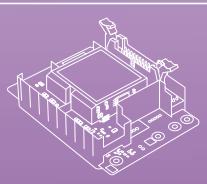
TAMURA

ELECTRONICS COMPONENTS

Gate Driver



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Introduction

What's the TAMURA's Gate Driver?

TAMURA's Gate Driver is a 2-channel isolated circuit module for IGBT / SiC MOSFET.
The Gate Driver features a DC / DC converter and integrated drive circuit.
The Gate Driver is designed for robust operation in applications using IGBT / SiC MOSFET.

Features

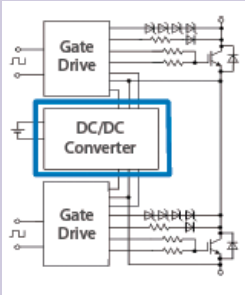
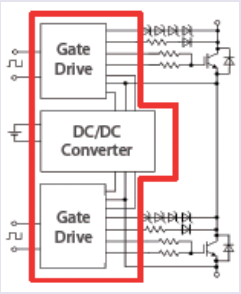
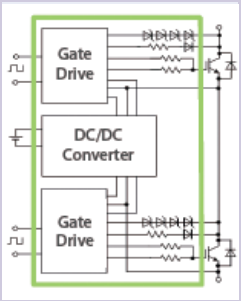
Wide Input Voltage

Low Stray Capacity

High-Speed Response & Accuracy

Gate Driver Products overview

You can refer to gate driver's web selection guide from this code

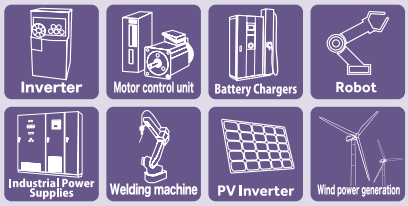
Category	Function	Block diagram	Appearance
DC-DC Converter	DC-DC Converter for 2in1 Power Module		
Gate Driver Module	DC-DC Converter + Gate drive Circuit		
Gate Driver Unit	Gate Driver Module + Gate resistors Protective function		

Product Lineup

Gate Driver Module

2CG-B Series

Applications



Features

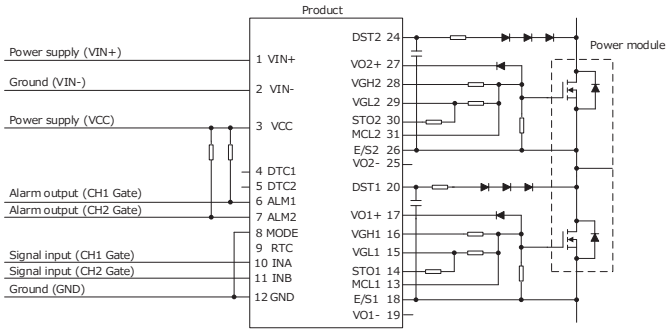
1. All-in-one (built-in DC-DC converter/ Gate driver)
2. High insulation voltage (AC5kV)
3. Low stray capacity (12pF TYP)
4. Dual output corresponding to 2 in 1
5. Wide input voltage range (DC13V-28V)

Standards

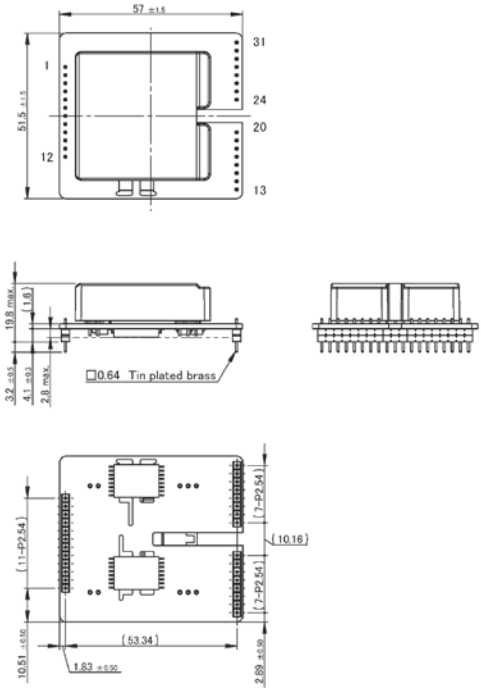
UL508 compliant

The next generation gate driver emerges with high insulation voltage (support to 2500V module) and low profile, in addition to the conventional low stray capacity.

Application Image



Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

General characteristics

Model		2CG010BBC11N	2CG010BBC12N	2CG010BBC13N	2CG010BBC14N	2CG010BBC15N
Application		IGBT		SiC-MOSFET		
Input	Input Voltage (Recommended)	DC13.5V ~ 26.4V				
	Logic Input Voltage (Recommended)	DC3V ~ 5.5V				
Output	Number of Output	2				
	Output Power (per 1ch)	4.0W	3.3W	3.5W	3.2W	3.0W
	Gate Voltage (ON)	+14V ~ +16V	+14V ~ +16V	+17V ~ +19V	+17V ~ +19V	+14V ~ +16V
	Gate Voltage (OFF)	–9V ~ –11V	–14V ~ –16V	–3V ~ –5V	–1V ~ –3V	–3V ~ –5V
	Peak Output Current (Gate Current)	±43A				
Insulation	Withstand Voltage	Primary to secondary : AC5000V				
		Secondary to secondary : AC4000V				
	Delay Time	100ns				
	Minimum Clearance Distance	Primary to secondary : 14mm				
		Secondary to secondary : 7mm				
	Minimum Creepage Distance	Primary to secondary : 16mm				
		Secondary to secondary : 12mm				
Function	Switching Mode Select	Direct mode and half bridge mode can be selected				
	Dead Time (Half Bridge Mode)	Adjustable by external circuit				
	Desaturation Protection	Yes				
	Soft Turn Off	Yes				
	Miller Clamp	Yes				
	Protection Release Condition	Auto recovery				
Environment	Ambient Temperature (Operating)	–40 ~ +85℃ (Input Voltage ~ DC13.5V ~ 18V)				
		–40 ~ +75℃ (Input Voltage ~ DC18V ~ 26.4V)				
	Ambient Humidity (Operating)	20 ~ 95% RH (No condensation)				
	Ambient Temperature (Storage)	–40 ~ +90℃				
	Ambient Humidity (Storage)	5 ~ 95% RH (No condensation)				

*The content of this document is subject to change without prior notice for the purpose of improvements, etc.

Pin assignment

Input side

Pin No.	Name	Explanation of pins
1	VIN+	Power supply terminal for DC/DC converter (+)
2	VIN-	Power supply terminal for DC/DC converter (-)
3	VCC	Power supply input pin of driver circuit
4	DTC1	Power supply terminal for DC/DC converter (+)
5	DTC2	Power supply terminal for DC/DC converter (-)
6	ALM1	Power supply terminal for DC/DC converter (+)
7	ALM2	Power supply terminal for DC/DC converter (-)
8	MOD	Mode selection pin
9	RTC	Pin for adjusting the recovery time of the protection circuit
10	INA	Control input terminal A
11	INB	Control input terminal B
12	GND	Ground pin for drive circuit

Output side

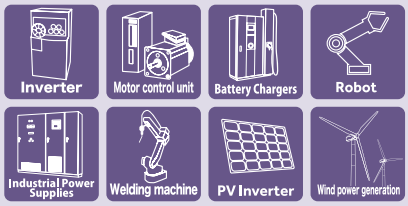
Pin No.	Name	CH	Explanation of terminal
13	MCL1	1	Miller clamp pin
14	STO1	1	Soft turn off pin
15	VGL1	1	OFF side of gate output
16	VGH1	1	ON side of gate output
17	VO1+	1	DC/DC converter output pin
18	E/S1	1	Emitter or source connection pin
19	VO1-	1	DC/DC converter output pin
20	DST1	1	Desaturation protection pin
21	None		None
22	None		None
23	None		None
24	DST2	2	Desaturation protection pin
25	VO2-	2	DC/DC converter output pin
26	E/S2	2	Emitter or source connection pin
27	VO2+	2	DC/DC converter output pin
28	VGH2	2	ON side of gate output
29	VGL2	2	OFF side of gate output
30	STO2	2	Soft turn off pin
31	MCL2	2	Miller clamp pin

Product Lineup

Gate Driver Module

2CG-D Series

Applications



Features

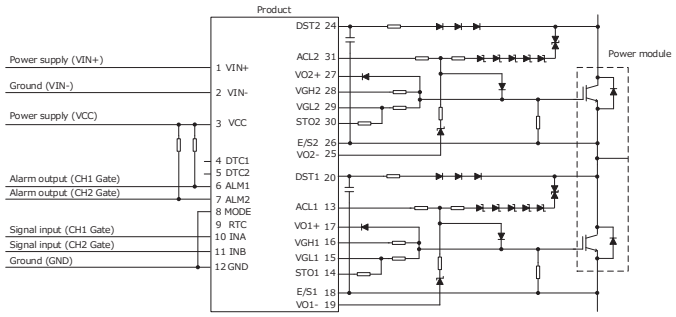
1. All-in-one (built-in DC-DC converter/ Gate driver)
2. High insulation voltage (AC5kV)
3. Low stray capacity (12pF TYP)
4. Dual output corresponding to 2 in 1
5. Wide input voltage range (DC13V-28V)

Standards

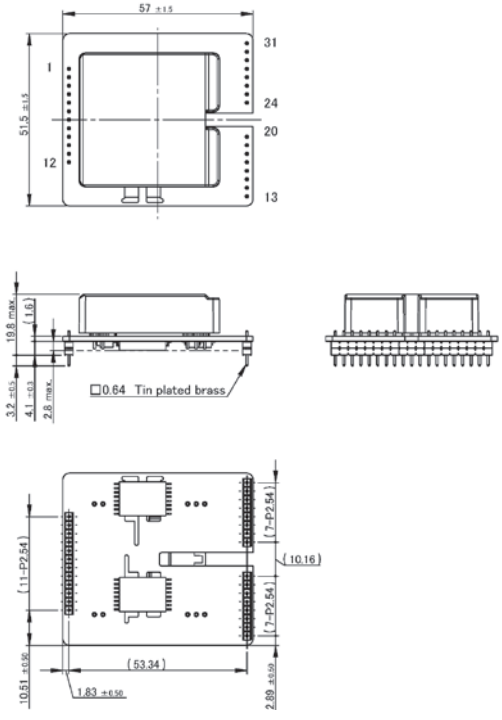
UL508 compliant

The next generation gate driver emerges (With Active Clamp) with high insulation voltage (support to 2500V module) and low profile, in addition to the conventional low stray capacity.

