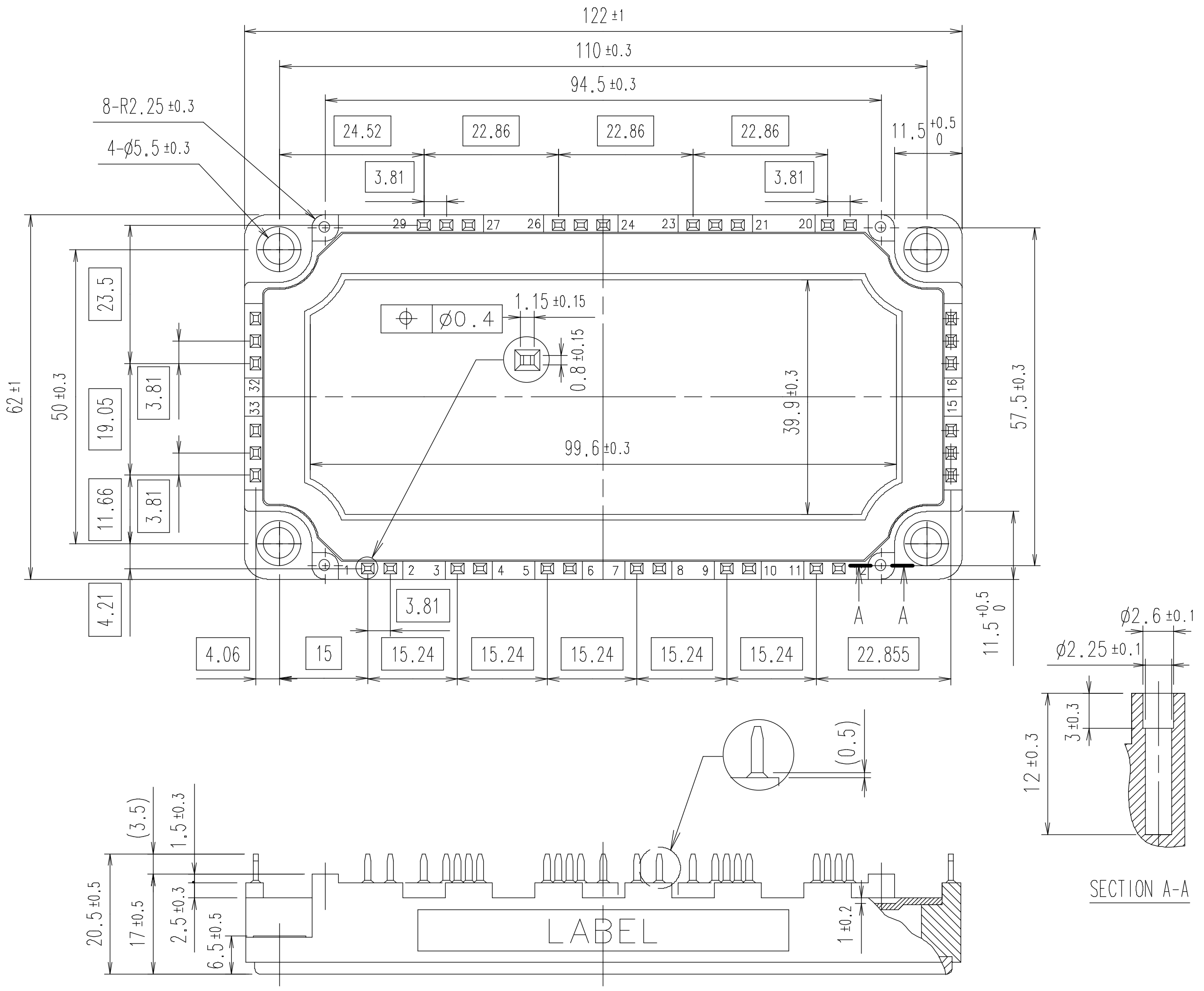
6MBI150U4B-120-50 (RoHS compliant product)

