

H BRIDGE IGBT DRIVER

MEGA MASTER
PARALLEL / FULL BRIDGE CONFIGURATION

PART CODE : 220221055

Excellent Plug & Play solution!!

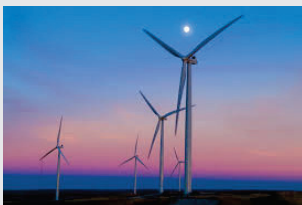
Features

- 4X4 Watt Compact Four channel driver
- Switching frequency up to 20 KHz
- $\pm 35A$ gate current, +15V/-10V
- Drive up to 1700V IGBT Module
- 14-Pin FRC/MSTB-6 Electrical Interface
- Extremely reliable & rugged design
- Integrated short-circuit soft shutdown
- In-build Dead band generation
- Parallel / Full bridge drive configuration
- Less than 500 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.
- +24/+15V Power supply (Optional - Factory set)

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.
- Single 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)

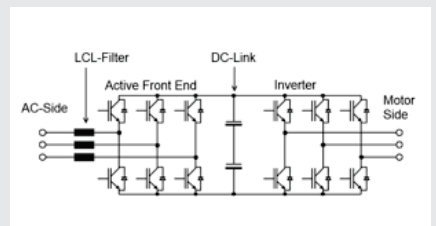
Application



WIND TURBINE



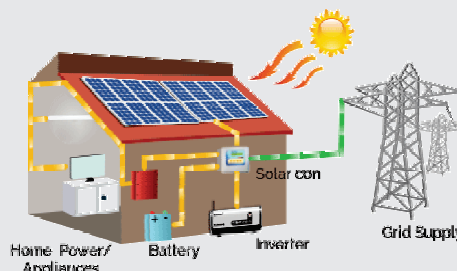
DRIVES



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	: 12.0 V 15.0 V logic level
3. Turn-on threshold	: 12 V (typ)
4. Turn off threshold	: 10.7 V (typ)
5. SOx output, failure Condition	: 0.7 V Max., I(SOx) < 20mA total

Short-Circuit Protection

	: Diode sense method
1. Vce-monitoring threshold	: 4.95 V (Internally Fix)
Isc Trip adjustment	: 33K (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 (R4)	: 49 mSec (100K Factory Set
5. Minimum blocking time (R4)	: 9 μ Sec (OE)

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)}	: 300 nS, 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) In case of no use, Pin must be Ground.

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 _{Ghx}	: 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 (max.)
8. Output Power	: 4.0 W, T _{amb} < 85 °C
	: 6.0 W, 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 H Bridge drives all usual 62mm 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
ERROR : High (Normal) to Low (Error) (JP1 SHORT - (1-2))
High (Error) to Low (Normal) (JP1 SHORT - (2-3))
Open collector output (Optional).

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

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 - 220221055

MEGA MASTER HP	Description
	4WX2, 35A, 20KHz 1700V CLASS IGBT DRIVER
	ELECTRICAL Interface
	Default Gate Resistor: 3E3 Rg(On), 3E3 Rg(Off)

Interfacing with Control Circuit

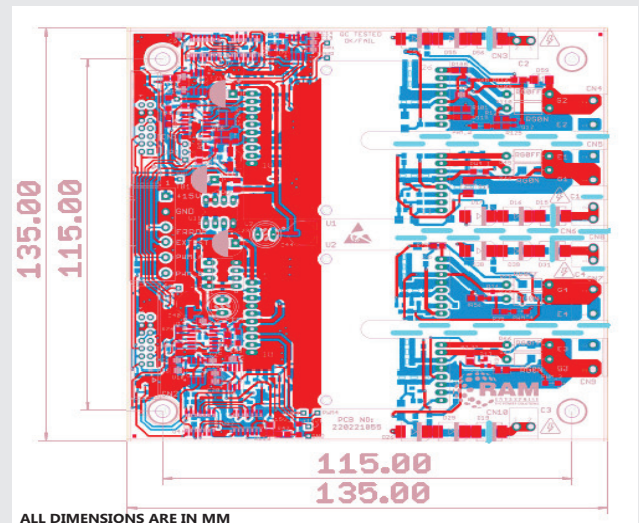
INPUT Detail 14 Pin FRC: CN1/CN2

2 (CN1)BOT	PWM_A2	2 (CN2)BOT	PWM_A4
4 (CN1)TOP	PWM_A1	4 (CN2)TOP	PWM_A3
3	ERROR	10,11,12	GND
8,9	+24/+15V	1,13,14	NC
6	EXTRST (GND - If unused)		

INPUT Detail 6 Pin MSTB: TB1 (Optional - On Demand)

1	+24/+15V	2	GND
5	PWM_A1(TOP)	6	PWM_A2(BOT)
3	ERROR	4	EXTRST (GND - If unused)

MECHANICAL DIMENSION:



Accessory



FRC CABLE