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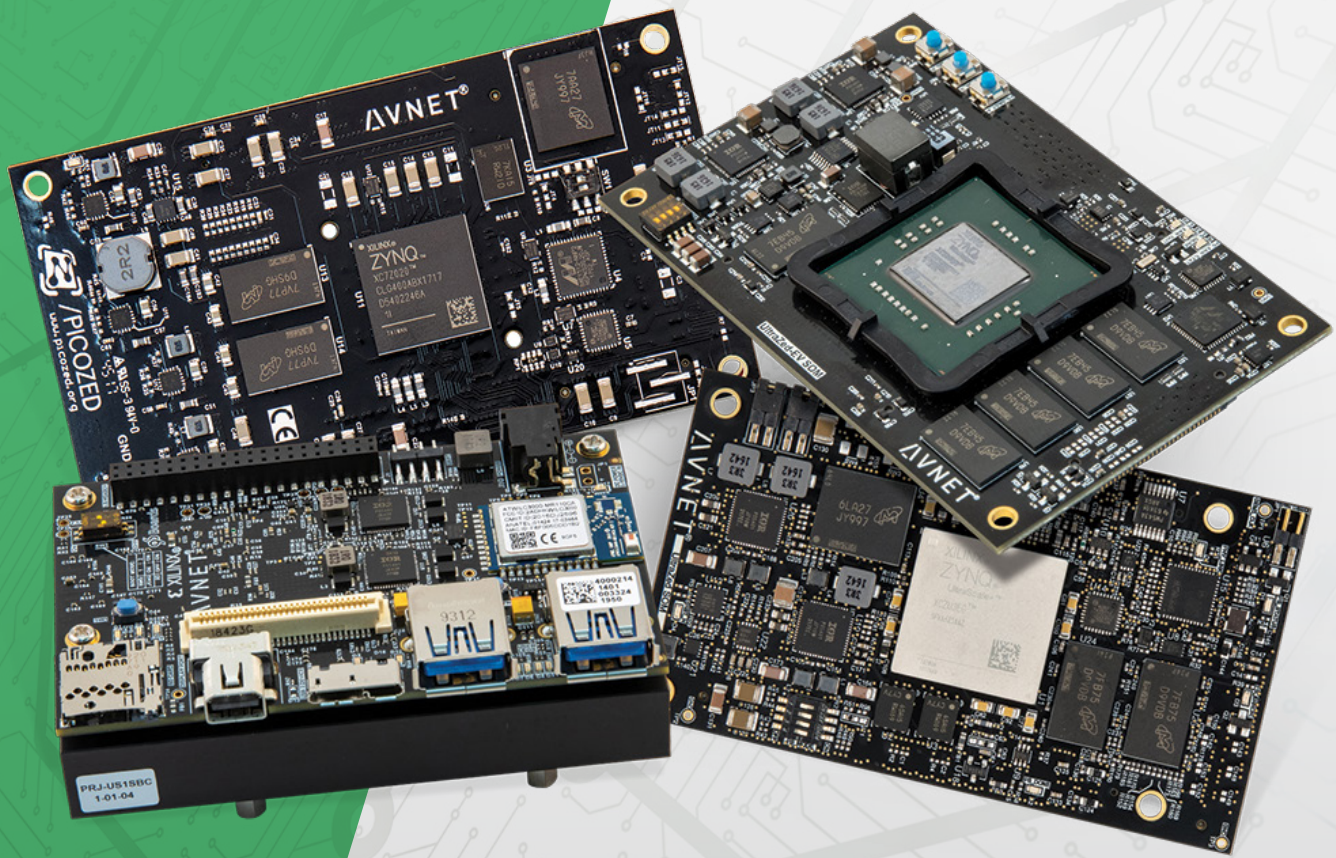
AVNET BOARDS

Xilinx Solutions Guide



DESIGNED BY AVNET

DESIGN IT OR BUY IT?

Avnet's Ready-made SoC Modules Will Shorten Your Development Cycle

Today's quick time-to-market demands are forcing you to rethink how you design, build, and deploy your products. Typically, it's faster, less costly, and lower risk to incorporate an off-the-shelf solution instead of designing from the beginning. Avnet's System-On-Module (SOM) and Single-Board Computer (SBC) solutions for the Xilinx Zynq-7000 SoC, Zynq UltraScale+ MPSoC and Zynq UltraScale+ RFSoC can reduce development times by more than twelve months, allowing you to focus your efforts on adding differentiating features and unique capabilities.

