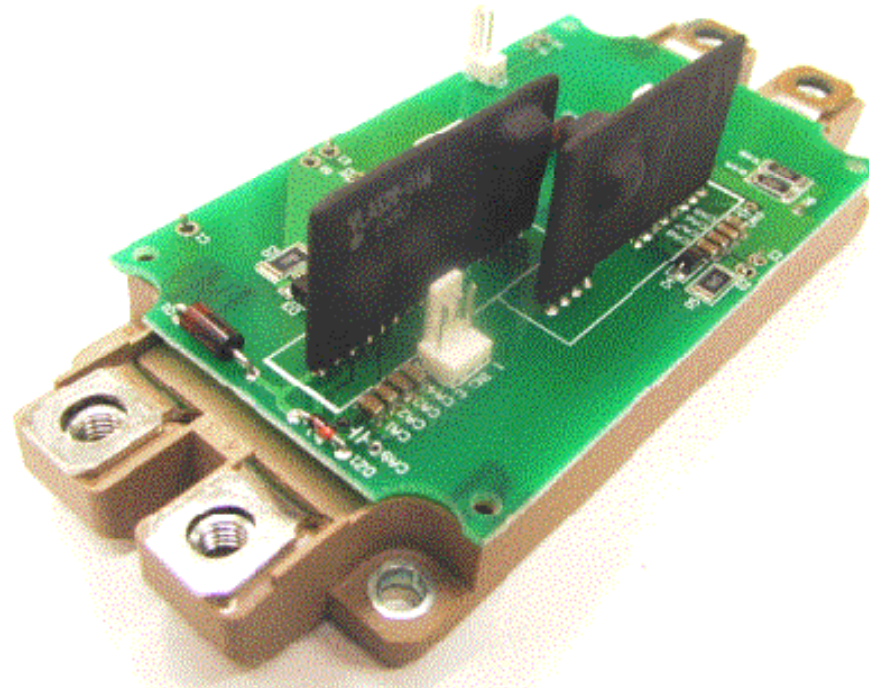




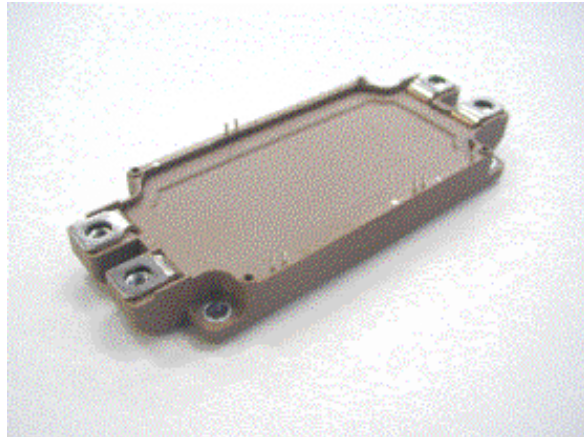
**IGBT Gate Drive Unit  
“VLA530-01R” Installation Manual**

(Tentative)



