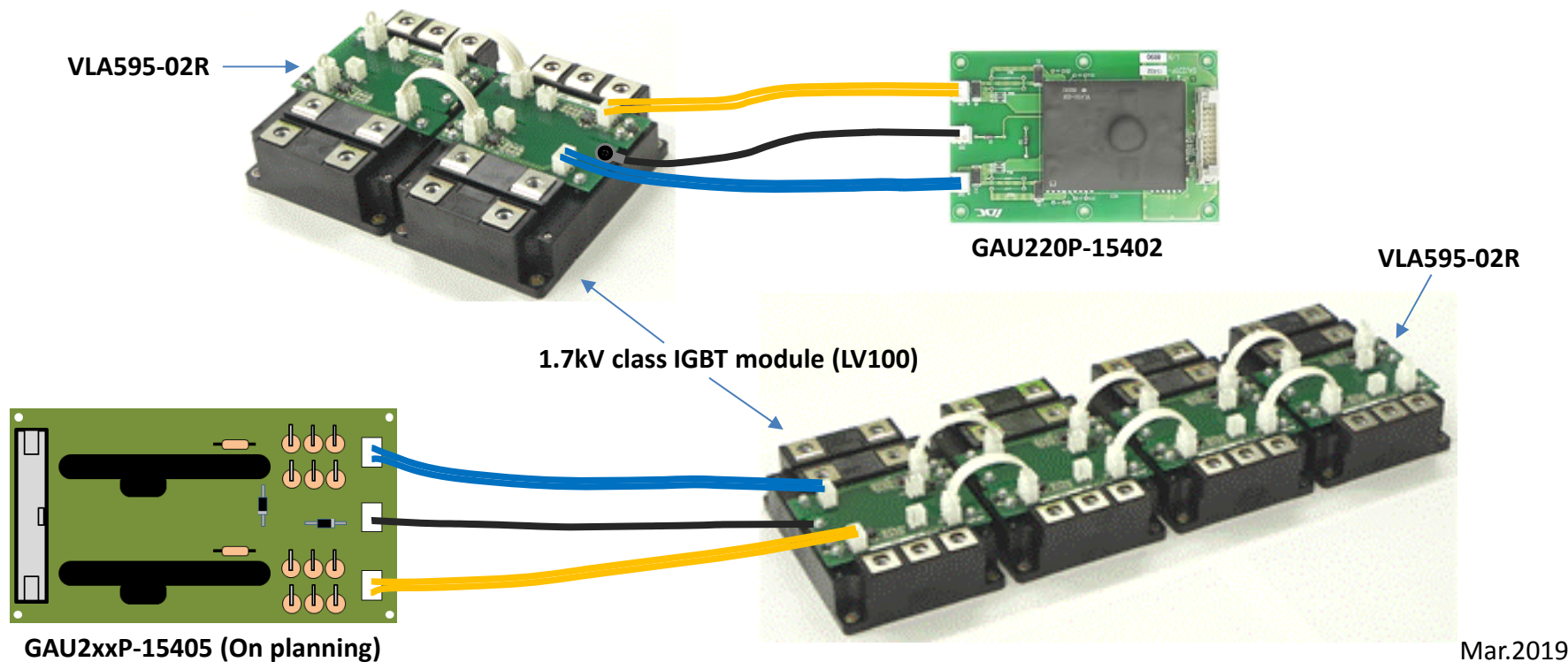


Preliminary

Gate Drive Unit GAU220P-15402 Adapter Unit VLA595-02R for industrial LV100

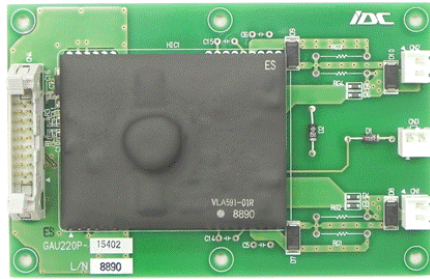


Mar.2019



IGBT drivers suitable for industrial IGBT modules of LV100 pkg.

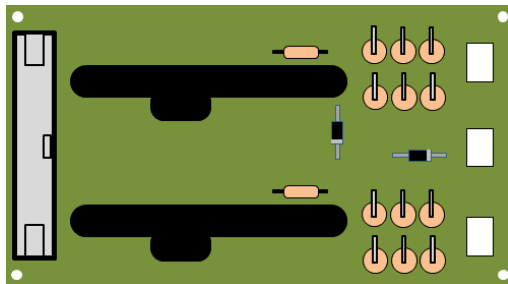
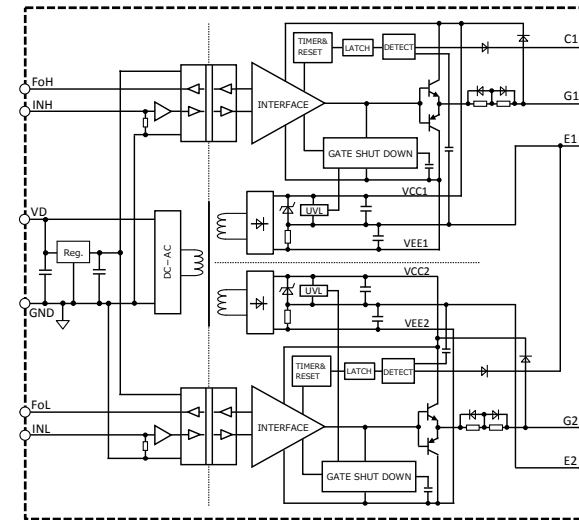
Preliminary



GAU220P-15402

Main spec.
 Built-in core gate driver : **VLA591-01R**
 Isolation voltage : **4kVrms (1min)**
 Gate peak current : **20Amax**
 Gate average current : **100mAmax (per 1circuit)**

