

## MICRO 3PH INVERTER

IGBT DRIVER

**PART CODE: 220221060**

**Excellent Plug & Play solution!!**

### Features

- 1Wx6 Compact Six Channel driver
- Switching frequency up to 20 KHz
- $\pm 6A$  gate current, +15V/-10V
- Drive up to 1200V IGBT Module
- Electrical Interface - 25 pin D-type
- Reliable & rugged design
- Integrated short-circuit soft shutdown
- Gate clamping by ASIC
- Less aging effect due to ASIC
- Primary/Sec. under voltage lockout
- Vce monitoring for short circuit current
- Superior EMI-EMC & 105°C suitable for traction
- Easy tuning with various IGBT module
- Basic active clamping for over voltage protection
- In-build Dead band generation

### Benefits

- On board isolated DC-DC converter - No need of separate SMPS.
- Interface for 13V...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

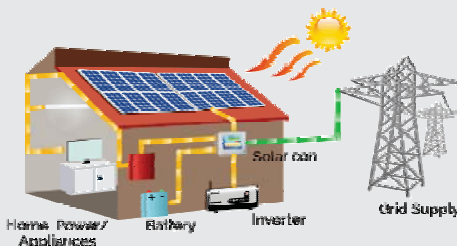
### Application



UPS



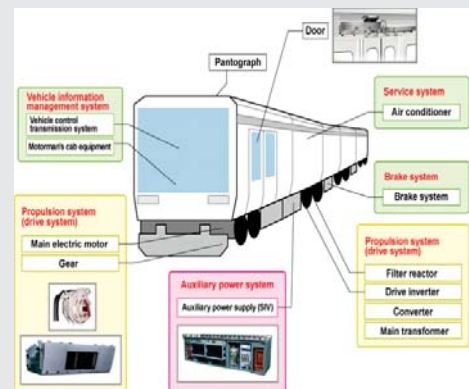
DRIVES



SOLAR INVERTER



MEDICAL-X RAY



POWER SUPPLY FOR RAILWAY

### 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):	105 mA (@20KHz PWM I/P)		
3. Under Voltage Primary, Set Fault	: 13.0	13.8	14.1 V
Clear Fault	: 14.2	14.5	15.0 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 $\mu$ A
2. Interface Logic level	: 12 V ..... 15.0 V logic level
3. Turn-on threshold	: 12 V
4. Turn off threshold	: 10.7 V
5. SOx output, failure Condition	: 0.7 V Max., I(SOx) < 20 mA total

### Short-Circuit Protection

1. Vce-monitoring threshold	: Diode sense method
2. Factory Set response time	: 9.3 V (Internally Fix)
3. Minimum response time	: 4.5 $\mu$ Sec (C34,C38,C42,C46,C50,C54: 150pF)
4. Available blocking time	: 4.5 $\mu$ Sec
5. Minimum blocking time	: 49 mSec (User Selectable 100K)(R17,R43,R67)
	: 9 $\mu$ Sec (0E)(R17,R43,R67)

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

1. Turn-on delay $t_{d(on)}$	: 1 uS, Max.
2. Turn-off delay $t_{d(off)}$	: 1.2 uS, 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. Basic active clamping for IGBT Over Voltage during switching.
4. Vce monitoring for short circuit current.
5. Schmitt trigger at the Input stage, highly immune to noise.
6. IGBT Gate clamping.

### 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  $2500V_{AC(eff)}$ . 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,  $V_{GHx}$  : 15.2 V, any load condition
2. Turn-off voltage,  $V_{GLx}$  : -9.8 V, No load
3. Turn-off voltage,  $V_{GLx}$  : -8.0 V @ 1 W
4. Gate Peak Current  $I_{out}$  :  $\pm 6$  Amp
5. Internal Gate resistance : 0.5  $\Omega$
6. External Gate resistance : Minimum 2.5  $\Omega$ , < 25kHz  
: Minimum 5  $\Omega$ , > 25kHz
7. Switching frequency F : 50 KHz
8. Output Power : 1.0 W,  $T_{amb} < 85^\circ C$   
: 1.2 W,  $T_{amb} < 70^\circ C$   
: 0.35W,  $T_{amb} < 105^\circ C$

Part used on Plug & play driver : 2SC0106T2A1-12 from Power Integration (03 Qty/Board)

### Environmental

Working temperature	: -40 to 105 $^\circ C$
Storage temperature	: -40 to 90 $^\circ C$

### Driving Capability : ANY MAKE

All usual 34/62mm IGBT modules up to 450 A /1200 V or 600A/600V. Driving power depends on switching frequency so in case of any doubt during selection process pl. contact us.


### Interfacing with Control Circuit

ERROR :Open collector output.  
High (Normal) to Low (Error) (JP1/JP2/JP3 SHORT - (2-3))  
Low (Normal) to High (Error) (JP1/JP2/JP3 SHORT - (1-2))

### LED Indication

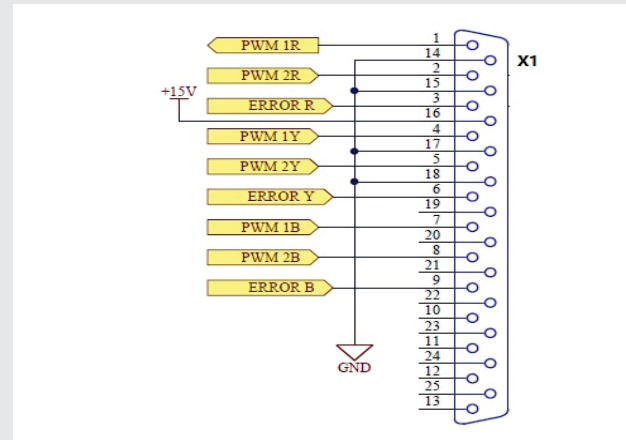
Power ON: Green (Normally ON, Off during Power supply fault)  
ERROR : RED (ON during Under Voltage / DESAT/ IGBT Fault)  
(Off during healthy condition)  
(ERROR R, ERROR Y, ERROR B)

## ORDERING CODE - 220221060

MICRO 3PH INVERTER	Description	Specify X from Table
	1Wx6, 6A, 20KHz 1200V CLASS IGBT DRIVER	
	Default Gate Resistor: RGOFF :10E, RGON: 5E	

### Interfacing with Control Circuit

25-Pin D-SUB type male connector:



### Mechanical Dimension:

