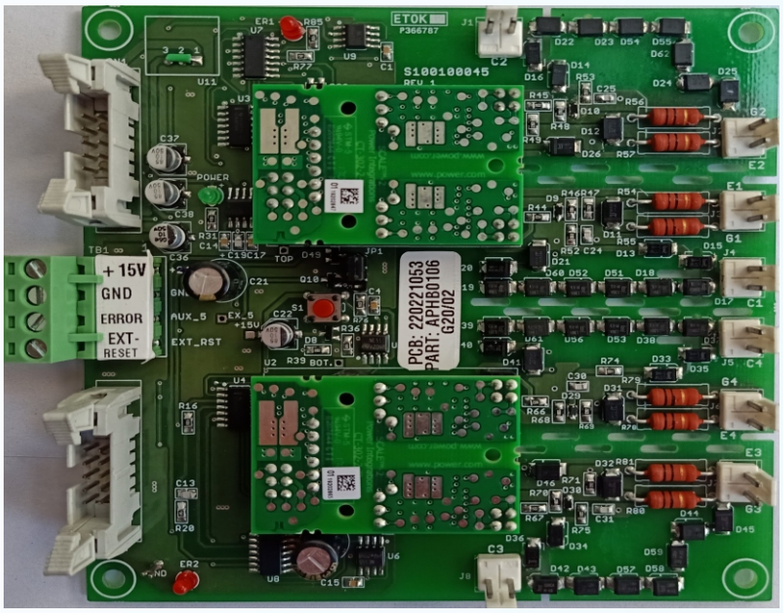
ARIHANT ELECTRICALS

IGBT DRIVER SOLUTION



APHB0106 IGBT DRIVER

HALF BRIDGE (4-CH)

IGBT DRIVER
Ready to use!!!

APHB0106

Features

- Four channel driver
- 4X1 Watt Output Power at 85°C
- ±6 A gate current, +15 V/-10 V
- Blocking voltage up to 1200V
- Compact Plug & Play solution
- In-Built Dead Band generation
- Extremely reliable & rugged design
- SOFT shut down function .
- Gate Clamping
- Switching frequency up to 50 KHz
- Approx. 200 nS delay time
- Basic Active Clamping available
- Long service life
- Supply under voltage lockout
- ASIC based driver solution
- Vce monitoring for short circuit protection
- Superior EMC

Benefits

- On board isolated DC-DC converter
- Interface for 13V...15V logic level
- Common fault feedback signal to interface with controller
- Field configurable dead band & blocking time
- Safe isolation to EN50178, can drive up to 1200V IGBT module
- User selectable Rg(on) & Rg(off)

Application

- UPS
- Solar Converters
- Induction Heating & Melting
- Industrial Drives
- Traction power supply

Technical Specification

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):		150 mA		
3. Under Voltage Monitor, Set Fault	11.3	12.3	12.7	V

Logical Inputs & Outputs

1. Interface Logic level	: 12 V.....15.0 V logic level
2. Input Bias Current	: 190 µA
3. Turn-on threshold	: 2.9 V (TYP)
4. Turn off threshold	: 1.8 V (TYP)
5. SOx output , failure Condition	: 0.7 V max., I(SOx) < 20 mA total

Short-Circuit Protection

1. Vce-monitoring threshold	: 9.3 V (Internally Fix)
2. Available response time	: 4.5±10% µS (User selectable)
3. Minimum response time	: 3 µS
4. Available blocking time	: 49 mS (User Selectable)
5. Minimum blocking time	: 9 µS

Timing Characteristic (Input to Output of Driver board)

1. Turn-on delay $t_{d(on)}$	: 200 nS, Max. under No-load
2. Turn-off delay $t_{d(off)}$	: 250 nS, Max. under No-load

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

Protection Available on driver board

1. Primary/Secondary Under voltage monitoring.
2. Power supply reverse polarity protection.
3. Soft shut down for an over voltage protection.
4. Vce monitoring for short circuit protection.
5. Schmitt trigger at the Input stage, high immunity against noise.
6. Gate Clamping & Safe torque operation.

Electrical Isolation

Test voltage (50 Hz/1 sec)

1. Primary to secondary side	: 4.0 KV min
2. Secondary to secondary side	: 4.0 KV min

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 $4000V_{AC(eff)}$ 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}	: -9.4 V, No load
3. Turn-off voltage, V_{GLx}	: -8.0 V @ 1W
4. Turn-off voltage, V_{GLx}	: -9.3 V @ 6 W
5. Gate Peak Current I_{out}	: ±6 Amp
6. External Gate resistance	: 0.5 Ω, Minimum
7. Switching frequency F	: 50 Khz
8. Output Power	: 1W, T_{amb} <85 °C
	: 1.2 W , T_{amb} <70 °C
	: 0.35 W, T_{amb} <105 °C

Input FRC & MSTB :-

CN1/CN2 :-
Pin 1 : PWM A
Pin 9 : PWM B
Pin 2&10 : GND

TB1 :-
Pin 1 :15 V
Pin 2 : GND
Pin 3 : Error
Pin 4 : EXRST

Interfacing with Control Circuit

1.Electrical Output to interface with controller
ERROR/FAULT (JP1) : Low to High (JP1 : Pin No. 2 & 3)
: High to Low (Jp1 : Pin No. 1 & 2)

LED Indication

Power ON: GREEN (Normally ON, Off during Fault)
ERROR, ER1 & ER2 : RED (LED for Individual IGBT, ON during Fault)

Environmental

Working temperature	:	-20 to 105 ºC
Storage temperature	:	-20 to 105 ºC

Mechanical Dimension

PCB	:	125 mm X 125 mm
Mounting Hole	:	115 mm X 115 mm
Enclosure	:	Open Frame
Weight	:	0.5 Kg

Driving Capability

The APHB0106 drives all usual IGBT modules up to 1200 V. Driving power depends on switching frequency so in case of any doubt during selection process pl. contact our sales / technical representative.