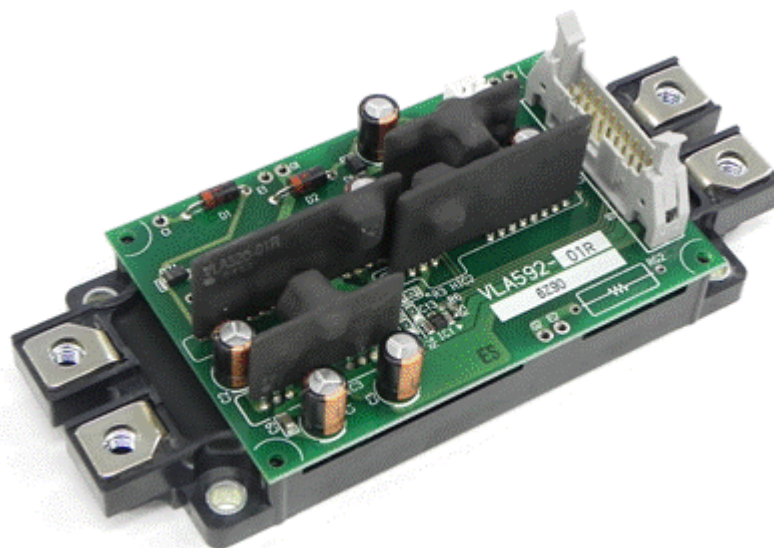


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IGBT Gate Drive Unit VLA592-01R



Mar.2017



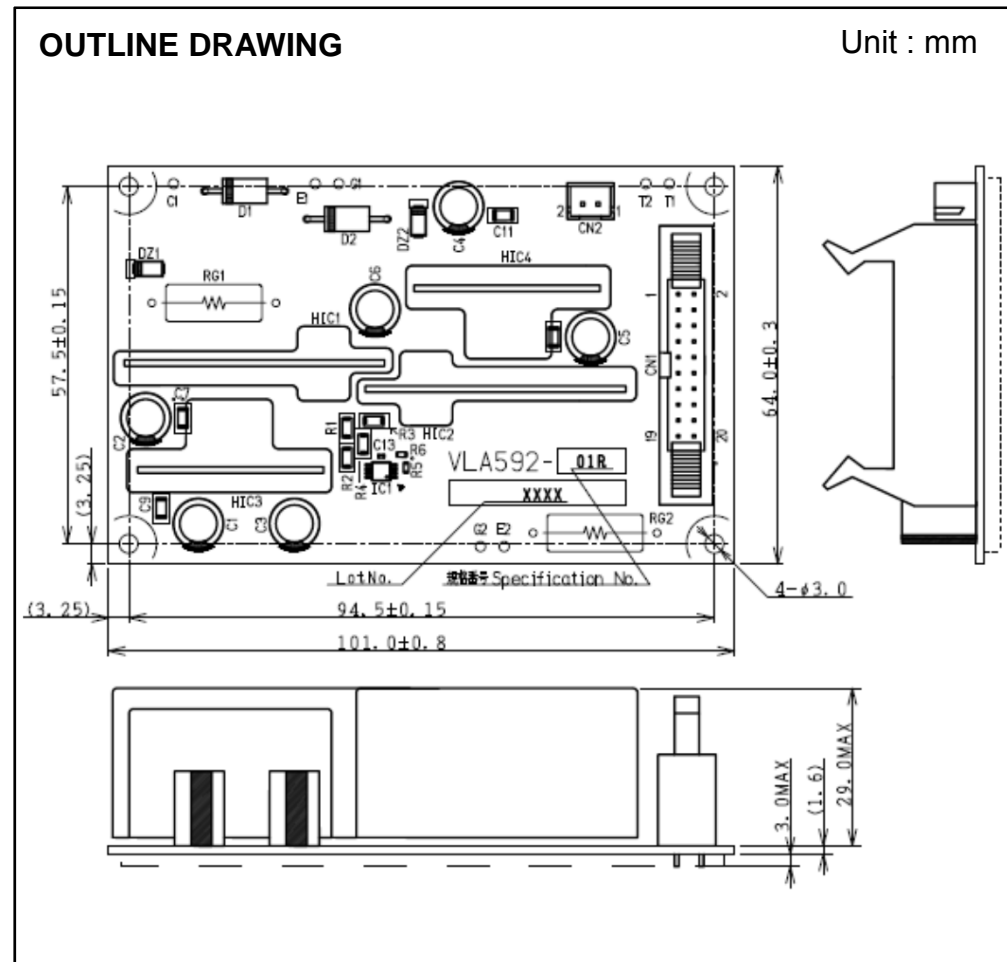
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FEATURE