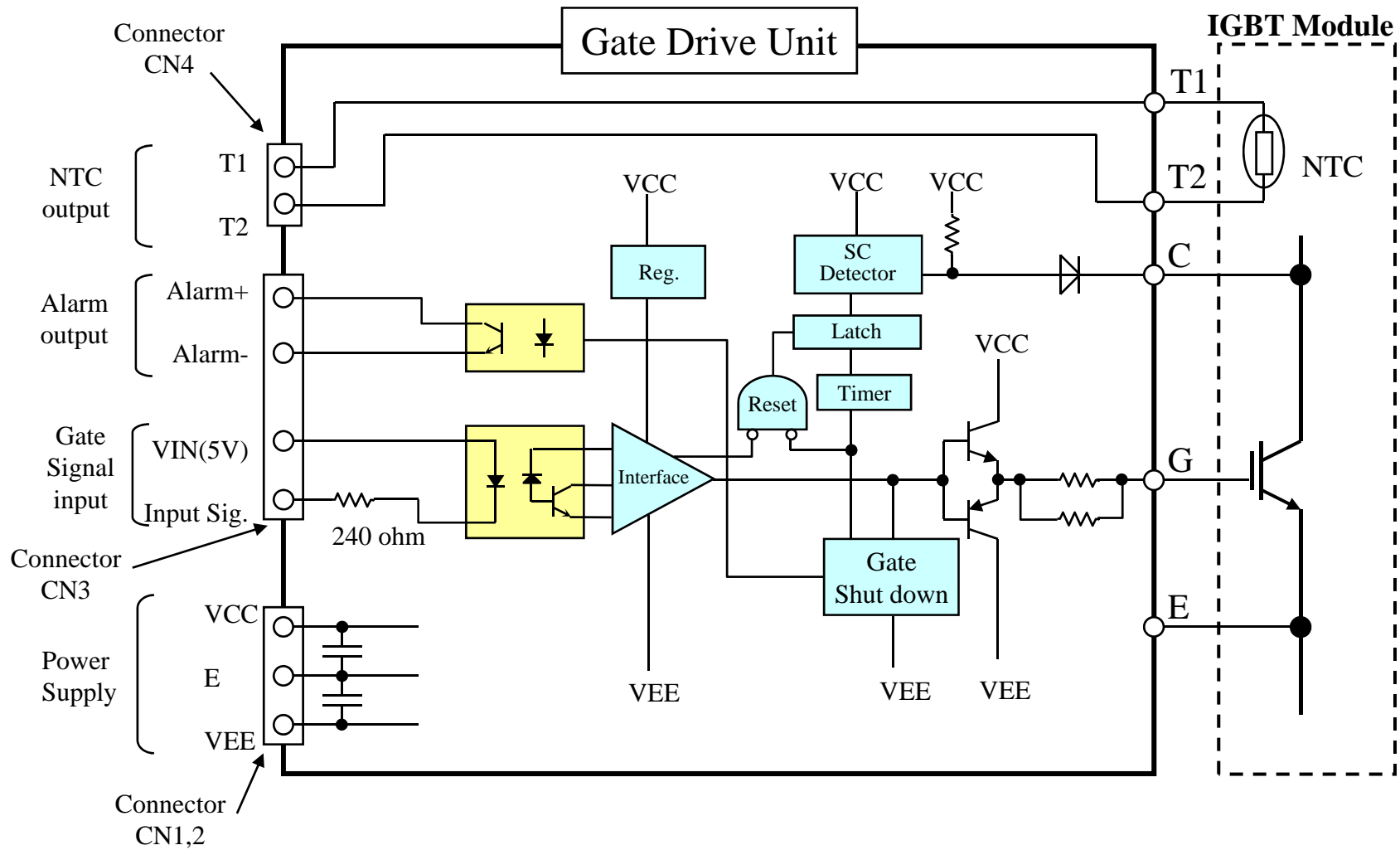
## 1.Applicable Fuji IGBT-module

| VCES(V) | IC(A) | Type              | Package        |
|---------|-------|-------------------|----------------|
| 1200    | 225   | 2MBI225U4N-120-50 | 2 in 1 package |
| 1200    | 300   | 2MBI300U4N-120-50 |                |
| 1200    | 450   | 2MBI450U4N-120-50 |                |
| 1700    | 225   | 2MBI225U4N-170-50 |                |
| 1700    | 300   | 2MBI300U4N-170-50 |                |
| 1700    | 450   | 2MBI450U4N-170-50 |                |

