

H BRIDGE IGBT DRIVER MEGA MASTER

Excellent Plug & Play solution!!

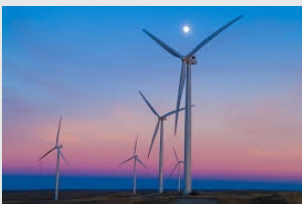
Features

- 4X4 Watt Compact Four channel driver
- Switching frequency up to 100 KHz
- $\pm 35A$ gate current, +15V/-10V
- Drive up to 1700V IGBT Module
- Electrical Interface
- Extremely reliable & rugged design
- Integrated short-circuit soft shutdown
- In-built Dead band generation
- Parallel / Full bridge drive configuration
- Less than 300 nS delay time
- Less aging effect due to ASIC
- Primary/Sec. under voltage lockout
- Vce monitoring for short circuit current
- Superior EMI-EMC
- IGBT mount Plug & Play solution
- Advance active clamping for over voltage protection.

Benefits

- On board isolated DC-DC converter - No need of separate SMPS.
- Interface for 13.0V...15 V logic level - Direct compatible with any Controller.
- Fault feedback signal to interface with controller.
- Field configurable blocking time - Flexibility in your hand, use any make IGBT !!
- Safe isolation to IEC 61800-5-1, IEC-60664-1 & En50178, protection class II
- User selectable Rg(on) & Rg(off)

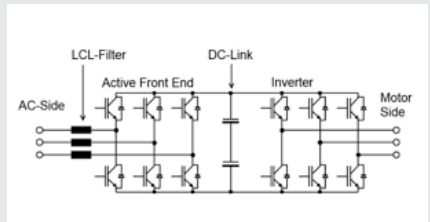
Application



WIND TURBINE



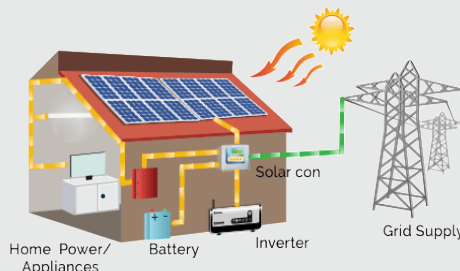
Industrial Drives & Control DRIVES



CONVERTER - INVERTER



RAILWAY CONVERTER



SOLAR INVERTER



INDUCTION HEATING & MELTING

Recommended Operating condition

Power Supply & Monitoring	MIN	TYP	MAX
1. Supply Voltage Vcc to GND	: 14.5	15	15.5 V
2. Supply Current Icc (Without Load)	: 340mA (@2KHz PWM I/P)		
3. Under Voltage Primary, Set Fault	: 11.3	12.1	12.7 V
Clear Fault	: 11.9	12.8	13.3 V
Secondary, Set Fault	: 11.5	12.0	12.5 V
Clear Fault	: 12.1	12.6	13.1 V

Logical Inputs & Outputs

1. Input Bias Current	: 190 μ A
2. Interface Logic level	: 12.0V 15.0V logic level
3. Turn-on threshold	: 12V (typ)
4. Turn off threshold	: 10.7V (typ)
5. SOx output, failure Condition	: 0.7V Max., I(SOx) < 20mA total

Short-Circuit Protection

	: Diode sense method
1. Vce-monitoring threshold	: 3.3 V (Factory Set)
Isc Trip adjustment	: 22K (R54,R55,R101,R105)
2. Response(blanking) time	: 4.5 μ Sec (R52,R71,R112,R116: 18K Ω) Factory Set
3. Minimum response time	: 1.2 μ Sec
4. Available blocking time	: 49 mSec (R37,R100=100K) Factory Set
5. Minimum blocking time	: 9 μ Sec (R37,R100=0E)

Timing Characteristic (Input to Output of Driver board under No-Load)

1. Turn-on delay $t_{d(on)}$: 250 nS, Max.
2. Turn-off delay $t_{d(off)}$: 300nS, Max.
3. Time synchronization for parallel IGBT drive	: 75 nS, Max.

For detail timing information of driver core, refer part specific datasheet.