Application Image



Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

General characteristics

Model		2CG010DBC11N	2CG010DBC12N
Application		IGBT	
Input	Input Voltage (Recommended)	DC13.5V ~ 26.4V	
	Logic Input Voltage (Recommended)	DC3V ~ 5.5V	
Output	Number of Output	2	
	Output Power (per 1ch)	4W	T.B.D
	Gate Voltage (ON)	+14V ~ +16V	+14V ~ +16V
	Gate Voltage (OFF)	–9V ~ –11V	–14V ~ –16V
	Peak Output Current (Gate Current)	±43A	
Insulation	Withstand Voltage	Primary to secondary : AC5000V	
		Secondary to secondary : AC4000V	
	Delay Time	100ns	
	Minimum Clearance Distance	Primary to secondary : 14mm	
		Secondary to secondary : 7mm	
	Minimum Creepage Distance	Primary to secondary : 16mm	
		Secondary to secondary : 12mm	
Function	Switching Mode Select	Direct mode and half bridge mode can be selected	
	Dead Time (Half Bridge Mode)	Adjustable by external circuit	
	Desaturation Protection	Yes	
	Soft Turn Off	Yes	
	Active Clamp	Yes	
	Protection Release Condition	Auto recovery	
Environment	Ambient Temperature (Operating)	–40 ~ +85˚C (Input Voltage ~ DC13.5V ~ 18V)	
		–40 ~ +75˚C (Input Voltage ~ DC18V ~ 26.4V)	
	Ambient Humidity (Operating)	20 ~ 95% RH (No condensation)	
	Ambient Temperature (Storage)	–40 ~ +90˚C	
	Ambient Humidity (Storage)	5 ~ 95% RH (No condensation)	

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Pin assignment

Input

Pin No.	Name	CH	Function
1	VIN+	Common	Power supply for DC/DC converter (+)
2	VIN–	Common	Power supply for DC/DC converter (–)
3	VCC	—	Power supply for drive circuit
4	DTC1	1	Dead time adjustment
5	DTC2	2	Dead time adjustment
6	ALM1	1	Alarm signal output
7	ALM2	2	Alarm signal output
8	MOD	—	Mode select
9	RTC	—	Recovery time of protection circuit control
10	INA	1	Control input A
11	INB	2	Control input terminal B
12	GND	—	Control input B

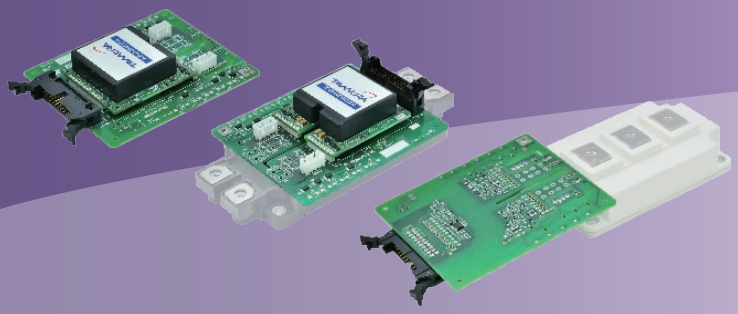
Output

Pin No.	Name	CH	Function
13	ACL1	1	Active clamp pin
14	STO1	1	Soft turn off pin
15	VGL1	1	Gate OFF side pin
16	VGH1	1	Gate ON side pin
17	VO1+	1	DC/DC converter output pin
18	E/S1	1	Emitter · source connection pin
19	VO1–	1	DC/DC converter output pin
20	DST1	1	Desaturation protection pin
21	NONE		None
22	NONE		None
23	NONE		None
24	DST2	2	Desaturation protection pin
25	VO2–	2	DC/DC converter output pin
26	E/S2	2	Emitter · source connection pin
27	VO2+	2	DC/DC converter output pin
28	VGH2	2	Gate ON side pin
29	VGL2	2	Gate OFF side pin
30	STO2	2	Soft turn off pin
31	ACL2	2	Active clamp pin

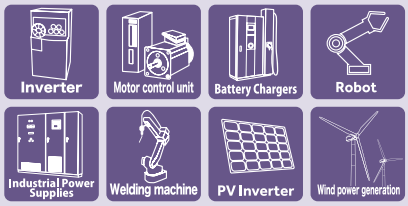
Product Lineup

Evaluation board for 2CG-B series

2RB Series



Applications



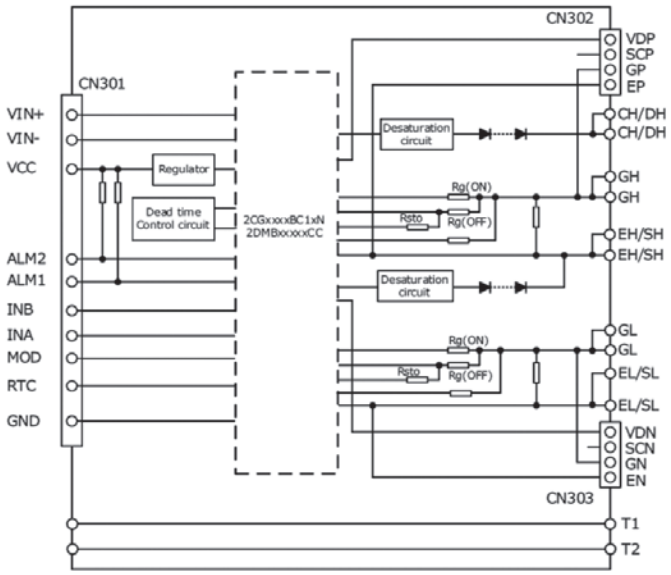
Features

1. You can start evaluating the Gate driver module right away.
2. With DESAT protection circuit

2RB series is an evaluation board dedicated to Gate Driver Module. You can start evaluating the Gate Driver Module (2CG-B series) right away.

Noted
The purpose of this product is to easily evaluate the power module.
It cannot be used in mass production.

Internal Block Diagram



General characteristics of 2RB series

Port no	2RB010CB	2RB020BB
Power semiconductor device	For IGBT EconoDUAL™ / 62mm	For SiC MOSFET 62mm / Mitsubishi
Operating Temperature	–40 ~ 85ºC	–40 ~ 85ºC
Storage Temperature	–40 ~ 90ºC	–40 ~ 90ºC
Input voltage (VIN) (Recommended)	DC13.5V ~ 26.4V	DC13.5V ~ 26.4V
Input voltage (Vcc) (Recommended)	DC13.5V ~ 26.4V	DC13.5V ~ 26.4V
Signal input voltage (Recommended)	DC3V ~ 5.5V	DC3V ~ 5.5V
DESAT voltage	10V	5V
DESAT detection time	4us	1us
Soft Turn Off (Resistor)	50Ω	50Ω
Miller Clamp	N/A	Yes

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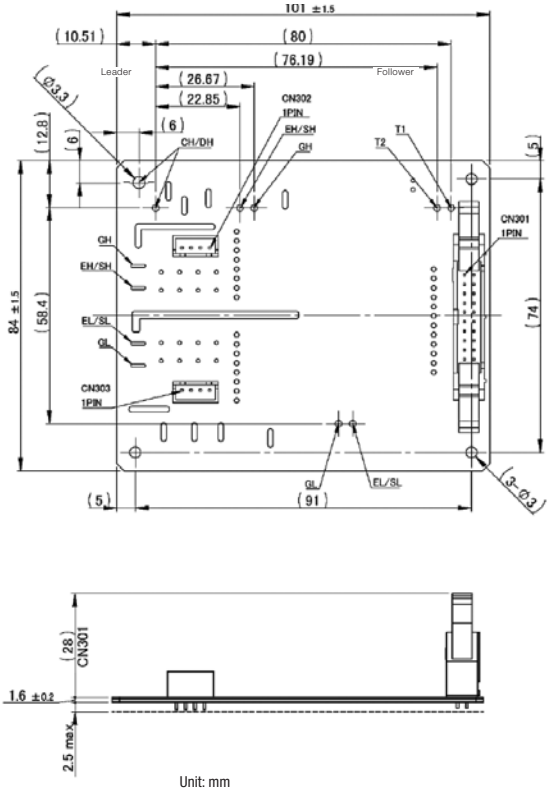
2RB010CB

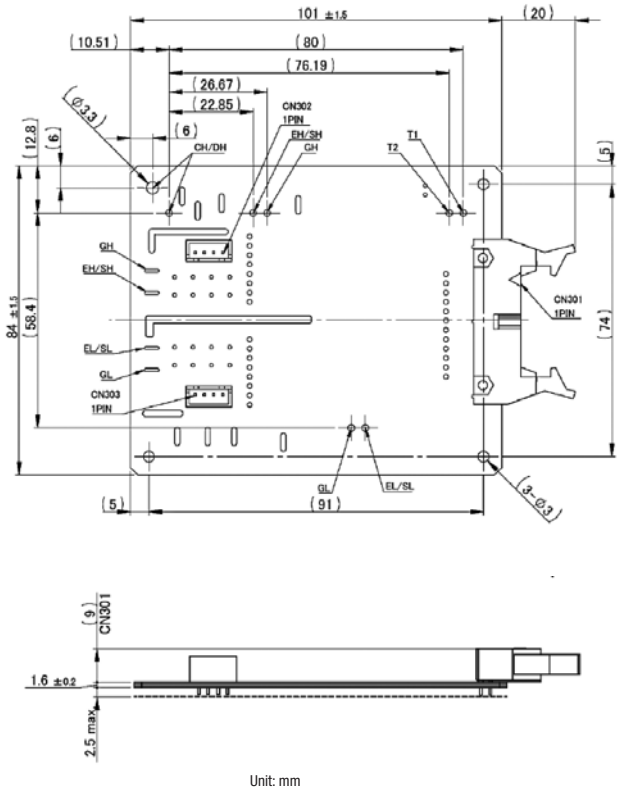
Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