Avnet's SoC Modules Offer the Following Benefits:

- Reduce risk by building your application upon a known working system
- Get running quickly with example designs, tutorials, and board support packages
- Start software development immediately
- Eliminate costly board re-spins
- Start with proven Carrier designs
- SOM and carrier customization through Avnet Design Services

With over fifteen years of experience building SOM products, we've helped many companies attain a jump start on their products and get to market faster. Contact us today to get started!

Table of Contents

Avnet's Zynq-7000 SOC and Zynq Ultrascale+ MPSoC SOM Solutions

Features	PicoZed				MicroZed		UltraZed -EG[4]	UltraZed -EV[5]	Ultra96-V2
	7010	7015	7020	7030	7010	7020	ZU3EG	ZU7EV	ZU3EG
Zynq Device	7Z010-1	7Z015-1	7Z020-1	7Z030-1	7Z010-1	7Z020-1	ZU3EG-1	ZU7EV-1	ZU3EG-1
Programmable Logic Cells	28 K	74 K	85 K	125 K	28 K	85 K	154 K	504 K	154K
DDR Memory	1 GB DDR3L	1 GB DDR3L	1 GB DDR3L	1 GB DDR3L	1 GB DDR3	1 GB DDR3	2 GB DDR4	5 GB DDR4	2GB LPDDR4
QSPI	128 Mb	128 Mb	128 Mb	128 Mb	128 Mb	128 Mb	512 Mb	512 Mb	No
uSD Card Cage	No	No	No	No	Yes	Yes	No	No	Yes + 16GB card
eMMC Memory	8 GB	8 GB	8 GB	8 GB	No	No	8 GB	8 GB	No
User I/O[1]	100/13	135/13	125/13	135/13	100/8	115/8	180/26	152/26	46/14
GTP/GTX/GTR Ports	-	4	-	4	-	-	4 PS	4 PS, 16 PL	4 PS
10/100/1000 Ethernet	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
USB 2.0	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
USB-UART	No	No	No	No	Yes	Yes	Yes	Yes	Yes -- via Pod
Other Peripherals	-	-	-	-	Pmod™	Pmod™	USB 3.0	USB 3.0	USB 3.0, Wi-Fi / Bluetooth, DisplayPort
Size	4" x 2.25" 102 x 57 mm	4" x 2.25" 102 x 57 mm	4" x 2.25" 102 x 57 mm	4" x 2.25" 102 x 57 mm	4" x 2.25" 102 x 57 mm	4" x 2.25" 102 x 57 mm	3.5" x 2" 89 x 51 mm	4" x 2.5" 102 x 63.5 mm	3.35" x 2.1" 85 x 54 mm
Temperature Grade	Commercial[3]	Industrial	Commercial[3]	Industrial	Commercial[3]	Commercial[3]	Commercial[3]	Commercial[3]	Commercial[3]
Resale[2]	$178 USD	$265 USD	$213 USD	$375 USD	$178 USD	$213 USD	$485 USD	$999 USD	$249 USD

1: Zynq: PL IO / PS MIO. 2: Resale based on 1 piece - call for volume pricing. 3: Industrial Grade also available. 4: Custom versions also available in the ZU4EV, ZU4EG, ZU5EV, ZU5EG, and ZU7EG. Pmod is a registered trademark of Digilent.

