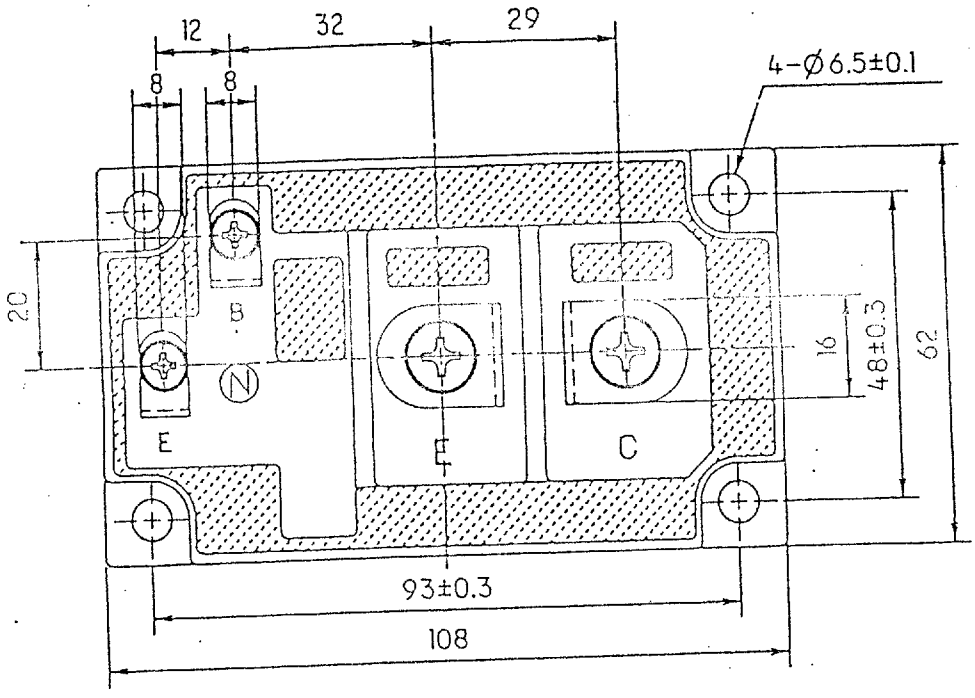
Ratings and characteristics of Fuji IGBT (MBT) Module

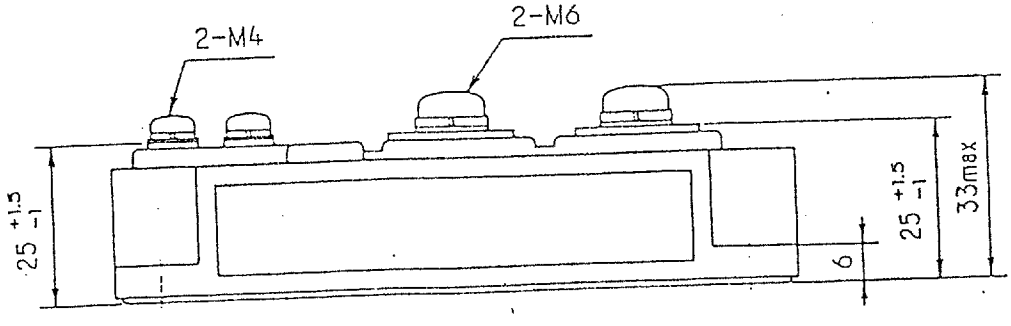
1MBI300JN-120 (TENTATIVE)

1. Outline Drawing

Unit : mm

* Isolation Voltage : AC 2500 V 1 minute





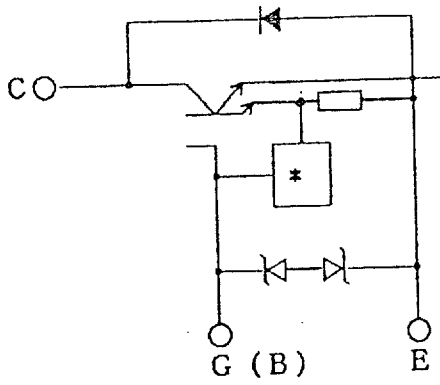
REVISIONS	DATE	NAME	APPROVED
DRAWN	Dec.-11-'98	N. Arikawa	
CHECKED	Dec.-15-'98	T. Miyasaka	

② Revised page 2-4 and added page 7~11. Apr 5 '99 A. Yamaguchi

Fuji Electric Co.,Ltd.

