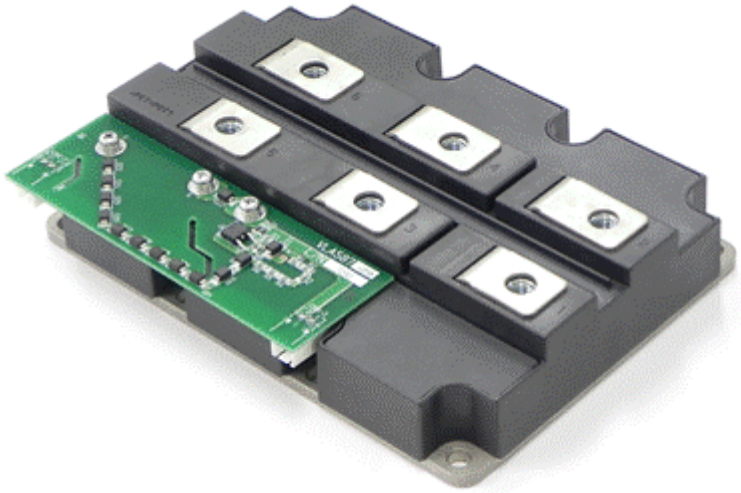
Preliminary

Adapter Unit VLA587-01R for 3.3kV class HVIGBT

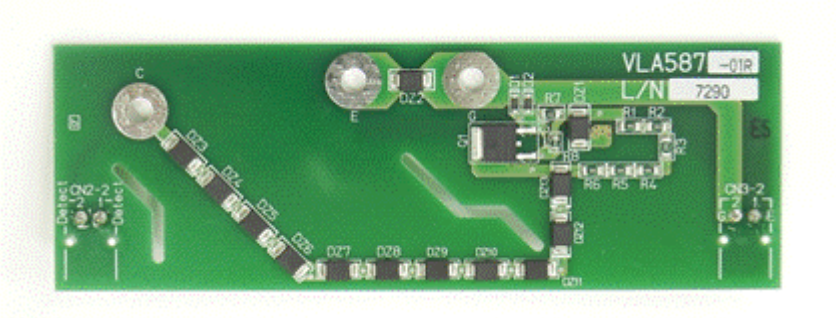


Jul.2017

HVIGBT Adapter Unit VLA587-01R

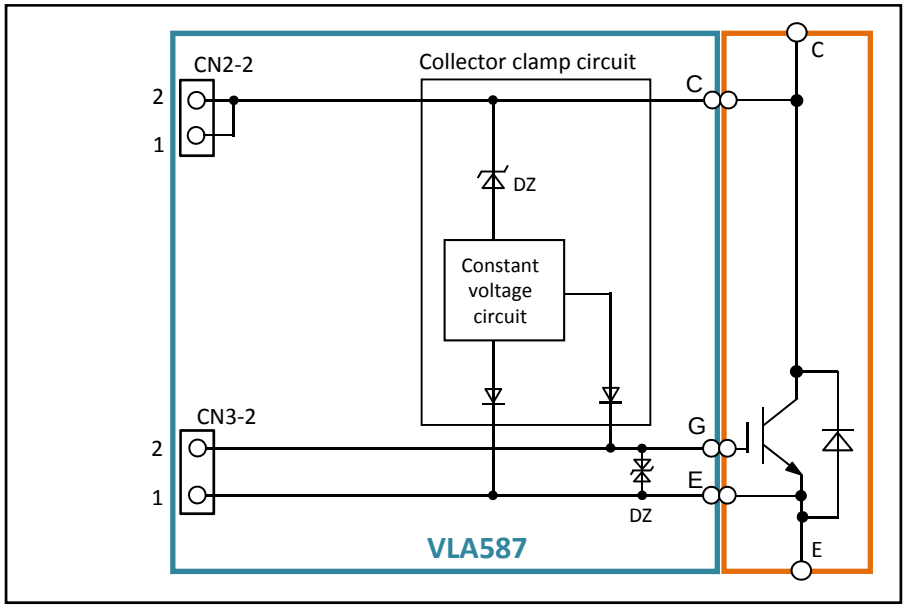
Preliminary

Outline (Image photo)



