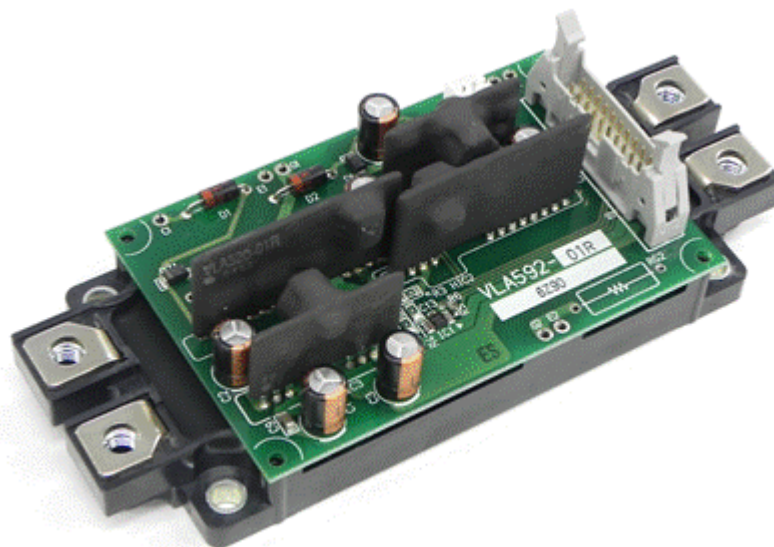


Tentative

# IGBT Gate Drive Unit VLA592-01R



Mar.2017

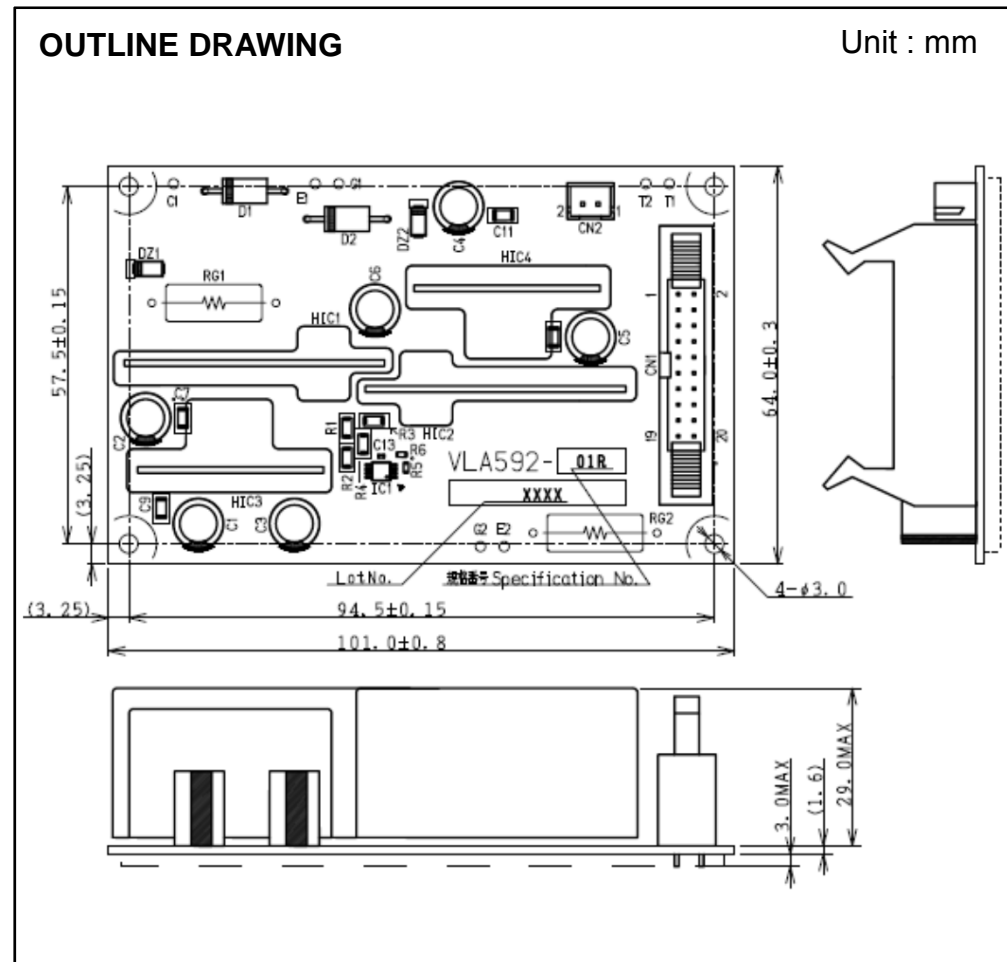
Tentative

**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)

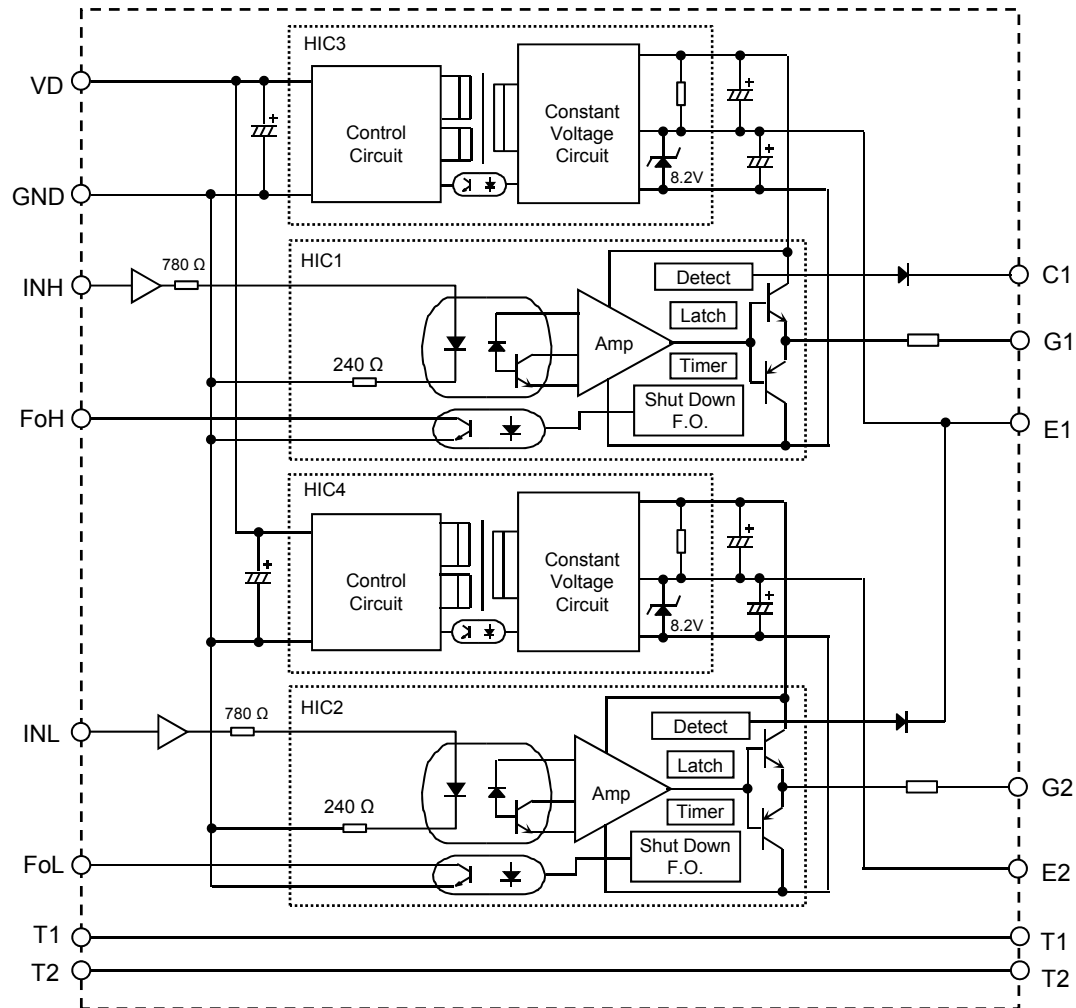