Protection Available on driver board

1. Primary/Secondary Under voltage monitoring & error feedback.
2. Power supply reverse polarity.
3. Advance active clamping, For IGBT Over Voltage.
4. Vce monitoring for short circuit current.
5. Schmitt trigger at the Input stage, highly immune to noise.
6. Interfacing with user's control circuit via EXTRESET pin so fault latching possible.(Optional)

Electrical Isolation

Test voltage (50 Hz/1 sec)	
1. Primary to secondary side	: 5.0 KV
2. Secondary to secondary side	: 4.0 KV

This gate driver is suited for HiPot testing. Nevertheless, it is strongly recommended to limit the testing time to 1s slots as stipulated by EN 50178. Excessive HiPot testing at voltages much higher than 1200V_{AC(eff)} may lead to insulation degradation. No degradation has been observed over 1 min. testing at 5000V_{AC(eff)}. Each driver core production sample shipped to customers has undergone 100% testing at the given value or higher for 1s.

Output Voltage / Current / Power

1. Turn-on voltage, V _{Gthx}	: 15.0 V, any load condition
2. Turn-off voltage, V _{GLx}	: -10.1 V, No load
3. Turn-off voltage, V _{GLx}	: -9.5 V @ 4W
4. Turn-off voltage, V _{GLx}	: -9.3 V @ 6W
5. Gate Peak Current I _{out}	: \pm 35 Amp
5. Internal Gate resistance	: 0.5 Ω
6. External Gate resistance	: Minimum 1 Ω
7. Switching frequency F	: 100 KHz
8. Output Power	: 4.0 W _i , T _{amb} < 85 °C
	: 6.0 W _i , T _{amb} < 70 °C
Part used on Plug & play driver	: 2SC0435T2xx-17 from Power Integration (02 Qty/Board)

(for more detail, kindly check part specific datasheet from PI)

Environmental

Working temperature	: -40 to 85°C
Storage temperature	: -40 to 90 °C

Driving Capability

: INFINEON / SEMIKRON / FUJI

The MEGA MASTER drives all usual IGBT modules up to 1700 V.

Power depends on switching frequency so in case of any doubt during selection process please contact.

Interfacing with Control Circuit (Electrical)

AUX_5 : High (Normal) to Low (Error) (JP1 SHORT - (1-2))

High (Error) to Low (Normal) (JP1 SHORT - (2-3))

Open collector output (Optional).

JP2 : Pin 1-2 & JP3 : Pin 2-3- PWM pulse Non-Inverting Selection
[Default Factory Set]

JP2 : Pin 2-3 & JP3 : Pin 1-2- PWM pulse Inverting Selection

EXTRST : 5 μ Sec high to low Pulse/ Do ground if function not used in circuit.

Deadband : 4 μ Sec (Factory Set)

LED Indication

Power ON: Green (Normally ON, Off during Power supply fault)

PWM_1, PWM_2, PWM_3, PWM_4:


YELLOW (ON : PWM Pulse available, OFF : absent)

ERROR (ER1, ER2, ER3, ER4):

RED (Normally off, On during FAULT)

(ERROR on individual Output channel)

ORDERING CODE - 220221034

MEGA MASTER	Description
	6WX2, 35A, 100KHz 1700V CLASS IGBT DRIVER ELECTRICAL Interface
220221034	Default Gate Resistor: 4.7E Rg(On), 4.7E Rg(Off)

Interfacing with Control Circuit

INPUT Detail 10 Pin FRC (CN1):

1	PWM_A1	2,10	GND
9	PWM_A2		

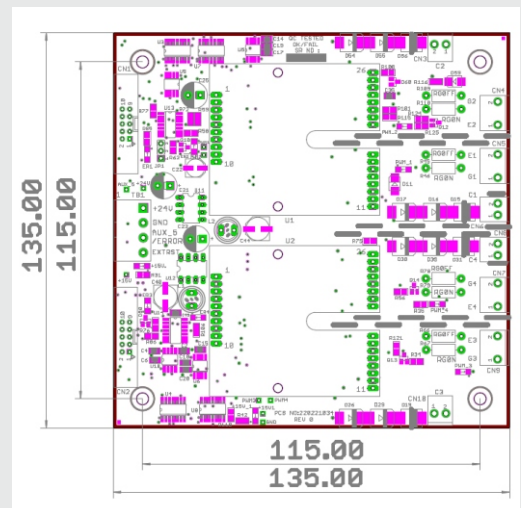
INPUT Detail 10 Pin FRC (CN2):

1	PWM_B1	2,10	GND
9	PWM_B2		

INPUT Detail 4 Pin TB1:

1	Power Supply (+15V)
2	GND
3	AUX_5 (Error Feedback)
4	EXTRST (IF NOT IN USE - GND, R87-0E)

MECHANICAL DIMENSION:



ALL DIMENSIONS ARE IN MM

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