Size : 44 x 130 mm

Block Diagram



Features

>Directly mountable on the HVIGBT module
>Built in collector clamp circuit
>Built in the constant voltage circuit for gate protection
>Wire connection to gate driver unit
>Mounted connector on back substrate
>Exclusive to combination use with Isahaya gate driver

Targeted IGBT Modules

VCES : 3300V,1000A~ 1500A class IGBT module

Applications

HVDC infrastructure
Medium voltage inverter
Wind turbine inverter etc..

Preliminary

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
VDC_Link	Main circuit voltage	The voltage between P and N of main circuit	2200	V
VCp	Collector peak voltage	Off surge voltage on C terminal	3300	V

Electrical characteristics

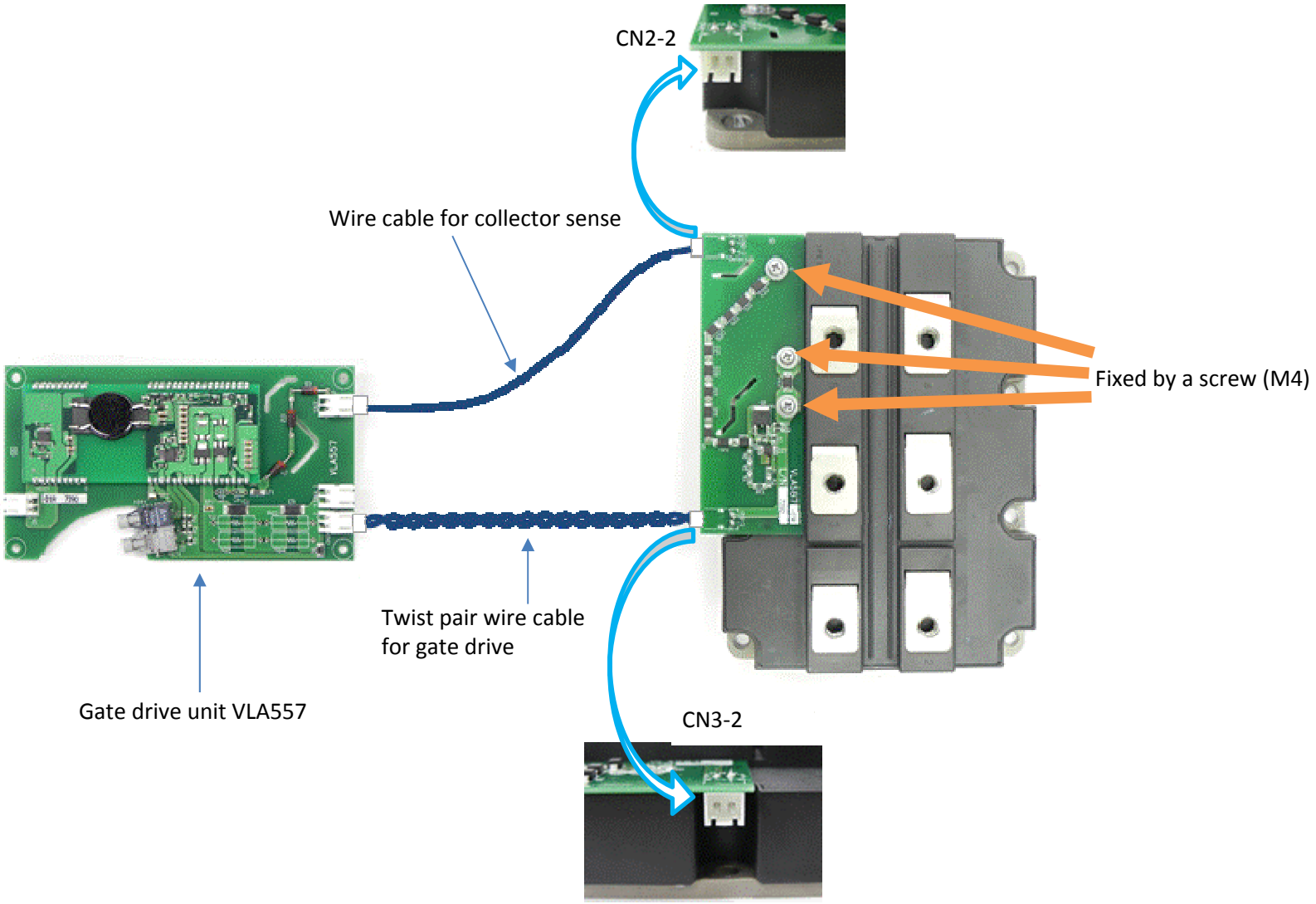
(unless otherwise noted, Ta=25 degC)

Symbol	Item	Conditions	Limits			Unit
			Min	Typ	Max	
Vz (*1)	Clamp zener voltage	Total zener voltage in collector clamp circuit at Iz = 1mA , Tj=25 deg C	2510	2650	2790	V

*1 : It depends on the condition of use, but actual clamp voltage of collector approximately rises by 550V from 250V to Vz.

Preliminary

Connection example



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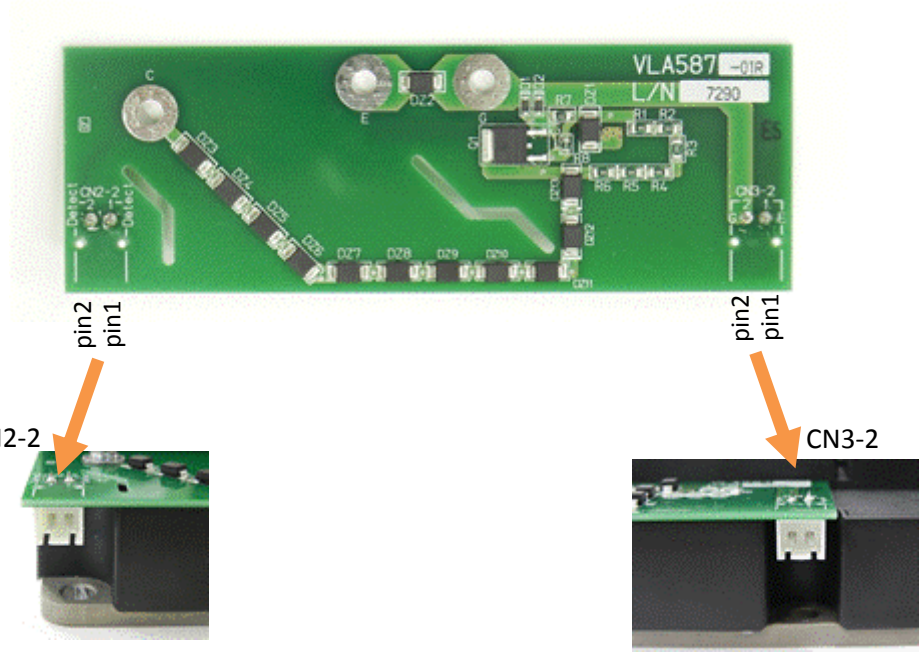
Details of connector

