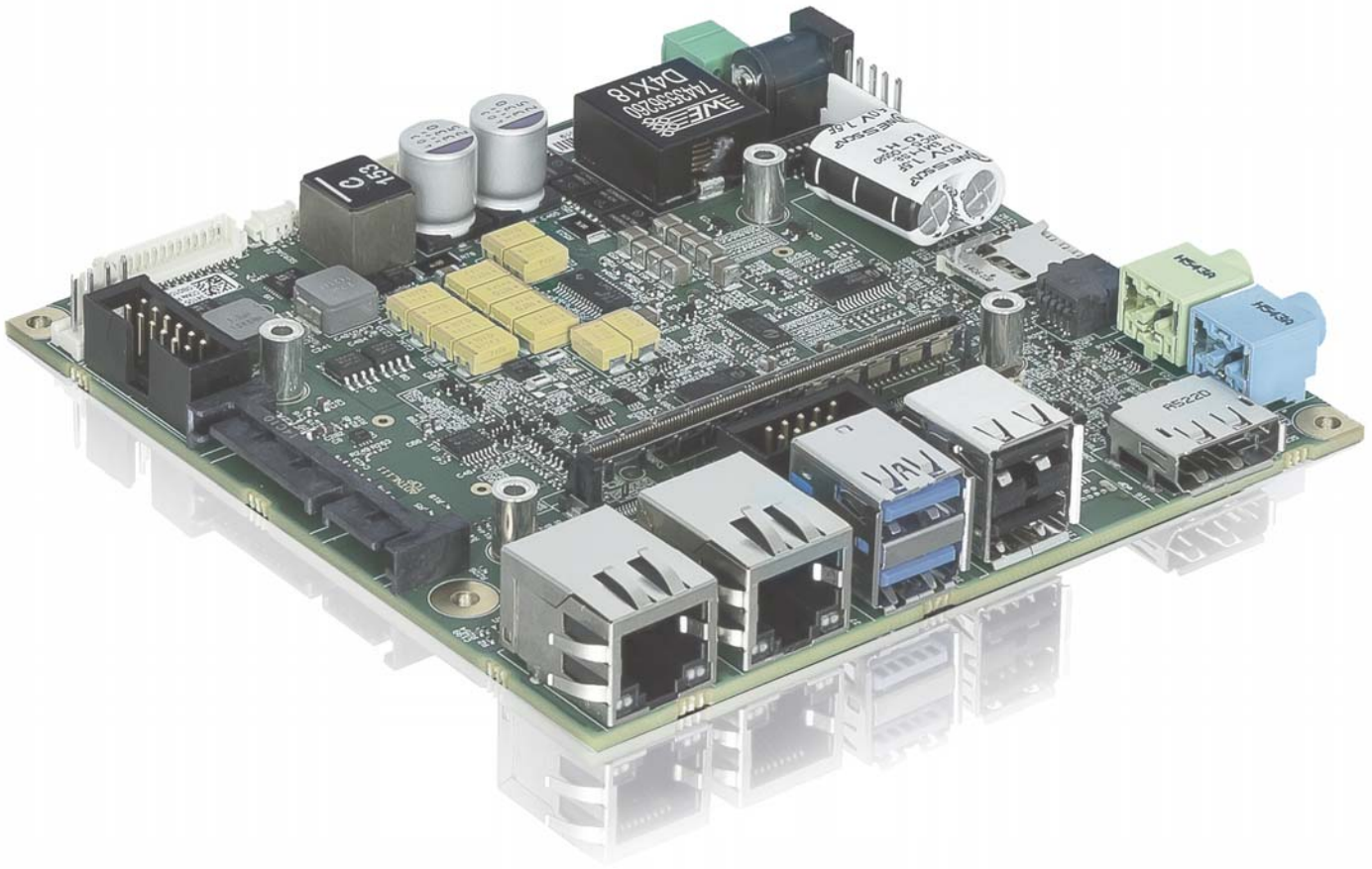


# » User Guide «



COMe Ref. Carrier-i T10 TNiX

Doc. ID: 1060-3229, Rev. 1.2

Date: April 19, 2017

## Revision History

| Revision | Brief Description of Changes  | Date of Issue |
|----------|---|---------------|
| 1.0      | Initial issue   | 01-Aug-2016   |
| 1.1      | 2.1.1 SPI Flash update<br>2.3.13 DIP Switch, update of table 15, position 7 | 23-Aug-2016   |
| 1.2      | 2.3.14 Power Supply and Management  | 19-Apr-2017   |

## Imprint

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Final disposition of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

# 1 Introduction

## 1.1 Carrier Overview

The COMe Reference Carrier-i Type 10 Thin-NanoITX (hereinafter referred to as COMe Ref. Carrier-i T10 TNI) is a COM Express® pinout Type 10, Thin-nITX form factor-compliant reference carrier designed to accommodate a mini Type 10 COM Express® Computer-on-Module compliant with the PICMG COM.0 specification Rev 2.1.

The COMe Ref. Carrier-i T10 TNI comes in three variants:

- » COMe Reference Carrier-i Type 10 Thin-NanoITX Professional (COMe Ref. Carrier-i T10 TNIP),
- » COMe Reference Carrier-i Type 10 Thin-NanoITX Value (COMe Ref. Carrier-i T10 TNIV), and
- » COMe Reference Carrier-i Type 10 Thin-NanoITX Entry (COMe Ref. Carrier-i T10 TNIE).

The following table provides information about the features implemented on the COMe Ref. Carrier-i T10 TNI variants.