- >Possible to mount on the IGBT package (2 in 1 package)
- >Built in the isolated DC-DC converter for gate drive
- >Built in short circuit protection (with soft shut down)
- >Electrical isolation voltage is 2500Vrms (for 1 minute)
- >One way power supply system for drivers and input signal (VD=15V)

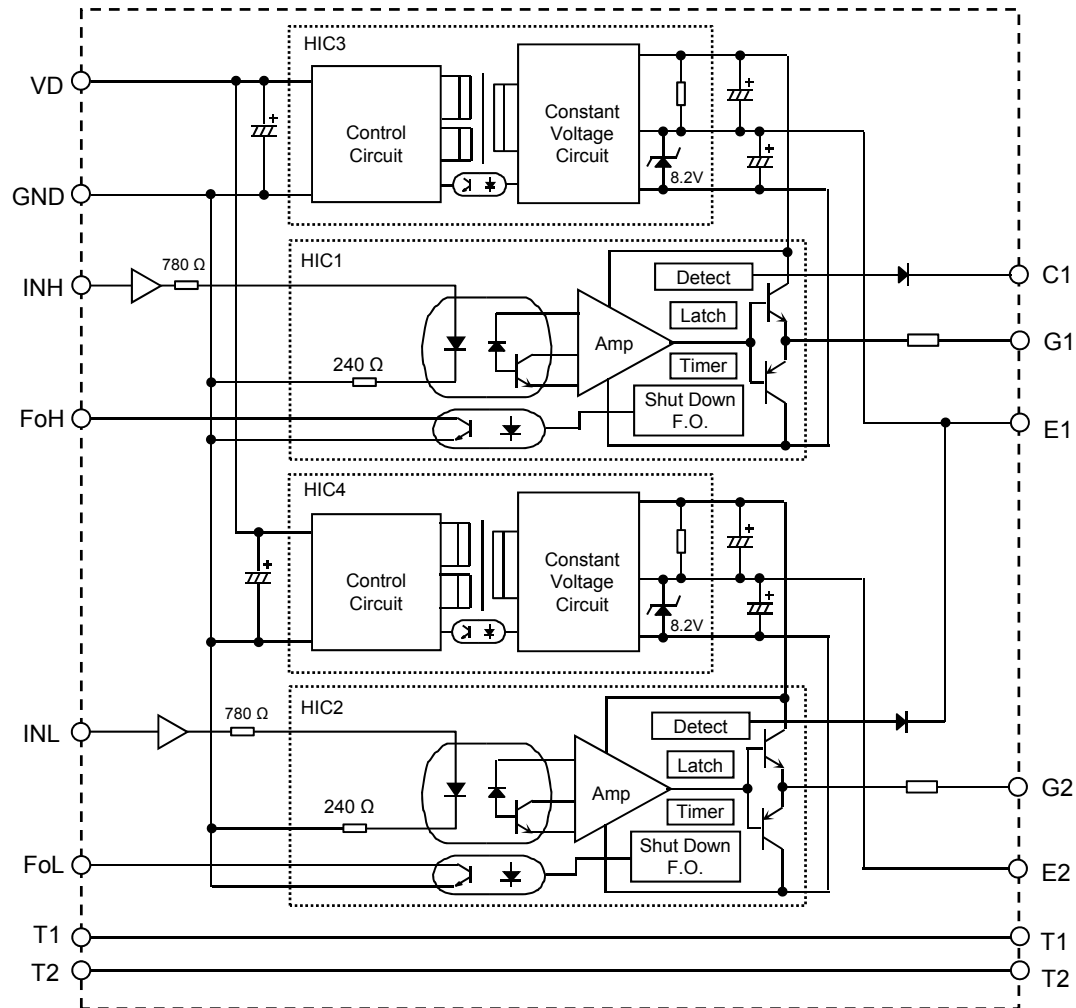
TARGETED IGBT MODULES

- VCES = 650V series ~ 600A class
- VCES = 1200V series ~ 450A class



BLOCK DIAGRAM

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MAXIMUM RATINGS (unless otherwise noted, Ta=25C)