CN2-2: 53259-0229 (Molex)	
Pin N.o.	Signal
1	Collector
2	Collector

CN3-2: 53259-0229 (Molex)	
Pin N.o.	Signal
1	Emitter
2	Gate

We recommend following parts or equivalent product for wire cable

HOUSING	TERMINAL	Maker
51067-0200	50217-8100	Molex

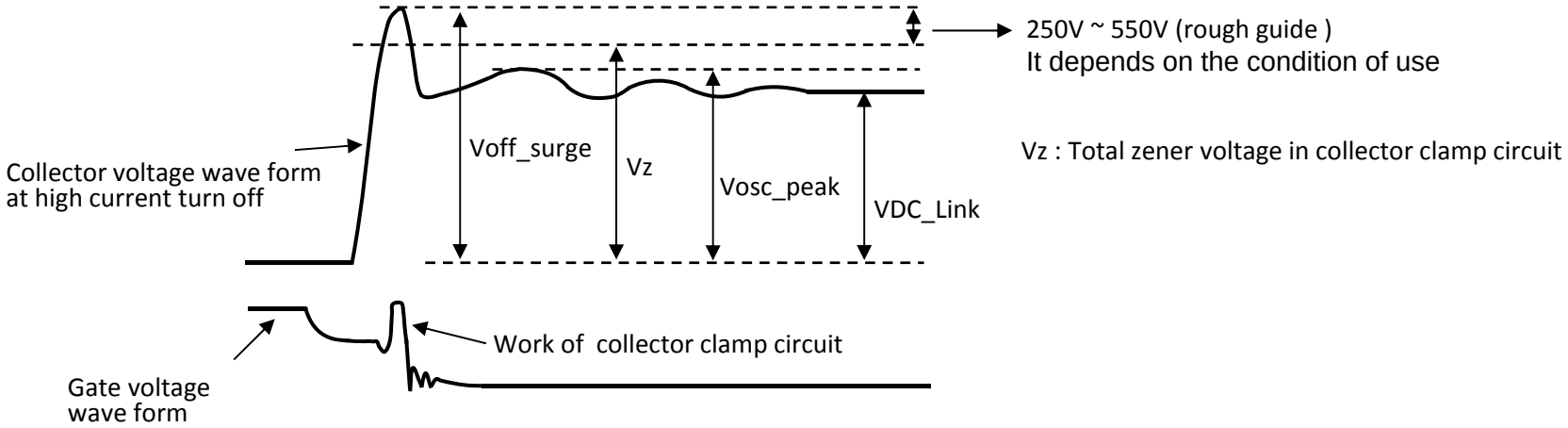


Note about collector clamp circuit (1)

Preliminary

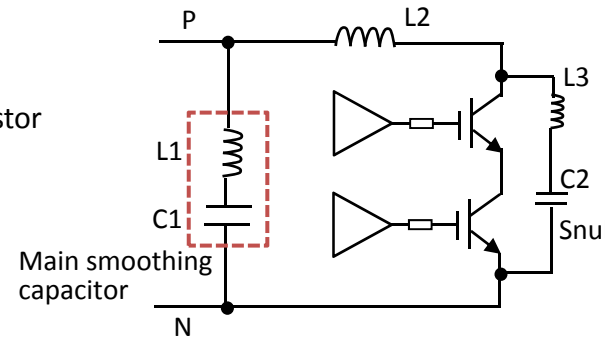
The following chart is the collector voltage wave form of IGBT at high current turn off.
This drive unit has collector clamp circuit built in.
As for this clamp circuit, there is effectiveness to control the surge voltage on collector at high current turn off, but the surge voltage may go over the maximum rating of collector voltage depending on the condition of use.
Therefore please confirm it in the actual machine evaluation.
Finally each parameter must be the following relation. Please keep this condition.

VDC_Link < Vosc_peak < Vz < Voff_surge



The next countermeasures are effective to suppress the rise and oscillation of the collector voltage.

(1) Reducing the value of L1,L2 and L3
(2) Increasing the value of C2
(3) Increasing the resistance of off gate resistor
(4) Limiting maximum collector current
(5) Reducing the VDC_Link



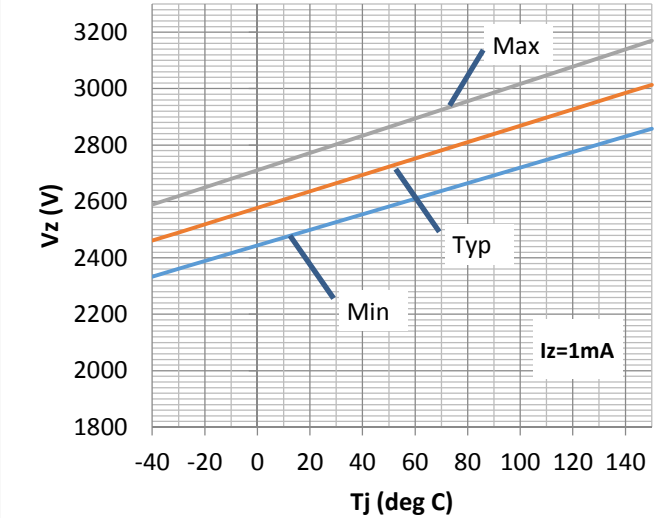
L1:Stray inductance in main smoothing capacitor
L2:Stray inductance of main wiring
L3:Stray inductance of snubber circuit
C1:Main smoothing capacitor
C2:Snubber capacitor

