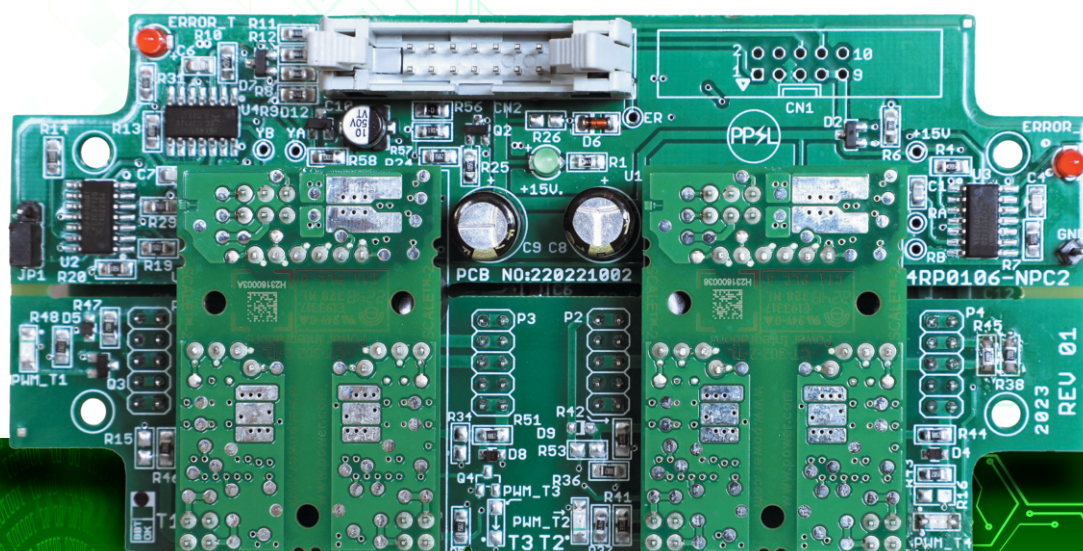


MICRO-NPC2 / TNPC (MASTER-SLAVE)



IGBT DRIVER (ELECTRICAL)

Excellent Plug & Play solution!!



MICRO NPC2 / TNPC

IGBT DRIVER (Electrical)

FEATURES

- 4X1 Watt Compact ARM driver
- Switching frequency up to 50 KHz
- 6A gate current, +15V/-10V
- Drive up to 1200V IGBT Module
- Electrical Interface
- Extremely reliable & rugged design
- Integrated short-circuit soft shutdown
- Gate Clamping
- Less than 100nS delay matching in master-slave
- Less aging effect due to ASIC
- Primary/Sec. under voltage lockout
- Vce monitoring for short circuit current
- Superior EMI-EMC
- Direct mount on Infineon & Semikron Make IGBT

BENEFITS

- On board isolated DC-DC converter.
- Interface 13.0V...15.0V logic level.
- Common fault feedback signal to interface with controller.
- Field configurable blocking time
- Safe isolation to IEC 61800-5-1, IEC-60664-1 & En50178, protection class II
- User selectable Rg(on) & Rg(off)

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)	: 200mA (@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 μ A
2. Interface Logic level	: 13V...15V
3. Turn-on threshold	: 12.7 V (typ)
4. Turn off threshold	: 10.7 V (typ)
5. SOx output , failure Condition	: 0.7 V Max., I (SOx)<20 mA total

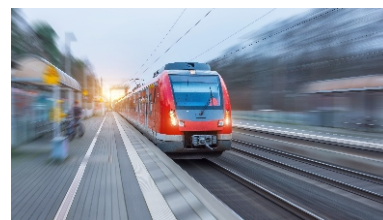
Short-Circuit Protection

	: Diode sense method
1. Vce-monitoring threshold	: 9.3 V (Internally Fix)
Isc Trip adjustment D10, D12	: 1N4734A /UF4007 / MUR1100
2. Response (blanking) time	: 4.5 μ S (C5,C6 : 150pF) - Factory Set
3. Minimum response time	: 4.5 μ S
4. Available blocking time (R7)	: 49 mS (User Selectable 100K)
5. Minimum blocking time (R7)	: 9 μ S (0E)

