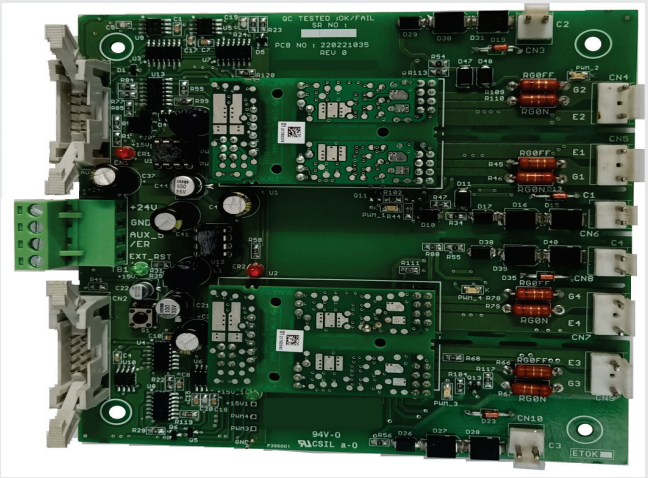
RAM ENTERPRISE

THE POWER SOLUTIONS



H BRIDGE MINI MASTER

PARALLEL / H BRIDGE CONFIGURATION

PART CODE : 220221035

Excellent Plug & Play solution!!

Features

- 4X1.2 Watt Compact Four channel driver
- Switching frequency up to 20 KHz
- ±15A gate current, +15V/-6V
- Drive up to 1200V IGBT Module
- 10-PIN & MSTB-4PIN 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 Or +15 Volt power supply(Optional)Factory set

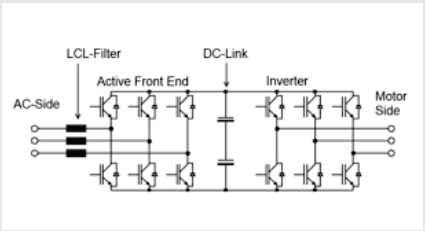
Benefits

- 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

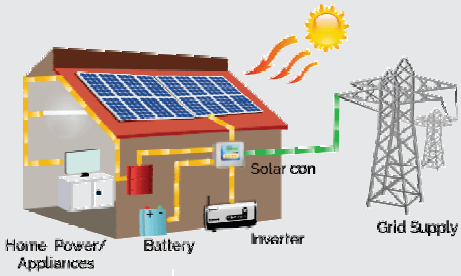
WIND TURBINE

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	: 18	24	26	V
2. Supply Current Icc (Without Load):	50mA (@20KHz 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 µA
2. Interface Logic level : 13.0 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 : 9.3 V (Internally Fix)
2. Response(blanking) time : 4.5µSec (R52,R71,R112,R116: 18KΩ) Factory Set
3. Minimum response time : 1.2 µSec
4. Available blocking time (R4) : 49 mSec (100K) Factory Set
5. Minimum blocking time (R4) : 9 µSec (0E)

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

1. Turn-on delay $t_{d(on)}$: 400 nS, Max.
2. Turn-off delay $t_{d(off)}$: 400 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)

Electrical Isolation

Test voltage (50 Hz/1 sec)

1. Primary to secondary side : 4.0 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. Excessive HiPot testing at voltages much higher than $850V_{AC(eff)}$ may lead to insulation degradation. No degradation has been observed over 1 min. testing at $4000V_{AC(eff)}$ Each driver core production sample shipped 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} : -8.5 V, No load
3. Turn-off voltage, V_{GLx} : -6.6 V @ 1 W
4. Gate Peak Current I_{out} : ±15 Amp
5. External Gate resistance : 2.5 Ω, Minimum for more than 25 Khz
   : 1.0 Ω,Minimum for Less than 25 Khz
6. Switching frequency F : 50 Khz
7. Output Power : 0.4 W, T <105 °C
   : 1.0 W, T <85 °C
   : 1.2W, T <70 °C
   : 1.4 W, T <55°C

Part used on Plug & play driver : 2SC0115T2A0-12 from Power Integration (02 Qty/Board)
(for more detail, kindly check part specific datasheet from PI)

Environmental

Working temperature : -20 to 105°C
Storage temperature : -40 to 105 °C

Driving Capability : INFINEON / SEMIKRON /FUJI

The H Bridge MINI MASTER drives all usual 62mm / Prime Pack2 IGBT modules up to 1400A/1200 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 µSec 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 LED
ON: PWM Pulse available, OFF : absent)
ERROR (ER1, ER2) : RED (Normally off, On during FAULT)
(ERROR on individual Output channel)

ORDERING CODE - 220221035

H BRIDGE MINI MASTER	Description
220221035	1.2WX2, 15A, 50KHz 1200V CLASS IGBT DRIVER ELECTRICAL Interface Default Gate Resistor: 2E Rg(On), 2E Rg(Off)

Interfacing with Control Circuit

INPUT Detail 10 Pin FRC FOR PWM: CN1/CN2

1 (CN1)TOP	PWM_A1	1 (CN2)TOP	PWM_A3
9 (CN1)BOT	PWM_A2	9 (CN2)BOT	PWM_A4
2,10	GND	2,10	GND

3,4,5,6,7,8 (CN1/CN2) NC

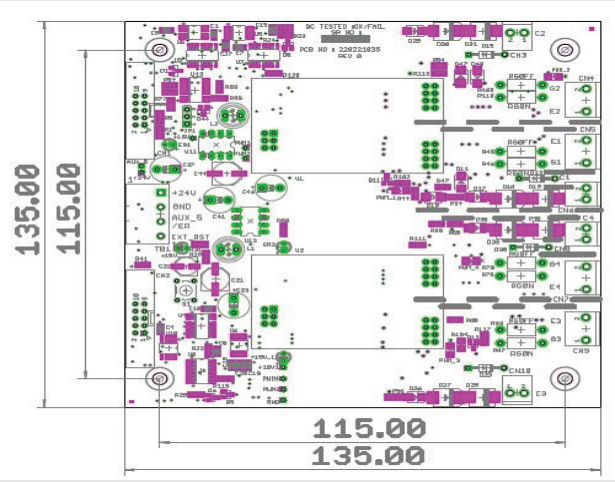
INPUT Detail 4 Pin MSTB: TB1 (Optional)

1	+24/+15V	2	GND
3	AUX_5 /ER (ERROR OUTPUT)		
4	EXT_RST (IF NOT IN USE - MUST GND)		

Accessory

FRC CABLE

MECHANICAL DIMENSION:



ALL DIMENSIONS ARE IN MM