

# SPECIFICATION

(TENTATIVE)

Product Name : IGBT Module (Power Integrated Module)

Type Name : 7MBR10PE120

Spec. No. : **MT6M1918**

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a) Changed Ic, Icp, - Ic, Vce(sat), - Vce, Avg-29-97 Y. Arita  
 Y. Arita

Fuji Electric Co., Ltd. (Matsumoto Factory)

This specification is subject to change without notice.

	DATE	NAME	APPROVED	Fuji Electric Co., Ltd.	
DRAWN	Jun - 23 - 97	Y. Arita		<b>MT6M1918</b>	a
CHECKED	June - 23 - 97	S. Miyamoto			1/5
REVISIONS			S. K.		

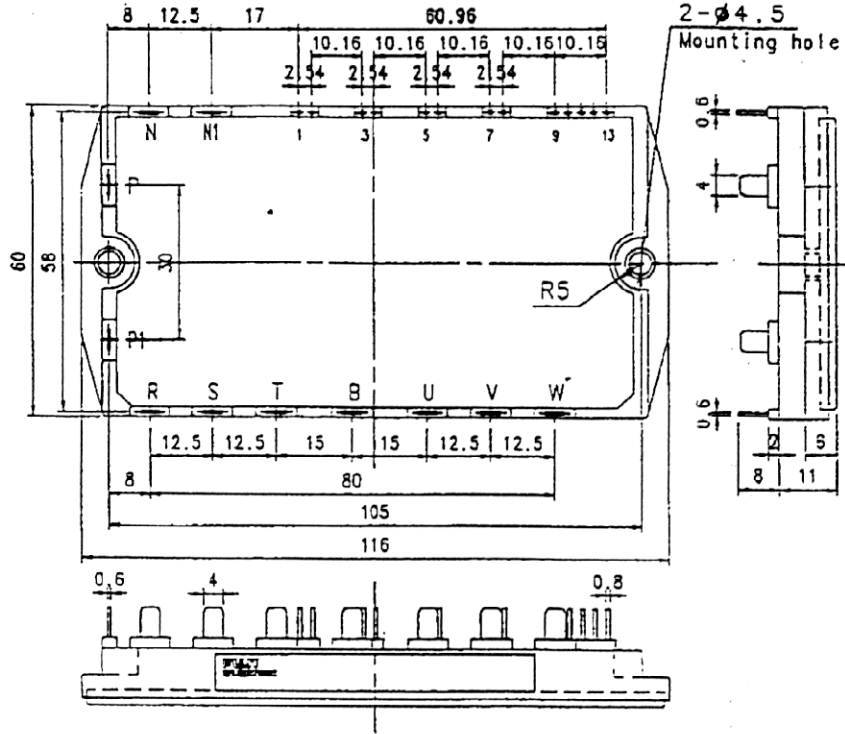
# 7 M B R 1 0 P E 1 2 0

(TENTATIVE)

## 1. Outline Drawing

Unit : mm

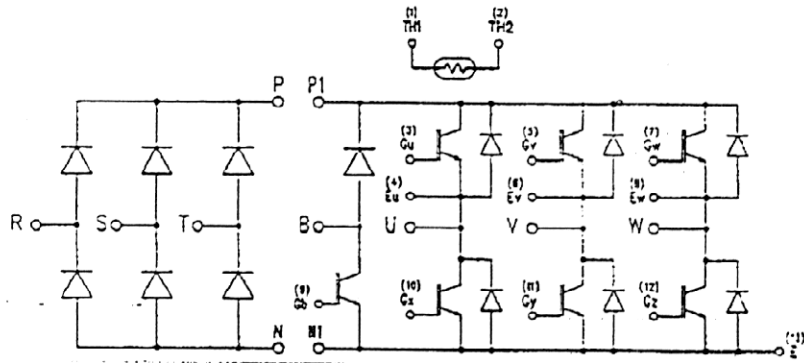
\*Isolation Voltage (Terminal to Case) : AC 2500V 1 minute



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## 2. Equivalent Circuit of Module

[ Converter ]                      [ Brake ]                      [ Inverter ]



\*This specification is changed without notes.