Symbol	Parameter	Conditions	Ratings	Unit
VD	Supply voltage	DC	15.75	V
VI	Input signal voltage	Applied between GND - INH,INL	19	V
IOHP	Gate peak current	Pulse width 2us	-5	A
IOLP			5	A
Viso	Isolation voltage	Sine wave voltage 60Hz, for 1min	2500	Vrms
Topr	Operating temperature	No condensation allowable	-20 ~ 70	deg C
Tstg	Storage temperature	No condensation allowable	-25 ~ 85	deg C
IFo	Fo pin output sink current	-	10	mA
VFo	Fo pin voltage	Applied between GND – FoH,FoL	50	V
Idrive	Gate drive current	Gate average current (Per one circuit)	83	mA

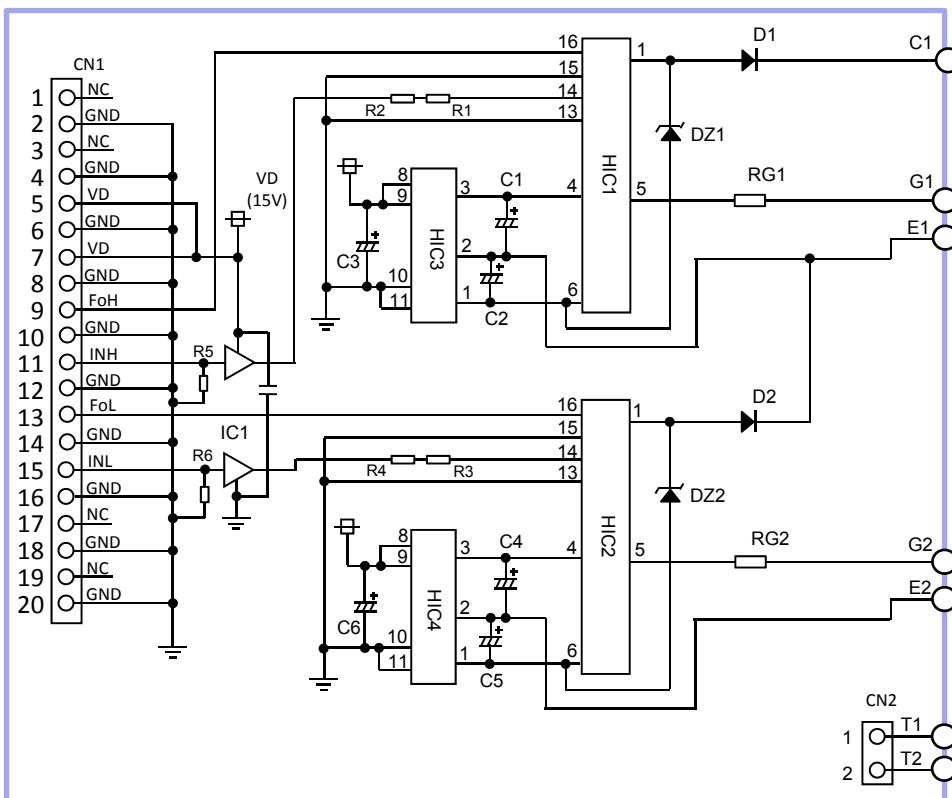
ELECTRICAL CHARACTERISTICS (unless otherwise noted, Ta=25C, VD=15V)

Symbol	Parameter	Conditions	Limits			Unit
			Min	Typ	Max	
VD	Supply voltage	Recommended range	14.25	15	15.75	V
f	Switching frequency	Recommended range	-	-	20	kHz
IFo	Fo output current	Recommended range	-	-	5	mA
RG	Gate resistance	-	-	-	-	Ω
VI_H	Input signal high threshold	-	1.8	2.1	2.4	V
VI_L	Input signal low threshold	-	0.9	1.2	1.5	V
VOH	Plus bias voltage	-	14.5	16.0	17.5	V
VOL	Minus bias voltage	-	-9.0	-8.0	-7.0	V
tPLH	"L-H" propagation time	VI = 15V	0.2	0.45	0.8	us
tPHL	"H-L" propagation time	VI = 15V	0.2	0.4	0.7	us
t_timer	Timer	Between start and clear (under input signal "OFF")	1	1.4	2	ms
td_Fo	Fault out delay time	IFo=2.5mA	-	6.5	10	us
VSC	SC detect collector voltage	IGBT collector voltage	15	-	-	V