**TARGETED IGBT MODULES**

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



BLOCK DIAGRAM

Tentative



Tentative

**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

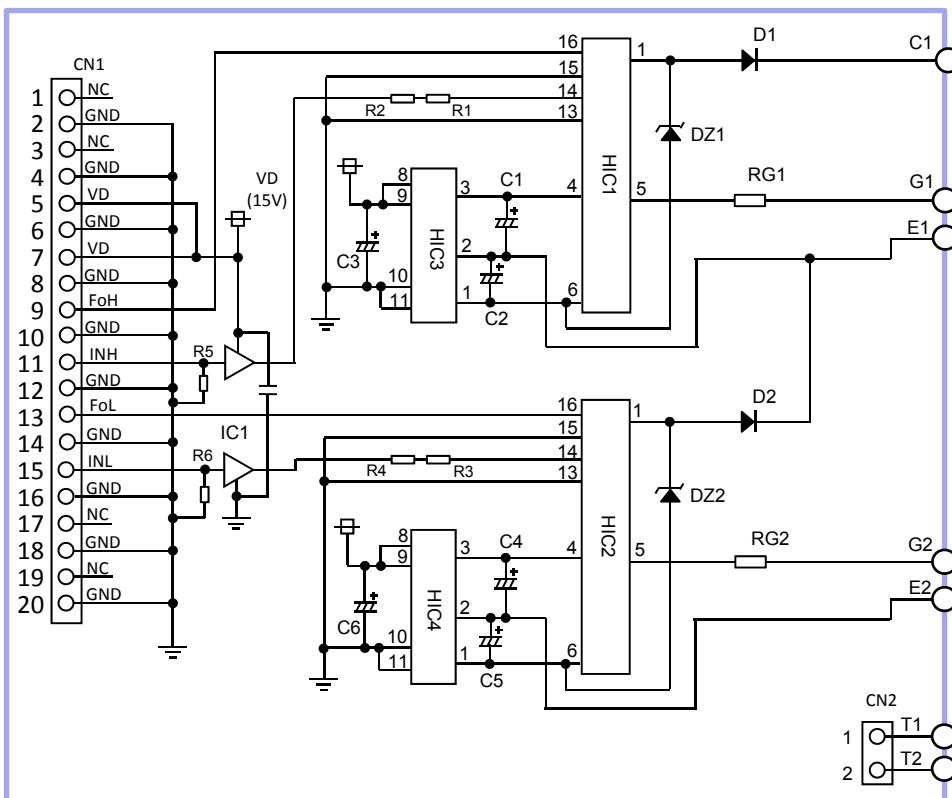
**ELECTRICAL CHARACTERISTICS** ( unless otherwise noted, Ta=25C, VD=15V )

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

