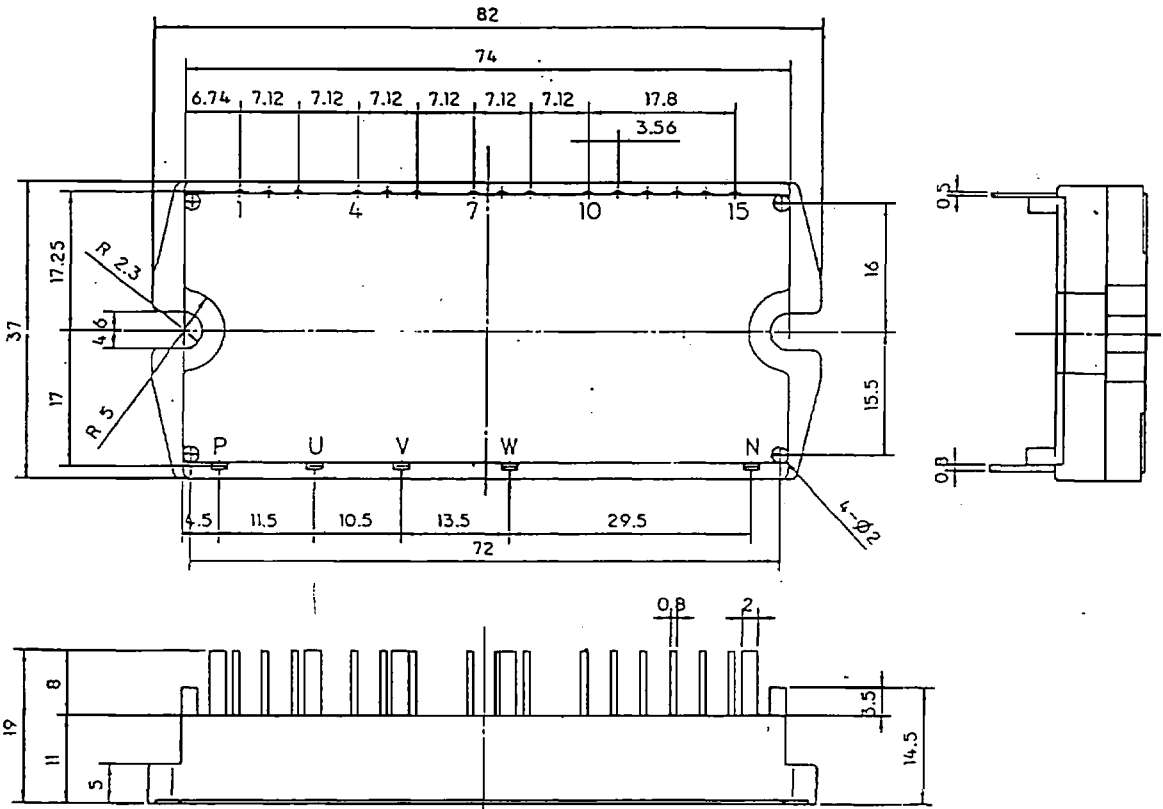


Ratings and Characteristics of Fuji Intelligent Power Module

6MBP20JB060 (TENTATIVE)