2RB020BB

Outline Dimensional Drawing

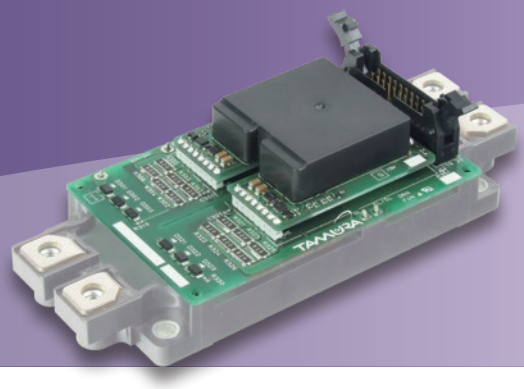


Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

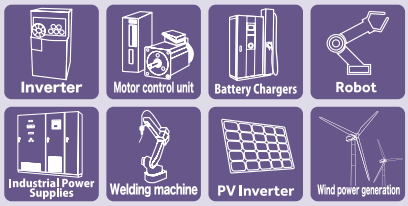
Product Lineup

Gate Driver Unit

2EG-C Series



Applications



Features

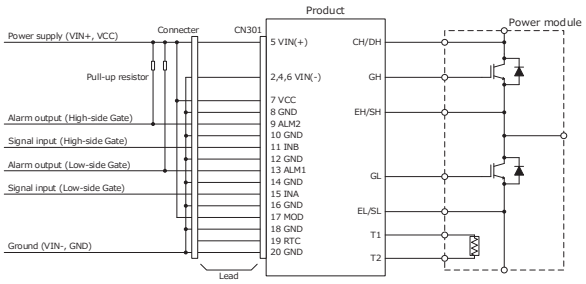
1. High insulation voltage (AC5kV)
2. Low profile (20mmMax, From the board mounting position)
3. Low stray capacity (12pF TYP)
4. Wide input voltage range (DC13V-28V)
5. Soft-turn-off

Standards

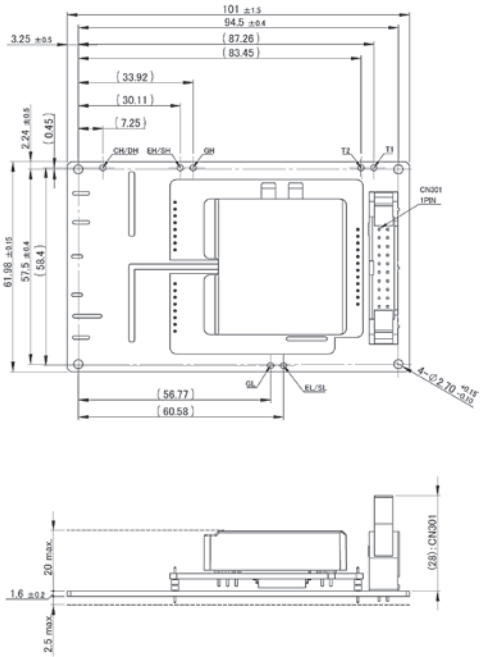
UL508 compliant

2EG-C series is suitable for 17mm type IGBT power module. (support to 1700V module) Built-in isolated DC / DC converter and gate drive circuit and short circuit detection voltage have already been set. Gate resistance is not assembled. They must be assembled by the user before operation.

Application Image



Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

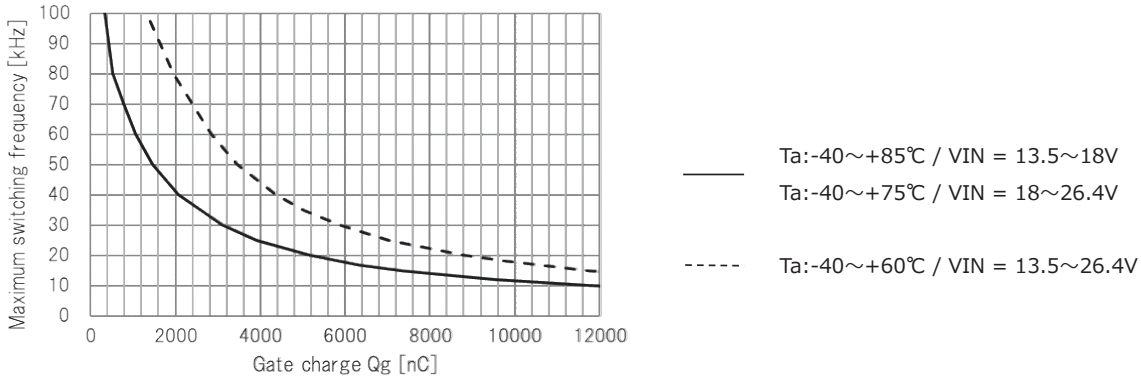
General characteristics

Model		2EG01XCDN11N	2EG01XCCN11N
Application		IGBT (~1700V)	
Input	Input Voltage (VIN, VCC) (Recommended)	DC13.5V ～ 26.4V	
	Logic Input Voltage (INA, INB) (Recommended)	DC13 ～ 16V	DC3.3 ～ 16V
Output	Number of Output	2	
	Gate Voltage (ON)	+14V ～ +16V	
	Gate Voltage (OFF)	–9V ～ –11V	
	Maximum Switching Frequency	100kHz *2	
Insulation	Withstand Voltage	Primary to secondary : AC5000V	
	Delay Time	±130ns (TYP)	
	Minimum Clearance Distance	*3 Please refer to below information	
	Minimum Creepage Distance	*3 Please refer to below information	
Function	Mode select	Direct mode / Half bridge mode can be switched	
	Desaturation Protection	Yes	
	Soft Turn Off	Yes	
	Miller Clamp	None	
	Active Clamp	None	
	Protection Release Condition	Auto Recovery, Interval: 110 ms (TYP)	
	Gate resistor	No mounting / Lead resistor can be mounted.	
Environment	Ambient Temperature (Operating)	–40 ～ +85℃ (Input Voltage:DC13.5V ～ 18V)	
		–40 ～ +75℃ (Input Voltage:DC18V ～ 26.4V)	
	Ambient Humidity (Operating)	20 ～ 95%RH (Nil condensation)	
	Ambient Temperature (Storage)	–40 ～ +90℃	
	Ambient Humidity (Storage)	5 ～ 95%RH (Nil condensation)	

*The content of this document is subject to change without prior notice for the purpose of improvements, etc.

*1 Permissible frequency curve
Gate resistor power derating is not included.
Use the output power in a range with sufficient margin for the allowable power of the gate resistor.
Recommended resistor surface temperature 120ºC or less.

Total gate charge (Qg) vs permissible frequency curve



*2 Insulation

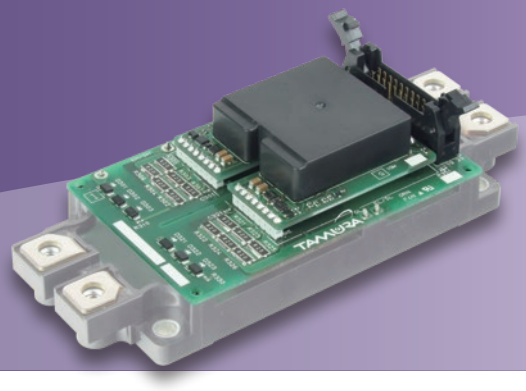
Item	Specification	Conditions · Note
Between Input-Output		
Minimum clearance distances	14mm	As for Gate driver PCB
Minimum clearance distances	16mm	
Between Input-Output / IGBT device terminal - Gate driver PCB Input side		
Minimum clearance distances	15mm	Infineon / EconoDUAL™ package
Minimum clearance distances	16mm	
Minimum clearance distances	13.4mm	Mitsubishi electronics / NX_DX package
Minimum clearance distances	16mm	
Minimum clearance distances	12mm	Fuji electronics / M254,M285 package
Minimum clearance distances	16mm	
Between CH1-CH2		
Minimum clearance distances	7mm	Excluding electrical connections point
Minimum clearance distances	12mm	

EconoDUAL™ is registered trademark of Infineon Technologies AG, Germany.

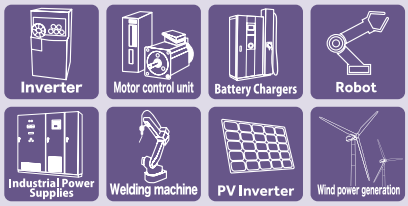
Product Lineup

Gate Driver Unit

2EG-B Series



Applications



Features

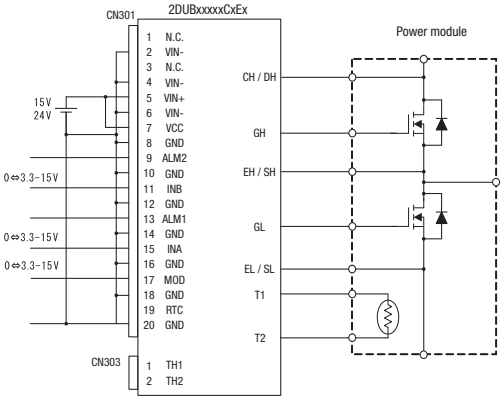
1. High insulation voltage (AC5kV)
2. Low profile (20mmMax, From the board mounting position)
3. Low stray capacity (12pF TYP)
4. Wide input voltage range (DC13V-28V)
5. Soft-turn-off/Miller-Clamp

Standards

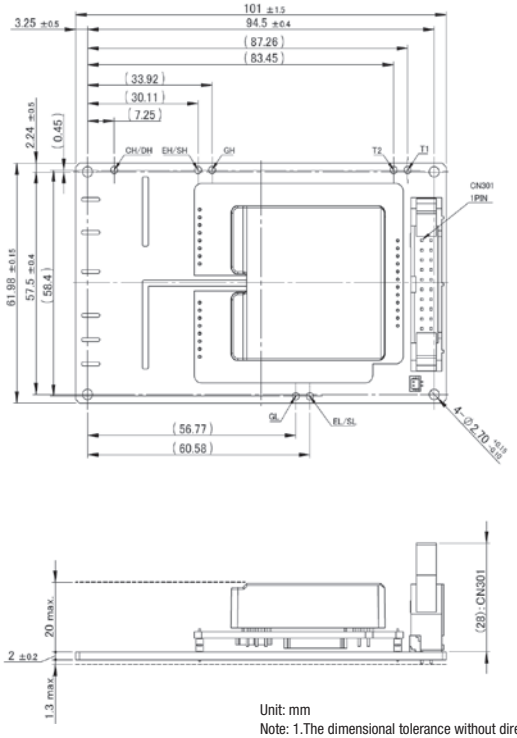
UL508 compliant

2EG-B series is suitable for 17mm type SiC power module. (support to 1700V module)
Built-in isolated DC / DC converter and gate drive circuit and short circuit detection voltage have already been set.
Gate resistance is not assembled.
They must be assembled by the user before operation.

Application Image



Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

Specifications are subject to change without notice.