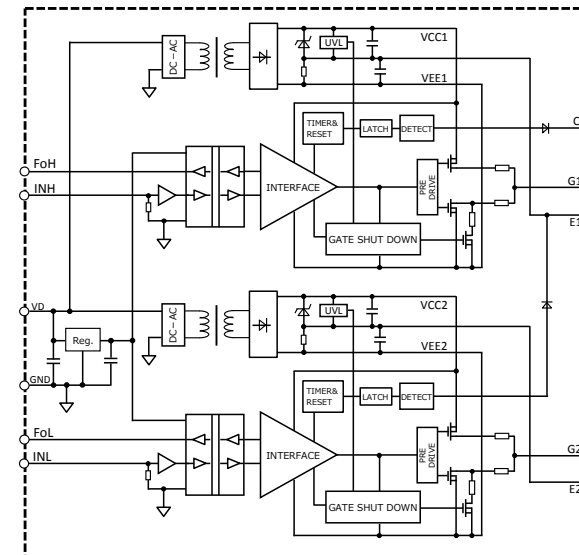
Development schedule
 ES : Now CS : Aug.-'19 MP : Oct.-'19



GAU2xxP-15405 (On planning)

Main spec.
 Built-in core gate driver : **VLB5xx-01R**
 Isolation voltage : **4kVrms (1min)**
 Gate peak current : **40Amax**
 Gate average current : **200mAmax (per 1circuit)**

Development schedule
 ES : May CS : Sep.-'19 MP : Nov.-'19



The maximum switching frequency of gate drive unit.

Maximum switching frequency at driving CM1200DW-34T

Gate drive unit	Parallel number			
	1	2	3	4
GAU220P-15402	~6.8kHz	~3.4kHz	NG	NG
GAU2xxP-15405	~13.6kHz *1	~6.8kHz	~4.5kHz	~3.4kHz

*1) Rg_on and Rg_off on gate drive unit must be over than 0.5 Ω

Maximum switching frequency at driving CM800DW-34T

Gate drive unit	Parallel number			
	1	2	3	4
GAU220P-15402	~10.2kHz	~5.1kHz	~3.4kHz	NG
GAU2xxP-15405	~20.3kHz	~10.2kHz	~6.8kHz	~5.1kHz

Preliminary

The way to calculate gate resistance value

Gate ON resistance value per one element = $R_b + (N \times R_{g_on})$

Gate OFF resistance value per one element = $R_b + (N \times R_{g_off})$

Note)

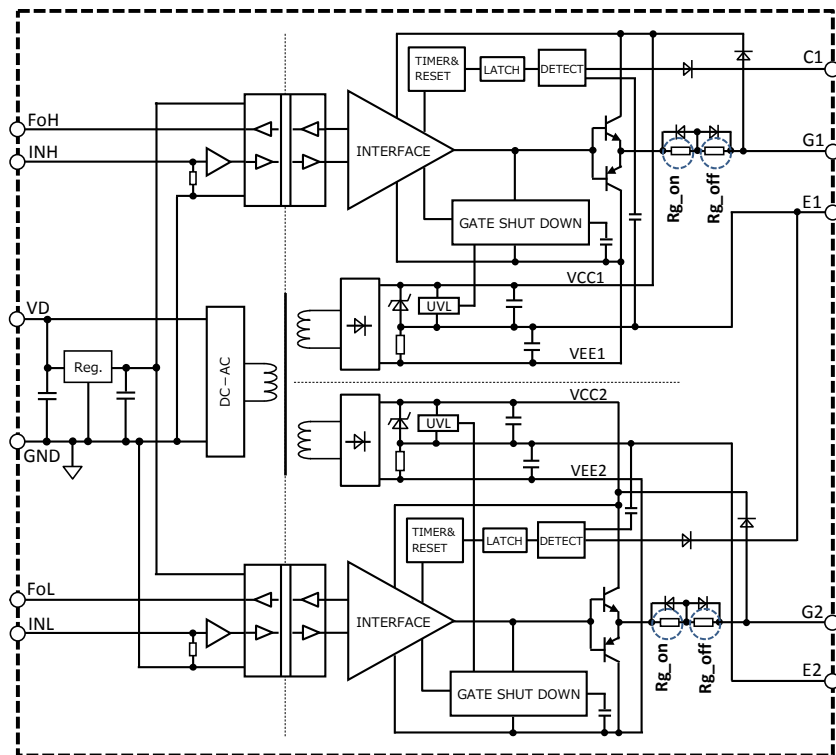
R_b : 0.1Ω (Compound value of 4 chip resistors on VLA595)

N : Parallel number

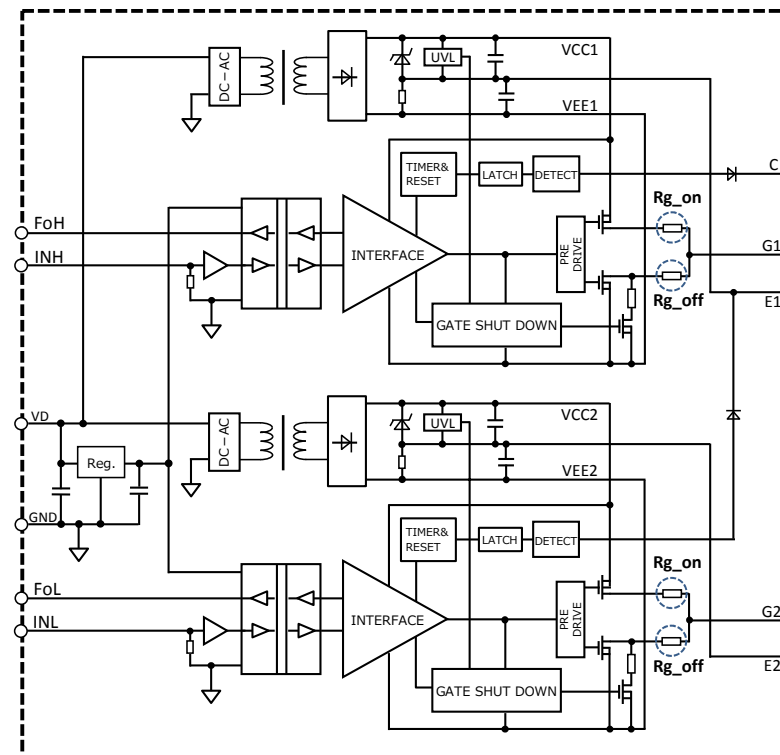
R_{g_on} : Gate ON resistance value on gate drive unit