1. Outline

Unit : mm



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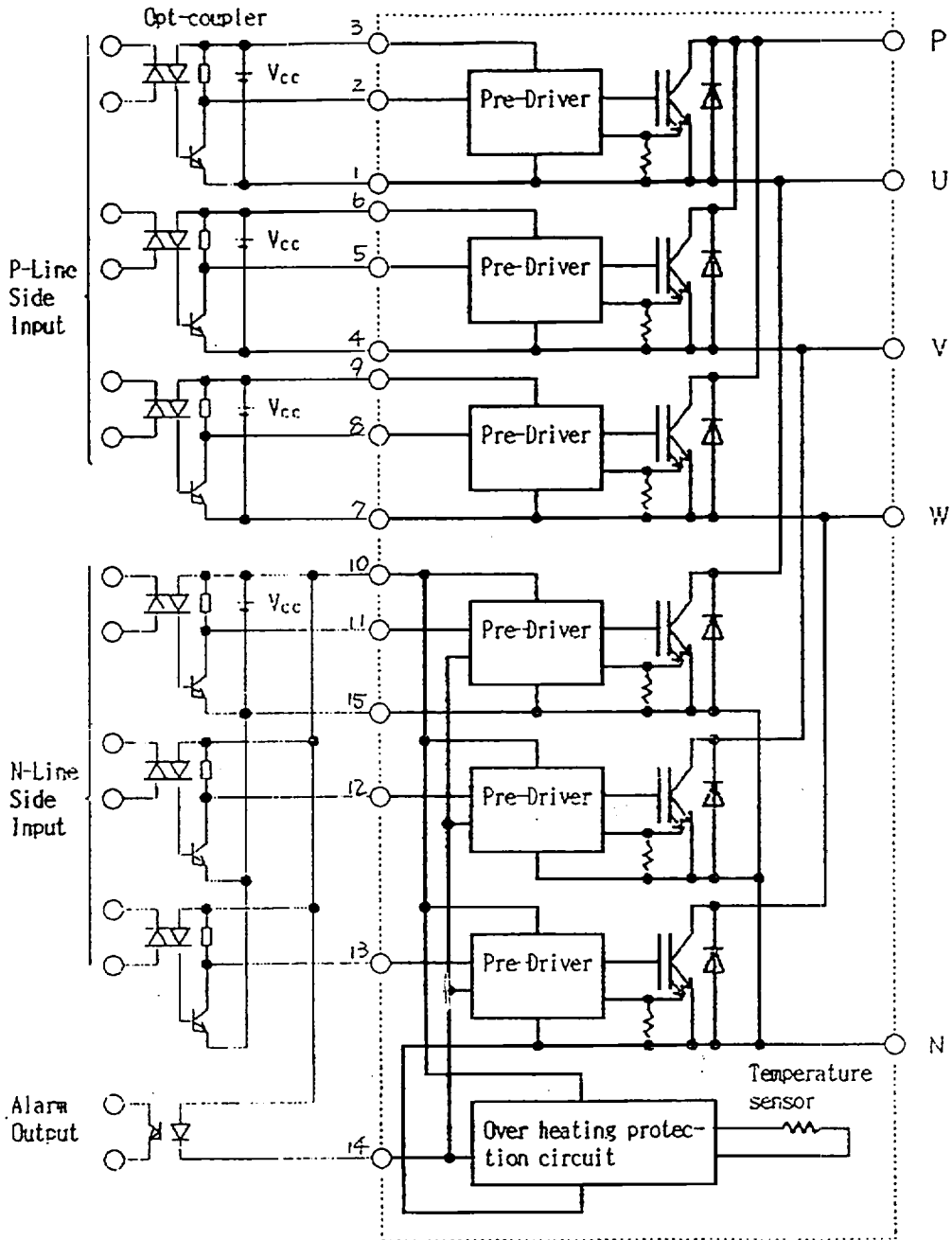
01	Added Test Circuit (1/17/92)	Jul. - 27 - 92	T. HASEN
b)	Revised VF value	Apr. 13 92 S.E.	
c)	Revised VF value	Apr. 28, 73 T. K.	

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DRAWN	Jul. - 7 - 92	T. HASEN	
CHECKED	July - 7 - 92	S. Kobayashi	<i>[Signature]</i>

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2. Block Diagram

6MBP20JB060



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- Pre-Drivers include following functions
- ① Short Circuit Protection Circuit
 - ② Amplifier for Driver
 - ③ Under Voltage Lockout Circuit
 - ④ Over current Protection Circuit

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3. Absolute Maximum Ratings (Tc=25°C)