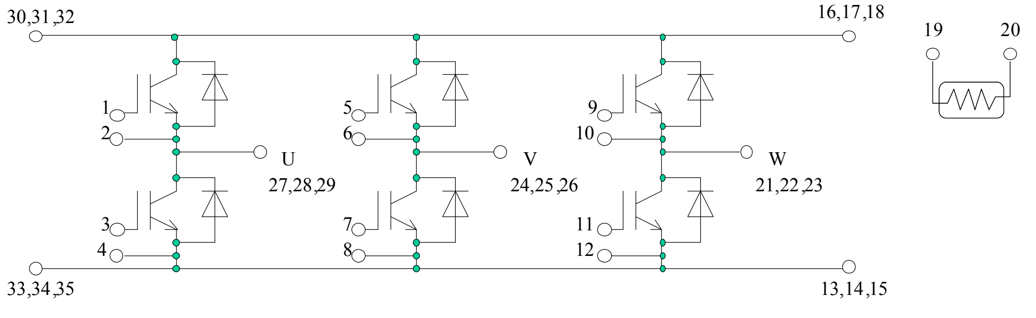
1. Outline Drawing (Unit : mm)



☐ 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
Collector-Emitter voltage		VCES			1200	V
Gate-Emitter voltage		VGES			±20	V
Collector current		Ic	Continuous	Tc=25°C	200	A
				Tc=80°C	150	
		Icp	1ms	Tc=25°C	400	
				Tc=80°C	300	
		-Ic			150	
		-Ic pulse	1ms		300	
Collector Power Dissipation		Pc	1 device		735	W
Junction temperature		Tj			+150	°C
Storage temperature		Tstg			-40 to +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 to 3.5 Nm (M5)

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	VCE=1200V VGE=0V		-	-	1.0	mA
	Gate-Emitter leakage current	IGES	VCE=0V VGE=±20V		-	-	200	nA
	Gate-Emitter threshold voltage	VGE(th)	VCE=20V Ic=150mA		4.5	6.5	8.5	V
	Collector-Emitter saturation voltage	VCE(sat) (terminal)	Ic=150A VGE=15V	Tj=25°C	-	2.45	ⓐ 2.80	V
				Tj=125°C	-	2.65	-	
		VCE(sat) (chip)		Tj=25°C	-	1.90	2.05	
				Tj=125°C	-	2.10	-	
	Input capacitance	Cies	VCE=10V,VGE=0V,f=1MHz		-	17	-	nF
	Turn-on time	ton	Vcc=600V Ic=150A VGE=±15V RG=2.2Ω		-	0.32	1.20	us
		tr			-	0.10	0.60	
		tr(i)			-	0.03	-	
	Turn-off time	toff			-	0.41	1.00	
		tf			-	0.07	0.30	
	Forward on voltage	VF (terminal)	IF=150A VGE=0V	Tj=25°C	-	2.20	ⓐ 2.50	V
				Tj=125°C	-	2.30	-	
		VF (chip)		Tj=25°C	-	1.65	1.80	
				Tj=125°C	-	1.75	-	
	Reverse recovery time	trr	IF=150A		-	-	0.35	us
	Lead resistance, terminal-chip (*4)	R lead			-	3.40	-	mΩ
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

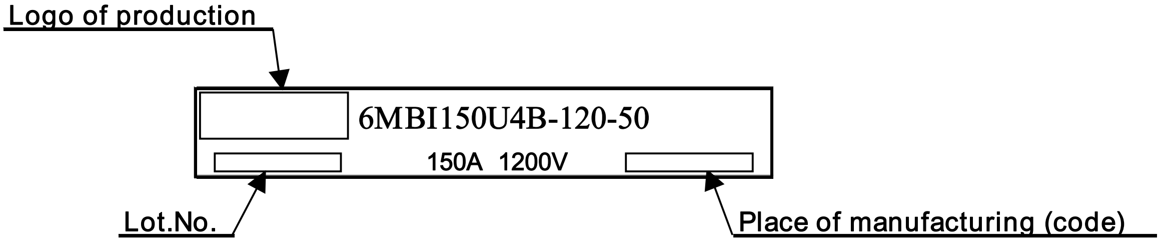
(*4) Biggest internal terminal resistance among arm.

5. Thermal resistance characteristics

Items	Symbols	Conditions	Characteristics			Units
			min.	typ.	max.	
Thermal resistance(1device)	Rth(j-c)	IGBT	-	-	0.17	°C/W
		FWD	-	-	0.28	
Contact Thermal resistance (1 device) (*5)	Rth(c-f)	with Thermal Compound	-	0.05	-	

