

MEGA PRIME PACK IGBT-MOSFET DRIVER (Electrical)

Excellent Plug & Play solution!!

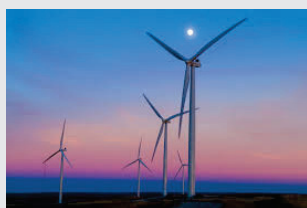
Features

- 2X4 Watt Compact Dual channel driver
- Switching frequency up to 10 KHz
- $\pm 35A$ gate current, +15V/-10V
- Drive up to 1700V IGBT Module
- 20-PIN Electrical Interface
- Extremely reliable & rugged design
- Integrated short-circuit soft shutdown
- Direct & half bridge modes
- Less than 1 uS 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 12.0V...15 V logic level - Direct compatible with any Controller.
- Individual 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)

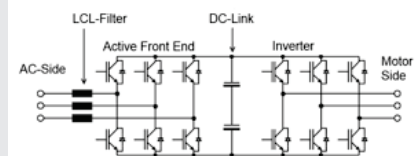
Application



WIND TURBINE



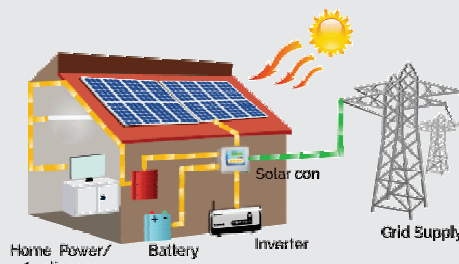
DRIVES



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)	: 50mA (@25KHz PWM I/P)		
3. Under Voltage Primary, Set Fault	: 11.3	12.0	12.7 V
Clear Fault	: 11.9	12.6	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 R3, R7	: 33K (Vce:3.45 V-2000A)
2. Response(blanking) time	: 4.5 μ Sec (C7,C16: 150pF) - Factory Set
3. Minimum response time	: 1.2 μ Sec
4. Available blocking time (R4)	: 49 mSec (User Selectable 100K)
5. Minimum blocking time (R4)	: 9 μ Sec (0E)

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

1. Turn-on delay $t_{d(on)}$: 980 nS, Max.
2. Turn-off delay $t_{d(off)}$: 890 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 susceptible to noise.
6. Interfacing with user's control circuit via EXTRESET pin so fault latching possible.(Optional for future expansion)

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 @ 4 W
4. Turn-off voltage, V _{GLx}	: -9.3 V @ 6 W
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	: 10 Khz
8. Output Power	: 4.0 W, T _{amb} < 85 °C
	: 6.0 W, T _{amb} < 70 °C

Part used on Plug & play driver : 2SC0435T2H0-17 from Power Integration
(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 PrimePACK 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
ERROR : High (Normal) to Low (Error)
EXTRST : 5 μ Sec high to low Pulse, Do ground if not used in circuit. (Optional for future use)

LED Indication

Power ON: Green (Normally ON, Off during Power supply fault)
PWM_T, PWM_B: GREEN (ON : PWM Pulse available, OFF : absent)

ORDERING CODE - 220221005

MEGA PRIME PACK	Description
	6W, 35A, 100KHz 1700V CLASS IGBT DRIVER ELECTRICAL Interface
	Default Gate Resistor: 1E Rg(On), 3.3E Rg(Off)

Interfacing with Control Circuit

INPUT Detail 20 Pin FRC:

1,3,5,7	+15V	9 ERROR IN B
2,4,6,8,10,12,14,16,18	GND	13 ERROR IN A
11	IN B	17 MODE SELECTION
15	IN A	19 TB SELECTION