Avnet XRF RFSoC SOMs Product Table

Features	XRF16 Gen 2	XRF8 Gen3		XRF16 Gen 3
RFSoC Device	XCZU39DR-2	XCZU47DR-1	XCZU48DR-1	XCZU49DR-2
# of 12-bit RF-ADCs w/ DDC	16	0	0	0
Max Sample Rate (GSPS)	2.22	-	-	-
# of 14-bit RF-ADC w/ DDC	0	8	8	16
Max Sample Rate (GSPS)	-	5	5	2.5
# of 14-bit RF-DAC w/DUC	16	8	8	16
Max Sample Rate (GSPS)	6.554	8.92 (1)	8.92 (1)	9.85 (1)
SD-FEC	0	0	8	0
RF Input Freq max (GHz)	5	6	6	6
System Logic Cells (K)	930	930	930	930
PL / PS DDR4 Memory	4GB / 4GB	4GB / 4GB	4GB / 4GB	4GB / 4GB
QSPI Flash Memory	128 MB	128 MB	128 MB	128 MB
eMMC Memory	32 GB	32 GB	32 GB	32 GB
Programmable RF PLL Subsystem	Yes	Yes	Yes	Yes
Multi-module sync	Yes	Yes	Yes	Yes
GTY Ports (28 Gbps)	16	16	16	16
10/100/1000 Ethernet	Yes	Yes	Yes	Yes
USB 3.0	Yes	Yes	Yes	Yes
User I/O (2)	72 / 24	72 / 24	72 / 24	72 / 24
High Speed Data Transport[3]	10/25/100 GbE	10/25/100 GbE	10/25/100 GbE	10/25/100 GbE
	Xilinx Aurora	Xilinx Aurora	Xilinx Aurora	Xilinx Aurora
	PCIe Gen3	PCIe Gen3/4	PCIe Gen3/4	PCIe Gen3/4
Size	4.0" x 5.0" 101 x 127 mm	4.0" x 5.0" 101 x 127 mm	4.0" x 5.0" 101 x 127 mm	4.0" x 5.0" 101 x 127 mm
Temperature Grade	Industrial	Industrial	Industrial	Industrial
Resale (4)	$21,995	$22,995	Call	$24,995

1: For operation up to 10GSPS, contact your local Avnet Sales Representative. 2: RFSoC: PL IO / PS MIO. 3: RFSoC integrated 100GbE and PCIe blocks are not provisioned in standard Avnet XRF IP/reference designs. Custom design services are available. 4: Resale based on 1 piece - call for volume pricing.

MINIZED™

MiniZed™ is a single-core Zynq 7Z007S development board that targets entry-level Zynq developers with a low-cost prototyping platform. With the advent of the latest cost-optimized portfolio from Xilinx, this board targets entry-level Zynq developers with a low-cost prototyping platform.

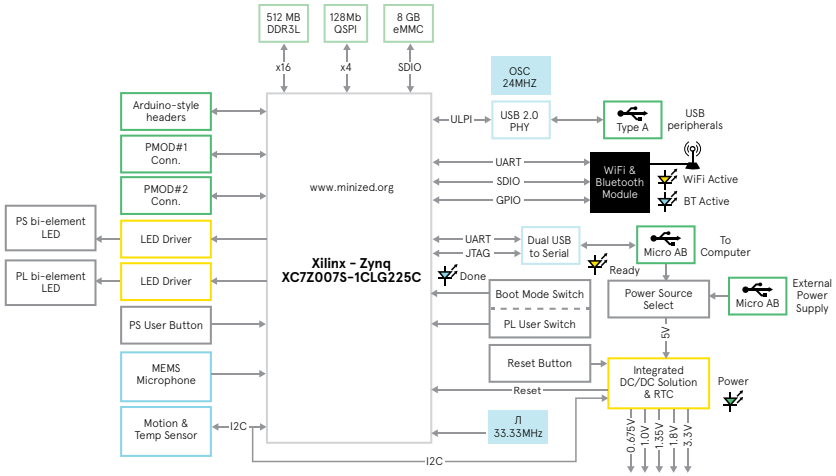
This compact design features on-board connectivity through USB, Wi-Fi and Bluetooth. Peripherals can be plugged into dual Pmod-compatible connectors, the Arduino-compatible shield interface or the USB 2.0 host interface. JTAG circuitry is incorporated onto the MiniZed base board, so with a single micro-USB cable to your laptop you are already up and running. User LED's, a button and a switch allow for a physical board interface.

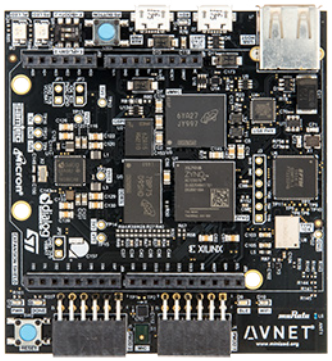
MiniZed provides for an efficient hardware reference design, while it is also an inexpensive board that can be used to run workshops and tutorials. The board aims to showcase the power of Zynq, where the Cortex A9 processor core integrates seamlessly with the programmable fabric to provide signal processing and control solutions. The on-board digital microphone serves as an input for a variety of illustrations of how to implement FIR filters, FFT's and direct memory access.