Items	Symbols	Rated Values	Unit
DC Bus Voltage	V _{DC}	450	V
Collector Current	DC	I _C	20 A
	1ms	I _{CP}	40 A
	DC	-I _C	20 A
Collector Power Dissipation	One Transistor	P _C	50 W
Junction Temperature	T _J	150	°C
Input Voltage of Power Supply for Pre-Driver	V _{CC} ±1	20	V
Input Signal Voltage	V _{IN} ±2	V _{CC}	V
Alarm signal output Voltage	V _{ALM} ±3	V _{CC}	V
Alarm signal current	I _{ALM} ±4	20	mA
Storage Temperature	T _{STG}	-40~125	°C
Isolation Voltage (Case-Terminal)	V _{ISO} ±5	AC2000	V
Mounting Screw Torque (M4)	—	1.7 ±6	N·m

- * 1 : V_{CC} shall be applied to the input Voltage between terminal No③ and ①, ⑥ and ④, ⑨ and ⑦, ⑩ and ⑮.
- * 2 : V_{IN} shall be applied to the input Voltage to terminal No②, ⑤, ⑧, ⑪, ⑫, and ⑬.
- * 3 : V_{ALM} shall be applied to the Voltage between terminal No⑭ and ⑮.
- * 4 : I_{ALM} shall be applied to the input current to terminal No⑬.
- * 5 : 50Hz/60Hz sine wave 1 minute.
- * 6 : Recommendable Value : 1.3 ~ 1.7 N·m

4. Electrical Characteristics

4.1 Electrical Characteristics of Power Circuit (Tj=25°C, V_{CC}=15V)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Collector Current at OFF Signal Input	I _{CES}	T _J = 25°C V _{CE} =600V	—	—	1.0	mA
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C = 20A	—	—	2.5	V
Forward Voltage of FWD	V _F (-I _C)	-I _C = 20A	—	—	③3.0	V

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4.2 Electrical Characteristics of Control Circuit (Tj=25°C, Vcc=15V)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Operating Power Supply Voltage Range of Pre-Driver	V _{cc}	Recommendable Value	13	15	17	V
Power Supply Current of P-Line Side Pre-driver (One Unit)	I _{ccp}		—	—	12	mA
Power Supply Current of N-Line Side Three Pre-Drivers and Protection Circuits	I _{ccn}		—	—	40	mA

Over Heating Protective Section (Vcc=15V)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Over Heating Protection Temperature Level	T _{OH}	—	90	95	100	°C
Hysterisis	T _H	—	—	10	—	°C

Over Current Protective Section (Tj=25°C, Vcc=15V)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Over Current Protection Level	I _{oc}	— #7 Fig.1	23			A

Short Circuit Protective Section (Tj=25°C, Vcc=15V)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Short Circuit Protection Level	V _{sc}	— #8 Fig.2	—		400	V

Alarm Signal Output Section (Tj=25°C, Vcc=15V)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Alarm Signal Hold Time	t _{ALM}	— #9 Fig.3	100	—	—	μs

Under Voltage Lockout Section (Tj=25°C, Vcc=15V)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Under Voltage Protection Level	V _{cc}	—	11.0	12	12.5	V
Hysterisis	V _H	—	0.2	—	—	V

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5. Dynamic Characteristics ($T_j=25^\circ\text{C}$, $V_{cc}=15\text{V}$)

Items	Symbols	Conditions	Min.	Typ.	Max.	Unit
Switching Time	t_{on}	$I_c = 20\text{A}$ $V_{DC} = 300\text{V}$ $V_{to} = 0\text{V}$ *10 Fig 4	—	—	2.0	μs
	t_{off}		—	—	3.0	μs
	t_r		—	—	0.5	μs

6. Thermal Characteristics

Items		Symbols	Min.	Typ.	Max.	Unit
Junction to Case Thermal Resistance	IGBT	$R_{th(j-c)}$	—	—	2.5	$^\circ\text{C/W}$
	FWD	$R_{th(j-c)}$	—	—	4.0	$^\circ\text{C/W}$
Case to Fin Thermal Resistance with Compound		$R_{th(c-f)}$	—	0.05	—	$^\circ\text{C/W}$