General characteristics

Item		Model					
		2EG01XBCN13N	2EG01XBDN13N	2EG01XBCN14N	2EG01XBDN14N	2EG01XBCN18N	2EG01XBDN18N
Application		ROHM 2nd Generation		ROHM 3nd Generation		Mitsubishi Electric NX-SiC *1	
Input	Input Voltage	DC13.5V ～ 26.4V					
	Logic Input Voltage	DC3.3 ～ 16V	DC13 ～ 16V	DC3.3 ～ 16V	DC13 ～ 16V	DC3.3 ～ 16V	DC13 ～ 16V
Output	Number of Output	2					
	Gate Voltage (ON)	+17 ～ +19V				+14 ～ +16V	
	Gate Voltage (OFF)	-5 ～ -3V		-3 ～ -1V		-8 ～ -6V	
	Maximum Switching Frequency	17.7kHz (Qg=4500nC)		20.5kHz (Qg=3600nC)		16kHz (Qg=5500nC)	
Insulation	Withstand Voltage	Primary to secondary : AC5000V					
	Delay Time	±130ns (TYP)					
	Minimum Clearance Distance	As for Gate driver PCB : 12mm / From ROHM E package : 14mm / ROHM G package : 11.5mm				As for Gate driver PCB : 12mm / From NX package : 11mm	
	Minimum Creepage Distance	As for Gate driver PCB : 16mm / From ROHM E package : 15mm / ROHM G package : 12.5mm				As for Gate driver PCB : 16mm / From NX package : 12mm	
Function	Mode select	Direct mode / Half bridge mode can be switched					
	Desaturation Protection	Yes *2					
	Soft Turn Off	Yes					
	Miller Clamp	Yes					
	Protection Release Condition	Auto recovery, Interval : 110ms(TYP)					
	Gate resistor	No mounting / Lead resistor can be mounted					
Environment	Ambient Temperature (Operating)	-40 ～ +85℃ (Input voltage : DC13.5 ～ 18V)					
		-40 ～ +75℃ (Input voltage : DC18 ～ 26.4V)					
	Ambient Humidity (Operating)	20 ～ 95%RH(No condensation)					
	Ambient Temperature (Storage)	-40 ～ +90℃					
	Ambient Humidity (Storage)	5 ～ 95%RH(No condensation)					

*1 : When using with FMF600DXE-34BN (Mitsubishi),do not use the desaturation protection function.The DESAT function can be disabled by mounting a 0Ω(1608 size). Please refer to the Data sheet for details.Since the protection function will not be activated when an overcurrent occurs due to an arm short circuit or load short circuit in the power semiconductor, please implement safety measures on the device side.
*2 : This product has DESAT protection for arm short circuit and load short circuit protection.However,even if this protection works,the SiC MOSFET may be damaged if abnormally high current occurs due to SiC MOSFET's characteristics variations or the load short-circuit mode during parallel operation.To ensure safety, be sure to check the short-circuit current at the unit in which this product is integrated, and evaluate whether itcan protect under the condition that there is no damage to the SiC MOSFET.

Pin assignment

CN101 : RA-H201TD / JST

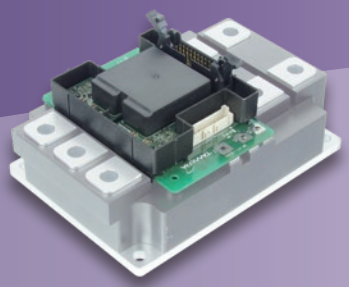
Pin No.	Name	Function
1	N.C	Unused pin
2	VIN-	Power supply for DC/DC converter(-)
3	N.C	Unused pin
4	VIN-	Power supply for DC/DC converter(-)
5	VIN+	Power supply for drive circuit
6	VIN-	Power supply for DC/DC converter(-)
7	VCC	Power supply for drive circuit
8	GND	Ground for drive circuit
9	ALM2	Alarm signal output 2 (High side)
10	GND	Ground for drive circuit

Pin No.	Name	Function
11	INB	Control input B (High side)
12	GND	Ground for drive circuit
13	ALM1	Alarm signal output 1 (Low side)
14	GND	Ground for drive circuit
15	INA	Control input A (Low side)
16	GND	Ground for drive circuit
17	MOD	Mode select
18	GND	Ground for drive circuit
19	RTC	Recovery time of protection circuit control
20	GND	Ground for drive circuit

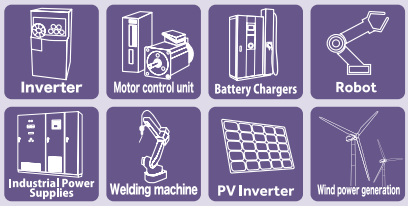
Product Lineup

Gate Driver Unit

2LG-C Series



Applications



Features

1. High insulation voltage (AC5kV)
2. Low profile (23.5mmMax, From the board mounting position)
3. Low stray capacity (12pF TYP)
4. Wide input voltage range (DC13V-28V)
5. Soft-turn-off

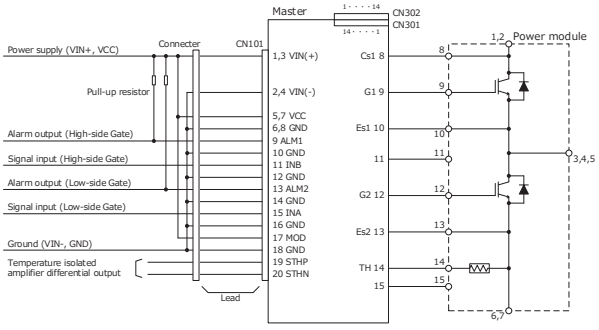
Standards

UL508 compliant

2LG-C series is suitable for 100mm×140mm type IGBT.
Built-in isolated DC / DC converter and gate drive circuit, in addition, gate resistor and short circuit detection voltage have already been set.

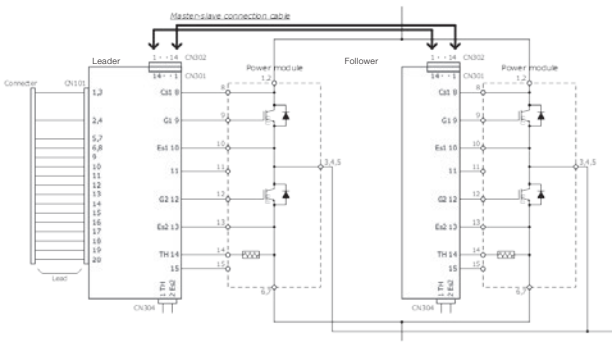
Leader board

Application Image



Follower board

Application Image



General characteristics

Electrical Specification (Ta=25ºC)

Application		CM1200DW-34T / CM800DW-34T/34TA			CM1200DW-24T / CM800DW-24T		
Item		Leader		Follower	Leader		Follower
Model		2LG01ACDC11M	2LG01ACCC11M	2LG01ACZC11S	2LG02ACDC11M	2LG02ACCC11M	2LG02ACZC11S
Input	Input Voltage (Recommended)	DC13.5 ~ 26.4V		N/A	DC13.5 ~ 26.4V		N/A
	Logic Input Voltage (Recommended)	DC13 ~ 16V	DC3.3 ~ 16V	Depends on the leader board	DC13 ~ 16V	DC3.3 ~ 16V	Depends on the leader board
Output	Number of Output	2					
	Gate Voltage (ON)	+14V ~ +16V					
	Gate Voltage (OFF)	-9V ~ 11V					
	Maximum Gate Charge	CM1200DW-34T: 14000nC *1 CM800DW-34T/34TA: 9600nC *1			CM1200DW-24T: 14000nC *1 CM800DW-24T: 8500nC *1		
	Maximum Switching Frequency (Reference value)	CM1200DW-34T: 7.5kHz (Leader only) *2 3.8kHz (1leader/1follwer) *2 CM800DW-34T/34TA: 10.5kHz ((Leader only) *2 5.4kHz (1leader/1follwer) *2			CM1200DW-24T: 3.0kHz (Leader only) *2 2.8kHz (1leader/1follwer) *2 CM800DW-24T: 5.2kHz ((Leader only) *2 4.6kHz (1leader/1follwer) *2		
Insulation	Withstand Voltage	Primary to secondary : AC5000V					
	Delay Time	±140ns (TYP)					
	Minimum Clearance Distance	Primary to secondary : 14mm *3					
	Minimum Creepage Distance	Primary to secondary : 16mm *3					
Function	Mode select	Direct mode / Half bridge mode can be switched					
	Desaturation Protection	Yes					
	Soft Turn Off	Yes					
	Miller Clamp	None					
	Active Clamp Gate	None *4					
	Protection Release Condition	Auto Recovery, Interval: 110 ms (TYP)					
	Thermistor Isolated Circuit	Yes *5					
Environment	Ambient Temperature (Operating)	-40 ~ +85ºC (Input Voltage : DC13.5V ~ 18V)					
		-40 ~ +75ºC (Input Voltage : DC18V ~ 26.4V)					
	Ambient Humidity (Operating)	20 ~ 95%RH (Nil condensation)					
	Ambient Temperature (Storage)	-40 ~ +90ºC					
	Ambient Humidity (Storage)	5 ~ 95%RH (Nil condensation)					
Coating	Insulating moisture proof coating	Yes					

Application		CM1200DW-40T		2MBI1200XZF230-50		2MBI1200XZG230-50	
Item		Leader	Follower	Leader	Follower	Leader	Leader
Model		2LG07ACDC11M	2LG07ACZC11S	2LG08AFDC11M	2LG08AGZC11S	T.B.D	T.B.D
Input	Input Voltage (Recommended)	DC13.5 ~ 26.4V	N/A	DC13.5 ~ 26.4V	N/A	DC13.5 ~ 26.4V	N/A
	Logic Input Voltage (Recommended)	DC13 ~ 16V	Depends on the leader board	DC13 ~ 16V	Depends on the leader board	DC13 ~ 16V	Depends on the leader board
Output	Number of Output	2					
	Gate Voltage (ON)	+14V ~ +16V					
	Gate Voltage (OFF)	-9V ~ 11V					
	Maximum Gate Charge	14000nC *1		11000nC *1		T.B.D	
	Maximum Switching Frequency (Reference value)	7.0kHz (Leader only) *2 3.8kHz (1leader/1follwer) *2 Test load: 0.63Ω/560nF		8.8kHz (Leader only) *2 2.8kHz (1leader/1follwer) *2 Test load: 1.67Ω/440nF		T.B.D	
Insulation	Withstand Voltage	Primary to secondary : AC5000V					
	Delay Time	±140ns (TYP)					
	Minimum Clearance Distance	Primary to secondary : 14mm *3					
	Minimum Creepage Distance	Primary to secondary : 16mm *3				Primary to secondary : 14mm *3	
Function	Mode select	Direct mode / Half bridge mode can be switched					
	Desaturation Protection	Yes					
	Soft Turn Off	Yes					
	Miller Clamp	None					
	Active Clamp Gate	None *4					
	Protection Release Condition	Auto Recovery, Interval: 110 ms (TYP)					
	Thermistor Isolated Circuit	Yes *5					
Environment	Ambient Temperature (Operating)	-40 ~ +85ºC (Input Voltage : DC13.5V ~ 18V)					
		-40 ~ +75ºC (Input Voltage : DC18V ~ 26.4V)					
	Ambient Humidity (Operating)	20 ~ 95%RH (Nil condensation)					
	Ambient Temperature (Storage)	-40 ~ +90ºC					
	Ambient Humidity (Storage)	5 ~ 95%RH (Nil condensation)					
Coating	Insulating moisture proof coating	Yes					

*1: If the gate charge exceeds the allowable value, the gate voltage at turn-on and turn-off will drop, which may affect the switching performance of the IGBT.
*2: Use the recommended conditions.
*3: The clearance and creepage distances of the Thermistor Isolated Circuit are both 8.5 mm.
*4: Active clamp function is optional. Please contact us.
*5: Non-impremention of themistor isolation circuit is optional. Please contact us.