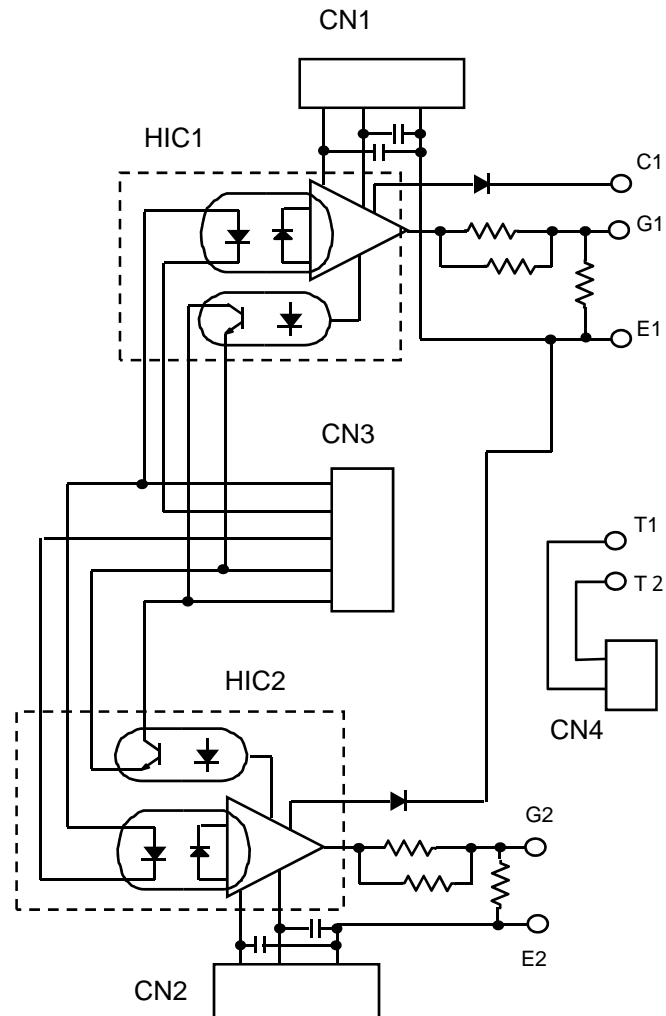


2MBI450U4N-120-50

2.Block Diagram1



### 3.Block Diagram2



## 4. Specifications (Tentative)

### Maximum ratings (unless otherwise noted, Ta=25C)

| Symbol | Parameter             | Conditions  | Ratings   | Unit  |
|--------|-----------------------|---|-----------|-------|
| VCCEE  | Supply voltage        | Applied between VCC –VEE                                | 31        | V     |
| IIH    | Input signal current  | -   | 20        | mA    |
| IOHP   | Gate peak current     | Pulse width 2us   | -5        | A     |
| IOLP   |                       |   | 5         | A     |
| Ialm   | Alarm output current  | -   | 10        | mA    |
| fc     | Switching frequency   | -   | 15        | kHz   |
| Viso   | Isolation voltage     | AC50/60Hz,1min<br>Applied between Primary and Secondary | 4000      | Vrms  |
| Topr   | Operating temperature | No condensation allowable                               | -20 ~ 85  | deg C |
| Tstg   | Storage temperature   | No condensation allowable                               | -25 ~ 100 | deg C |

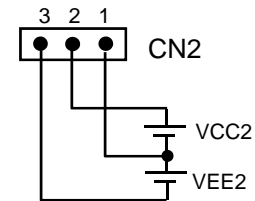
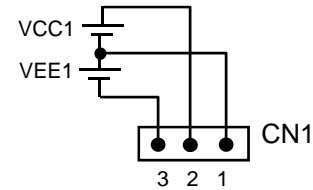
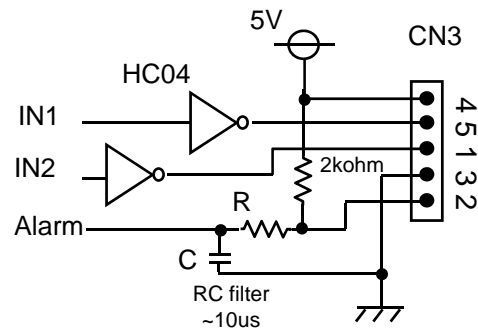
### Electrical Characteristics ( unless otherwise noted, Ta=25C, VCC=15V,VEE=-

| Symbol | Parameter                   | Conditions                            | Limits |       |       | Unit |
|--------|-----------------------------|---------------------------------------|--------|-------|-------|------|
|        |                             |                                       | Min    | Typ   | Max   |      |
| tPLH   | "L-H" propagation time      | Measurement point is output of driver | -      | -     | 1.3   | us   |
| tPHL   | "H-L" propagation time      | Measurement point is output of driver | -      | -     | 1.3   | us   |
| VSC    | SC detect threshold voltage | -                                     | VCC-9  | VCC-8 | VCC-7 | V    |
| talm   | Alarm output time           | -                                     | 1      | 1.4   | 2     | ms   |
| tdalm  | Alarm delay time            | -                                     | -      | -     | 10    | us   |
| Rg     | Gate resistance             | -                                     | -      | 1.1   | -     | ohm  |

### Recommended operating conditions

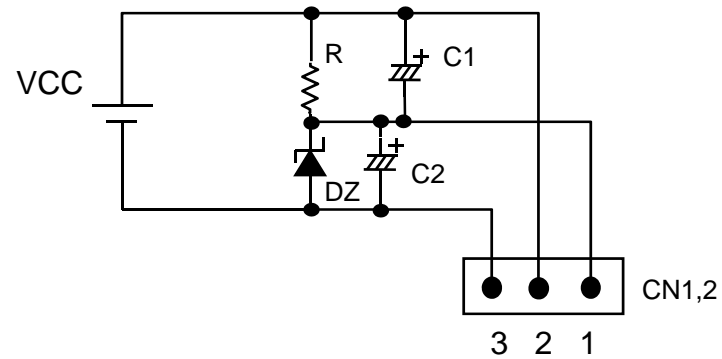
| Symbol | Parameter                        | Conditions                | Ratings |     |      | Unit  |
|--------|----------------------------------|---------------------------|---------|-----|------|-------|
|        |                                  |                           | Min     | Typ | Max  |       |
| VCC    | Supply voltage                   | -                         | 14.5    | 15  | 17   | V     |
| VEE    |                                  | -                         | -6      | -8  | -12  | V     |
| VIN    | Pull-up voltage for input signal | -                         | 4.75    | 5   | 5.25 | V     |
| IIH    | Input signal current             | -                         | 10      | 13  | 16   | mA    |
| Topr   | Operating temperature            | No condensation allowable | -20     | -   | 85   | deg C |