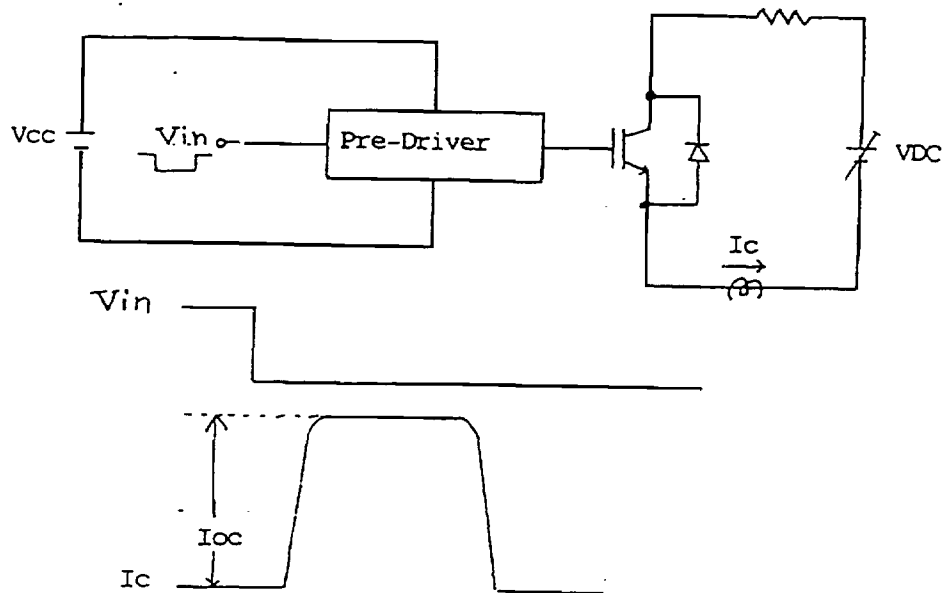
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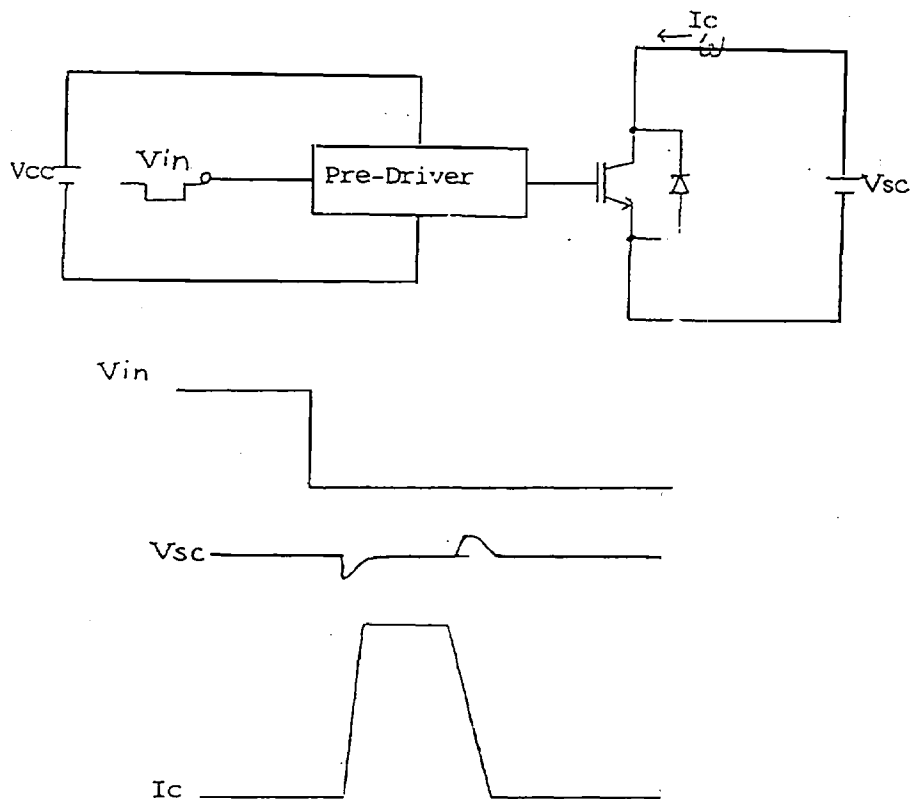
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*7 Fig.1 Over Current Test