**Table 1: COMe Ref. Carrier-i T10 TNI Variants**

|                   | COMe Ref. Carrier-i T10 TNIP<br>(P/N 34105-0000-00-0) | COMe Ref. Carrier-i T10 TNIV<br>(P/N 34105-0000-00-1) | COMe Ref. Carrier-i T10 TNIE<br>(P/N 34105-0000-00-2) |
|-------------------|---|---|---|
| SPI BIOS Socket   | x   | x   | x   |
| Carrier EEPROM    | x   | x   | x   |
| DDIO - DP++       | x   | x   | x   |
| LVDS              | x   | x   | x   |
| mDP++ (eDP)       | --  | --  | --  |
| mPCIe0            | x   | x   | --  |
| mPCIe1 / mSATA    | x   | x   | x   |
| GBLan0 (Module)   | x   | x   | x   |
| GBLan1 (Carrier)  | x   | x   | --  |
| SATA0             | x   | x   | x   |
| USB 2.0 / 3.0 I/O | x   | x   | x   |
| USB 2.0 Header    | x   | x   | --  |
| HDA Codec         | x   | x   | --  |
| Line-In/Out       | x   | x   | --  |
| S/PDIF            | x   | x   | --  |
| SERO              | x   | x   | x   |
| GPIO              | x   | x   | x   |
| microSD/SIM       | x   | x   | --  |
| Sys Signals       | x   | x   | x   |
| Sys Panel         | x   | x   | x   |
| CPU Fan           | x   | x   | x   |
| RTC connector     | x   | x   | x   |
| Goldcap 1.5F      | x   | x   | --  |
| SMART Battery     | x   | --  | --  |
| 12V Input         | x   | x   | x   |
| 6.5 - 30V Input   | x   | --  | --  |
| Rubber Feet       | x   | --  | --  |

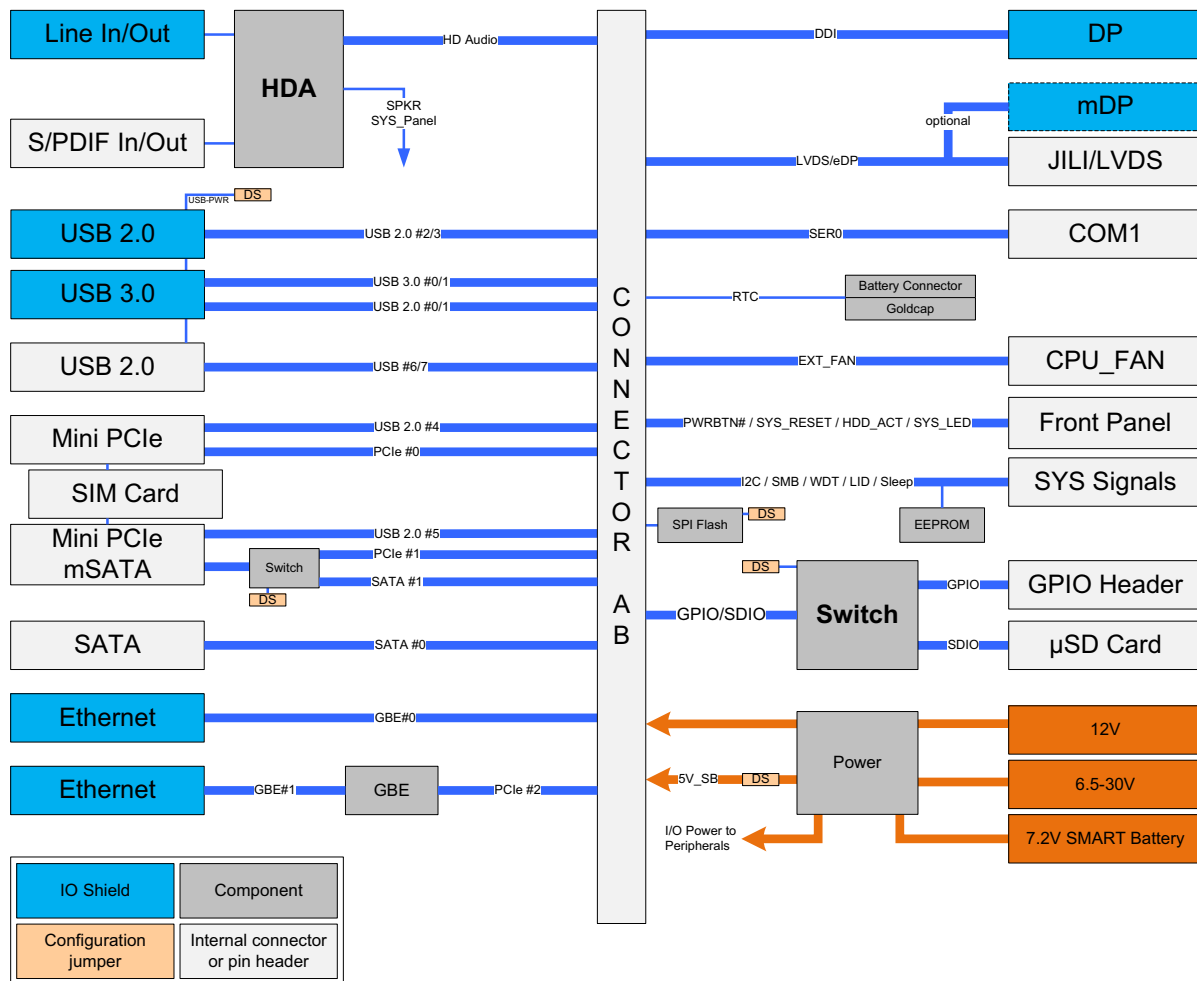


## 1.2 Board Diagrams

The following diagrams provide additional information concerning board functionality and component layout.

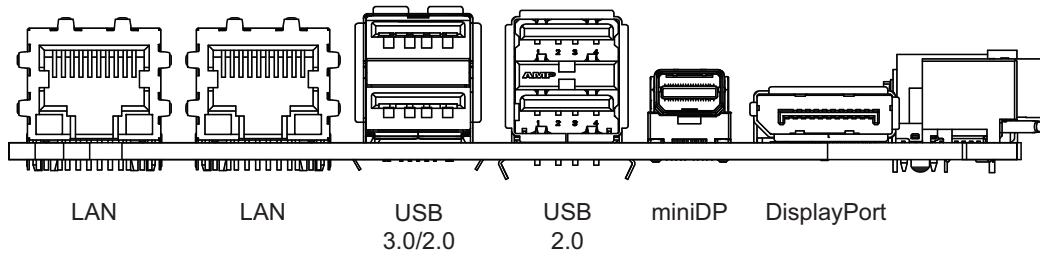
### 1.2.1 Functional Block Diagram

Figure 1: COMe Ref. Carrier-i T10 TNI Functional Block Diagram



### 1.2.2 Rear Panel

Figure 2: COMe Ref. Carrier-i T10 TNI Rear Panel



### 1.2.3 Board Layout

Figure 3: COMe Ref. Carrier-i T10 TNI Layout - Top View

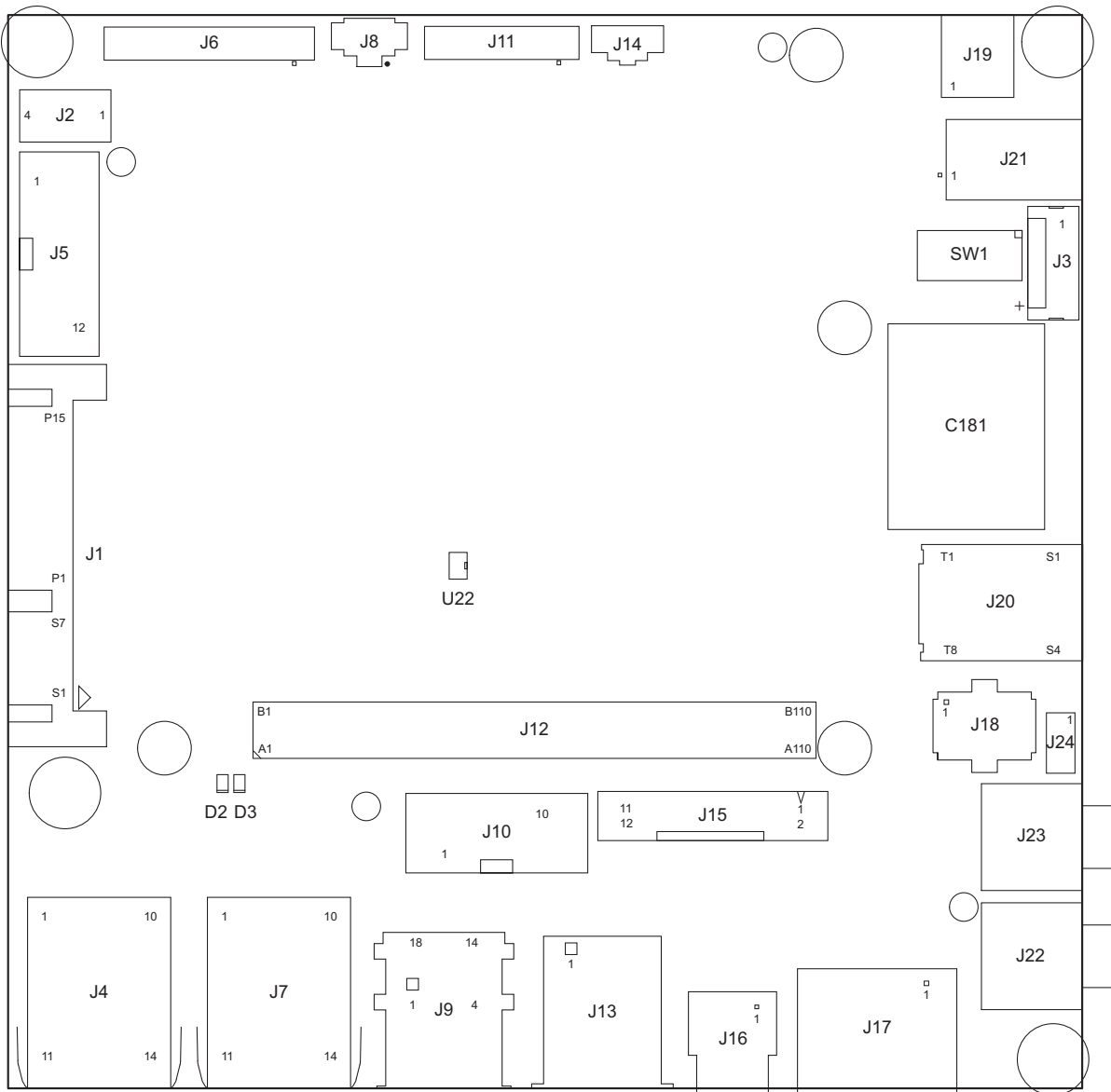
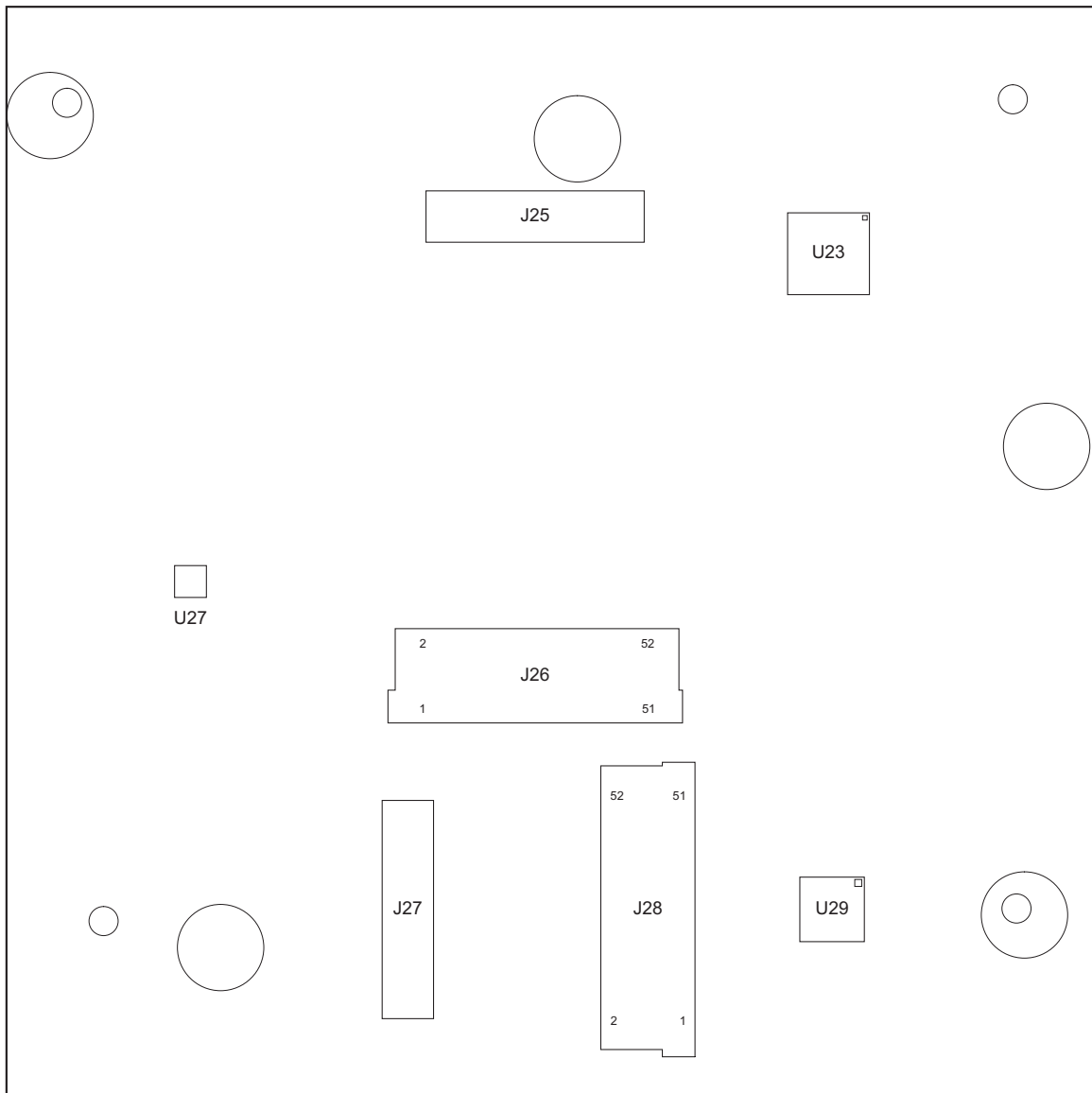


Figure 4: COMe Ref. Carrier-i T10 TNI Layout - Bottom View



### 1.2.3.1 Component Overview

**Table 2: Component Overview**

| COMPONENT | DESCRIPTION                                     |
|-----------|---|
| C181      | Goldcap   |
| D2        | Status LED: V12_S0                              |
| D3        | Status LED: V5.0_S5                             |
| J1        | SATA plug connector (with power connector)      |
| J2        | PWM fan connector                               |
| J3        | Smart Battery Input                             |
| J4        | RJ45 Ethernet connector                         |
| J5        | Front panel connector                           |
| J6        | SYS_Signals / embedded interfaces pin header    |
| J7        | RJ45 Ethernet connector                         |
| J8        | COM port pin header (COM1/SER0)                 |
| J9        | USB 3.0/2.0 double-stack connector              |
| J10       | USB 2.0 header                                  |
| J11       | GPIO pin header                                 |
| J12       | COMe connector (Row A and B)                    |
| J13       | USB 2.0 double-stack connector                  |
| J14       | CMOS battery connector                          |
| J15       | LVDS / JILI connector                           |
| J16       | Mini DisplayPort++ connector (eDP option)       |
| J17       | DisplayPort++ connector (DDIO)                  |
| J18       | SPI BIOS socket                                 |
| J19       | Power connector (6.5V – 30V input voltage)      |
| J20       | microSD/SIM combo connector                     |
| J21       | DC jack (12V only)                              |
| J22       | Rear panel line-in connector                    |
| J23       | Rear panel SPK / line-out connector             |
| J24       | S/PDIF Header                                   |
| J25       | Mini PCIe card latch (full-size) / mSATA socket |
| J26       | Mini PCIe card slot (full-size) / mSATA socket  |
| J27       | Mini PCIe card latch (half-size)                |
| J28       | Mini PCIe card slot (half-size)                 |
| SW1       | DIP switch                                      |
| U22       | Carrier EEPROM (FRUPROM)                        |
| U23       | Intel® Ethernet Controller I210-IT              |
| U27       | Smart Battery Controller TI BQ24725A            |
| U29       | HD Audio Codec IDT / Tempo Semi 92HD73C         |

## 1.3 Technical Specification

**Table 3: COMe Ref. Carrier-i T10 TNI Main Specifications**

| FEATURES            |                           | SPECIFICATIONS  |
|---------------------|---------------------------|---|
| CPU                 | Processor & Chipset       | Via COMe mini Type 10 module  |
| Memory              | System Memory             | Via COMe mini Type 10 module  |
|                     | Flash Memory              | One SPI BIOS socket for an SPI flash IC with up to 8 MB flash memory  |
|                     | EEPROM                    | EEPROM with 32 kbit on the carrier (FRUPROM)  |
| Graphics Interfaces | Digital Display Interface | One digital display interface (DDIO): <ul style="list-style-type: none"> <li>» DDIO: DisplayPort++ connector from COMe DDIO, J17</li> </ul>   |
|                     | LVDS                      | LVDS / JILI connector (24-bit, single-channel LVDS), J15  |
|                     | Embedded DisplayPort      | Mini DisplayPort++ connector via eDP (optional, instead of LVDS), J16   |
| System Interfaces   | PCI Express               | Three PCIe interfaces: <ul style="list-style-type: none"> <li>» PCIe#0 for Mini PCIe 2.0 half-size card slot connected to the microSD/SIM combo socket, J28</li> <li>» PCIe#1 for Mini PCIe 2.0 full-size card slot muxed with SATA#1 (mSATA) and connected to the microSD/SIM combo socket, J26</li> <li>» PCIe#2 for the onboard Gigabit Ethernet controller</li> </ul>   |
|                     | SATA                      | Two SATA 3 Gb/s interfaces: <ul style="list-style-type: none"> <li>» SATA#0 via the 22-pin SATA plug connector, J1</li> <li>» SATA#1 for the mSATA socket / Mini PCIe full-size card slot, J26</li> </ul>   |
|                     | Ethernet                  | Two Gigabit Ethernet interfaces: <ul style="list-style-type: none"> <li>» GbE#0 on RJ45 connector, J4, via COMe mini Type 10 module</li> <li>» GbE#1 on RJ45 connector, J7, via the onboard GbE controller (Intel® Ethernet Controller I210-IT)</li> </ul>  |
|                     | USB 2.0                   | Eight USB 2.0 interfaces: <ul style="list-style-type: none"> <li>» Two USB 2.0 interfaces (USB#[0;1]) for USB 3.0/2.0 double-stack connector, J9</li> <li>» Two USB 2.0 interfaces (USB#[2;3]) for USB 2.0 double-stack connector, J13</li> <li>» One USB 2.0 interface (USB#4) for PCIe#0 (Mini PCIe half-size interface)</li> <li>» One USB 2.0 interface (USB#5) for PCIe#1 (Mini PCIe full-size/mSATA interface)</li> <li>» Two USB 2.0 interfaces (USB#[6;7]) for USB 2.0 pin header, J10</li> </ul> |
|                     | USB 3.0                   | Two USB 3.0 interfaces: <ul style="list-style-type: none"> <li>» Two USB 3.0 interfaces (USB_SS#[0;1]) for USB 3.0/2.0 double-stack connector, J9</li> </ul>  |
|                     | HD Audio                  | Three HD Audio interfaces: <ul style="list-style-type: none"> <li>» Rear panel line-in connector, J22</li> <li>» Rear panel SPK/line-out connector, J23</li> <li>» S/PDIF header, J24</li> </ul>  |
|                     | UART                      | One RS-232 COM port (RX/TX only) via pin header, J8 (COM1/SER0)   |
|                     | GPIO/SDIO                 | Either four GPIs and four GPOs via the 10-pin GPIO pin header, J11, or alternatively SDIO usage via microSD/SIM combo socket  |

Table 3: COMe Ref. Carrier-i T10 TNI Main Specifications (Continued)

| FEATURES                    |                      | SPECIFICATIONS  |
|-----------------------------|----------------------|---|
| System Interfaces           | SIM                  | microSD/SIM combo socket, J20, connected to both Mini PCIe interfaces   |
|                             | I <sup>2</sup> C     | I <sup>2</sup> C interface via 15-pin SYS_Signals/ embedded interfaces pin header, J6   |
|                             | SMBus                | SMBus interface via 15-pin SYS_Signals/ embedded interfaces pin header, J6  |
|                             | LID/SLEEP            | LID/SLEEP signals via 15-pin SYS_Signals/ embedded interfaces pin header, J6  |
|                             | CPU Fan              | One 4-pin PWM fan connector, J2   |
|                             | LEDs                 | Two status LEDs available via the front panel connector, J5: <ul style="list-style-type: none"> <li>» Power LED</li> <li>» HDD Activity LED</li> </ul>  |
| Switch                      | DIP Switch           | One 8-position DIP switch, SW1, for board configuration   |
| Power Supply and Management | Power Supply         | Power input 1: 12V only<br>Power input 2: 6.5V - 30V wide input range<br>SMART battery: 7.2V - 8.4V   |
|                             | Power / Reset Button | Available via the front panel connector, J5   |
|                             | RTC                  | 2-pin connector for external CMOS battery, J14<br>Goldcap for RTC backup, C181  |
| General                     | BIOS                 | Via COMe mini Type 10 module  |
|                             | Temperature Range    | Operational: -40°C to +85°C<br>Storage: -40°C to +85°C<br><br><b>Note:</b> When additional components are installed, refer to their operational specifications as this will influence the operational and storage temperature of the COMe Ref. Carrier-i T10 TNI. |
|                             | Climatic Humidity    | 93% RH at 40 °C, non-condensing (acc. to IEC 60068-2-78)  |
|                             | Form Factor          | COM Express® carrier, pinout Type 10, Thin-nITX form factor   |
|                             | Dimensions           | 120 mm x 120 mm (nITX)<br>Max. component height:<br>Top side: 16.5 mm<br>Bottom side: 4.0 mm  |

## 1.4 Accessories

The following accessories are available for the COMe Ref. carrier-i T10 TNI.

**Table 4: COMe Ref. Carrier-i T10 TNI Accessories**

| Part Number     | Part Name                    | Description   |
|-----------------|------------------------------|---|
| 96006-0000-00-1 | COMe Post T10                | NFCB POST Code / Debug card   |
| 38019-0000-00-1 | ADA-COMe-Height-single       | EERC Height Adapter   |
| 34017-0000-00-0 | COMe mMount Kit 5/8 mm 1 set | Mounting Kit for 1 Module including screws for 5 mm and 8 mm connectors |
| 9-5000-0352     | ADA-LVDS_DVI 18 bit          | 18 bit LVDS to DVI converter  |
| 9-5000-0353     | ADA-LVDS_DVI 24 bit          | 24 bit LVDS to DVI converter  |
| 96006-0000-00-8 | ADA-DP-LVDS                  | DP to LVDS adapter  |
| 96082-0000-00-0 | KAB-ADAPT-DP-DVI             | DP to DVI adapter cable   |
| 96083-0000-00-0 | KAB-ADAPT-DP-VGA             | DP to VGA adapter cable   |
| 96084-0000-00-0 | KAB-ADAPT-DP-HDMI            | DP to HDMI adapter cable  |

## 1.5 Standards

This product complies with the requirements of the following standards.

**Table 5: Standards**

| TYPE          | ASPECT                 | STANDARD                       | REMARKS  |
|---------------|------------------------|--------------------------------|--|
| CE            | Emission               | EN61000-6-3, EN55022           | --   |
|               | Electrical Safety      | Directive 2014/35/EU           | Low Voltage Directive (LVD)  |
|               |                        | EN60950-1                      | --   |
|               | Product Safety         | Directive 2001/95/EC           | General Product Safety Directive   |
| EMC           | Directive 2014/30/EU   | Electromagnetic Compatibility  |  |
| Environmental | Climatic Humidity      | IEC60068-2-78 (see note below) | --   |
|               | WEEE                   | Directive 2002/96/EC           | Waste electrical and electronic equipment  |
|               | RoHS 2                 | Directive 2011/65/EU           | Restriction of the use of certain hazardous substances in electrical and electronic equipment  |
| Environmental | Vibration (Sinusoidal) | IEC60068-2-6                   | Test parameters:<br>9-150 (Hz) frequency range<br>1 (g) acceleration<br>1 (oct/min) sweep rate<br>10 cycles/axis<br>3 axes   |
|               | Single Shock           | IEC60068-2-27                  | Test parameters:<br>15 (g) acceleration<br>11 (ms) shock duration half sine<br>3 number of shocks per direction (total: 18)<br>6 directions<br>5 (s) recovery time |

**Note:** Customers desiring to perform further environmental testing of the COMe Ref. Carrier-i T10 TNI must contact Kontron for assistance prior to performing any such testing.

Boards **without conformal coating** must not be exposed to a change of temperature which can lead to condensation, as it may cause irreversible damage especially when the board is powered up again.

Kontron does not accept any responsibility for damage to products resulting from destructive environmental testing.



## 1.6 Related Publications

The following publications contain information relating to this product.

**Table 6: Related Publications**

| PRODUCT          | PUBLICATION  |
|------------------|--|
| COM Express®     | COM Express® Carrier Design Guide Rev 2.0<br>COM Express® Module Base Specification Rev 2.1  |
| SATA             | Serial ATA Specification Revision 3.0  |
| PCI Express      | PCI Express Base Specification Rev 2.0<br>PCI Express M.2 Specification Rev 1.0  |
| DisplayPort      | Display Port 1.1a Standard<br>Display Port 1.2 Standard  |
| USB              | Universal Serial Bus (USB) 2.0 Specification Rev 2.0<br>Universal Serial Bus (USB) 3.0 Specification Rev 1.0   |
| SD               | SD Spec. Part A2 SD Host Controller Standard Spec. Version 2.00<br>SD Spec. Part E1 SDIO Spec. Version 2.00<br>SD Spec. Part 2 File System Spec. Version 3.00<br>SD Spec. Part 1 Physical Layer Spec. Version 3.00 |
| I <sup>2</sup> C | I2C Bus Specification Version 4.0  |
| SMBus            | SMBus Specification Version 2.0  |
| ACPI             | ACPI spec Rev 5.0  |

## 2 Functional Description

### 2.1 Memory

#### 2.1.1 SPI Flash

The COMe Ref. Carrier-i T10 TNI provides one SPI BIOS socket, J18, for SPI flash ICs with up to 8 MB flash memory for use with an external Carrier BIOS. Recommended SPI flash ICs include Winbond W25Q64FVSSIG (8MB) and Atmel AT25DF321A-SH (4MB), depending on the COMe module used. Booting from the Carrier SPI flash can be enabled or disabled via the onboard DIP switch SW1.

#### 2.1.2 Carrier EEPROM

The COMe Ref. Carrier-i T10 TNI comes with an onboard 32-kbit I<sup>2</sup>C EEPROM, U22, for storage of manufacturer records or COMe module information.

### 2.2 Graphics Interfaces

#### 2.2.1 Digital Display Interfaces

The COMe Ref. Carrier-i T10 TNI provides the following digital display interface (DDI):

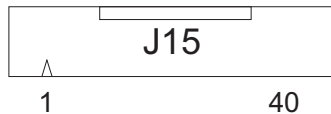
- » DDIO from the COMe module is directly mapped to the DisplayPort++ connector, J17

### 2.2.2 LVDS/eDP Interface

The COMe Ref. Carrier-i T10 TNI supports a 24-bit, single-channel LVDS interface via the LVDS/JILI connector, J15.

The following figure and table provide pinout information for the LVDS/JILI connector, J15.

**Figure 5: LVDS/JILI Connector J15**



**Table 7: LVDS/JILI Connector J15 Pinout**

| PIN | SIGNAL         | PIN | SIGNAL       |
|-----|----------------|-----|--------------|
| 1   | LVDS_BKLT_CTRL | 21  | NC           |
| 2   | LVDS_A0-       | 22  | GND          |
| 3   | LVDS_A0+       | 23  | NC           |
| 4   | LVDS_VDD_EN    | 24  | NC           |
| 5   | LVDS_A1-       | 25  | GND          |
| 6   | LVDS_A1+       | 26  | NC           |
| 7   | NC             | 27  | NC           |
| 8   | LVDS_A2-       | 28  | GND          |
| 9   | LVDS_A2+       | 29  | NC           |
| 10  | GND            | 30  | NC           |
| 11  | LVDS_A_CK-     | 31  | +5V          |
| 12  | LVDS_A_CK+     | 32  | +5V          |
| 13  | GND            | 33  | +5V          |
| 14  | LVDS_A3-       | 34  | +5V          |
| 15  | LVDS_A3+       | 35  | LVDS_BKLT_EN |
| 16  | LVDS_I2C_DAT   | 36  | GND          |
| 17  | NC             | 37  | GND          |
| 18  | NC             | 38  | +12V         |
| 19  | LVDS_IC2_CK    | 39  | +12V         |
| 20  | NC             | 40  | +12V         |

If eDP support is required, the COMe Ref. Carrier-i T10 TNI may optionally be equipped with a Mini DisplayPort++ connector, J16, instead of the LVDS/JILI connector, J15.

**Note:** In order to use the eDP interface, the COMe module installed must also support eDP.

## 2.3 System Interfaces

### 2.3.1 PCI Express Interfaces

The COMe Ref. Carrier-i T10 TNI provides three general-purpose PCI Express (PCIe) lanes:

- » PCIe#0 for the Mini PCIe half-size card slot, J28, connected to the microSD/SIM combo socket, J20
- » PCIe#1 for Mini PCIe full-size card slot, J26, muxed with SATA#1 (mSATA), connected to the microSD/SIM combo socket, J20. Mini PCIe may be enabled via the onboard DIP switch SW1.
- » PCIe#2 for onboard Gigabit Ethernet Controller, U23

**Note:** The MiniPCIe half-size card slot, J28, is available as a standard feature on the COMe Ref. COMe Ref. Carrier-i T10 TNIV (Value) and the COMe Ref. Carrier-i T10 TNIP (Professional) versions.

### 2.3.2 SATA Interfaces

The COMe Ref. Carrier-i T10 TNI supports up to two SATA 3 Gb/s interfaces:

- » SATA#0 via the 22-pin SATA plug connector, J1
- » SATA#1 for the mSATA socket / Mini PCIe full-size card slot, J26, muxed with PCIe#1 (Mini PCIe). mSATA may be enabled via the onboard DIP switch, SW1.

### 2.3.3 Gigabit Ethernet Interfaces

The COMe Ref. Carrier-i T10 TNI provides up to two Gigabit Ethernet interfaces via two single RJ45 connectors:

- » GBE#0 on RJ45 Ethernet connector, J4, directly via the COMe mini Type 10 module
- » GBE#1 on RJ45 Ethernet connector, J7, via the onboard Intel® Ethernet Controller I210-IT, U23 (on PCIe#2)

The Ethernet connector LEDs have the following states:

|                       |                           |
|-----------------------|---------------------------|
| LINK (green):         | Ethernet Link             |
| ACT (green):          | 1000BASE-T Ethernet Speed |
| ACT (yellow):         | 100BASE-TX Ethernet Speed |
| ACT (off) + LINK(on): | 10BASE-T Ethernet Speed   |

**Note:** The RJ45 Ethernet connector, J7, and the Intel® Ethernet Controller I210-IT, U23, are available as a standard feature on the COMe Ref. Carrier-i T10 TNIV (Value) and the COMe Ref. Carrier-i T10 TNIP (Professional) versions.

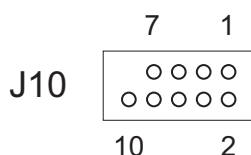
### 2.3.4 USB 2.0 Interfaces

The COMe Ref. Carrier-i T10 TNI supports eight high-speed USB 2.0 interfaces used as host by default:

- » USB#[0;1] are used for USB 3.0/2.0 double-stack connector, J9. 5V standby power for wake events may be enabled and disabled via the onboard DIP switch, SW1.
- » USB#[2;3] are routed to the USB 2.0 double-stack connector, J13. 5V standby power for wake events may be enabled and disabled via the onboard DIP switch, SW1.
- » USB#[4] is used for the Mini PCIe half-size interface to enable usage of USB 2.0 high-speed Mini PCIe form factor devices.
- » USB#5 is used for the Mini PCIe full-size / mSATA interface to enable usage of USB 2.0 high-speed Mini PCIe form factor devices.
- » USB#[6;7] are used for the USB 2.0 pin header, J10. USB#7 can be used as host or client (switchable via the onboard DIP switch SW1).

The following figure and table provide pinout information for the USB 2.0 pin header, J10.

**Figure 6: USB 2.0 Pin Header J10**



**Table 8: Pinout of USB 2.0 Pin Header J10**

| PIN | SIGNAL | PIN | SIGNAL |
|-----|--------|-----|--------|
| 1   | Power  | 2   | Power  |
| 3   | USB6-  | 4   | USB7-  |
| 5   | USB6+  | 6   | USB7+  |
| 7   | GND    | 8   | GND    |
| 9   | --     | 10  | NC     |

**Note:** The USB 2.0 pin header, J10, is available as a standard feature on the COMe Ref. Carrier-i T10 TNIV (Value) and the COMe Ref. Carrier-i T10 TNIP (Professional) versions.

### 2.3.5 USB 3.0 Interfaces

The COMe Ref. Carrier-i T10 TNI supports two super-speed USB 3.0 interfaces used as host:

- » USB\_SS#[0;1] are routed to the USB 3.0/2.0 double-stack connector, J9.

### 2.3.6 HD Audio Interfaces

The COMe Ref. Carrier-i T10 TNI provides HD Audio via the industrial grade HD Audio Codec IDT / Tempo Semi 92HD73C (U29) through the following analog and digital audio connectors:

- » Rear panel line-in connector, J22
- » Rear panel SPK / line-out connector, J23
- » S/PDIF header, J24

The following figure and table provide pinout information for the S/PDIF header, J24.

**Figure 7: S/PDIF Header J24**



**Table 9: S/PDIF Header J24 Pinout**

| PIN | SIGNAL    |
|-----|-----------|
| 1   | SPDIF_OUT |
| 2   | GND       |
| 3   | SPDIF_IN  |
| 4   | GND       |

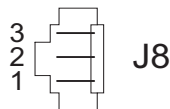
**Note:** The HD Audio Codec including all of its functions is available as a standard feature on the COMe Ref. Carrier-i T10 TNIV (Value) and the COMe Ref. Carrier-i T10 TNIP (Professional) versions.

### 2.3.7 UART Interfaces

The COMe Ref. Carrier-i T10 TNI provides one RS232 COM port (RX/TX only) via the pin header J8 (COM1/SERO).

The following figure and table provide pinout information for the pin header J8 (COM1/SERO).

**Figure 8: Pin Header J8**



**Table 10: Pinout of Pin Header J8**

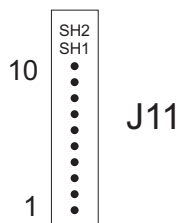
| PIN | SIGNAL ON J8 |
|-----|--------------|
| 3   | GND          |
| 2   | SERO_RX      |
| 1   | SERO_TX      |

### 2.3.8 GPIO/SDIO Interfaces

The COMe Ref. Carrier-i T10 TNI provides four GPIs and four GPOs via a 10-pin GPIO pin header, J11.

The following figure and table provide pinout information for the GPIO pin header J11.

**Figure 9: GPIO Pin Header J11**



**Table 11: GPIO Pin Header J11**

| PIN | SIGNAL   |
|-----|----------|
| 10  | GND      |
| 9   | GPO3     |
| 8   | GPO2     |
| 7   | GPO1     |
| 6   | GPO0     |
| 5   | GPI3     |
| 4   | GPI2     |
| 3   | GPI1     |
| 2   | GPIO     |
| 1   | VCC 3.3V |

## COMe Ref. Carrier-i T10 TNI

**Note:** The COMe Ref. Carrier-i T10 TNI alternatively provides SDIO usage via the microSD/SIM combo socket, J20. SDIO support may be enabled and disabled via the onboard DIP switch, SW1.

### 2.3.9 microSD/SIM Interface

The COMe Ref. Carrier-i T10 TNI provides a microSD/SIM combo socket, J20, connected to both Mini PCIe interfaces, PCIe#0 and PCIe#1, to support radio-based services on Mini PCIe.

**Note:** The microSD/SIM combo socket is available as a standard feature on the COMe Ref. Carrier-i T10 TNIV (Value) and the COMe Ref. Carrier-i T10 TNIP (Professional) versions.

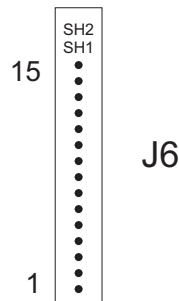
### 2.3.10 SYS\_Signals / Embedded Interfaces

On the COMe Ref. Carrier-i T10 TNI, a pin header for various SYS\_Signals / embedded interfaces, J6, is available and provides access to the following I/Os:

- » I2C
- » SMBus
- » Watchdog
- » LID
- » SLEEP

The following figure and table provide pinout information for the pin header J6.

**Figure 10: Pin Header J6**



**Table 12: Pin Header J6**

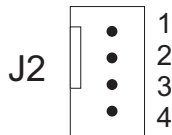
| PIN | SIGNAL     |
|-----|------------|
| 15  | GND        |
| 14  | GND        |
| 13  | GND        |
| 12  | NC         |
| 11  | THRM#      |
| 10  | LPC_SERIRQ |
| 9   | SLEEP#     |
| 8   | LID#       |
| 7   | WAKE1#     |
| 6   | WDT        |
| 5   | SMB_ALERT# |
| 4   | SMB_DAT    |
| 3   | SMB_CK     |
| 2   | I2C_DAT    |
| 1   | I2C_CK     |

### 2.3.11 CPU Fan Interface

The COMe Ref. Carrier-i T10 TNI provides a 4-pin PWM fan connector, J2, directly controlled by the module fan output.

The following figure and table provide pinout information for the PWM fan connector J2.

**Figure 11: PWM Fan Connector J2**



**Table 13: PWM Fan Connector J2**

| PIN | SIGNAL      |
|-----|-------------|
| 1   | GND         |
| 2   | 12V         |
| 3   | SENSE       |
| 4   | PWM Control |

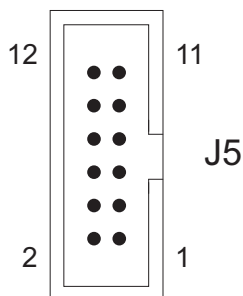
### 2.3.12 Front Panel Interface

The COMe Ref. Carrier-i T10 TNI provides a front panel connector, J5, with access to the following signals:

- » HDD activity LED
- » Power LED
- » Power button
- » Reset button
- » Speaker -out (Beep)

The following figure and table provide pinout information for the front panel connector J5.

**Figure 12: Front Panel Connector J5**



**Table 14: Front Panel Connector J5 Pinout**

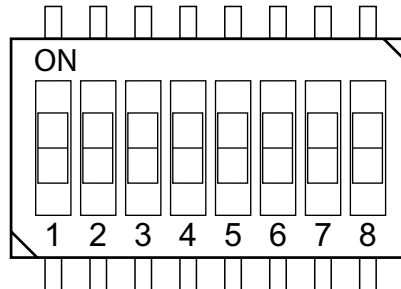
| PIN | SIGNAL     | PIN | SIGNAL     |
|-----|------------|-----|------------|
| 12  | BEEP#      | 11  | GND        |
| 10  | GND        | 9   | SYS_RESET# |
| 8   | GND        | 7   | GND        |
| 6   | BEEP+      | 5   | PWRBTN#    |
| 4   | GND        | 3   | ATA_ACT#   |
| 2   | Power_LED+ | 1   | HDD_LED+   |



### 2.3.13 DIP Switch

The COMe Ref. Carrier-i T10 TNI provides one 8-position DIP switch, SW1, for board configuration.

**Figure 13: DIP Switch SW1**



**Table 15: DIP Switch SW1 Functionality**

| POSITION | SETTING    | FUNCTIONALITY  |
|----------|------------|--|
| 1        | <i>ON</i>  | Enable GPIO support on GPIO pin header   |
|          | <i>OFF</i> | <i>Enable SDIO support for microSD/SIM combo socket</i>                          |
| 2        | <i>ON</i>  | <i>Enable mSATA on full-size Mini PCIe / mSATA interface</i>                     |
|          | OFF        | Disable mSATA on full-size MiniPCIe / mSATA interface                            |
| 3        | <i>ON</i>  | <i>Enable USB host port on USB#7</i>   |
|          | OFF        | Enable USB client port on USB#7  |
| 4        | <i>ON</i>  | <i>Enable 5V standby power supply on COMe module for ATX function (S-States)</i> |
|          | OFF        | Disable 5V standby power supply on COMe module for ATX function (S-States)       |
| 5        | <i>ON</i>  | <i>Enable 5V standby power to USB ports USB#[0;1] for wake events</i>            |
|          | OFF        | Disable 5V standby power to USB ports USB#[0;1] for wake events                  |
| 6        | <i>ON</i>  | <i>Enable 5V standby power to USB ports USB#[2;3] for wake events</i>            |
|          | OFF        | Disable 5V standby power to USB ports USB#[2;3] for wake events                  |
| 7        | <i>ON</i>  | <i>Enable booting from COMe module SPI Flash</i>                                 |
|          | OFF        | Disable booting from COMe module SPI Flash-Carrier BIOS enabled                  |
| 8        | ON         | Wireless disable for Mini PCIe   |
|          | <i>OFF</i> | <i>Wireless enable for Mini PCIe</i>   |

The default setting is indicated by using italic bold.

### 2.3.14 Power Supply and Management

The COMe Ref. Carrier-i T10 TNI supports fixed input voltage (12V only) as a standard feature via the DC jack, J21.

**Note:** The COMe Ref. Carrier-i T10 TNIP (Professional) version also supports a wide input voltage range (6.5V - 30V) by default via a wired power connector, J19. The COMe Ref. Carrier-i T10 TNIP can be powered up either through the J19 or the J21 connector.

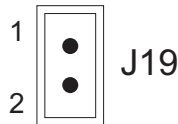
**Warning:** Powering up the COMe Ref. Carrier-i T10 TNIP through power both connectors (J19 and J21) at the same time may result in damage to the power supply unit/power adapter.

The following 12V power supply is recommended for use with the COMe Ref. Carrier-i T10 TNI:

» SDI65-12-U-P11

The following figure and table provide pinout information for the wired power connector, J19.

**Figure 14: Power Connector J19**



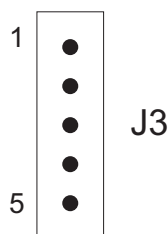
**Table 16: Power Connector J19 Pinout**

| PIN | SIGNAL |
|-----|--------|
| 1   | V_IN   |
| 2   | GND    |

**Note:** Smart battery support is only available on the COMe Ref. Carrier-i T10 TNIP (Professional) version via the smart battery connector, J3.

The following figure and table provide pinout information for the smart battery connector, J3.

**Figure 15: Smart Battery Connector J3**



**Table 17: Smart Battery Connector J3 Pinout**

| PIN | SIGNAL  |
|-----|---------|
| 1   | GND     |
| 2   | THERM   |
| 3   | SMB_DAT |
| 4   | SMB_CLK |
| 5   | V_BATT  |

### 2.3.15 RTC

The COMe Ref. Carrier-i T10 TNI provides a 2-pin connector, J14, for an external CMOS battery. In addition, the COMe Ref. Carrier-i T10 TNIV (Value) and the COMe Ref. Carrier-i T10 TNIP (Professional) versions provide a 1.5F goldcap, C181, for RTC backup.