## 5. Input signal & Gate power supply connection



**VCC,VEE : Isolated Power Supplies**

## 6. Application example of single power supply for gate drive



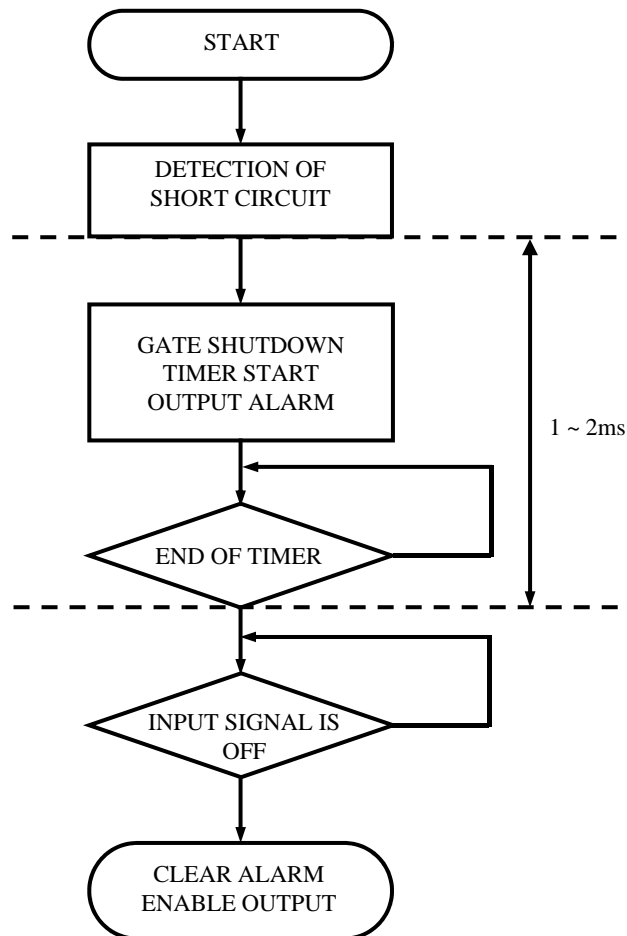
VCC = 24V (Isolated Power Supply) → Ex. VLA106-15242 (ISAHAYA ELECTRONICS)

R = 3.3kohm

DZ = 8.2V

C1,2 = 100uF,50V (low impedance)

## 7. Operation flow on detecting short circuit

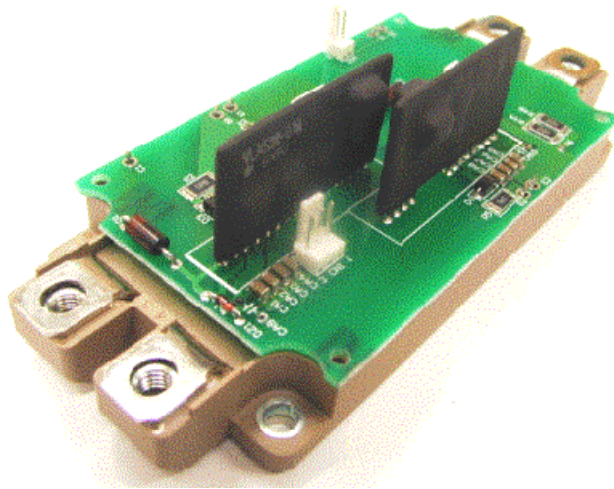


(1) In case the gate voltage is “H” and the collector voltage is high, the gate driver will recognize the circuit as short circuit and immediately reduce the gate voltage. (Slow shut down) Besides, put out an alarm sign which inform that protection circuit is operating.