R_{g_off} : Gate OFF resistance value on gate drive unit

Drive unit (GAU220P-15402)



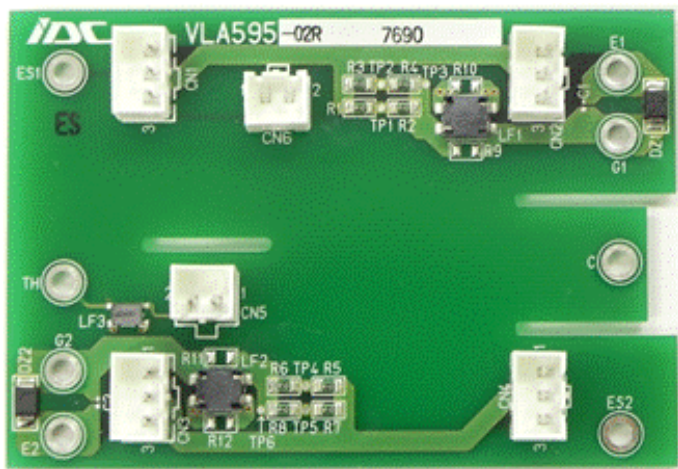
High power type new drive unit GAU2xxP-15405 (On planning)



IGBT module Adapter Unit VLA595-02R

Preliminary

Outline (Image photo)

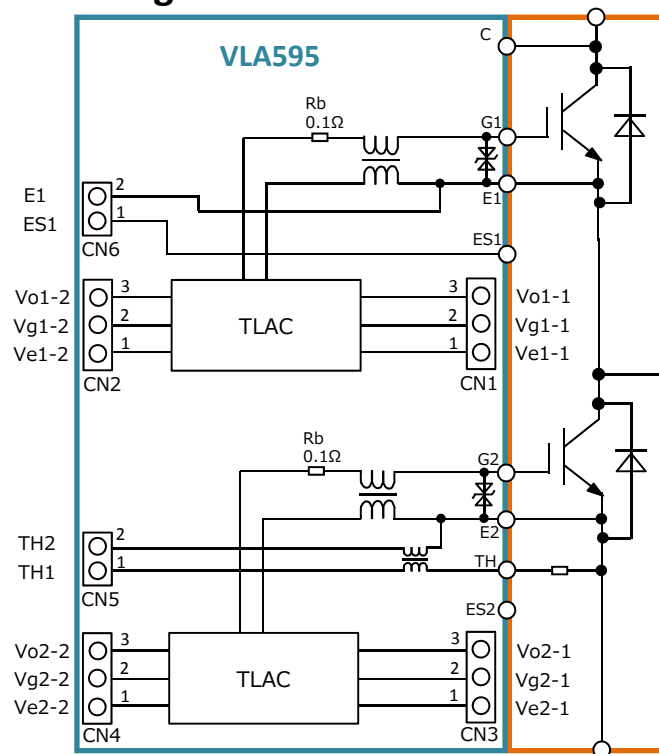


Size : 68 x 99 mm

Features

- >Directly mountable on the 2in1 module (LV100)
- >Easy and flexible to use for parallel connection
- >Built in Total Line length Adjustment Circuit (TLAC) for parallel connection of gate and emitter
- >Wire connection to gate driver unit
- >Built-in connector for thermistor

Block Diagram



Targeted IGBT Modules

VCES : 1200V/1700V, class 2in1 IGBT module (LV100)

Applications

HVDC infrastructure
 Medium voltage inverter
 Wind turbine inverter

Preliminary

Spec. of VLA595-02R

Maximum ratings (unless otherwise noted, Ta=25 degC)

Symbol	Parameter	Conditions	Ratings	Unit
Topr	Operating temperature	No condensation allowable	-40 ~ 85	deg C
Tstg	Storage temperature	No condensation allowable	-40 ~ 85	deg C
Pd_rb	Maximum power dissipation of balance resistor	Total value of 4 chip resistors	0.8	W
VDC_Link	Main circuit voltage	The supply voltage of mail circuit	2400	V
VCp	Collector peak voltage	Off surge voltage on C terminal	3300	V

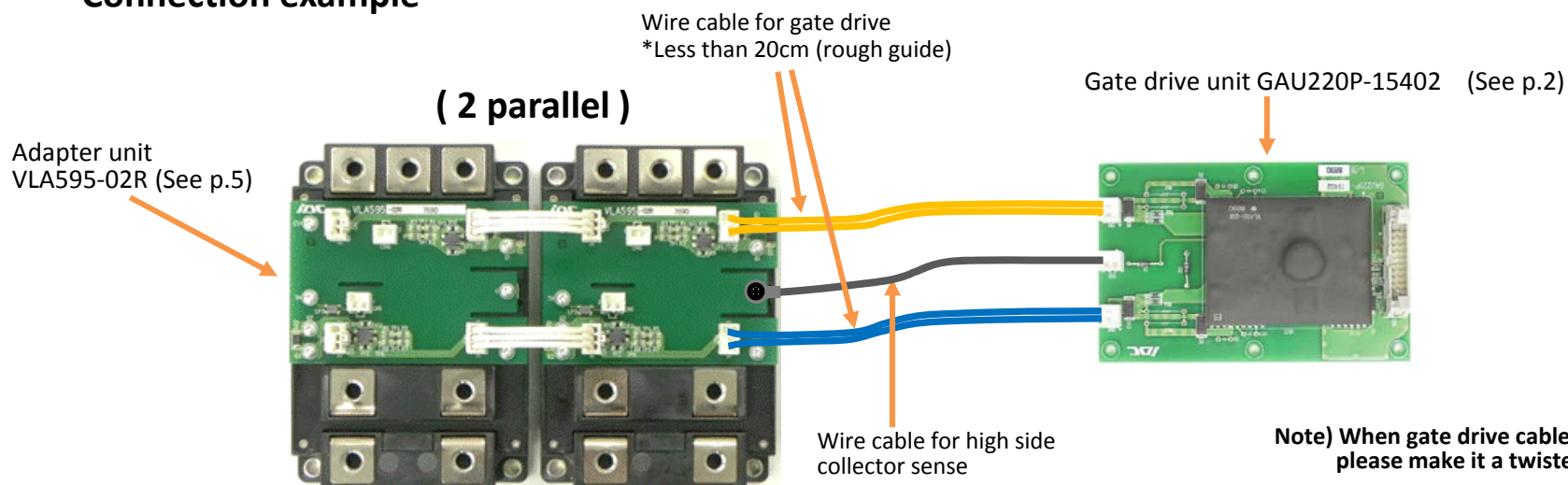
Electrical characteristics (unless otherwise noted, Ta=25 degC)

Symbol	Item	Conditions	Limits			Unit
			Min	Typ	Max	
Rb	Balance resistance	Compound value of 4 chip resistors	-	0.1	-	Ω

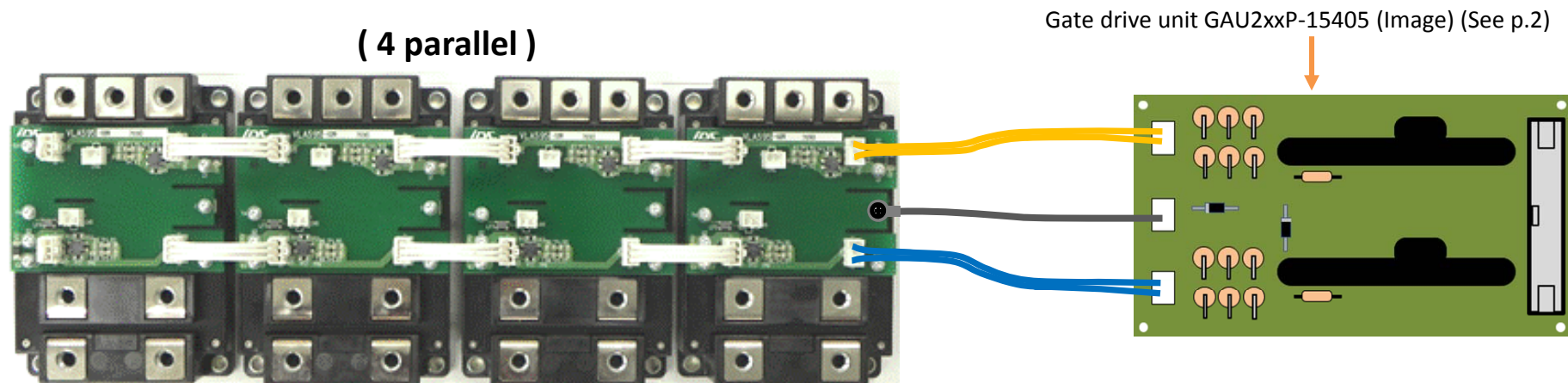


Preliminary

Connection example



Note) The harness for connections doesn't attach at the time of shipment.



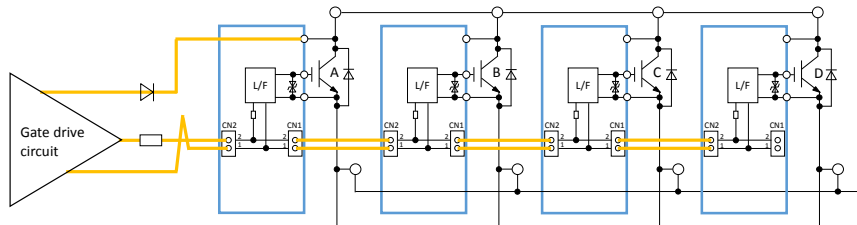
Note) Unevenness of gate voltage waveform during parallel modules is very small by Total Line length Adjustment Circuit of VLA595.



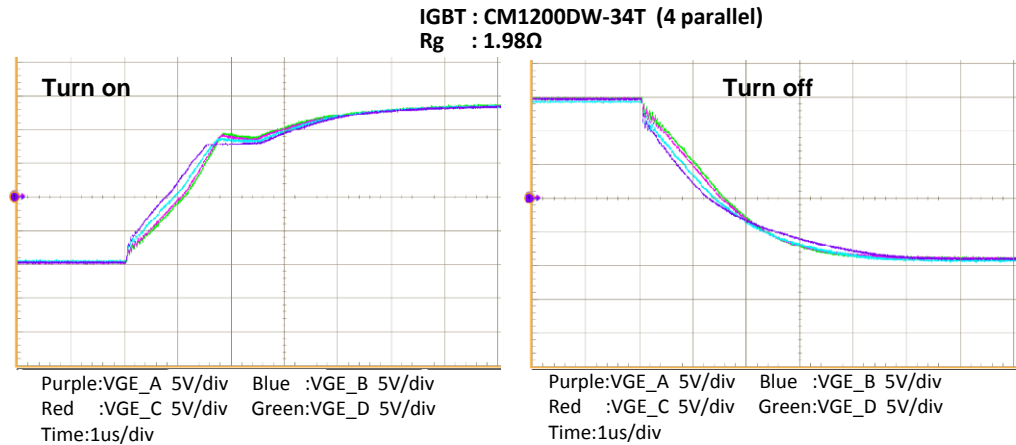
Preliminary

Effectiveness of Total Line length Adjustment Circuit of VLA595

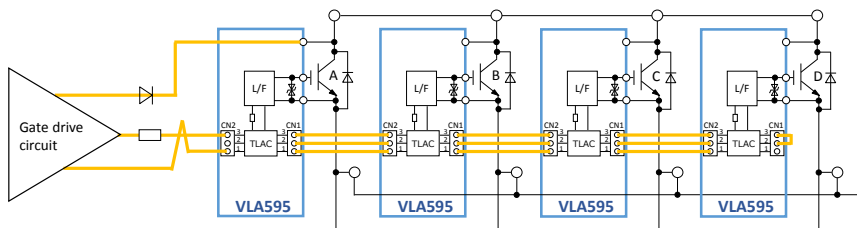
The case of using old type parallel connection (Example)



