# Содержание

# TQ-Embedded TQMxE40M

pic:



pn:

TQMxE40m

formfactor:

COM Express Type 10

manufacturer:

TQ-Embedded

cpu:

Intel Atom® x6000 series

Elkhart Lake

emmc:

8...256 GB

ram:

4/8/16 GB LPDDR4/4x

eeprom:

32kbit (24AA32AT)

temprange:

0...+60 °C, -40...+85 °C

edp:

1/lvds 1ch

dp:

1 (or hdmi)

hdmi:

1 (or dp)

lvd:

1 1ch (or edp)

ethernet:

1 1G (Marvell 88E1512)

dsi:

-

csi:

-

usb2:

6(8)

usb3:

2

can:

1 (or SER1)

uart:

2/1 + 1 CAN (2 full optional)
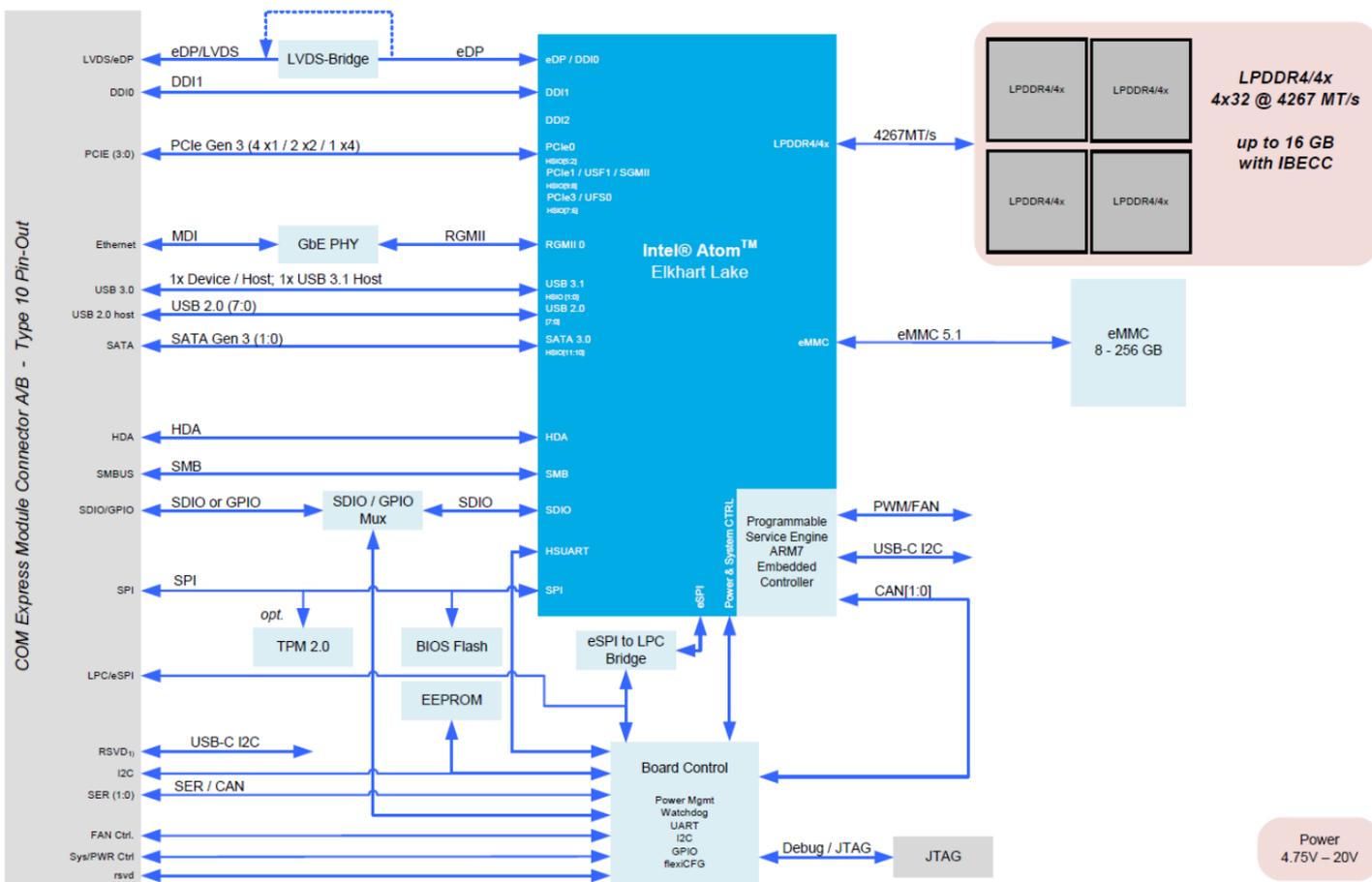
spi:
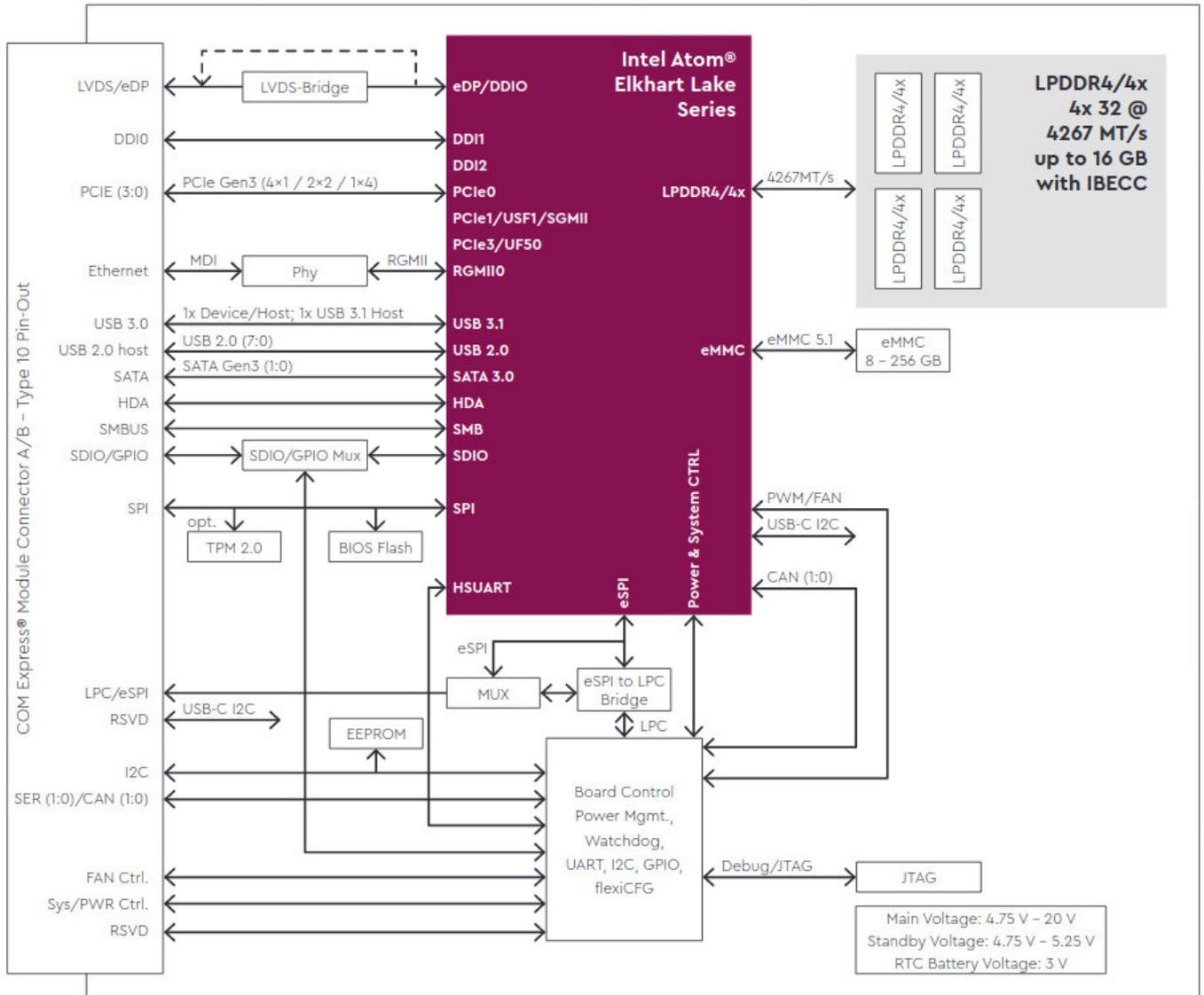
1

pcie:

4 gen 3 (1x4, 2x2, 4x1)

i2:

    1 HDA

sata:

    2

sdio:

    1 or 8x gpio

i2c:

    1/2 optional

smbu:

    1

espi:

    -

lpc:

    1

gpio:

    8 or SDIO

bio:

    InsydeH2O 64bit uEFI

rtc:

    (Motorola MC146818B) integrated in the Intel® X6000E Series CPU

tpm:

    TPM 2.0 Infineon SLB9670

dimension:

    82x50

datasheet:

    link

struct:



page:

    page

INMYS
INDIGO MICROSYSTEMS LTD

**INMYS**

COM Express Module Connector A/B - Type 10 Pin-Out

| Connector signal | | Intel Atom Elkhart Lake |
|---|---|---|
| LVDS/eDP | eDP/LVDS → LVDS-Bridge → eDP | eDP / DDI0 |
| DDI0 | DDI1 | DDI1 |
| | | DDI2 |
| PCIE (3:0) | PCIe Gen 3 (4 x1 / 2 x2 / 1 x4) | PCIe0 HSIO[5:2] / PCIe1 / USF1 / SGMII HSIO[6:8] / PCIe3 / UFS0 HSIO[7:6] |
| Ethernet | MDI → GbE PHY ← RGMII | RGMII 0 |
| USB 3.0 | 1x Device / Host; 1x USB 3.1 Host | USB 3.1 HSIO[1:0] |
| USB 2.0 host | USB 2.0 (7:0) | USB 2.0 [7:0] |
| SATA | SATA Gen 3 (1:0) | SATA 3.0 HSIO[11:10] |
| HDA | HDA | HDA |
| SMBUS | SMB | SMB |
| SDIO/GPIO | SDIO or GPIO → SDIO / GPIO Mux → SDIO | SDIO |
| | | HSUART |
| SPI | SPI | SPI |
| LPC/eSPI | | eSPI |

LPDDR4/4x — 4267MT/s

LPDDR4/4x
4x32 @ 4267 MT/s
up to 16 GB
with IBECC

eMMC — eMMC 5.1 → eMMC 8 - 256 GB

opt. TPM 2.0
BIOS Flash
eSPI to LPC Bridge
EEPROM

Programmable Service Engine ARM7 Embedded Controller — PWM/FAN, USB-C I2C, CAN[1:0]

Power & System CTRL

RSVD — USB-C I2C
I2C
SER (1:0) — SER / CAN
FAN Ctrl.
Sys/PWR Ctrl
rsvd

Board Control
Power Mgmt
Watchdog
UART
I2C
GPIO
flexiCFG

Debug / JTAG → JTAG

Power 4.75V – 20V

## Docs

| | | | |
|---|---|---|---|
| Datasheet www | TQ-Embedded | | link |
| Datasheet Short | TQ-Embedded | | link |
| Datasheet | TQ-Embedded | | link |
| MX25L25645GM2I-08G | Macronix | 3.3V 256Mbit | link |
| SLB9670 | Infineon | TPM2.0 | link |
| 88E1512 | Marvell | 1G Eth | link |
| 24AA32AT | Microchip | 32k I2C EEPROM | link |

## SPI Boot Flash

Flash for carrier:

| | | | |
|---|---|---|---|
| MX25L25645GM2I-08G | Macronix | 3.3V 256Mbit | link |

# USB

> The USB 2.0 port 0 must be paired with USB 3.2 SuperSpeedPlus port 0.
> The USB 2.0 port 1 must be paired with USB 3.2 SuperSpeedPlus port 1.

# HDA

> On the COM Express™ connector there is no HDA_SDIN2 signal available.

# SPI

The SPI interface can only be used for SPI boot Flash devices.

# UART

| COM Express™ Signal | COM Express™ Pin | TQMxE40M | Remark |
|---|---|---|---|
| SER0_TX | A98 | SER0_TX | 3.3 V output |
| SER0_RX | A99 | SER0_RX | 3.3 V input |
| SER1_TX | A101 | SER1_TX | 3.3 V output |
| SER1_RX | A102 | SER1_RX | 3.3 V input |
| SER0_RTS# | B77 | SER0_RTS# | 3.3 V output |
| SER0_CTS# | B78 | SER0_CTS# | 3.3 V input |
| SER1_RTS# | B91 | SER1_RTS# | 3.3 V output |
| SER1_CTS# | B92 | SER1_CTS# | 3.3 V input |

> In Revision 2.1 of the COM Express™ specification, the signals A98, A99, A101 and A102 have been reclaimed from the VCC_12V pool. Therefore protection on the carrier board is necessary to avoid damage to those when accidentally connected to 12 V. The implementation of this circuitry causes lower transfer rates at both serial ports.
>
> On the TQMxE40M the protection circuit is removed by default and the serial ports provide transfer rates of up to 115 kbaud. Therefore the TQMxE40M can only be used in COM.0 Revision 2.1 and 3.0 Type10 pinout carrier boards.

# CAN

The TQMxE40M provides a CAN interface. The signals for the CAN interface are shared with the serial port (SER1) signals and can be configured via a register setting.

# DEBUG

The TQMxE40M includes a 14-pin flat cable connector, to connect an external debug module (TQ specific), to provide BIOS post code information, debug LEDs and a JTAG interface for on-board FPGA. This header is intended for TQ internal use only!