Parts

Part number	Description	Resale
AES-MINIZED-7Z007-G	MiniZed™ Single-core Zynq 7Z007S Development Board	$89 USD*

*Resale price may be higher in Asia, Australia, New Zealand and Japan





Features

Xilinx Zynq XC7Z007S SoC

- Micron 512 MB DDR3L
- Micron 128 Mb QSPI flash
- Micron 8GB eMMC mass storage
- On-board USB to JTAG and debug UART circuit
- Murata "Type 1DX" wireless module with 802.11b/g/n Wi-Fi and Bluetooth 4.1 plus EDR and BLE (Bluetooth Low Energy)
- USB 2.0 host interface with Microchip USB3320 PHY
- Dialog Semiconductor DA9062 PMIC (Power Management IC)
- Arduino-compatible shield interface
- 2 x Pmod-compatible interfaces
- ST Micro LIS2DS12 Accelerometer and Temperature sensor
- ST Micro MP34DT05 digital MEMS microphone
- Reset button, user button, user switch, 2 x user bi-element LEDs
- Microchip Low-Power Precision CMOS Oscillators

Kit includes

- MiniZed development board
- Voucher for SDSoC license from Xilinx
- Micro USB cable

Optional add-on items

- Digilent "Pmod SD" for using an SD card
- SD card

Target applications

- Entry level/Low-cost Zynq development environment
- Training, prototyping and proof-of-concept demo platform
- Wireless design and demonstrations using Wi-Fi and Bluetooth
- Audio signal processing examples using the microphone input
- IoT/Cloud connectivity for on-board and peripheral sensors

Additional information and downloadable documentation for MiniZed can be obtained at avnet.me/minized

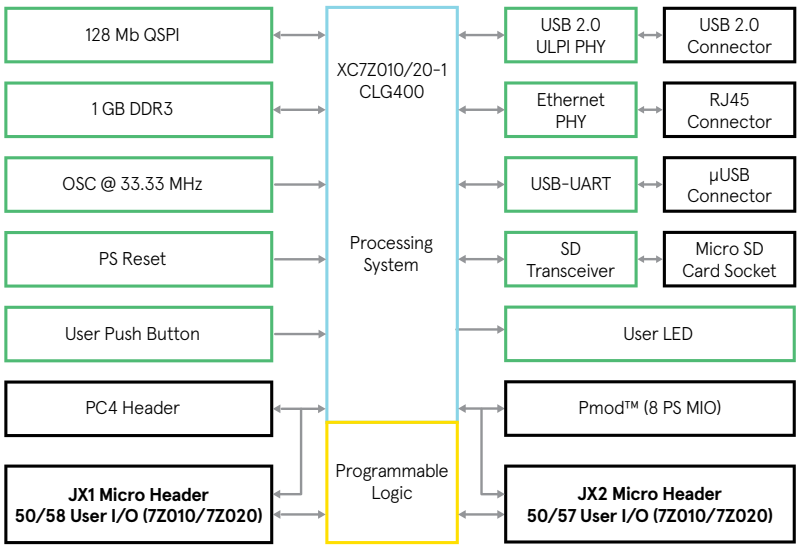
MICROZED™

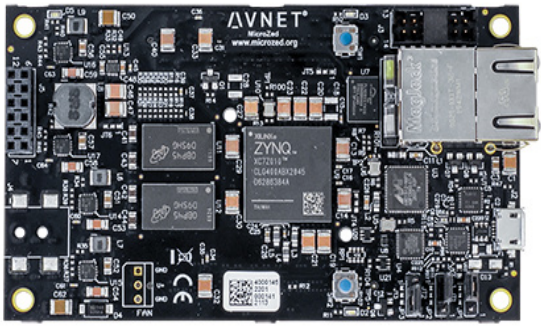
MicroZed™ is a low-cost SOM that is based on the Xilinx Zynq -7000 SoC. In addition to the Zynq-7000 SoC, the module contains the common functions and interfaces required to support the core of most SoC designs, including memory, configuration, Ethernet, USB, and clocks. On the bottom side of the module, MicroZed contains two 100-pin I/O headers that provide connection to two I/O banks on the programmable logic (PL) side of the Zynq-7000 SoC device. When plugged onto a user designed baseboard or carrier card, these 100-pin connectors provide connectivity between the Zynq-7000 SoC PL I/Os and the user circuits on the carrier card. MicroZed also includes on-board power regulation that supports 5 V input with an option to support 12 V input.

