

Trion® T20 FPGAs

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The T20 FPGA features the high-density, low-power Efinix® Quantum™ fabric wrapped with an I/O interface in a small footprint package for easy integration. T20 FPGAs support mobile, consumer, and IoT edge markets that need low power, low cost, and a small form factor. These FPGAs have hardened MIPI CSI-2 controllers with independent TX/RX. Additionally, they have hardened DDR DRAM controller that supports DDR3, LPDDR3, and LPDDR2. T20 FPGAs:

- Some packages have hardened MIPI CSI-2 interfaces for video and camera applications
- Some packages feature a hardened DDR DRAM interface for accessing off-chip memory devices
- Have LVDS pins that operate at 800 Mbps per lane
- Are built on a low-power 40 nm process
- Feature high-performance I/O supporting 1.8, 2.5, and 3.3 V single-ended I/O standards and interfaces
- Provide flexible on-chip clocking
- Have device configuration options including a standard SPI and JTAG interfaces
- Fully supported by the Efinity® software, an RTL-to-bitstream compiler
- Optional mask option, that allows you to eliminate the configuration device, thereby saving space and costs

Applications

Mobile, Consumer, IoT, Edge

Features

Logic elements:	19,728
RAM (Kbits):	1044.48
RAM (blocks):	204
Multipliers (18 x 18):	36

Documents

-  T20 Data Sheet (../support/docsdL.php?s=ef&pn=DST20)
-  Trion Overview (../support/docsdL.php?s=ef&pn=TRION-OVERVIEW)
-  Trion FPGA 製品概要 (../support/docsdL.php?s=ef&pn=TRION-OVERVIEW-JP)
-  Trion Selector Guide (../support/docsdL.php?s=ef&pn=TRIONSEL)

Find more  (../support/docs.php)

Available T20 FPGAs

Ordering Code	Package	Pins	GPIO	PLLs	Osc.	LVDS TX	LVDS RX	MIPI TX	MIPI RX	DDR	Temp. Grade	Speed Grade	Where to Buy
T20W80C3	WLCSP	80	33	3	–	–	–	1	1	–	C	3	Find distributor (../company-distributors.html)
T20W80C4	WLCSP	80	33	3	–	–	–	1	1	–	C	4/4L	Find distributor (../company-distributors.html)
T20W80I4	WLCSP	80	33	3	–	–	–	1	1	–	I	4/4L	Find distributor (../company-distributors.html)
T20Q144C3	LQFP	144	97	5	–	6	6	–	–	–	C	3	Find distributor (../company-distributors.html)
T20Q144C4	LQFP	144	97	5	–	6	6	–	–	–	C	4/4L	Find distributor (../company-distributors.html)
T20Q144I4	LQFP	144	97	5	–	6	6	–	–	–	I	4/4L	Find distributor (../company-distributors.html)
T20F169C3	FBGA	169	73	5	–	8	12	2	2	–	C	3	 DigiKey (https://www.digikey.com/product-detail/en/efinix-inc/2134-T20F169C3-ND) Find distributor (../company-distributors.html)
T20F169C4	FBGA	169	73	5	–	8	12	2	2	–	C	4/4L	 DigiKey (https://www.digikey.com/product-detail/en/efinix-inc/2134-T20F169C4-ND) Find distributor (../company-distributors.html)
T20F169I4	FBGA	169	73	5	–	8	12	2	2	–	I	4/4L	 DigiKey (https://www.digikey.com/product-detail/en/efinix-inc/2134-T20F169I4-ND) Find distributor (../company-distributors.html)
T20F169Q4	FBGA	169	73	5	–	8	12	2	2	–	Q	4	Find distributor (../company-distributors.html)
T20F256C3	FBGA	256	195	5	–	13	13	–	–	–	C	3	 DigiKey (https://www.digikey.com/product-detail/en/efinix-inc/2134-T20F256C3-ND) Find distributor (../company-distributors.html)
T20F256C4	FBGA	256	195	5	–	13	13	–	–	–	C	4/4L	 DigiKey (https://www.digikey.com/product-detail/en/efinix-inc/2134-T20F256C4-ND) Find distributor (../company-distributors.html)