Product Lineup

Gate Driver Unit

2LH Series

Applications

Features

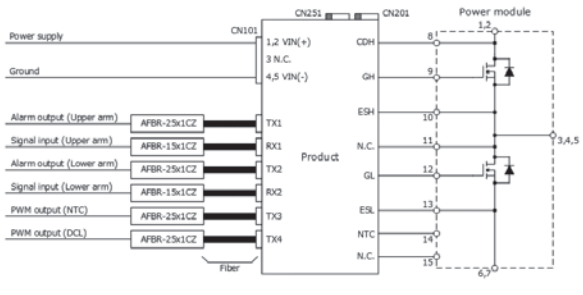
- Low coupling capacitance: 11pF/ Common mode noise reduction
- SC protection: Short-circuit mask time (tsc) / Adjustable down to 1us. Suitable for SiC Power Modules
- High output power: Output power suitable for high frequency drive (T.B.D/1ch)
- Scalability: Can be installed on top or to the side of the power module

2LH series is suitable for 3.3kV/100mm×140mm type SiC/IGBT power modules. Built-in isolated DC / DC converter and gate drive circuit, in addition, gate resistor and short circuit protection have already been set.
There is also a Follower board, so multiple power modules can be driven simultaneously with one signal.

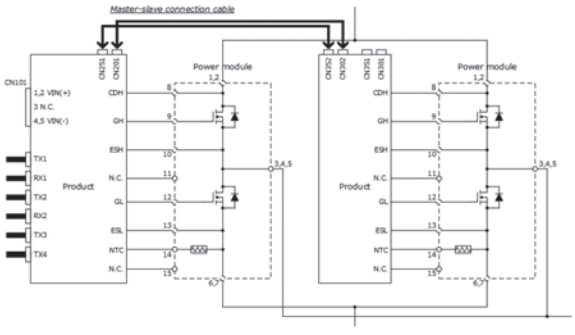
Leader board

Application Image

2LH-M



2LH-S



Products Lineup

For Mitsubishi Electric / High Voltage SiC / LV100 type

V_{DS} (V)	I_D (A)	Part No	Leader/Follower	Gate Driver P/N*
3300	750	FMF750DC-66A	Leader(Top)	2LH07CCVC27M
			Follower	2LH07CCZC27S
	800	FMF800DC-66BEW	Leader(Top)	2LH04CCVC2AM
			Follower	2LH04CCZCZAS

For Mitsubishi Electric / High Voltage IGBT / LV100 type

V_{CE} (V)	I_C (A)	Part No	Leader/Follower	Gate Driver P/N*
3300	450	CM450DA-66X	Leader(Top)	2LH06CFVC21M
			Follower	T.B.D
	600	CM600DA-66X	Leader(Top)	2LH01CFVC21M
			Follower	2LH01CFZCZ1S

For Wolfspeed /All SiC Power Module LM type

V_{DS} (V)	I_D (A)	Part No	Leader/Follower	Gate Driver P/N*
3300	770	CAB600M33LM3	Leader(Top)	2LH03CCVC29M
			Follower	2LH03CCZCZ9S

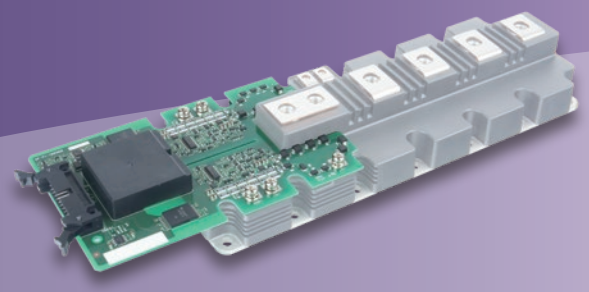
Outline Dimensional Drawing

T.B.D (Please contact us)

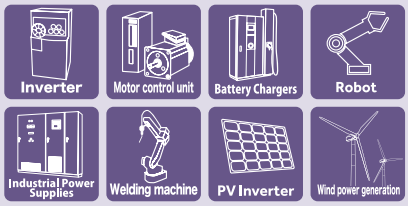
Product Lineup

Gate Driver Unit

2PG-C Series



Applications



Features

1. High insulation voltage (AC5kV)
2. Low profile (14mmMax, From the board mounting position)
3. Low stray capacity (12pF TYP)
4. Wide input voltage range (DC13V-28V)
5. Soft-turn-off

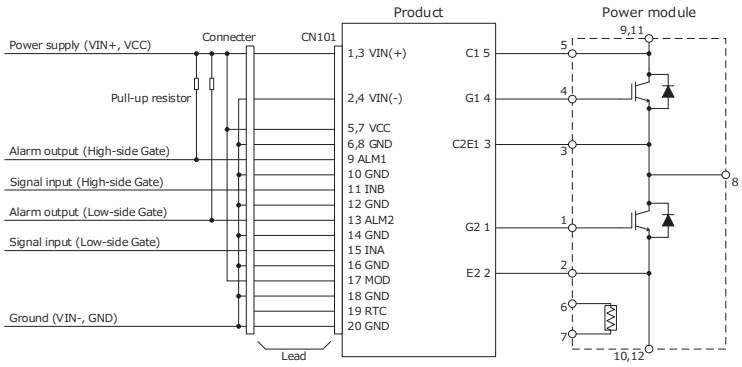
Standards

UL508 compliant

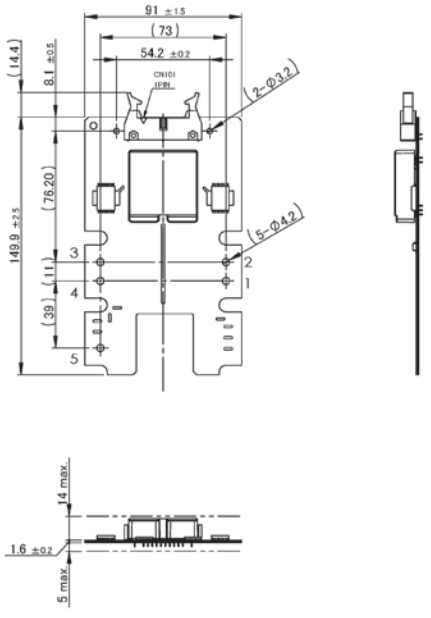
2PG-C series is suitable for PrimePACK™.
Built-in isolated DC / DC converter and gate drive circuit, in addition, gate resistor and short circuit detection voltage have already been set.

Note1: PrimePACK™ is a registered trademark of Infineon Technologies AG.

Application Image



Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

General characteristics

Model		2PG010CCC11N	2PG010CDC11N
Application		2MBI1800XXF170-50 (Fuji Electric)	
Input	Input Voltage	DC13V ~ 28V	
	Logic Input Voltage	DC3.3 ~ 18V	DC13 ~ 18V
Output	Number of Output	2	
	Gate Voltage (ON)	+14V ~ +16V	
	Gate Voltage (OFF)	–9V ~ –11V	
	Maximum Gate Charge	11000nC	
	Maximum Switching Frequency	10kHz	
Insulation	Withstand Voltage	Primary to secondary : AC5000V	
	Delay Time	±130ns (TYP)	
	Minimum Clearance Distance	Primary to secondary : 14mm	
		Secondary to secondary : 8mm	
	Minimum Creepage Distance	Primary to secondary : 14mm	
		Secondary to secondary : 12mm	
Function	Mode select	Direct mode / Half bridge mode can be switched	
	Desaturation Protection	Yes	
	Soft Turn Off	Yes	
	Miller Clamp	None	
	Active Clamp Gate	None ※1	
	Protection Release Condition	Auto Recovery, Interval: 110 ms (TYP)	
Environment	Ambient Temperature (Operating)	–40 ~ +85℃ (Input Voltage : DC13V ~ 18V)	
		–40 ~ +75℃ (Input Voltage : DC18V ~ 28V)	
	Ambient Temperature (Storage)	20 ~ 95%RH (Nil condensation)	
	Ambient Humidity (Storage)	–40 ~ +90℃	
	Ambient Humidity (Storage)	5 ~ 95%RH (Nil condensation)	

*The content of this document is subject to change without prior notice for the purpose of improvements, etc.
※1 Active clamp function is optional. Please contact us.