Industrial Temperature MicroZed SOMs are built with components supporting extended temperatures of -40 to +85 C, with the exception of the use of the microSD card connector. Due to the configurability of the Zynq device, the user must perform final temperature testing validation.

Parts

Part number	Description	Resale
AES-Z7MB-7Z010-SOM-G/REV-H	MicroZed 7Z010 SOM, C Grade	$178 USD
AES-Z7MB-7Z010-SOM-I-G/REV-H	MicroZed 7Z010 SOM, I Grade	$217 USD
AES-Z7MB-7Z020-SOM-G/REV-H	MicroZed 7Z020 SOM, C Grade	$213 USD
AES-Z7MB-7Z020-SOM-I-G/REV-H	MicroZed 7Z010 SOM, I Grade	$265 USD





Features

SoC

- XC7Z010-1CLG400 or
- XC7Z020-1CLG400

Memory

- 1 GB of DDR3 SDRAM
- 128 Mb of QSPI Flash
- MicroSD card interface

Communications

- 10/100/1000 Ethernet
- USB 2.0 OTG
- USB-UART

User I/O (via dual board-to-board connectors)

- 7Z010 Version
  - 108 User I/O (100 PL, 8 PS MIO)
  - PL I/O configurable as up to 48 LVDS pairs or 100 single-ended I/O
- 7Z020 Version
  - 123 User I/O (115 PL, 8 PS MIO)
  - PL I/O configurable as up to 55 LVDS pairs or 115 single-ended I/O

Other

- 2x6 Digilent Pmod compatible interface providing 8 PS MIO connections for user I/O
- Xilinx PC4 JTAG configuration port
- PS JTAG pins accessible via Pmod or I/O headers
- 33.33 MHz oscillator
- User LED and push button

Software

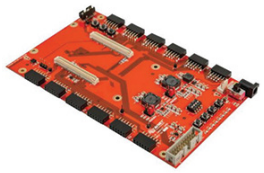
- Linux BSP and reference designs

Mechanical

- 4 inches x 2.25 inches (102 mm x 57 mm)

Additional information and downloadable documentation for MicroZed can be obtained at avnet.me/microzed

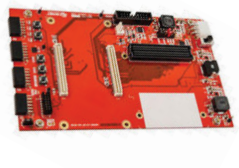
MICROZED™ ACCESSORIES



MicroZed I/O Carrier Card

Part number	Resale	SURL
AES-MBCC-IO-G	$149 USD	avnet.me/mz-io-cc

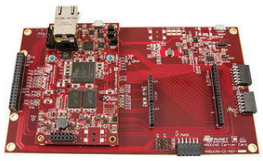
The I/O Carrier Card supports the System-on-Module (SOM), providing easy access to the full 108 user I/O available from the MicroZed SOM. Two 100- pin MicroHeaders on the carrier card mate with the MicroZed, connecting over 80 of the MicroZed Programmable Logic (PL) I/O to 12 Digilent Pmod™ compatible interfaces. The remaining MicroZed I/O are connected to various I/O Carrier Card features, including push button switches, DIP switches, LEDs, EEPROM, Xilinx XADC, and clock oscillator. The I/O Carrier Card also generates the necessary power rails for MicroZed, providing 5 V to the MicroZed core, user selectable bank voltages for the PL I/O, and the necessary voltages for the XADC. The I/O Carrier Card speeds prototype and evaluation of MicroZed and provides an excellent starting point for creating your own MicroZed carrier card.