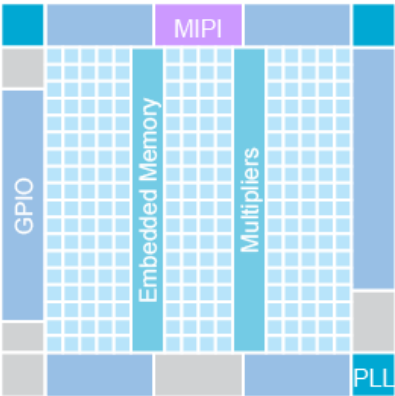
T20F256I4	FBGA	256	195	5	–	13	13	–	–	–	I	4/4L	 DigiKey https://www.digikey.com/product-detail/en/efinix-inc/2134-T20F256I4-ND  Find distributor (../company-distributors.html)
T20F324C3	FBGA	324	130	7	–	20	26	2	2	x8, x16	C	3	 Find distributor (../company-distributors.html)
T20F324C4	FBGA	324	130	7	–	20	26	2	2	x8, x16	C	4/4L	 Find distributor (../company-distributors.html)
T20F324I4	FBGA	324	130	7	–	20	26	2	2	x8, x16	I	4/4L	 Find distributor (../company-distributors.html)
T20F400C3	FBGA	400	230	7	–	20	26	–	–	x8, x16	C	3	 Find distributor (../company-distributors.html)
T20F400C4	FBGA	400	230	7	–	20	26	–	–	x8, x16	C	4/4L	 Find distributor (../company-distributors.html)
T20F400I4	FBGA	400	230	7	–	20	26	–	–	x8, x16	I	4/4L	 Find distributor (../company-distributors.html)

Available Packages

T20 FBGA

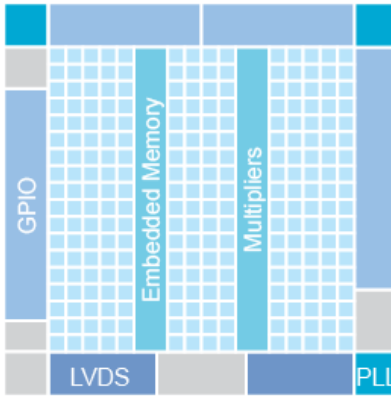


WLCSP80



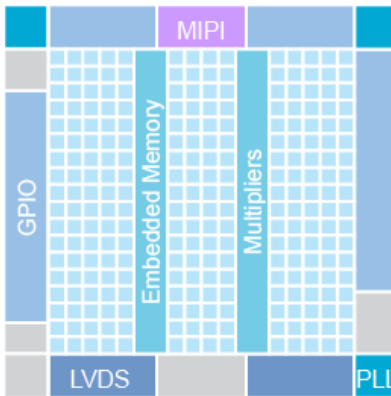
(3.6 x 4.5 mm, 0.4 pitch)

LQFP144



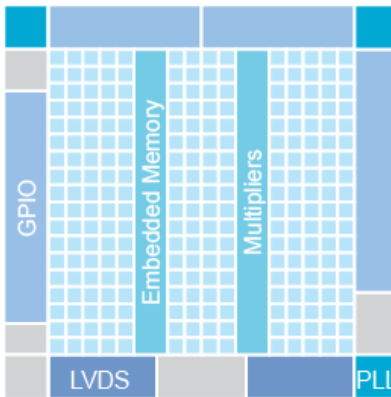
(20 x 20 mm, 0.5 pitch)

BGA169



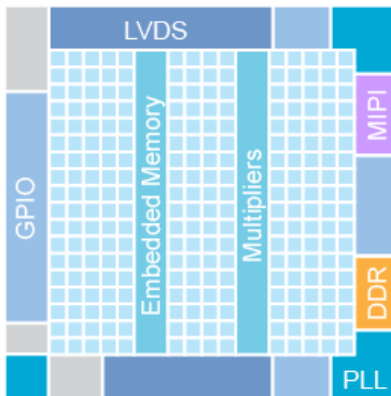
(9 x 9 mm, 0.65 pitch)

BGA256

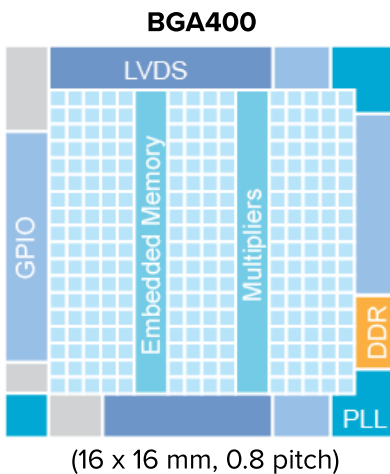


(13 x 13 mm, 0.8 pitch)

BGA324



(12 x 12 mm, 0.65 pitch)

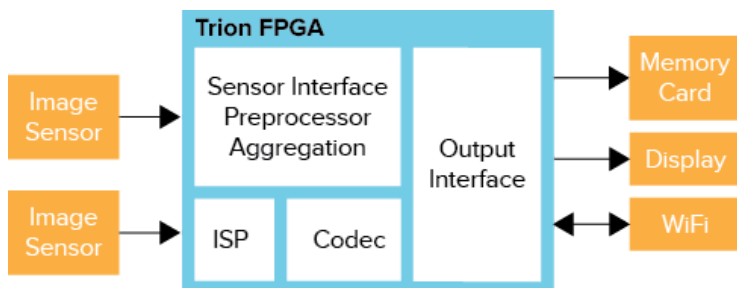


Dimensions and blocks shown for illustrative purposes.

Use Cases

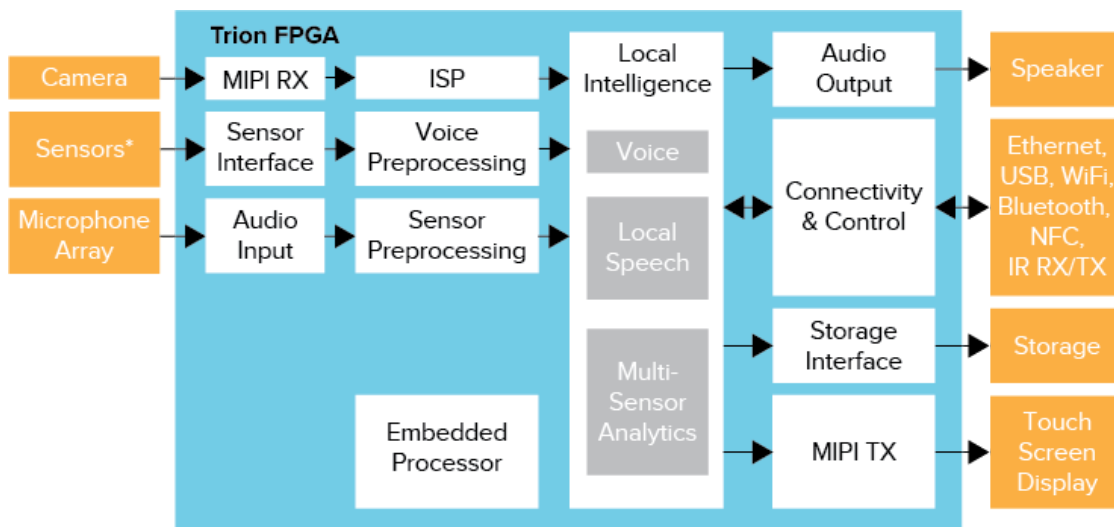
Camera Image Processing and Bridging

In this simplified remote camera, one or more sensors collect data. The Trion FPGA aggregates and processes the image with functions such as debayering, color space conversion, etc. for display. The Trion FPGA may make decisions on what data is stored locally, perhaps defined by an environmental statistic, and continually flushes unwanted data as time goes on. Depending on the application, low power, integration, and small footprint can be important attributes, and Trion FPGAs hit these metrics.



Smart Home Controller

This smart home application, or more generically, you could just call it smart life. These products have camera sensors, environmental sensors, body sensors, motion sensors, you name it, with localized processing and connectivity. Power and small size are important attributes in these smart home, smart life applications, especially if they are wearable.



* Sensors for pressure, relative humidity, temperature, UV, position

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