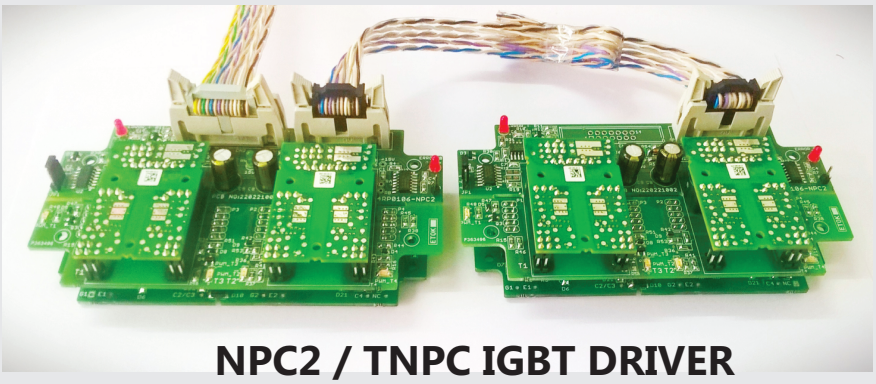
RAM ENTERPRISE

THE POWER SOLUTIONS



New Launch!!

NPC2 / TNPC IGBT DRIVER

MICRO-NPC2 MASTER-SLAVE

Excellent Plug & Play solution!!

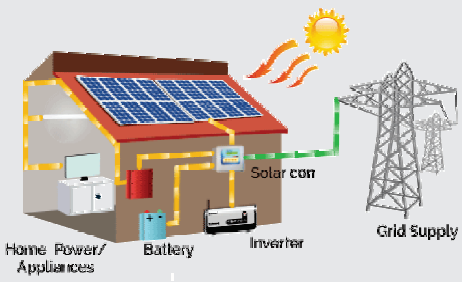
Features

- 1W Compact Four channel driver (ARM)
- Switching frequency up to 50 KHz
- ±6A gate current, +15V/-10V
- Drive up to 1200V IGBT Module
- Electrical Interface
- Integrated short-circuit soft shutdown
- <100nS Delay matching in master-slave
- Gate clamping
- Less aging effect due to ASIC
- Primary/Sec. under voltage lockout
- Vce monitoring for short circuit current
- Superior EMI-EMC
- Direct Press FIT on IGBT

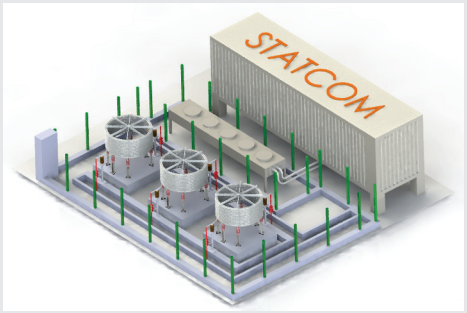
Benefits

- On board isolated DC-DC converter - No need of separate SMPS.
- Interface for 13V...15 V logic level - Direct compatible with any Controller.
- Common fault feedback signal to interface with controller - Avoid Extra component.
- 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

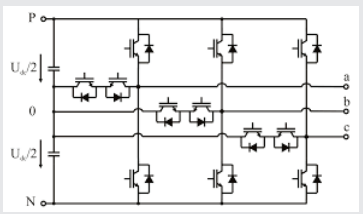
Application



SOLAR INVERTER



STATCOM / VAR COMPENSATION



CONVERTER - INVERTER

DRIVES

Recommended Operating condition

Power Supply & Monitoring	MIN	TYP	MAX
1. Supply Voltage Vcc to GND	: 14.5	15	16 V
2. Supply Current Icc (Without Load):	200 mA (@10KHz 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 µA
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 : Diode sense method

1. Vce-monitoring threshold	: 9.3 V (Internally Fix)
Trip adjustment D10,D12	: 1W ZENER / UF4007 / MUR1100
2. Factory Set response time	: 4.5 µSec (C5,C6: 150pF)
3. Minimum response time	: 4.5 µSec
4. Available blocking time (R7)	: 49 mSec (User Selectable 100K)
5. Minimum blocking time (R7)	: 9 µSec (0E)

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

1. Turn-on delay $t_{d(on)}$	: 1.2 uS, Max.
2. Turn-off delay $t_{d(off)}$	: 1.0 uS, Max.

3. Time mismatch between Master-Slave: 75 nS, Max. (rising-falling both)
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. Soft Shut down, For IGBT Over Voltage.
4. Vce monitoring for short circuit current.
5. Schmitt trigger at the Input stage, highly susceptible 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}	: 15.0 V, any load condition
2. Turn-off voltage, V_{GLx}	: -9.9 V, No load
3. Turn-off voltage, V_{GLx}	: -8.0 V @ 1 W
4. Gate Peak Current I_{out}	: ±6 Amp
5. Internal Gate resistance	: 0.5 Ω
6. External Gate resistance	: Minimum 2.5 Ω, <25kHz
	: Minimum 5 Ω, >25kHz
7. Switching frequency F	: 50 Khz
8. Output Power	: 1.0 W, T_{amb} <85 °C
	: 1.2 W , T_{amb} <70 °C
	: 0.35W, T_{amb} <105 °C

Part used on Plug & play driver : 2SC0106T2A1-12 from Power Integration

Environmental

Working temperature	: -40 to 105 °C
Storage temperature	: -40 to 90 °C

Driving Capability : INFINEON / SEMIKRON
F3L400R12PT4_B26, SEMiX405TMLI12E4B, SEMiX305TMLI12E4B, SEMiX205TMLI12E4B, F3L300R12PT4_B26

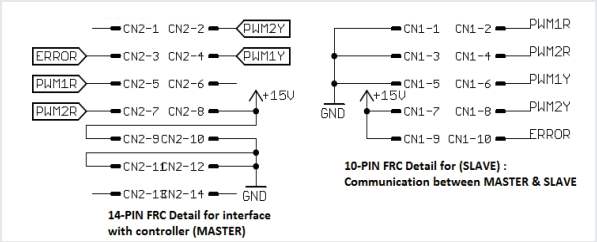
Interfacing with Control Circuit
1. Electrical
ERROR : Low to High / High to Low (Site selectable)

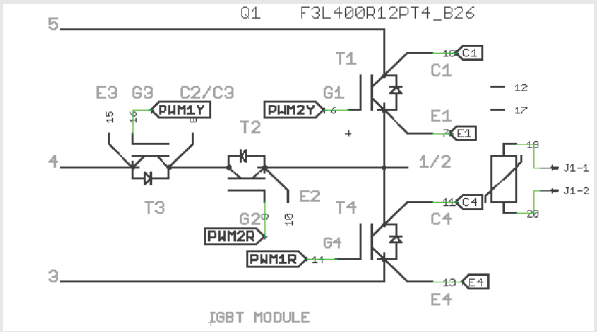
LED Indication
Power ON: Green (Normally ON, Off during Power supply fault)
ERROR_T, ERROR_B : RED (ON during UV / De-sat / IGBT Fault)
PWM_T1, PWM_T2,PWM_T3,PWM_T4: For Pulse Output Indication

ORDERING CODE - 220221002

MICRO NPC2 MASTER SLAVE	Description Specify X from Table
220221002	1W, 6A, 50KHz 1200V CLASS IGBT DRIVER 14-PIN FRC Electrical Interface
	Default Gate Resistor RG ON: 3.3E, RG OFF: 10E

Interfacing with Control Circuit





MECHANICAL DIMENSION: DIRECT MOUNTING ON IGBT