MicroZed FMC Carrier Card

Part number	Resale	SURL
AES-MBCC-FMC-G	$199 USD	avnet.me/mz-fmc-cc

The FMC Carrier Card supports the System-on-Module (SOM), providing easy access to the full 108 user I/O available from the MicroZed SOM. Two 100-pin MicroHeaders on the carrier card mate with the MicroZed, connecting 75 of the MicroZed Programmable Logic (PL) I/O to a low-pin-count Vita 57 FPGA Mezzanine Connector (FMC) interface. The remaining MicroZed I/O are connected to various FMC Carrier Card features, including push button switches, LEDs, EEPROMs, and five Digilent Pmod compatible interfaces. The FMC Carrier Card also generates the necessary power rails for MicroZed, providing 5 V to the MicroZed core and a user selectable bank voltage for the PL I/O and FMC Vadj. The FMC Carrier Card accelerates complex prototyping by interconnecting a MicroZed SOM and industry-standard FMC Modules.



MicroZed Arduino Carrier Card

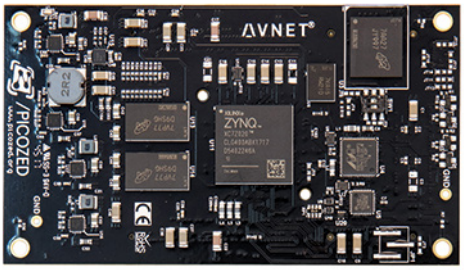
Part number	Resale	SURL
AES-ARDUINO-CC-G	$89 USD	avnet.me/mz-arduino-cc

The MicroZed™ Carrier Card Kit for Arduino™ brings both Shield expansion and Peripheral Module expansion (2x6 pin connectors) to the MicroZed System-On-Module. The carrier card is ideal for building quick prototypes that leverage the large number of Arduino-compatible Shields.

This low-cost platform facilitates:

- Expansion of platform functionality via a wide range of 3rd party Arduino™-compatible "Shields"
- Design partitioning to include ultra low-power MCU to offload and control the Apps Processor
- Power management and scheduling of the MicroZed board by an optional Microcontroller board
- 2x6 Peripheral expansion connectors for MicroZed as well as the optional MCU sub-system

PICOZED™



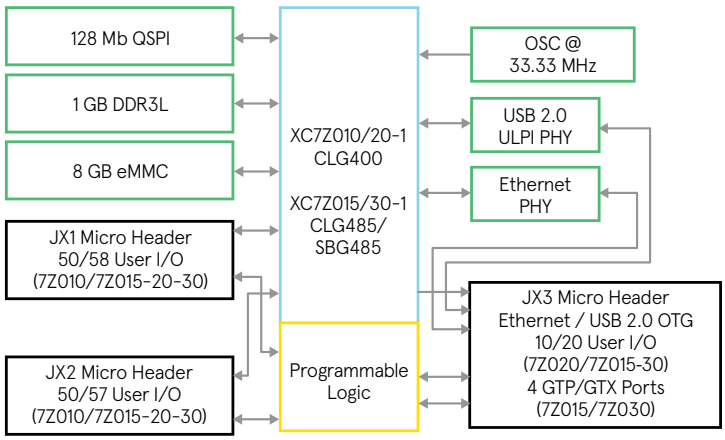
PicoZed™ is a highly flexible, rugged SOM that is based on the Xilinx Zynq-7000 SoC. It offers designers the flexibility to migrate between the 7010, 7015, 7020, and 7030 Zynq-7000 SoC devices in a pin-compatible footprint. The PicoZed module contains the common functions required to support the core of most SoC designs, including memory, configuration, Ethernet, USB, clocks, and power. It provides easy access to over 100 user I/O pins through three I/O connectors on the backside of the module. These connectors also support access to dedicated interfaces for Ethernet, USB, JTAG, power and other control signals, as well as the GTP/GTX transceivers on the 7015/7030 models. The transceiver based 7015 and 7030 versions of PicoZed are a superset of the 7010/7020 version, adding four highspeed serial transceiver ports to the I/O connectors. Designers can simply design their own carrier card, plug-in PicoZed, and start their application development with a proven Zynq-7000 SoC sub-system.

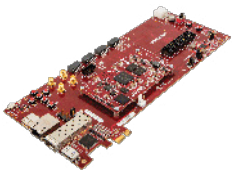
Industrial Temperature PicoZed SOMs are built with components supporting extended temperatures of -40 to +85 C. Due to the configurability of the Zynq device, the user must perform final temperature testing validation.