Pin assignment

CN101 : RA-H201SD / JST

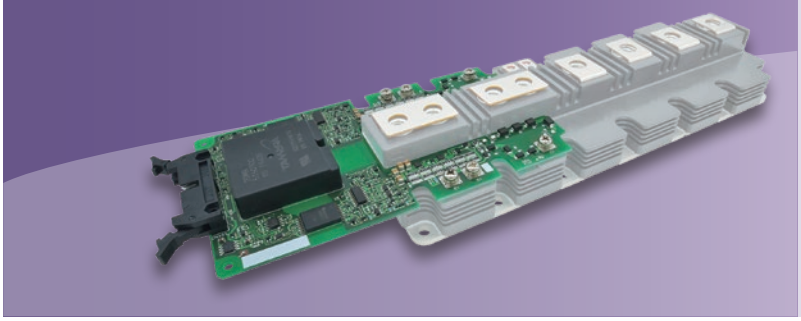
Pin No.	Name	Function
1	VIN(+)	Power supply for DC/DC converter(+)
2	VIN(-)	Power supply for DC/DC converter(-)
3	VIN(+)	Power supply for DC/DC converter(+)
4	VIN(-)	Power supply for DC/DC converter(-)
5	VCC	Power supply for drive circuit
6	GND	Ground for drive circuit
7	VCC	Power supply for drive circuit
8	GND	Ground for drive circuit
9	ALM1	Alarm signal output 1 (High side)
10	GND	Ground for drive circuit

Pin No.	Name	Function
11	INB	Control input B (High side)
12	GND	Ground for drive circuit
13	ALM2	Alarm signal output 2 (Low side)
14	GND	Ground for drive circuit
15	INA	Control input A (Low side)
16	GND	Ground for drive circuit
17	MOD	Mode select
18	GND	Ground for drive circuit
19	RTC	Recovery time of protection circuit control
20	GND	Ground for drive circuit

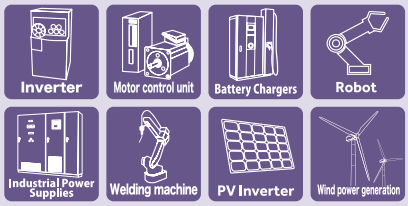
Product Lineup

Gate Driver Unit

2QG-C Series



Applications



Features

1. High insulation voltage (AC5kV)
2. Low profile (14mmMax, From the board mounting position)
3. Low stray capacity (12pF TYP)
4. Wide input voltage range (DC13V-28V)
5. Soft-Turn-off

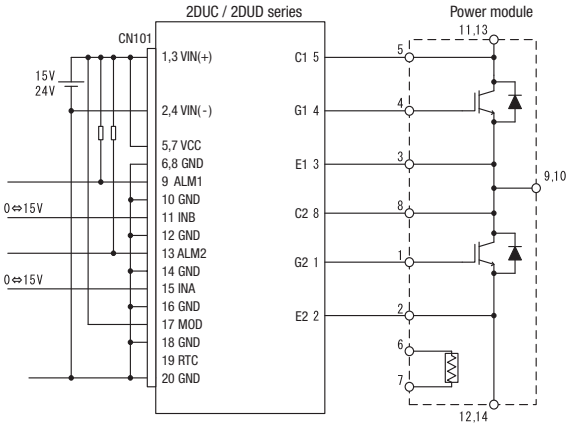
Standards

UL508 compliant

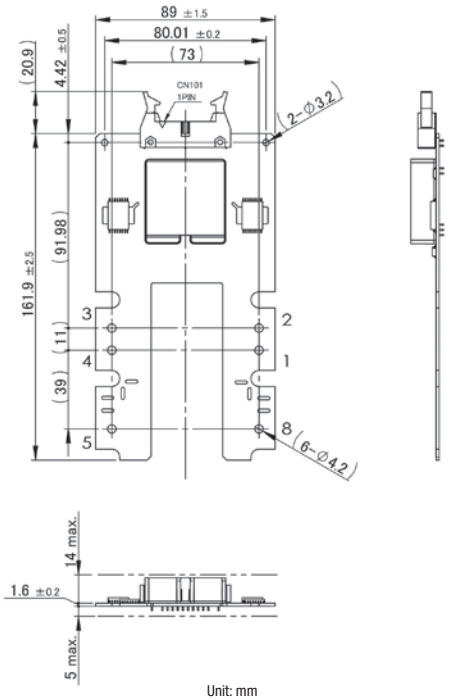
2QG-C series is suitable for PrimePACK™3+.
Built-in isolated DC / DC converter and gate drive circuit, in addition, gate resistor and short circuit detection voltage have already been set.

Note1: PrimePACK™ is a registered trademark of Infineon Technologies AG.

Application Image



Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

General characteristics

Model		2QG010CDC11N	2QG020CDC11N
Application		2MBI1800XXG170-50 (Fuji Electric)	FF1800R17IP5 (Infineon Technologies)
Input	Input Voltage	DC13V ~ 28V	
	Logic Input Voltage	DC13 ~ 18V	
Output	Number of Output	2	
	Gate Voltage (ON)	+14V ~ +16V	
	Gate Voltage(OFF)	−9V ~ −11V	
	Permissible Switching Frequency	8.8kHz (Qg=12.5uC)	8.4kHz (Qg=8.4uC)
Insulation	Withstand Voltage	Primary to secondary : AC5000V	
	Delay Time	±130ns (TYP)	
	Minimum Clearance Distance	Primary to secondary : 14mm	
		Secondary to secondary : 8mm	
	Minimum Creepage Distance	Primary to secondary : 16mm * As for Gate Driver PCB	
		Secondary to secondary : 12mm	
Function	Mode select	Direct mode / Half bridge mode can be switched	
	Desaturation Protection	Yes	
	Soft Turn Off	Yes	
	Miller Clamp	None	
	Active Clamp Gate	None ※1	
	Protection Release Condition	Auto Recovery, Interval: 110 ms (TYP)	
Environment	Ambient Temperature (Operating)	−40 ~ +85℃ (Input Voltage: DC13V ~ 18V)	
		−40 ~ +75℃ (Input Voltage: DC18V ~ 28V)	
	Ambient Temperature (Storage)	20 ~ 95%RH (Nil condensation)	
	Ambient Humidity (Operating)	−40 ~ +90℃	
	Ambient Humidity (Storage)	5 ~ 95%RH (Nil condensation)	

※1 Active clamp function is optional. Please contact us.

Pin assignment

CN101 : RA-H201SD / JST

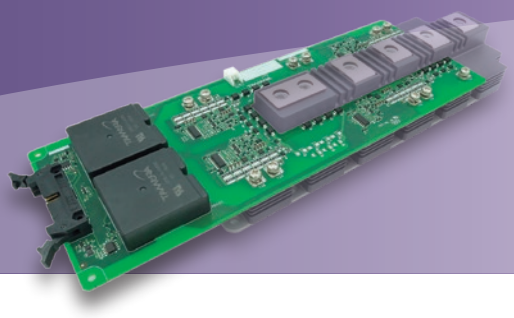
Pin No.	Name	Function
1	VIN(+)	Power supply for DC/DC converter(+)
2	VIN(-)	Power supply for DC/DC converter(-)
3	VIN(+)	Power supply for DC/DC converter(+)
4	VIN(-)	Power supply for DC/DC converter(-)
5	VCC	Power supply for drive circuit
6	GND	Ground for drive circuit
7	VCC	Power supply for drive circuit
8	GND	Ground for drive circuit
9	ALM1	Alarm signal output 1 (High side)
10	GND	Ground for drive circuit

Pin No.	Name	Function
11	INB	Control input B (High side)
12	GND	Ground for drive circuit
13	ALM2	Alarm signal output 2 (Low side)
14	GND	Ground for drive circuit
15	INA	Control input A (Low side)
16	GND	Ground for drive circuit
17	MOD	Mode select
18	GND	Ground for drive circuit
19	RTC	Recovery time of protection circuit control
20	GND	Ground for drive circuit

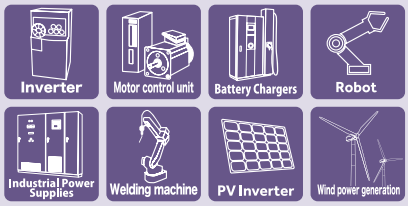
Product Lineup

Gate Driver Unit

4DUx Series



Applications



Features

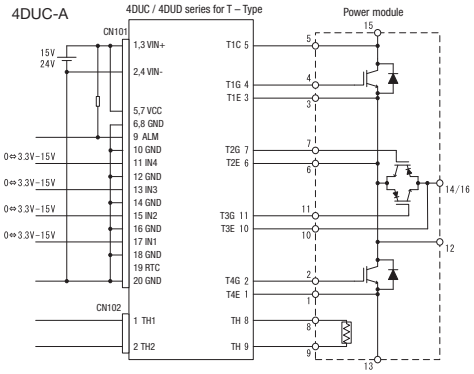
1. High insulation voltage (AC5kV)
2. Low profile
   (14mmMax, From the board mounting position)
3. Low stray capacity (12pF TYP)
4. Wide input voltage range
   (DC13V-28V)

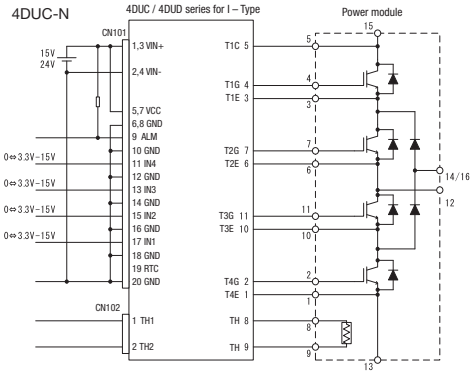
Standards

UL508 compliant

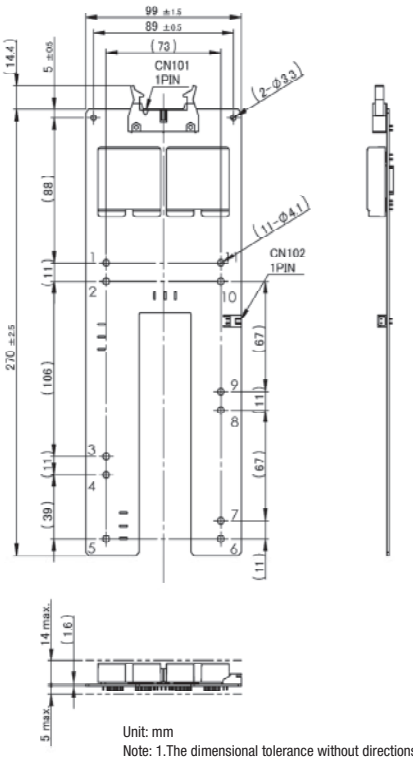
It is an optimum gate driver for 3-Level circuit IGBT (4in1).
We prepared two models for T-TYPE and I-TYPE
with a low profile of almost the same height as the T-Prime terminals.