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

6. Indication on module



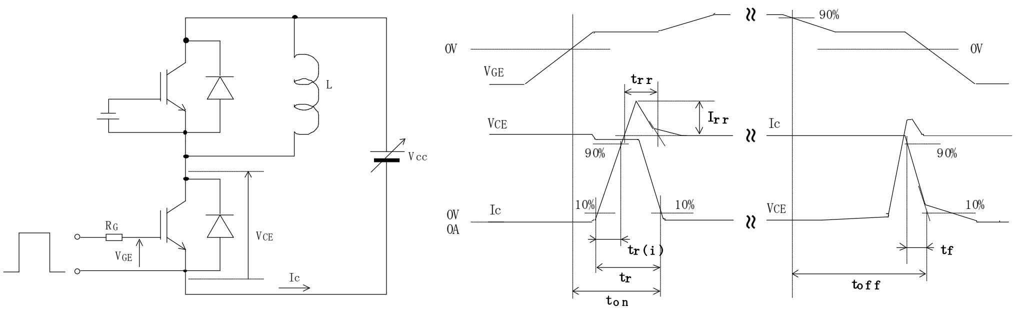
7. Applicable category

This specification is applied to IGBT-Module named 6MBI150U4B-120-50.

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% . Be careful to solderability of the terminals if the module has passed over one year from manufacturing date, under the above storage condition.
- 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.

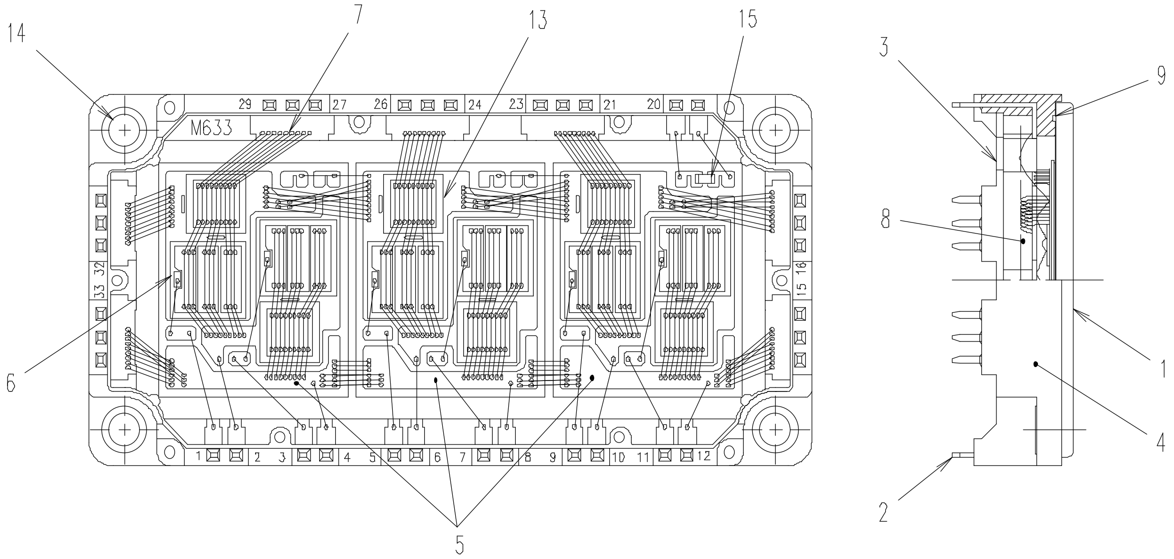
9. Definitions of switching time



10. Packing and Labeling

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

11. List of material （材料リスト）



（Total weight of soldering material(typ) :　9.1 g)

No.	Parts	Material (main)	Ref.
1	Base Plate	Cu	Ni plating
2	Terminal	Cu	Ni plating（Internal) Lead free solder plating (External)
3	Cover	PPS resin	UL 94V-0
4	Case	PPS resin	UL 94V-0
5	Isolation substrate	Al_2O_3 + Cu	
6	IGBT chip	Silicon	
7	Wiring	Aluminum	
8	Silicone Gel	Silicone resin	
9	Adhesive	Silicone resin	
10	Solder　(Under chip)	Sn/Ag base	(Not drawn in above)
11	Solder (Under Isolation substrate)	Sn/Ag base	(Not drawn in above)
12	Label	Paper	(Not drawn in above)
13	FWD chip	Silicon	
14	Ring	Fe	Trivalent Chromate treatment
15	Thermistor	Lead glass	

12. RoHS Directive Compliance （RoHS 指令適用について）

本IGBTモジュールは富士電機デバイステクノロジーが発行しているRoHSに関する資料MS5F6209を適用する。日本語版(MS5F6212)は参考資料とする。

The document (MS5F6209) about RoHS that Fuji Electric Device Technology issued is applied to this IGBT Module. The Japanese Edition(MS5F6212) is made into a reference grade.