*8 Fig.2 Short Circuit Test



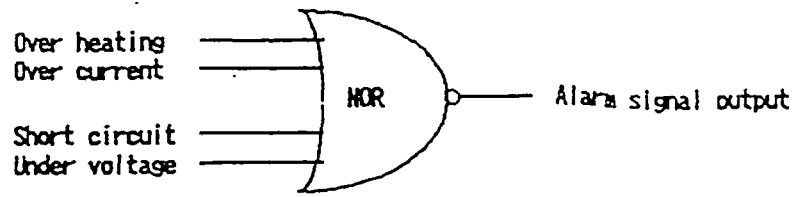
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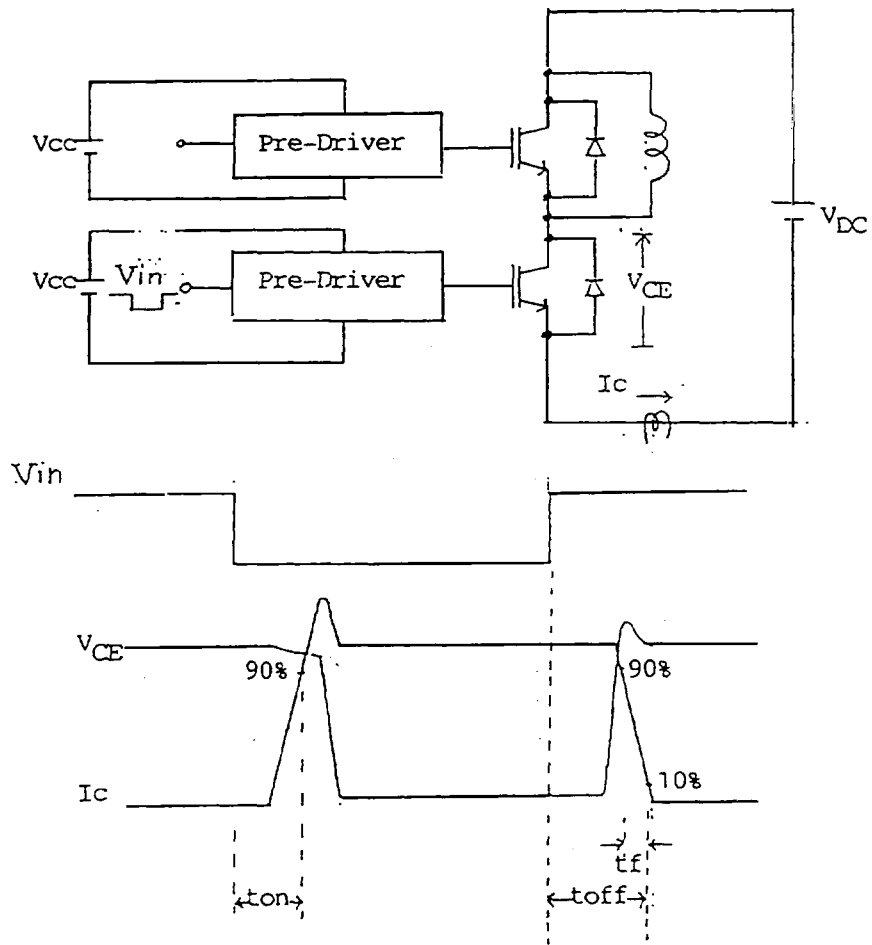
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*.9 Fig.3 Alarm Signal Output Logic



*10 Fig.4 Switching Time Test



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