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

Items		Symbols	Conditions	Maximum Ratings	Units
Inverter	Collector-Emitter Voltage	V <sub>CES</sub>	—	1200	V
	Gate-Emitter Voltage	V <sub>GES</sub>	—	±20	V
	Collector Current	I <sub>C</sub>	Continuous ② 25 / 80°C	15/10 ②	A
		I <sub>CP</sub>	1ms 25 / 80°C ②	30/20 ②	A
		-I <sub>C</sub>	25 / 80°C ②	15/10 ②	A
Collector Power Dissipation	P <sub>C</sub>	1 device	100	W	
Brake	Collector-Emitter Voltage	V <sub>CES</sub>	—	1200	V
	Gate-Emitter Voltage	V <sub>GES</sub>	—	±20	V
	Collector Current	I <sub>C</sub>	Continuous ② 25 / 80°C	15/10 ②	A
		I <sub>CP</sub>	1ms 25 / 80°C ②	30/20 ②	A
	Collector power Dissipation	P <sub>C</sub>	1 device	100	W
	Repetitive peak Reverse Voltage	V <sub>RRM</sub>	—	1200	V
Converter	Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	—	1600	V
	Average Output Current	I <sub>O</sub>	—	10	A
	Surge Current (Non-Repetitive)	I <sub>FSM</sub>	Tj=150°C, 8.3ms half sine wave	162	A
	I <sup>2</sup> t (Non-Repetitive)	I <sup>2</sup> t	Tj=150°C	110	A <sup>2</sup> s
Operating Junction Temperature	Tj		+ 150	°C	
Storage Temperature	Tstg		-40 ~ +125	°C	
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)

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

Characteristics		Symbols	Conditions	min.	max.	Units
Inverter	Zero gate voltage collector current	I <sub>CES</sub>	V <sub>CE</sub> =1200V V <sub>GE</sub> = 0V		1.0	mA
	Gate-emitter leakage current	I <sub>GES</sub>	V <sub>CE</sub> = 0V V <sub>GE</sub> =±20V		200	nA
	Gate-emitter threshold voltage	V <sub>GE(th)</sub>	V <sub>CE</sub> =20V I <sub>C</sub> =10mA	6.0	9.0	V
	Collector-emitter saturation Voltage	V <sub>CE(sat)</sub>	V <sub>GE</sub> =15V I <sub>C</sub> =10A		3.3	V
	Collector-Emitter Voltage	-V <sub>CE</sub>	-I <sub>C</sub> =15A		3.3	
	Input capacitance	C <sub>ies</sub>	V <sub>GE</sub> =0V V <sub>CE</sub> =10V f=1MHz		1000 (typ.)	pF
	Switching Time	ton	V <sub>CC</sub> = 600V I <sub>C</sub> = 10A V <sub>GE</sub> =±15V R <sub>G</sub> =120Ω		1.2	μs
		tr			0.6	
		toff			1.0	
		tf			0.3	
Reverse Recovery Time of FRD	trr	I <sub>F</sub> = 10A		350	ns	
Brake	Zero gate voltage collector current	I <sub>CES</sub>	V <sub>CE</sub> =1200V V <sub>GE</sub> = 0V		1.0	mA
	Gate-emitter leakage current	I <sub>GES</sub>	V <sub>CE</sub> = 0V V <sub>GE</sub> =±20V		200	nA
	Collector-emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 10A V <sub>GE</sub> =15V		3.3	V
	Switching Time	ton	V <sub>CC</sub> = 600V I <sub>C</sub> = 10A V <sub>GE</sub> =±15V R <sub>G</sub> =120Ω		1.2	μs
		tr			0.6	
		toff			1.0	
		tf			0.3	
Reverse Current	I <sub>RRM</sub>	V <sub>R</sub> =1200V		1	mA	
Reverse Recovery Time	trr			350	ns	

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Characteristics		Symbols	Conditions	min.	max.	Units
Converter	Forward Voltage	$V_{FM}$	$I_F = 10A$		1.5	V
	Reverse Current	$I_{RRM}$	$V_R = 1600V$		1	mA
Thermistor	Resistance	R	$T_j = 25^\circ C$	5 (typ.)		k $\Omega$
	B value	B	$T_j = 25/50^\circ C$	3375 (typ.)		K

### 5. Thermal Characteristics

Characteristics	Symbols	Conditions	min.	max.	Units
Thermal Resistance (1 device)	$R_{th(j-c)}$	Inverter IGBT		1.25	$^\circ C/W$
		Inverter FRD		3.71	
		Brake IGBT		1.25	
		Converter Diode		2.61	
Contact Thermal Resistance	$R_{th(c-f)}$	With Thermal Compound	(typ) 0.05		

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