INNER CIRCUIT

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CN1	
Pin N.o.	Pin name
1	NC
2	GND
3	NC
4	GND
5	VD
6	GND
7	VD
8	GND
9	FoH
10	GND
11	INH
12	GND
13	FoL
14	GND
15	INL
16	GND
17	NC
18	GND
19	NC
20	GND

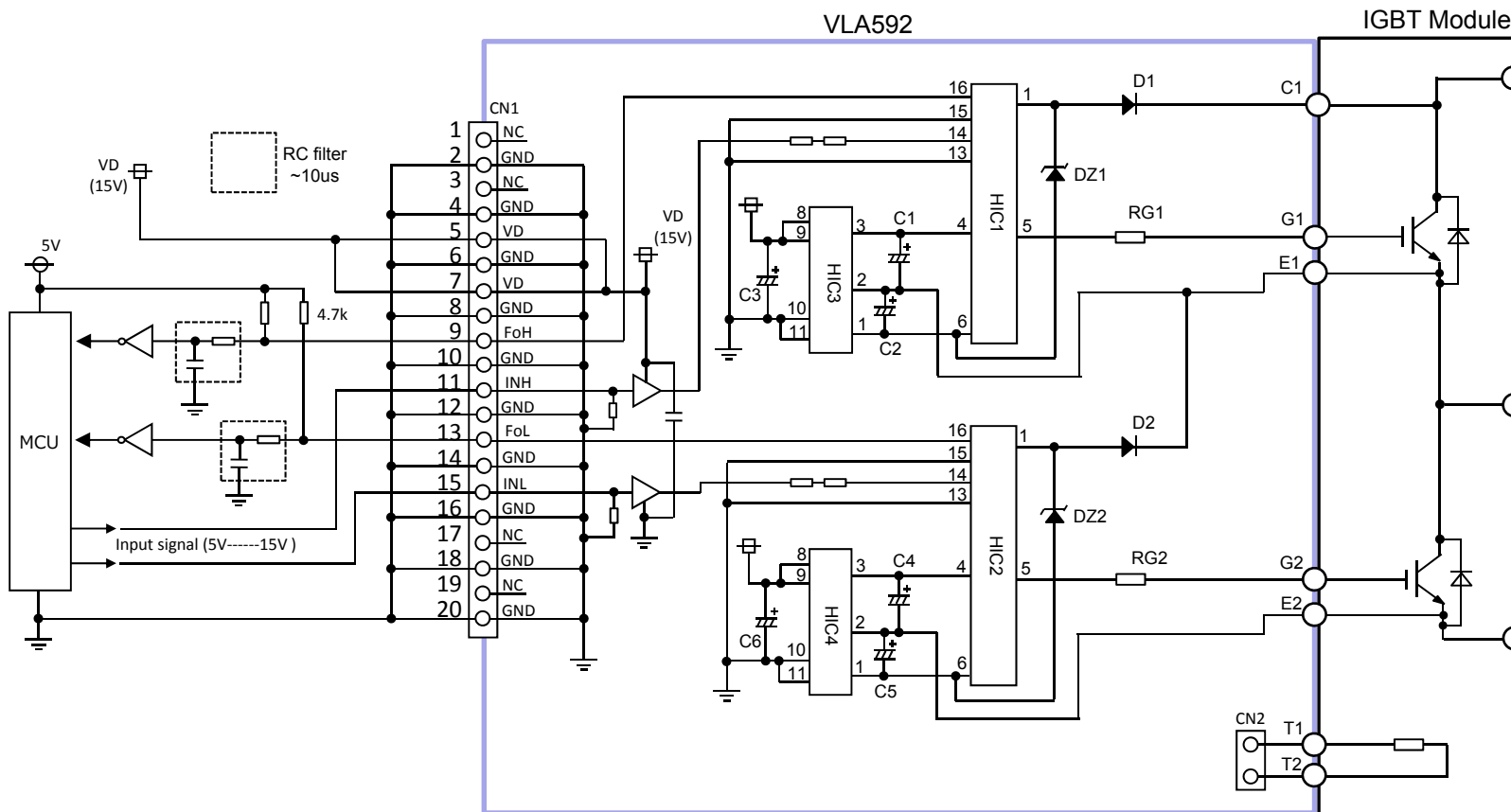
CN2	
Pin N.o.	Pin name
1	T1
2	T2

- Main parts list (Reference)
- | | | |
|----------|------------------|---------|
| HIC1,2 | VLA520-01R | ISAHAYA |
| HIC3,4 | VLA106-15252 | ISAHAYA |
| IC1 | UCC27524A | TI |
| DZ1,2 | 30V, 500mW class | |
| D1,2 | RP1H | SanKen |
| CN1 | 3428-6002LCPL | 3M |
| CN2 | B2B-XH-A | JST |
| R1,2,3,4 | 390 ohm 1/4W | |
| R5,6 | 10k ohm 1/10W | |
| RG1,2 | 3W | |



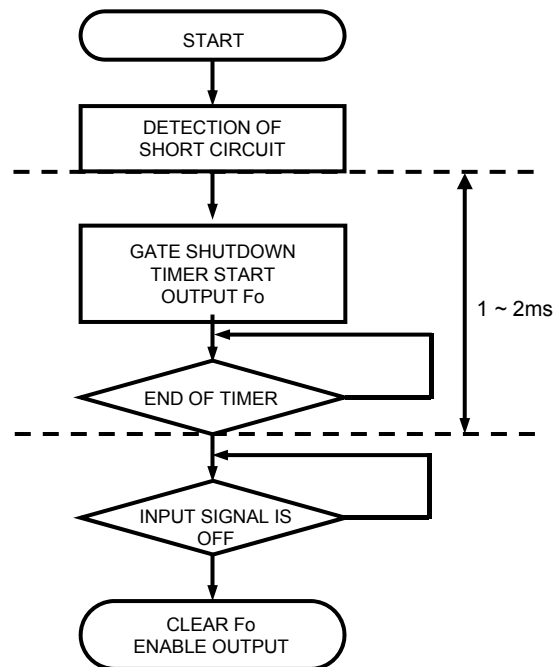
APPLICATION EXAMPLE

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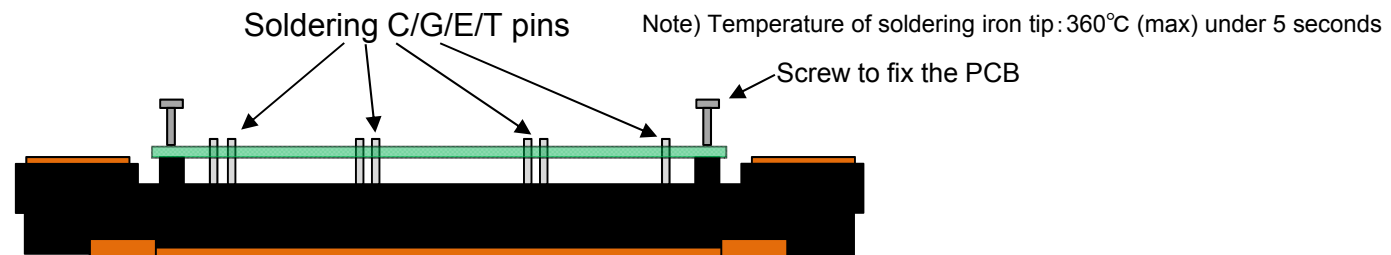
OPERATION FLOW ON DETECTING SHORT CIRCUIT

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- (1) In case the gate signal is "ON" and the collector voltage is high, the gate driver will recognize the circuit as short circuit and immediately reduce the gate voltage. (Soft shut down)
Besides, put out an Fo sign which inform that protection circuit is operating.
- (2) The protection circuit return to ordinary condition if input signal is OFF when the predetermined time(1~2ms) passed.
(OFF period is needed more than 40us.)

INSTALLATION OF THE PCB ON IGBT MODULE



Keep safety first in your circuit designs!

·ISAHAYA Electronics Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1) placement of substitutive, auxiliary circuits, (2) use of non-flammable material or (3) prevention against any malfunction or mishap.

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