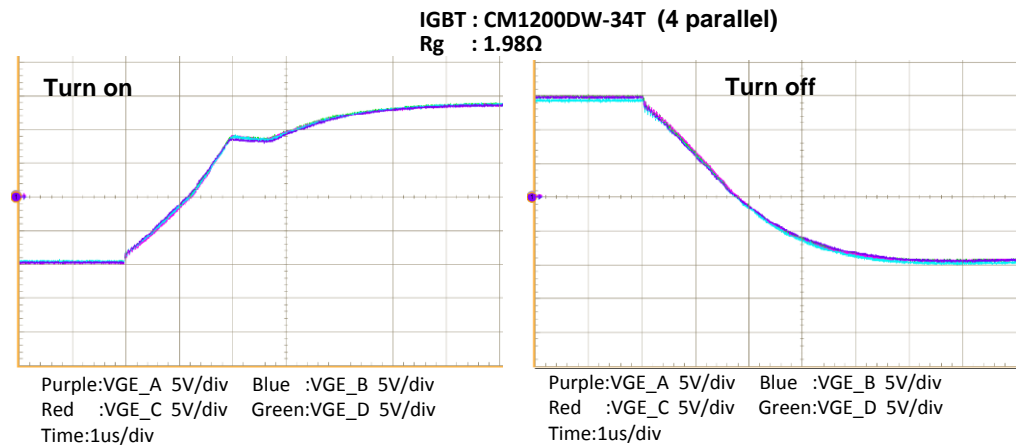
*This type connection is generally not recommended for parallel connection because it's different in the wiring total line length of the gate and emitter every each element.



The case of using VLA595

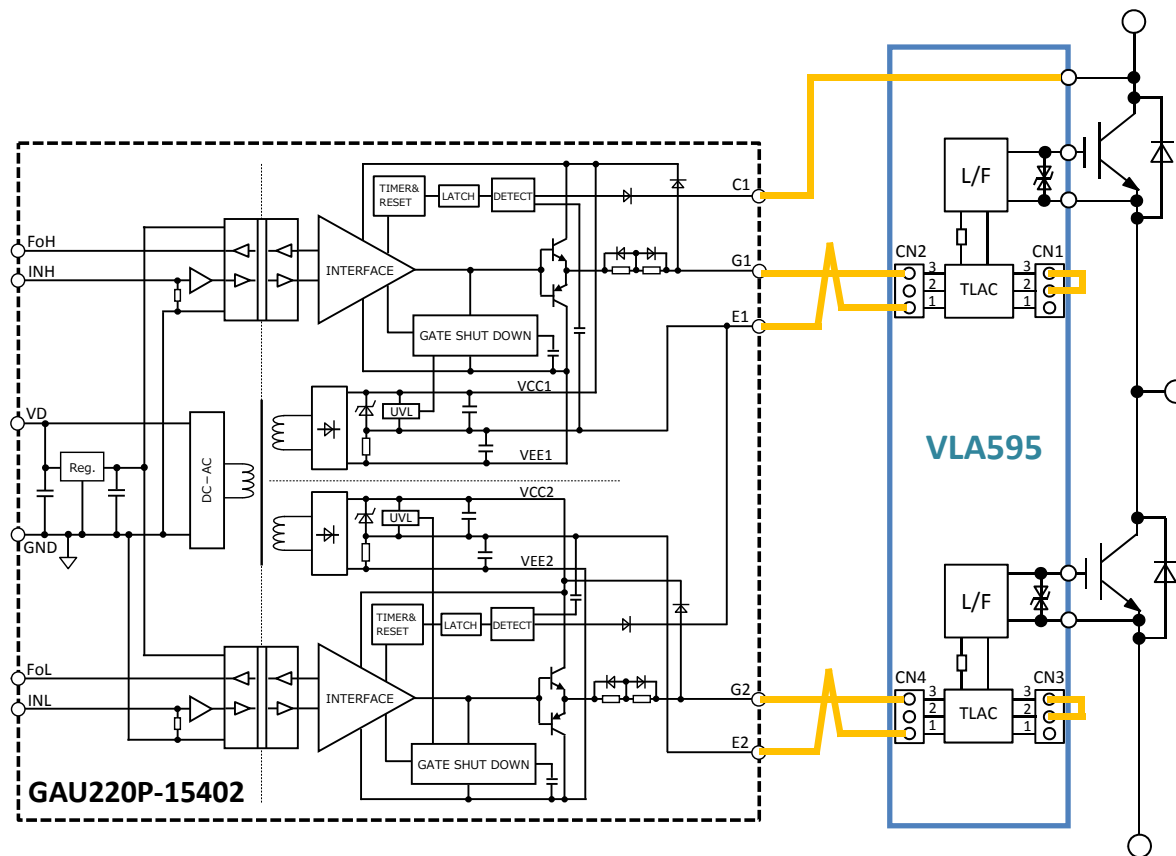


*The wiring total line length of the gate and emitter every each element becomes same by Total Line length Adjustment Circuit (TLAC) of VLA595.