DWG.NO. MT5F5034 1/11

2. Equivalent Circuit



* Current Control Circuit

3. Absolute Maximum Ratings (Tj=25℃)

Items		Symbols	Ratings	Units
Collector-emitter voltage		V_{CES}	1200	V
Gate -emitter voltage		V_{GES}	±20	V
Collector current	Continuous	I_C	300	A
	1 ms	I_C pulse	600	
		$-I_C$	300	
	1 ms	$-I_C$ pulse	600	
Max.power dissipation		PC	1600	W
Operating temperature		Tj	+150	℃
Storage temperature		Tstg	−40～+125	℃
Isolation voltage		Vis	AC 2500 (1min)	V
Screw Torque		Mounting *1	3.5	N・m
		Terminals *2	4.5	
		Terminals *3	1.7	

Note : *1 Recommendable Value : 2.5 ～ 3.5 N・m (M5)or(M6)
Note : *2 Recommendable Value : 3.5 ～ 4.5 N・m (M6)
Note : *3 Recommendable Value : 1.3 ～ 1.7 N・m (M4)

	DATE	NAME	APPROVED
DRAWN	- -		
CHECKED	- -		
REVISIONS			

Fuji Electric Co.,Ltd.

DWG.NO. MT5F5034 2/11

4. Static electrical characteristics (at Tj=25℃ unless otherwise specified)

Items	Symbols	Characteristics min.	typ.	max.	Conditions		Units
Zero gate voltage collector current	I_{CES}			4.0	Tj= 25℃	V_{GE}=0V, V_{CE} =1200V	mA
					Tj=125℃		mA
Gate-emitter leakage current	I_{GES}			60	V_{CE}= 0 V, V_{GE}=±20V		μA
Gate-emitter threshold voltage	$V_{GE(th)}$		5.0		V_{CE}=20V, I_C =300mA		V
Collector-emitter saturation voltage	$V_{CE(sat)}$		2.2		V_{GE}=15V, I_C =300A		V

5. Dynamic ratings (at Tj=25℃ unless otherwise specified)

Items	Symbols	Characteristics min.	typ.	max.	Conditions	Units
Input capacitance	Cies		36000		V_{GE}= 0 V, V_{CE}=10V, f = 1 MHz	pF
Output capacitance	Coes		—			
Reverse transfer capacitance	Cres		—			
Turn-on time	t on		0.95		V_{CC}=600V, I_C =300A, V_{GE}=±15V, R_G =2.7Ω	μs
	t r		0.30			
Turn-off time	t off		1.15			
	t f		0.20			

	DATE	NAME	APPROVED
DRAWN	- -		
CHECKED	- -		
REVISIONS			

Fuji Electric Co.,Ltd.

DWG.NO. MT5F5034 3/11

6 . Characteristics of reverse diode (at Tj=25℃ unless otherwise specified)

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Diode forward on-voltage	VF		2.5		IF =300A V_{GE}= 0V	V
Reverse recovery time	trr			350	IF =300A -di/dt=900A/μs	ns

7 . Thermal resistance characteristics

Items	Symbols	Characteristics			Conditions	Units
		min.	typ.	max.		
Thermal resistance	Rth(j-c)			0.078	IGBT(MBT)	℃/W
	Rth(j-c)			0.150	Diode	
	※ Rth(c-f)		0.0125		the base to cooling fin	

※ This is the value which is defined mounting on the additional cooling fin with thermal compound.

	DATE	NAME	APPROVED
DRAWN	- -		
CHECKED	- -		
REVISIONS			

Fuji Electric Co.,Ltd.

DWG.NO. MT5F5034 4/11 a