Note about collector clamp circuit (2)

Preliminary

The total zener voltage in the collector clamp circuit has the tolerance and fluctuation by temperature such as the following chart.
Please keep the main circuit so that the DC_Link voltage does not exceed this zener voltage.

Total zener voltage characteristic

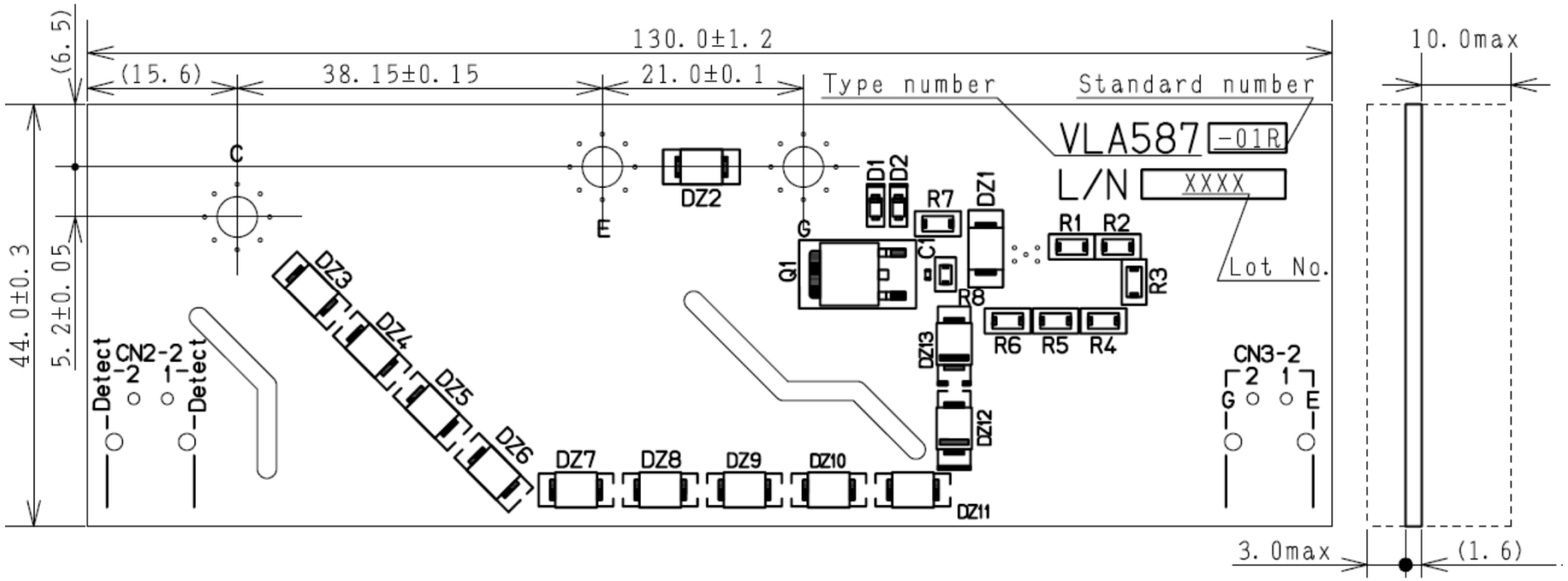


Note about collector clamp circuit (3)

When the collector clamp circuit operates repeatedly, it may be destroyed for heat.
Therefore please keep it to work non-consecutively.

Outline & Size

Preliminary



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