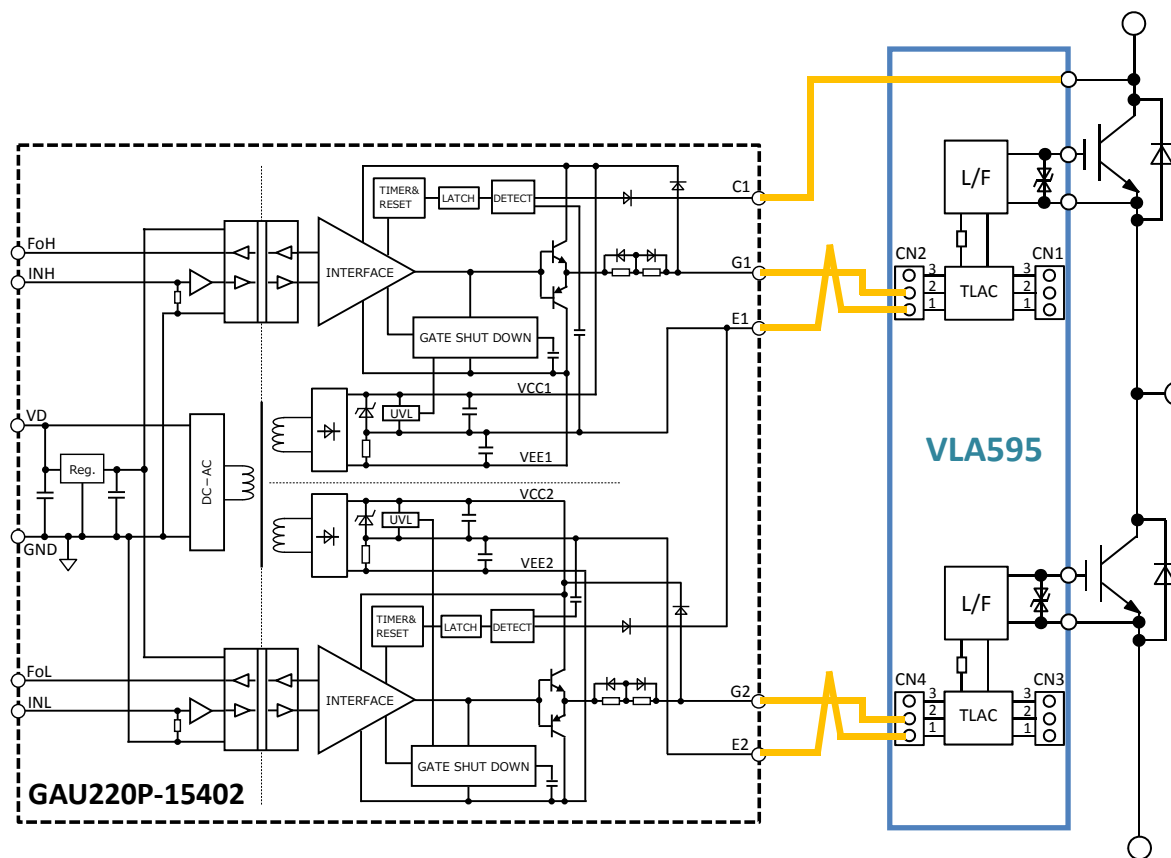
Application example 1

(single connection 1)



Application example 2

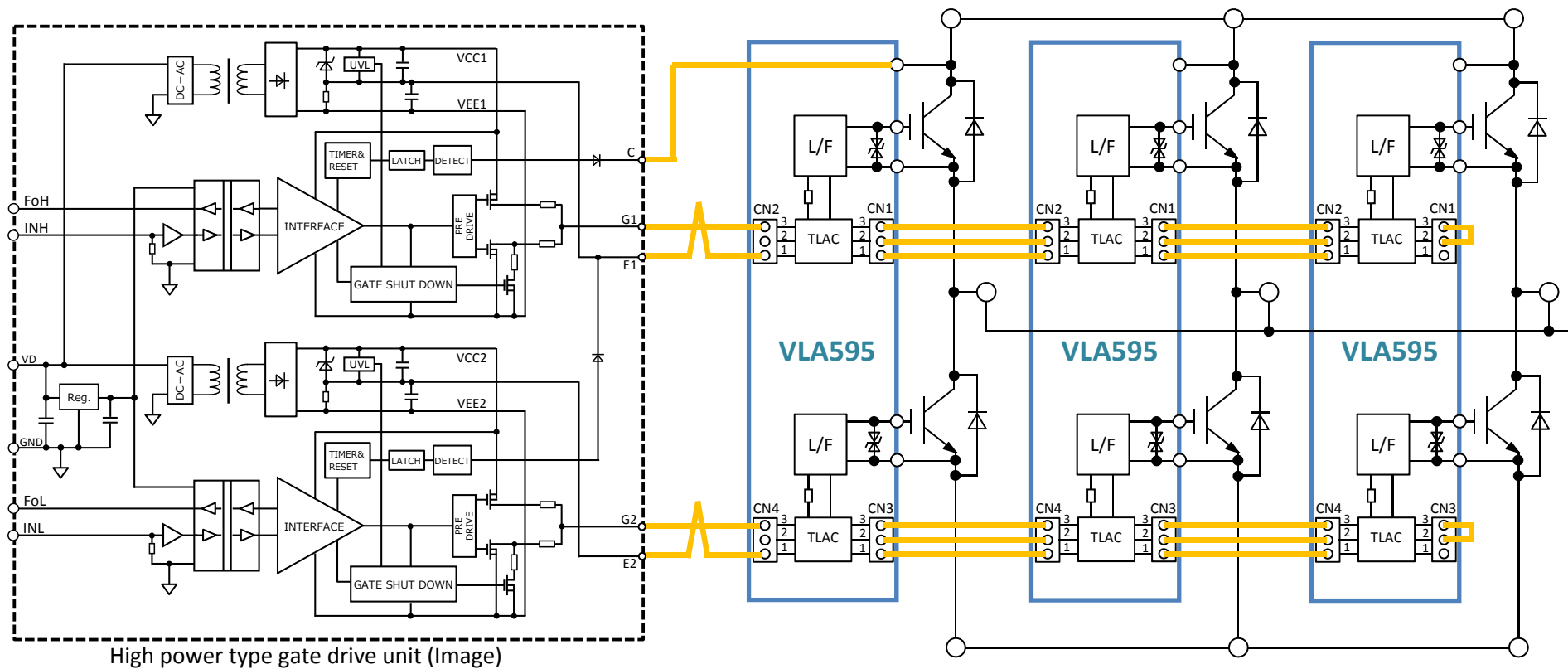
(single connection 2)