Application Image





Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

General characteristics

Model		4DUD-N series	4DUC-A series	
		4DUD51016CFN1	4DUC51016CFA1	4DUC51016CFA2
Application		4MBI600VC-120-50 (Fuji Electric)	4MBI900VB-120R1-50 (Fuji Electric)	4MBI900VB-120R1-50 (Fuji Electric)
Input	Input Voltage	DC13V ~ 28V		
	Logic Input Voltage	DC3.3 ~ 5V		
Output	Number of Output	4		
	Gate Voltage (ON)	+14V ~ +16V		
	Gate Voltage (OFF)	–9V ~ –11V		
	Maximum Gate Charge	5700nC	T1,T4 : 8500nC, T2,T3 : 4300nC	T1,T4 : 8500nC T2,T3 : 3900nC
	Maximum Switching Frequency	7.5kHz (Ave), 15kHz (Peak)		
Insulation	Withstand Voltage	Primary to secondary : AC5000V		
	Delay Time	±130ns (TYP)		
	Minimum Clearance Distance	Primary to secondary : 14mm		
	Minimum Creepage Distance	Primary to secondary : 14mm		
Function	Desaturation Protection	T1,T4 : Yes, T2,T3 : None		
	Soft Turn Off	Yes		
	Miller Clamp	None	None	None
	Active Clamp	Yes	None	None
	Protection Release Condition	Auto Recovery, Interval: 110 ms (TYP)		
Environment	Ambient Temperature (Operating)	–40 ~ +85℃ (Input Voltage: DC13V ~ 18V)		
		–40 ~ +75℃ (Input Voltage: DC18V ~ 28V)		
	Ambient Humidity (Operating)	20 ~ 95%RH (Nil condensation)		
	Ambient Temperature (Storage)	–40 ~ +90℃		
	Ambient Humidity (Storage)	5 ~ 95%RH (Nil condensation)		

*The content of this document is subject to change without prior notice for the purpose of improvements, etc.

Pin assignment

CN101 : RA-H201SD / JST

Pin No.	Name	Function
1	VIN+	Power supply for DC/DC converter(+)
2	VIN-	Power supply for DC/DC converter(-)
3	VIN+	Power supply for DC/DC converter(+)
4	VIN-	Power supply for DC/DC converter(-)
5	VCC	Power supply for drive circuit
6	GND	Ground for drive circuit
7	VCC	Power supply for drive circuit
8	GND	Ground for drive circuit
9	ALM	Alarm signal output
10	GND	Ground for drive circuit
11	IN4	Control input 4
12	GND	Ground for drive circuit
13	IN3	Control input 3
14	GND	Ground for drive circuit
15	IN2	Control input 2
16	GND	Ground for drive circuit
17	IN1	Control input 1
18	GND	Ground for drive circuit
19	RTC	Recovery time of protection circuit control
20	GND	Ground for drive circuit

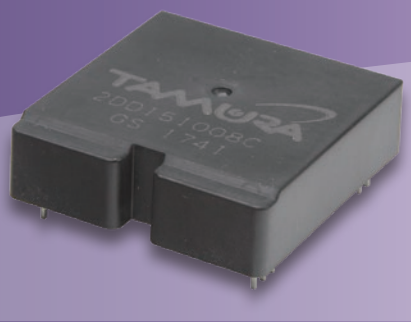
CN102 : S2B-XH-A /JST

Pin No.	Name	Function
1	TH	For thermistor
2	TH	For thermistor

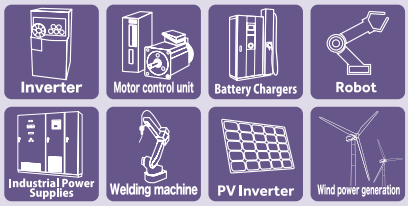
Product Lineup

DC-DC Converter for gate drive

2DD series



Applications



Features

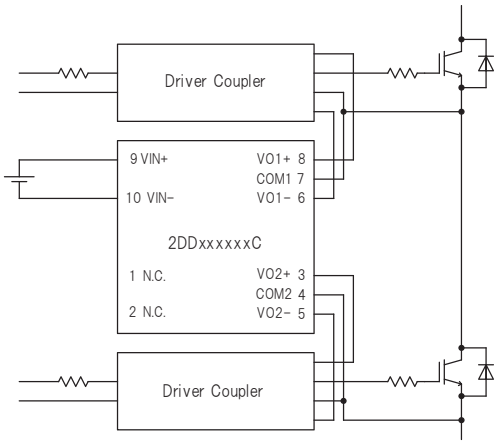
1. High insulation voltage (AC5kV)
2. Low stray capacity (9pF TYP)
3. Low profile (12.5mm)
4. Dual output corresponding to 2 in 1
5. Wide input voltage range (DC13V-28V)

Standards

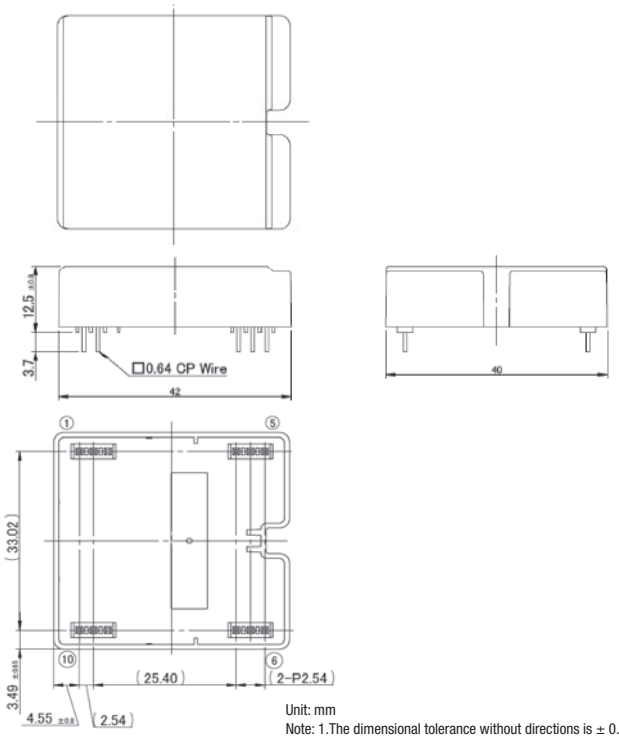
UL508 (file no.E243511)

The 2DD series is a dedicated DC-DC Converter for driving various SiC and IGBT power modules.
The low parasitic capacitance (9pF) and Insulation voltage (5kV) make this product ideal for driving IGBT and SiC.

Application Image



Outline Dimensional Drawing



Unit: mm
Note: 1.The dimensional tolerance without directions is ± 0.5mm.

General characteristics

Model		2DD151507C	2DD151008C	2DD180407C	2DD180206C
Input Voltage		DC13V ~ 28V			
Number of Output		2			
Output Voltage (High) Vo1+,Vo2+		+14V ~ +16V	+14V ~ +16V	+17V ~ +19V	+17V ~ +19V
Output Voltage (Low) Vo1-,Vo2-		–14V ~ –16V	–9V ~ –11V	–3V ~ –5V	–1V ~ –3V
Rated Load (per 1ch)		0.11A	0.16A	0.16A	0.16A
Efficiency (DC24V, Rated load, Ta=25℃)		79.5% (typ)	79.5% (typ)	79.0% (typ)	78.5% (typ)
Line Regulation (Rated load, Ta=25℃)		50mV (typ)	50mV (typ)	50mV (typ)	50mV (typ)
Load Regulation (DC24V, 10mA ~ Rated load, Ta=25℃)		200mV (typ)	200mV (typ)	200mV (typ)	200mV (typ)
Ripple		250mVpp	150mVpp	150mVpp	150mVpp
Ripple & Noise		300mVpp	200mVpp	200mVpp	200mVpp
Protection	Over Current Protection	Auto recovery			
	Over Temperature Protection	Auto recovery			
Insulation	Withstand voltage	Primary to secondary : AC5000V			
		Secondary to secondary : AC4000V			
	Insulation Resistance	DC500V 100MΩmin			
	Isolation Capacitance	9pF (typ)			
Environment	Ambient Temperature (Operating)	–40 ~ +85℃ (Input Voltage : DC13V ~ 18V)			
		–40 ~ +75℃ (Input Voltage : DC13V ~ 28V)			
	Ambient Humidity (Operating)	20 ~ 95%RH (No condensation)			
	Ambient Temperature (Storage)	–40 ~ +90℃			
	Ambient Humidity (Storage)	5 ~ 95%RH (No condensation)			
	Vibration	10 ~ 55HZ 1.5mmp-p 120min X,Y,Z direction each once			
	Shock	490m/s² 11ms X,Y,Z direction each once			

*The content of this document is subject to change without prior notice for the purpose of improvements, etc.ection ea

Pin assignment

Pin No.	Name
1	N.C.
2	N.C.
3	VO2+
4	COM2
5	VO2-
6	VO1-
7	COM1
8	VO1+
9	VIN+
10	VIN-

Product Cross reference

※1 There are other applicable power modules, Search in the selection guide.

Product line-up for FUJI Electric "DualXT Type"

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
225	2MBI225XNA120-50	2EG01XCCN11N 2EG01XCDN11N	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
300	2MBI300XNA120-50			
450	2MBI450XNA120-50			
600	2MBI600XNG120-50			
600	2MBI600XNE120-50			
800	2MBI800XNE120-50			
1000	2MBI1000XRNE120-50			
		Vce=1700V		
225	2MBI225XNA170-50	2EG01XCCN11N 2EG01XCDN11N	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
300	2MBI300XNA170-50			
450	2MBI450XNA170-50			
600	2MBI600XNE170-50			
600	2MBI600XNG170-50			
800	2MBI800XRNE170-50			

Product line-up for FUJI Electric "Standard2 Type"

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
100	2MBI100XAA120-50		2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
150	2MBI150XAA120-50			
200	2MBI200XAA120-50			
200	2MBI200XBE120-50			
300	2MBI300XBE120-50			
300	2MBI300XHA120-50			
400	2MBI400XDE120-50			
450	2MBI450XHA120-50			
450	2MBI450XEE120-50			
600	2MBI600XDE120-50			
600	2MBI600XHA120-50			
600	2MBI600XEE120-50			
		Vce=1700V		
75	2MBI75XAA170-50		2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
100	2MBI100XAA170-50			
150	2MBI150XAA170-50			
150	2MBI150XHA170-50			
200	2MBI200XHA170-50			
300	2MBI300XHA170-50			
300	2MBI300XEE170-50			
400	2MBI400XHA170-50			
400	2MBI400XEE170-50			

Product line-up for FUJI Electric "PrimePACK™ Type"

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
900	2MBI900XXA120P-50	Semi-optimized products. Please contact us.	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
	2MBI900XXA120E-50			
1200	2MBI1200XXE120P-50			
	2MBI1200XXE120E-50			
1400	2MBI1400XXB120P-50			
1800	2MBI1800XXF120P-50			
2400	2MBI2400XRXG120-50			
		Vce=1700V		
650	2MBI650XXA170-50	Semi-optimized products. Please contact us.	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
1200	2MBI1200XXE170-50			
1000	2MBI1000XXB170-50			
1400	2MBI1400XXB170-50			
1800	2MBI1800XXF170-50	2PG010CCC11N 2PG010CDC11N		
1800	2MBI1800XXG170-50	2QG010CDC11N		

Product Cross reference

※1 There are other applicable power modules, Search in the selection guide.