Tentative



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	

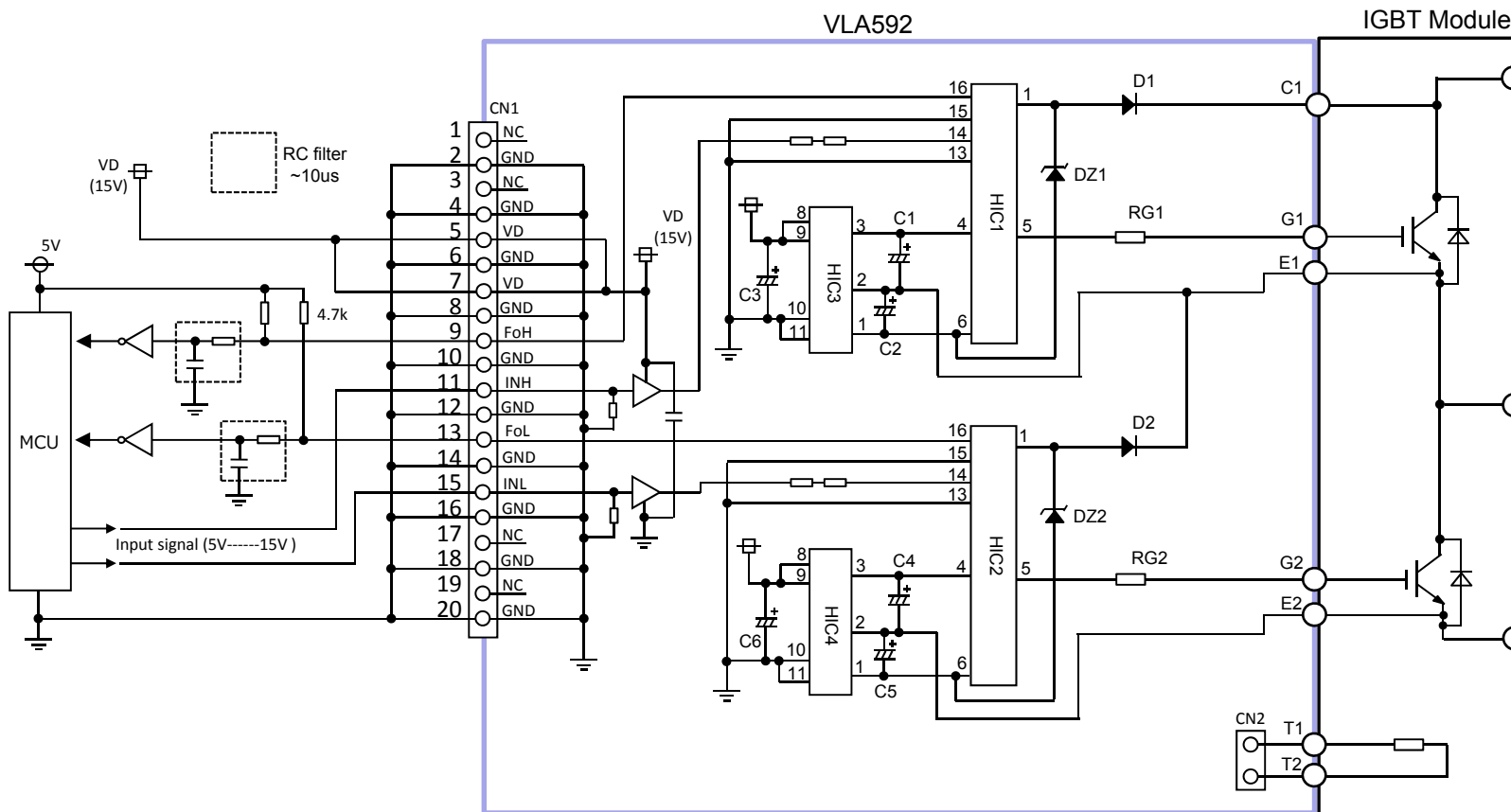
CN1	
PinN.o.	Pin name
1	NC
2	GND
3	NC
4	GND
5	VD
6	GND
7	VD
8	GND
9	FoH
10	GND
11	INH
12	GND
13	FoL
14	GND
15	INL
16	GND
17	NC
18	GND
19	NC
20	GND

