive)	I^2t			1352	A^2s
Junction temperature		Tj			150	°C
Storage temperature		Tstg			-40 ~ +125	
Isolation voltage	between terminal and copper base (*1)	Viso	AC : 1min.		2500	VAC
	between thermistor and others (*2)					
Screw Torque	Mounting (*3)	-			3.5	N m

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

(*2) Two thermistor terminals should be connected together, each other terminals should be connected together and shorted to base plate when isolation test will be done.

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

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

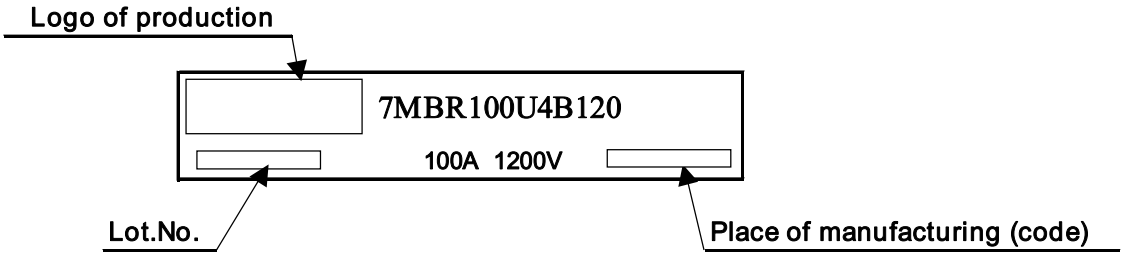
	Items	Symbols	Conditions		Characteristics min.	Characteristics typ.	Characteristics max.	Units
Inverter	Zero gate voltage Collector current	ICES	VGE = 0V VCE = 1200V		-	-	1.0	mA
	Gate-Emitter leakage current	IGES	VCE = 0V VGE=±20V		-	-	200	nA
	Gate-Emitter threshold voltage	VGE(th)	VCE = 20V Ic = 100mA		4.5	6.5	8.5	V
	Collector-Emitter saturation voltage	VCE(sat) (terminal)	VGE=15V Ic = 100A	Tj= 25°C	-	2.60	2.85	V
				Tj=125°C	-	2.95	-	
		VCE(sat) (chip)		Tj= 25°C	-	2.10	2.35	
				Tj=125°C	-	2.45	-	
	Input capacitance	Cies	VCE=10V,VGE=0V,f=1MHz		-	8	-	nF
	Turn-on time	ton	Vcc = 600V Ic = 100A VGE=±15V Rg = 9.1 Ω		-	0.38	1.20	μs
		tr			-	0.13	0.60	
		tr (i)			-	0.03	-	
	Turn-off time	toff			-	0.41	1.00	
		tf			-	0.07	0.30	
	Forward on voltage	VF (terminal)	VGE=0V IF = 100A	Tj= 25°C	-	2.60	2.85	V
				Tj=125°C	-	2.90	-	
		VF (chip)		Tj= 25°C	-	2.10	2.35	
				Tj=125°C	-	2.40	-	
	Reverse recovery time	trr	IF = 100A		-	-	0.35	μs
Brake	Zero gate voltage Collector current	ICES	VGE = 0V VCE = 1200V		-	-	1.0	mA
	Gate-Emitter leakage current	IGES	VCE = 0V VGE=±20V		-	-	200	nA
	Collector-Emitter saturation voltage	VCE(sat) (terminal)	VGE=15V Ic = 50A	Tj= 25°C	-	2.25	2.65	V
				Tj=125°C	-	2.60	-	
		VCE(sat) (chip)		Tj= 25°C	-	2.00	2.40	
				Tj=125°C	-	2.35	-	
	Turn-on time	ton	Vcc = 600V Ic = 50A VGE=±15V Rg = 33 Ω		-	0.53	1.20	μs
		tr			-	0.43	0.60	
	Turn-off time	toff			-	0.37	1.00	
		tf			-	0.07	0.30	
	Reverse current	IRRM	VR=1200V		-	-	1.0	mA
Converter	Forward on voltage	VFM	VGE=0V IF = 100A	terminal	-	1.55	1.90	V
				chip	-	1.40	-	
	Reverse current	IRRM	VR=1600V		-	-	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(1device)	Rth(j-c)	Inverter IGBT	-	-	0.32	°C/W
		Inverter FWD	-	-	0.58	
		Brake IGBT	-	-	0.60	
		Converter Diode	-	-	0.50	
Contact Thermal resistance (1device) (*4)	Rth(c-f)	with Thermal Compound	-	0.05	-	

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

6. Indication on module



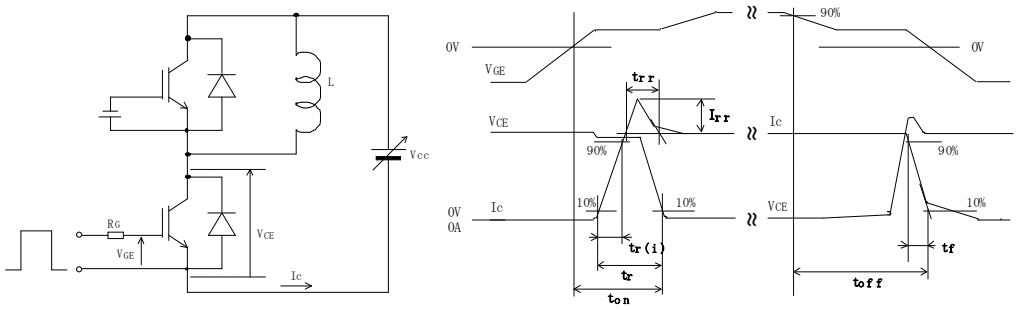
7.Applicable category

This specification is applied to Power Integrated Module named 7MBR100U4B120 .

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.

9. Definitions of switching time



10. Packing and Labeling

Display on the packing box
- Logo of production
- Type name
- Lot No
- Products quantity in a packing box