Preliminary

Application example 3

(3 parallel connection)



Preliminary

Details of connector on VLA595-02R

CN1: 53258-0329 (Molex)	
Pin N.o.	Signal
1	Ve1-1
2	Vg1-1
3	Vo1-1

CN2: 53258-0329 (Molex)	
Pin N.o.	Signal
1	Ve1-2
2	Vg1-2
3	Vo1-2

CN3: 53258-0329 (Molex)	
Pin N.o.	Signal
1	Ve2-1
2	Vg2-1
3	Vo2-1

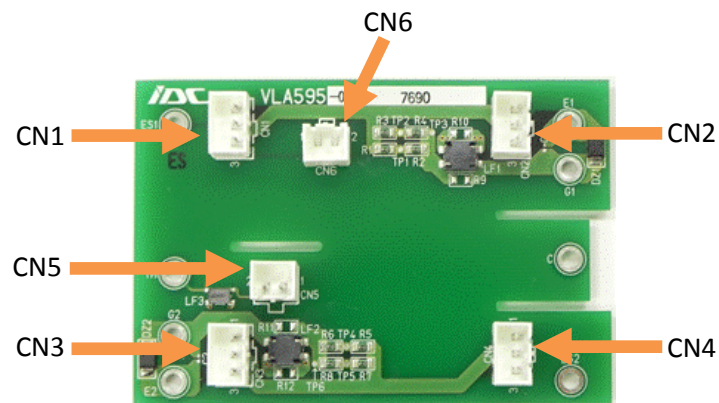
CN4: 53258-0329 (Molex)	
Pin N.o.	Signal
1	Ve2-2
2	Vg2-2
3	Vo2-2

CN5: 53258-0229 (Molex)	
Pin N.o.	Signal
1	TH1
2	TH2

CN6: 53258-0229 (Molex)	
Pin N.o.	Signal
1	E1
2	ES1

We recommend following parts or equivalent product for wire cable

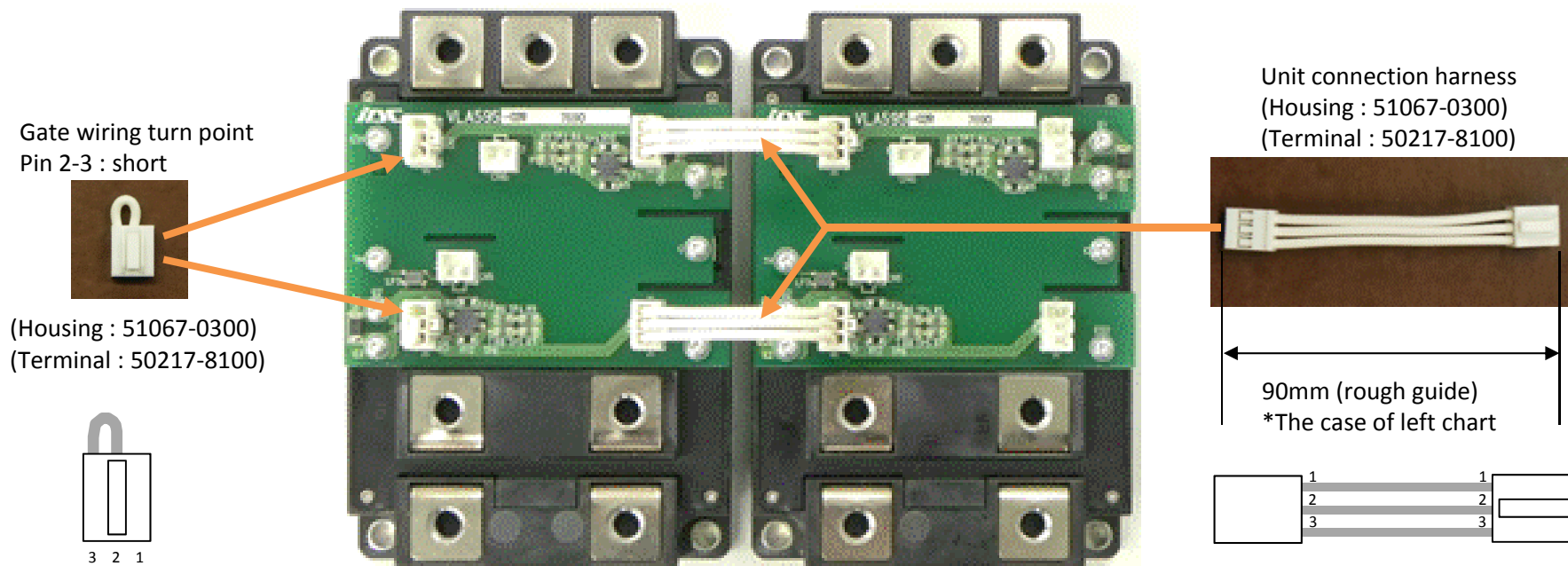
HOUSING	TERMINAL	Maker	Note
51067-0200	50217-8100	Molex	to 53258-0229
51067-0300	50217-8100	Molex	to 53258-0329