Product line-up for FUJI Electric "PrimePACK™ 3-Level Type"

Ic	Ic (T2,T3)	Part No	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
			Vce=1200V (T1,T4)		
900	450	4MBI450VB-120R1-50	Under planning		2DD151507C / 2DD151008C
900	650	4MBI650VB-120R1-50			
900	900	4MBI900VB-120R1-50	4DUC51016CFA1		
900	900	4MBI900VB-120RA-50	4DUC51016CFA2		
1200	600	4MBI600VC-120-50	4DUD51016CFN1		
			Vce=1700V (T1,T4)		
1200	450	4MBI450VB-170R2-50	Under planning		2DD151507C / 2DD151008C
1200	600	4MBI600VB-170R2-50			

Note1: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

Product line-up for Mitsubishi Electric "NX Type"

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
225	CM225DX-24T1	2EG01XCCN11N 2EG01XCDN11N	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
225	CM225DX-24T			
300	CM300DX-24T1			
300	CM300DX-24T			
450	CM450DX-24T1			
450	CM450DX-24T			
600	CM600DX-24T1			
600	CM600DX-24T			
800	CM800DX-24T1			
		Vce=1700V		
225	CM225DX-34T	2EG01XCCN11N 2EG01XCDN11N	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
300	CM300DX-34T			
450	CM450DX-34T			
600	CM600DX-34T			

Product line-up for Mitsubishi Electric "Std Type"

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
300	CM300DY-24T		2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
450	CM450DY-24T			
600	CM600DY-24T			
		Vce=1700V		
300	CM300DY-34T		2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
400	CM400DY-34T			

Product line-up for Mitsubishi Electric "LV100 (Industrial) Type"

Ic	Part No	Gate Driver Unit		Gate Driver Module	DC-DC Power Supply
		Leader	Follower		
			Vce=1200V		
800	CM800DW-24T	2LG02ACCC11M 2LG02ACDC11M	2LG02ACZC11S	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C /2DD151008C
1200	CM1200DW-24T				
			Vce=1700V		
800	CM800DW-34T CM800DW-34TA	2LG01ACCC11M 2LG01ACDC11M	2LG01ACZC11S	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C /2DD151008C
1200	CM1200DW-34T				
			Vce=2000V		
2000	CM1200DW-40T	2LG07ACDC11M	2LG07ACZC11SP	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C /2DD151008C

Product Cross reference

※1 There are other applicable power modules, Search in the selection guide.

Product line-up for Infineon Technologies "EconoDUAL™ Type"

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
150	FF150R12MS4G	2EG01XCCN11N 2EG01XCDN11N	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
225	FF225R12ME4			
225	FF225R12MS4			
300	FF300R12ME4			
300	FF300R12MS4			
450	FF450R12ME4			
600	FF600R12ME4			
700	FF750R12ME7			
900	FF900R12ME7			
		Vce=1700V		
225	FF225R17ME4	2EG01XCCN11N 2EG01XCDN11N	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
300	FF300R17ME4			
450	FF450R17ME4			
600	FF600R17ME4			
750	FF750R17ME7			
900	FF900R17ME7			

Product line-up for Infineon Technologies "PrimePACK™ Type"

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
900	FF900R12IE4	Semi-optimized products. Please contact us.	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
1200	FF1200R12IE5			
1400	FF1400R12IP4			
		Vce=1700V		
650	FF650R17IE4	Semi-optimized products. Please contact us.	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
1200	FF1200R17IP5			
1000	FF1000R17IE4			
1400	FF1400R17IP4			

Note1: EconoDUAL™ is registered trademark of Infineon Technologies AG, Germany. Note2: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

Product line-up for Infineon Technologies “PrimePACK™ 3+ Type”

Ic	Part No ※1	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
900	FR900R12IE4D	Semi-optimized products. Please contact us.	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
1500	FF1500R12IE5			
1800	FF1800R12IE5			
		Vce=1700V		
1500	FF1500R17IP5	Semi-optimized products. Please contact us.	2CG010BBC11N 2CG010BBC12N 2CG010DBC11N 2CG010DBC12N	2DD151507C / 2DD151008C
1800	FF1800R17IP5	2QG020CDC11N		

Product line-up for ROHM Semiconductor "SiC C Type"

Ic	Part No	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
80	BSM080D12P2C008		2CG010BBC13N	2DD180407C
120	BSM120D12P2C005			
180	BSM180D12P3C007		2CG010BBC14N	2DD180206C

Product line-up for ROHM Semiconductor "SiC E Type"

Ic	Part No	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
180	BSM180D12P2E002	2EG01XBCN13N 2EG01XBDN13N	2CG010BBC13N	2DD180407C
300	BSM300D12P2E001			
300	BSM300D12P3E005	2EG01XBCN14N 2EG01XBDN14N	2CG010BBC14N	2DD180206C
		Vce=1700V		
250	BSM250D17P2E004	2EG01XBCN13N 2EG01XBDN13N	2CG010BBC13N	2DD180407C

Product line-up for ROHM Semiconductor "SiC G Type"

Ic	Part No	Gate Driver Unit	Gate Driver Module	DC-DC Power Supply
		Vce=1200V		
400	BSM400D12P2G003	2EG01XBCN13N 2EG01XBDN13N	2CG010BBC13N	2DD180407C
400	BSM400D12P3G002	2EG01XBCN14N 2EG01XBDN14N	2CG010BBC14N	2DD180206C
600	BSM600D12P3G001			

Part numbering system

You can refer to gate driver's web selection guide from this code

* For system description. Not all combinations are possible.

	①	②	③	④	⑤	⑥
Leader board	2LH	**	CFV	C	21	M
Follower board	2LH	**	CFZ	C	Z1	S

① Series (Triple digits)

2EG : EconoDUAL™/NX/DualXT or other
2PG : PrimePACK™2 or 3
2QG : PrimePACK™3+
2LG : LV100/HPnC
2CG : Driver core
2RB : Evaluation board
2LH : High voltage LV100(HV)/HPnC/XHP™2
2XH : Driver for high voltage/Any package

② Branch number (Double digits)

③ Function symbol (Triple digits)

④ With or without coating

C : With coating
N : Without coating

⑤ Output power classification symbo (Double digits)

⑥ Driver type symbol

N : Standard type (No parallel function)
M: Leader board with parallel functionality
S : Follower board for parallel
C : Control unit with parallel function

XHP™2 is registered trademark of Infineon Technologies AG, Germany.
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EconoDUAL™ is registered trademark of Infineon Technologies AG, Germany.

Important notice

Usage Cautions

- Always mount fuse on the plus side of input for ensuring safety because the fuse is not built-in the product.
  Please select the fuse considering conditions such as steady current, inrush current, and ambient temperature.
  When using a fuse having large rated current or high capacity input electrolytic condenser, by combining another converter and input line and input electrolytic condenser, fuse may not blow off in the case of abnormality.
  Do not combine high voltage line and fuse.

- This product is designed to be best when it drives two devices to have the same gate capacitance simultaneously.
  Because it leads to the "output unstable" and "output accuracy deterioration".
  If you want to use to drive only one of the devices, because of the output voltage accuracy deterioration prevention, please configure the dummy gate circuit (resistor and capacitor) to consume the equivalent of the power and the drive side.

- This product is to transmit the signal of the insulating part by the magnetic coupling.
  Therefore, if you use this product in a strong magnetic field in, there is a possibility of malfunction.
  In that case, connect the capacitor between the GND terminal of this product and a metal enclosure.

- Make sure the rise/fall time of the input signal is 500ns or less.

Important Notice

- This information and product are subject to change without prior notice for the purpose of improvements, etc.
  Ensure that you are in possession of the most up-to-date information when using this product.

- The operation examples and circuit examples shown in this document are for reference purposes only, and TAMURA Corporation disclaims all responsibility for any violations of industrial property rights, intellectual property rights and any other rights owned by TAMURA Corporation or third parties that these may entail.

- The circuit examples and part constants listed in this document are provided as reference for the verification of characteristics. You are to perform design, verification, and judgment at your own responsibility, taking into account the various conditions.

- TAMURA has evaluated the efficiency and performance of this product in a usage environment determined by us.
  Depending on your usage environment or usage method, there is the possibility that this product will not perform sufficiently as shown in the specifications, or may malfunction.
  When applying this product to your devices or systems, please ensure that you conduct evaluations of their state when integrated with this product. You are responsible for judging its applicability.
  TAMURA bears no responsibility whatsoever for any problems with your devices, systems or this product which are caused by your usage environment or usage method.

- TAMURA Corporation constantly strives to improve quality and reliability, but malfunction or failures are bound to occur with some probability in power products. To ensure that failures do not cause accidents resulting in injury or death, fire accidents, social damage, and so on, you are to thoroughly verify the safety of their designs in devices and/or systems, at your own responsibility.

- This product is intended for use in consumer electronics (electric home appliances, business equipment, Information equipment, communication terminal equipment, measuring devices, and so on.) If considering use of this product in equipment or devices that require high reliability (medical devices, transportation equipment,

Important notice

traffic signal control equipment, fire and crime prevention equipment, aeronautics and space devices, nuclear power control, fuel control, in-vehicle equipment, safety devices, and so on), please consult a TAMURA sales representative in advance. Do not use this product for such applications without written permission from TAMURA Corporation.

- This product is intended for use in environments where consumer electronics are commonly used.
  It is not designed for use in special environments such as listed below, and if such use is considered, you are to perform thorough safety and reliability checks at your own responsibility.
  - Use in liquids such as water, oil, chemical solutions, or organic solvents, and use in locations where the product will be exposed to such liquids.
  - Use that involves exposure to direct sunlight, outdoor exposure, or dusty conditions.
  - Use in locations where corrosive gases such as salt air, C12, H2S, NH3, SO2, or NO2, are present.
  - Use in environments with strong static electricity or electromagnetic radiation.
  - Use that involves placing inflammable material next to the product.
  - Use of this product either sealed with a resin filling or coated with resin.
  - Use of water or a water soluble detergent for flux cleaning.
  - Use in locations where condensation is liable to occur.

- This product is not designed to resist radiation.

- This product is not designed to be connected in series or parallel.
  Do not operate this product in a series, parallel, or N+1 redundant configuration.

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