APPLICATIONS



INDUSTRIAL UPS



Railway Converter



Drives

Timing Characteristic

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

1. Turn-on delay $t_{d(on)}$: 1.2 μ S, Max.
 2. Turn-off delay $t_{d(off)}$: 1.0 μ S, Max.
 3. Time delay between M-S: 75 nS, Max. (rising-falling)
- For detail timing information, 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, to avoid IGBT Over Voltage.
4. Vce monitoring for short circuit current.
5. Highly immune to noise.
6. IGBT Gate Clamping.

Mechanical

Overall Dimensions : 130 x 65 mm
Mounting Dimensions : 110 X 31 mm

Environmental

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

LED Indication

Power ON: Green (Normally ON, Off during Power supply fault) PWM_T1, PWM_T2, PWM_T3, PWM_T4 : GREEN (ON : PWM Pulse available, OFF : absent)
ERROR_T, ERROR_B : RED (ON during Under Voltage / DESAT/ IGBT Fault)



Power Quality



Solar Inverter

APPLICATIONS

ORDERING CODE - 220221002

MICRO-NPC2/TNPC

Version 1.0



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 as stipulated by EN 50178. Excessive HiPot testing at voltages much higher than 1200V may lead to insulation degradation. No degradation has been observed over 1 min. testing at 5000V. 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, $V_{CE(sat)}$: 15.0 V, any load condition
2. Turn-off voltage, $V_{CE(off)}$: -10.0 V, No load
3. Turn-off voltage, $V_{CE(off)}$: -8V @ 1W
4. Gate Peak Current I_{out} : ± 6 Amp
5. Internal Gate resistance : 0.5 Ω
6. External Gate resistance : Min 2.5 Ω , at below 25Khz
: Min 5 Ω , for above 25Khz,
7. Switching frequency F : 50 Khz
8. Output Power : 1.0 W, T_{amb} <85 °C
: 0.35 W, T_{amb} <105 °C

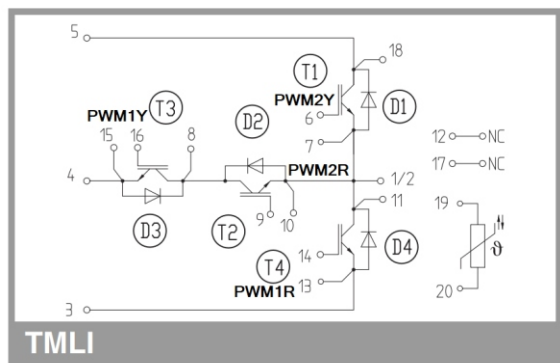
Driving Capability : INFINEON / SEMIKRON

The Micro-NPC2 drives SEMIX205TMI12E4B, 305TMI12E4B, 405TMI12E4B, F3L300R12PT4_B26, F3L400R12PT4_B26.

Interfacing with Control Circuit (ELECTRICAL)

ERROR : Low to High / High to Low (Site selectable)
EXTRST : 5 μ S high to low Pulse

Interfacing with Control Circuit (MASTER) Detail:



- | | | |
|--------------|----------|--------------|
| 1,13,14 N.C. | 2 PWM 2Y | 4 PWM 1Y |
| 3 ERROR | 5 PWM 1R | 7 PWM 2R |
| 6 EXT RST | 8,9 +15V | 10,11,12 GND |

Note: Ext Reset must GND, if not in use

Interfacing with SLAVE Driver:

- | | | |
|-----------|----------|----------|
| 1,3,5 GND | 2 PWM 1R | 4 PWM 2R |
| 6 PWM 1Y | 8 PWM 2Y | 10 ERROR |
| 7,9 +15V | | |



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Safety Instructions

Prior to installation and operation, all safety notices and warnings and all warning signs attached to the equipment have to be carefully read. Make sure that all warning signs remain in a legible condition and that missing or damaged signs are replaced.

Even for customer-specific products, conclusive validation of the component in the circuit can only be carried out by the customer.