Preliminary

Harness for parallel connection

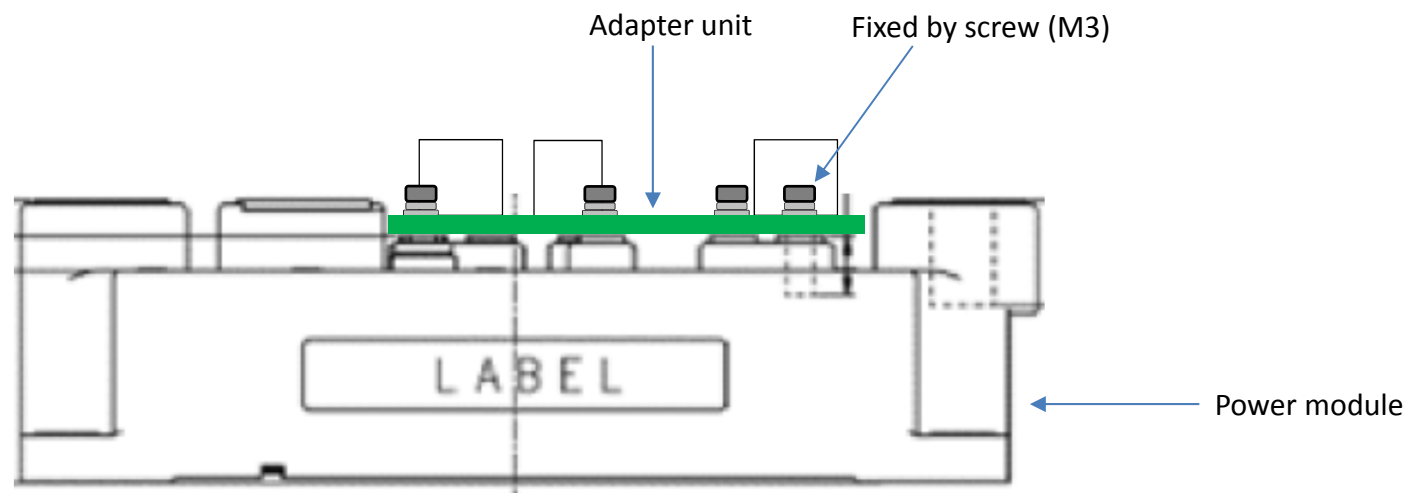
The harness for connections doesn't attach at the time of shipment, please prepare the harness like following figure.



- Note**
- 1) Please make the length of 3 lines the same length about the unit connection harness.
 - 2) When 3 lines of harness become dispersive, please take a measure by an spiral tube or insulok etc.

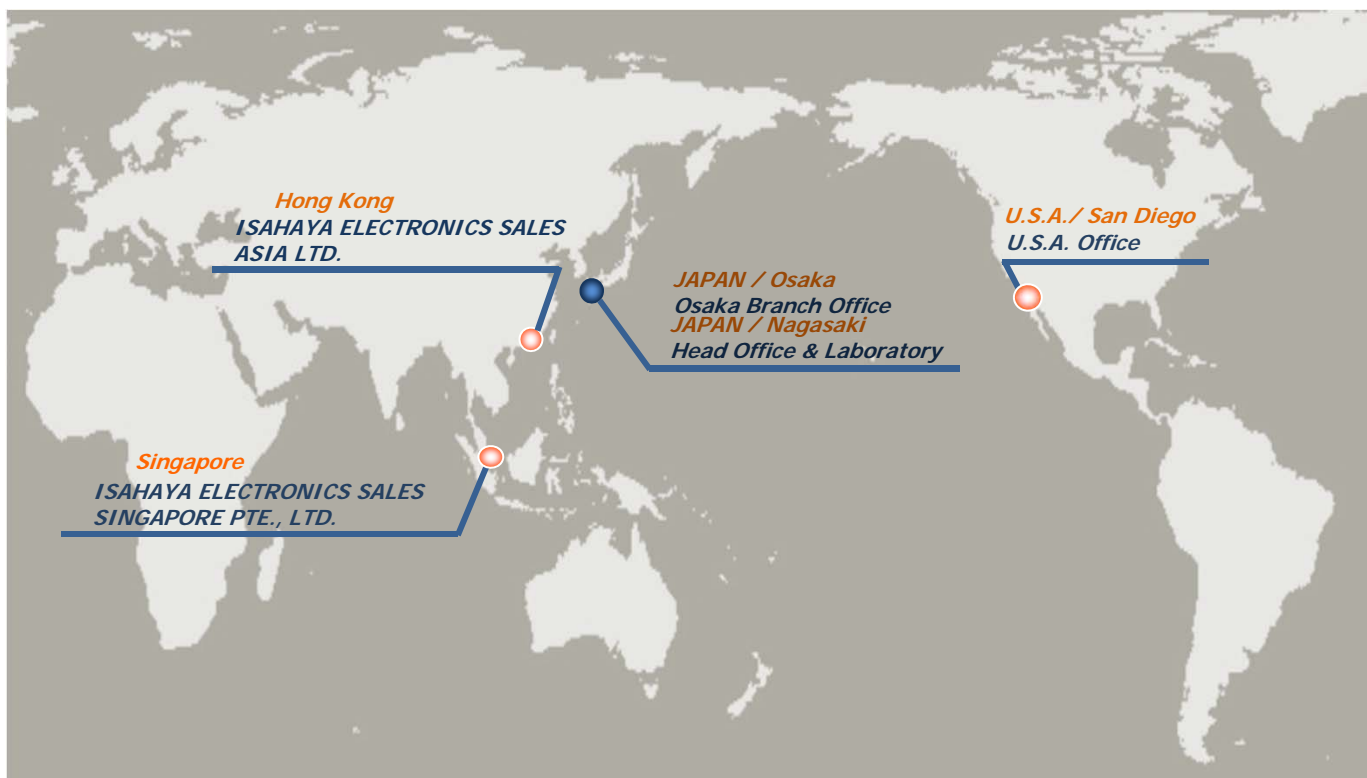
The installation of the adapter unit on IGBT module

When fixing this adapter unit on IGBT module , please use the screws with spring washers.



Sales office and window of request

Preliminary



- Osaka Marketing Office (covers Japan)
TEL (06)4709-7218 FAX(06)4709-7359
- Hong Kong / IESA (covers China)
TEL 852-2570-2238 FAX 852-2570-5438
- IESA U.S.A Office (covers North America, South America and Europe)
TEL 1-858-598-6793 FAX 1-858-598-6840
- Singapore / IESS (covers South East Asia and India)
TEL 65-6227-7714 FAX 65-6227-7716



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