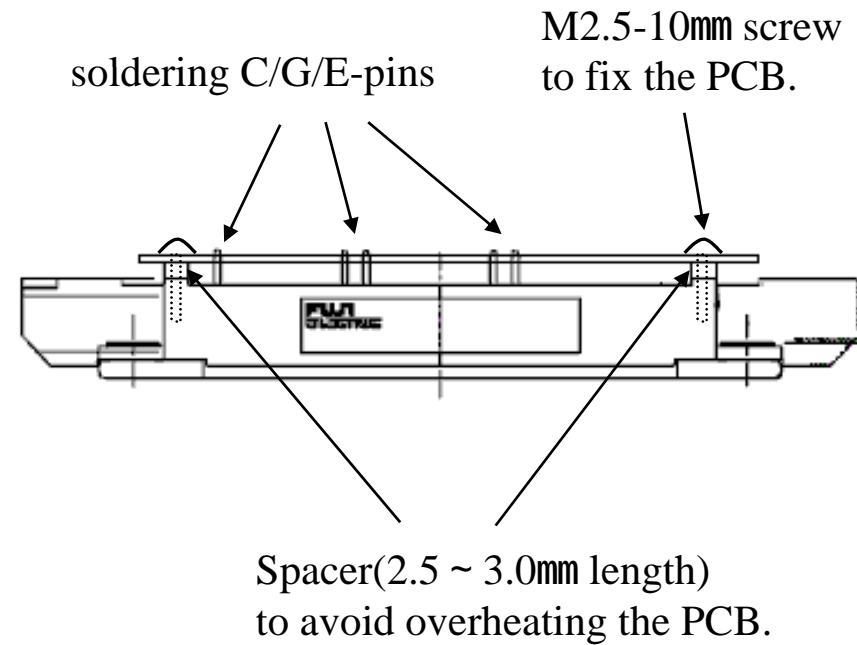
(2) The protection circuit return to ordinary condition if input sign is OFF when the predetermined time (1~2ms) passed. ( OFF period is needed more than 40us.)



## 8.The installation of the PCB on IGBT module



Gate Drive Unit VLA530-01R  
mounted on Fuji 2MBI450U4N-120-50



## 9.Details of connectors (1)

| CN1      |          |
|----------|----------|
| Pin N.o. | Signal   |
| 1        | Emitter1 |
| 2        | VCC1     |
| 3        | VEE1     |

| CN3      |         |
|----------|---------|
| Pin N.o. | Signal  |
| 1        | IN2     |
| 2        | Alarm+  |
| 3        | Alarm-  |
| 4        | VIN(5V) |
| 5        | IN1     |

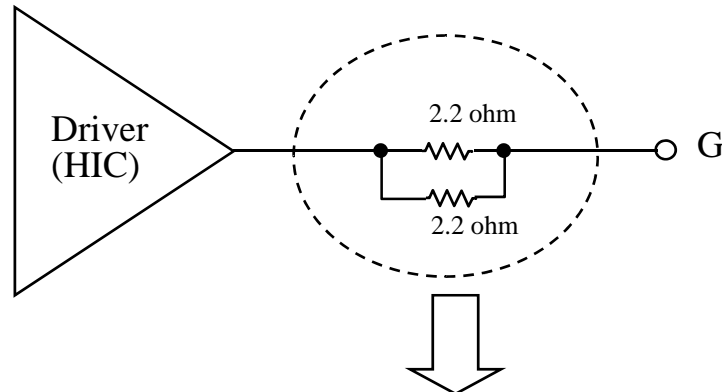
| CN2      |          |
|----------|----------|
| Pin N.o. | Signal   |
| 1        | Emitter2 |
| 2        | VCC2     |
| 3        | VEE2     |

| CN4      |        |
|----------|--------|
| Pin N.o. | Signal |
| 1        | T1     |
| 2        | T2     |

## 10.Details of connectors (2)

| Connector | Header   | Housing | Terminal | Maker |
|-----------|----------|---------|----------|-------|
| CN1,2     | 5045-03A | 5051-03 | 5159     | molex |
| CN3       | 5045-05A | 5051-05 | 5159     | molex |
| CN4       | 5045-02A | 5051-02 | 5159     | molex |

## 11.About gate resistor



Total resistance value is 1.1 ohm

Gate resistance value is 1.1 ohm at the time of shipment.  
Please order by the following type name if other resistance value is needed.

| Type name  | Resistance value |
|------------|------------------|
| VLA530-01R | ➔ 1.1 ohm        |
| VLA530-2R3 | ➔ 2.35 ohm       |
| VLA530-3R4 | ➔ 3.4 ohm        |
| VLA530-5R0 | ➔ 5 ohm          |