

FRC



MSTB



PART CODE: 220221020

MINI MASTER 115

IGBT-MOSFET DRIVER
Excellent Plug & Play solution!!

Features

- Dual Channel Driver
- 2X0.4 Watt Output power (at 105 °C)
- 2X1.4 Watt Output Power (at 70 °C)
- ±15A gate current, +15V/-6V
- Drive up to 1200V IGBT Module
- LED Indication for Pulse Output
- In-built Dead band generation
- Reliable & rugged design
- SOFT Shut down Function
- Gate clamping
- Switching frequency up to 50 KHz
- Advance active Clamping
- Long service life
- Primary/Sec. Supply under voltage lockout
- ASIC based driver solution
- Vce monitoring for short circuit protection
- Auto Reset (FRC)
- External reset (MSTB)

Benefits

- On board isolated DC-DC converter (4.0KV Isolation)
- Interface for 13V...15 V logic level
- Common fault feedback signal to interface with controller
- Field configurable blocking time
- Programmable dead time generation
- User Selectable Rg

Application

- Uninterrupted Power supply
- Industrial drives
- Power Supply for Railway
- Servo Stabilizer
- Welding & Plasma cutters
- Medical Equipments
- Electrical / Hybrid vehicle

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)	35 mA		
3. Under Voltage Monitor, Set Fault	11.4	12.0	12.8 V

Logical Inputs & Outputs

1. Input Bias Current	: 190 μ A
2. Interface Logic level	: 12 V 15.0 V logic level
3. Turn-on threshold	: 12 V
4. Turn off threshold	: 10.8 V
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	: 5 μ Sec
3. Minimum response time	: 4.5 μ Sec
4. Available blocking time	: 130 mSec
5. Minimum blocking time	: 9 μ Sec

Timing Characteristic (Input to Output of Driver board)

1. Turn-on delay $t_{d(on)}$: < 300 nS
2. Turn-off delay $t_{d(off)}$: < 300 nS
3. Deadband	: 4.0 μ Sec

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 Over Voltage protection.
4. Vce monitoring for short circuit protection.
5. Schmitt trigger at the Input stage, highly Immune to noise.
6. Gate clamping & Safe Torque operation.

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}	: \pm 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 _{amb} < 105 °C
	: 1.0 W, T _{amb} < 85 °C
	: 1.2 W, T _{amb} < 70 °C
	: 1.4 W, T _{amb} < 55 °C

Interfacing with Control Circuit

1. Electrical, Output to interface with Controller.
ERROR : Low to High / High to Low (Site selectable)

LED Indication

Power ON: Green (Normally ON, Off during fault)
ERROR : RED (ON during Fault)
Pulse Output : Yellow (ON during healthy-Pulse available)

Environmental

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

Mechanical Dimension

PCB	: 135 x 65
Mounting Hole	: 125 X 55
Enclosure	: Open Frame
Weight	: 0.2 Kg

Driving Capability

The MINI MASTER drives all usual IGBT modules up to 1400 A /1200 V. Driving power depends on switching frequency so in case of any doubt during selection Pl. contact our sales / technical representative.

ORDERING CODE: 220221020

FRC / MSTB	Description	Specify X	from Table
 220221020	1.5W, 15A, 50KHz 1200V		
	CLASS IGBT DRIVER		
Driver will be supplied with 4.7E & 10E Rgon & Rgoff. For special requirement pl. specify during ordering.			

Interfacing with Control Circuit

14-PIN Input

Pin Detail:

1,5,6,7,13,14	N.C.	3 ERROR
2	PWMB	4 PWMA
8,9	+15V	10,11,12 GND

6-PIN MSTB

Pin Detail:

1	ERROR	2, 6	GND
3	PWM TOP	4	PWM BOT
5	+15V		