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



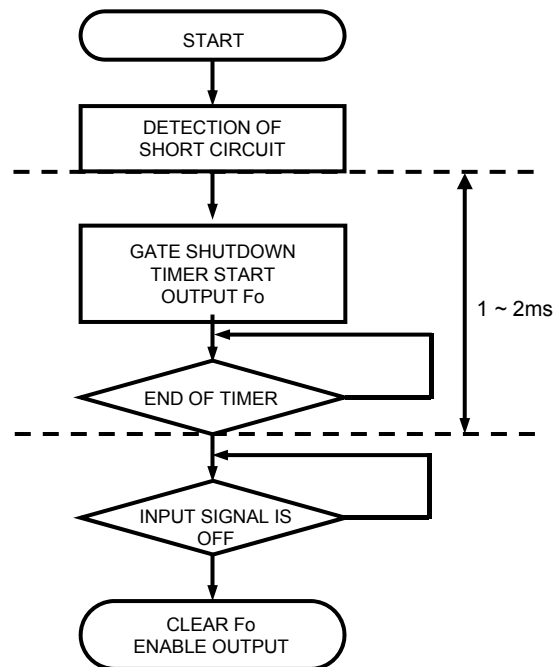
APPLICATION EXAMPLE

Tentative



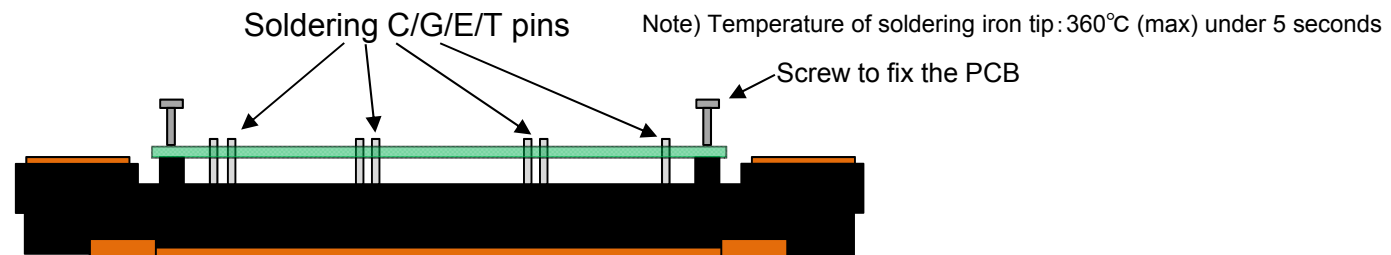
## OPERATION FLOW ON DETECTING SHORT CIRCUIT

**Tentative**



- (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.

**Notes regarding these materials**

- These materials are intended as a reference to our customers in the selection of the ISAHAYA products best suited to the customer's application; they don't convey any license under any intellectual property rights, or any other rights, belonging to ISAHAYA or third party.
- ISAHAYA Electronics Corporation assumes no responsibility for any damage, or infringement of any third party's rights, originating in the use of any product data, diagrams, charts or circuit application examples contained in these materials.
- All information contained in these materials, including product data, diagrams and charts, represent information on products at the time of publication of these materials, and are subject to change by ISAHAYA Electronics Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact ISAHAYA Electronics Corporation or an authorized ISAHAYA products distributor for the latest product information before purchasing product listed herein.
- ISAHAYA Electronics Corporation products are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact ISAHAYA Electronics Corporation or an authorized ISAHAYA products distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
- The prior written approval of ISAHAYA Electronics Corporation is necessary to reprint or reproduce in whole or in part these materials.
- If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination. Any diversion or re-export contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
- Please contact ISAHAYA Electronics Corporation or authorized ISAHAYA products distributor for further details on these materials or the products contained therein.

