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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)

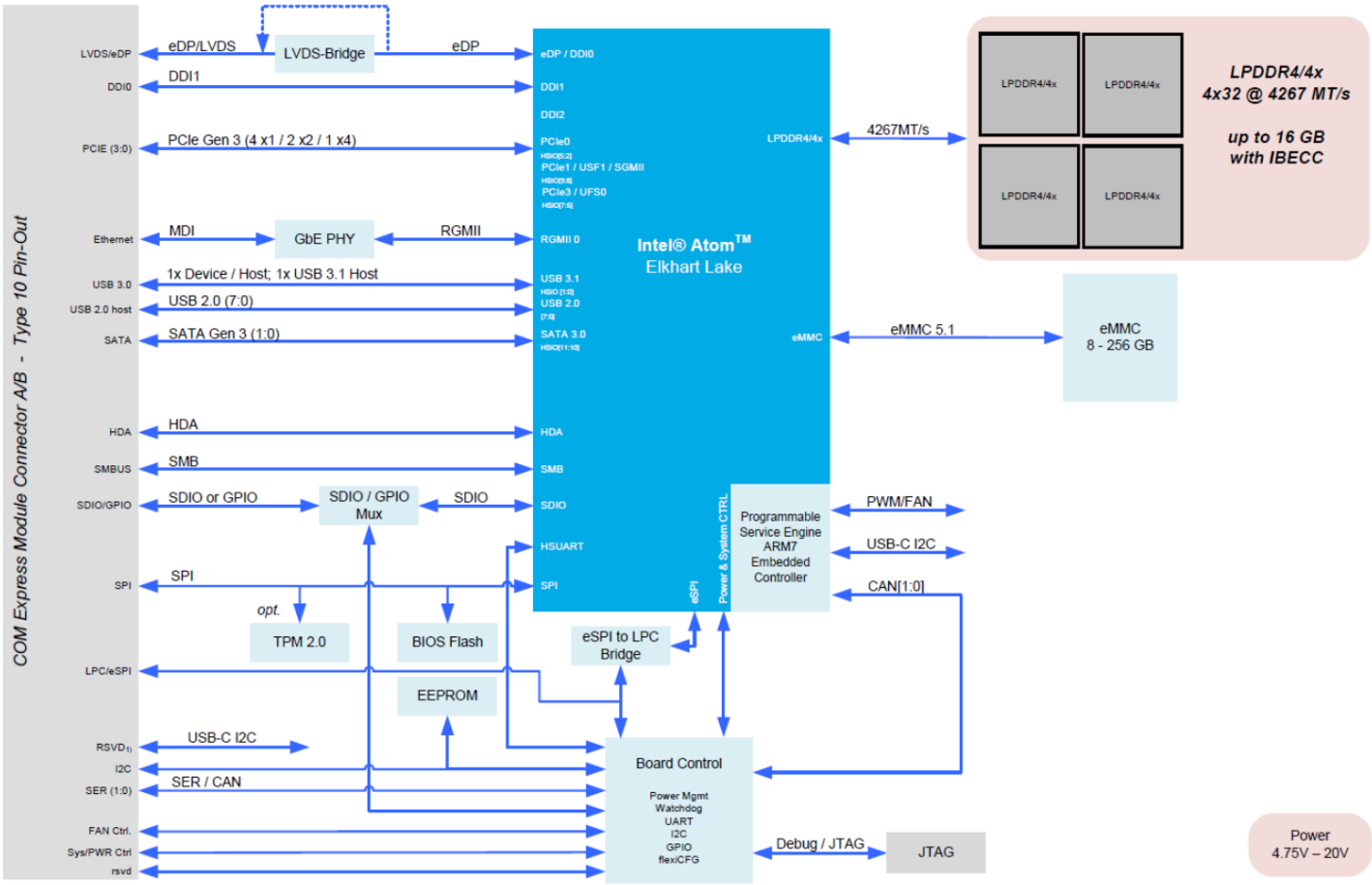
spi:
: 1

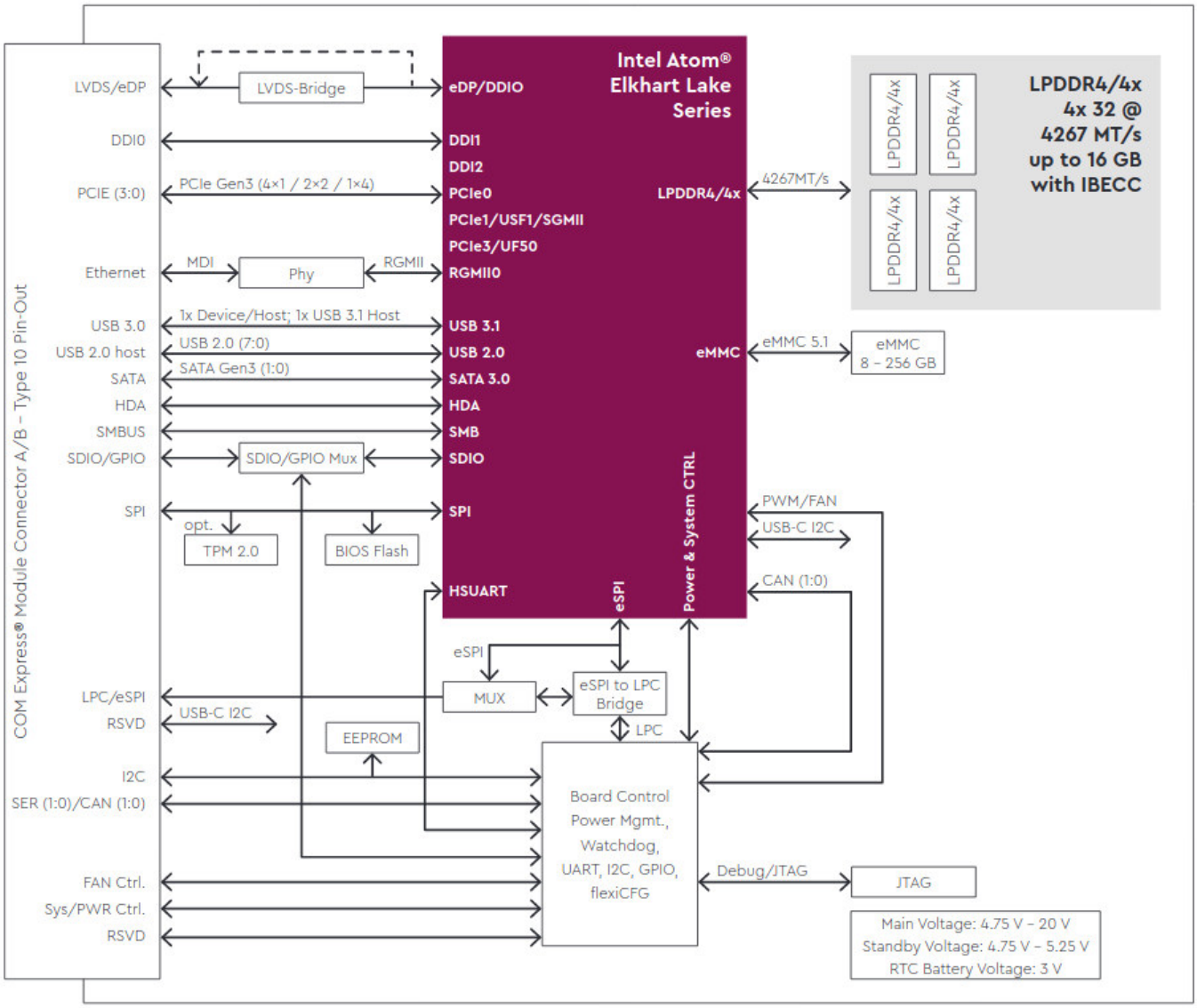
pcie:
: 4 gen 3 (1x4, 2x2, 4x1)

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




COM Express Module Connector A/B - Type 10 Pin-Out
LVDS/eDP
eDP/LVDS
LVDS-Bridge
eDP
DDI0
DDI1
PCIE (3:0)
PCIe Gen 3 (4 x1 / 2 x2 / 1 x4)
Ethernet
MDI
GbE PHY
RGMII
USB 3.0
1x Device / Host; 1x USB 3.1 Host
USB 2.0 host
USB 2.0 (7:0)
SATA
SATA Gen 3 (1:0)
HDA
SMBUS
SMB
SDIO/GPIO
SDIO or GPIO
SDIO / GPIO Mux
SDIO
SPI
opt.
TPM 2.0
BIOS Flash
LPC/eSPI
EEPROM
RSVD
I2C
SER (1:0)
SER / CAN
USB-C I2C
FAN Ctrl.
Sys/PWR Ctrl
rsvd
eDP / DDI0
DDI1
DDI2
PCIe0
PCIe1 / USF1 / SGMII
PCIe3 / UFS0
RGMII 0
USB 3.1
USB 2.0
SATA 3.0
HDA
SMB
SDIO
HSUART
SPI
eSPI
Power & System CTRL
Intel® Atom™
Elkhart Lake
LPDDR4/4x
4267MT/s
LPDDR4/4x
LPDDR4/4x
LPDDR4/4x
LPDDR4/4x
LPDDR4/4x
4x32 @ 4267 MT/s
up to 16 GB
with IBECC
eMMC
eMMC 5.1
eMMC
8 - 256 GB
Programmable
Service Engine
ARM7
Embedded
Controller
PWM/FAN
USB-C I2C
CAN[1:0]
eSPI to LPC
Bridge
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!