Parts

Part number	Description	Resale 1-99
AES-Z7PZ-7Z010-SOM-G/REV-E	PicoZed 7010 SOM, C Grade	$178 USD
AES-Z7PZ-7Z010-SOM-I-G/REV-E	PicoZed 7010 SOM, I Grade	$217 USD
AES-Z7PZ-7Z015-SOM-I-G/REV-E	PicoZed 7015 SOM, I Grade	$265 USD
AES-Z7PZ-7Z020-SOM-G/REV-E	PicoZed 7020 SOM, C Grade	$213 USD
AES-Z7PZ-7Z020-SOM-I-G/REV-E	PicoZed 7020 SOM, I Grade	$265 USD
AES-Z7PZ-7Z030-SOM-I-G/REV-E	PicoZed 7030 SOM, I Grade	$375 USD

*Contact your local Avnet sales office for pricing on higher quantities





PicoZed Carrier Card v2

Part number	Resale	SURL
AES-PZCC-FMC-V2-G	$349 USD	avnet.me/pz-fmc-v2-cc

Additional information and downloadable documentation for PicoZed can be obtained at avnet.me/picozed

Features

SoC options

- XC7Z010-1CLG400
- XC7Z015-1CLG485
- XC7Z020-1CLG400
- XC7Z030-1SBG485

Memory

- 1 GB of DDR3L SDRAM
- 8 GB eMMC
- 128 Mb of QSPI Flash

Communications

- 10/100/1000 Ethernet PHY
- USB 2.0 OTG PHY

User I/O (via three board-to-board connectors)

- 7Z010 Version
  - 113 User I/O (100 PL, 13 PS MIO)
  - PL I/O configurable as up to 48 LVDS
  - pairs or 100 single-ended I/O
- 7Z015 Version
  - 148 User I/O (135 PL, 13 PS MIO)
  - PL I/O configurable as up to 65 LVDS pairs or 135 single-ended I/O
  - 4 GTP Transceivers
- 7Z020 Version
  - 138 User I/O (125 PL, 13 PS MIO)
  - PL I/O configurable as up to 60 LVDS pairs or 125 single-ended I/O
- 7Z030 Version
  - 148 User I/O (135 PL, 13 PS MIO)
  - PL I/O configurable as up to 65 LVDS
  - pairs or 135 single-ended I/O
  - 4 GTX Transceivers

Other

- JTAG configuration port accessible via I/O connectors
- PS JTAG pins accessible via I/O connectors
- 33.33 MHz oscillator

Software

- Linux BSP and reference designs

Mechanical

- 4 inches x 2.25 inches (102 mm x 57 mm)

ULTRA96™-V2

The Ultra96-V2 is an Arm-based, Xilinx Zynq UltraScale+™ MPSoC single board computer based on the Linaro 96Boards Consumer Edition (CE) specification. Ultra96-V2 is available in many countries around the world as it has been designed with a certified radio module from Microchip. Additionally, Ultra96-V2 is available in both commercial and industrial temperature grade options. Additional power control and monitoring is possible with the included Infineon PMICs.

The Ultra96-V2 boots from the provided Delkin 16 GB microSD card. Engineers have options of connecting to Ultra96-V2 through a Webserver using integrated wireless access point capability or to use the provided Linux windows environment which can be viewed on the integrated Mini DisplayPort video output. Multiple application examples and on-board development options are provided as examples.

Ultra96-V2 provides four user-controllable LEDs. Engineers may also interact with the board through the 96Boards-compatible low-speed and high-speed expansion connectors by adding peripheral accessories such as those included in the MikroE Click Mezzanine for 96Boards (available as an accessory).

Micron LPDDR4 memory provides 2 GB of RAM in a 512M x 32 configuration. Wireless options include 802.11b/g/n Wi-Fi and Bluetooth 5 Low Energy. The radio module is Agency Certified in over 75 countries. UARTs are accessible on a header as well as through the expansion connector. JTAG is available through a header. The convenient JTAG/UART Pod (available as an accessory) provides both JTAG and UART connections via USB. I2C is available through the expansion connector.

Two Microchip USB3320 USB 2.0 ULPI Transceivers and one Microchip USB5744 4-Port SS/HS USB Controller Hub enable multiple USB connections. Ultra96-V2 provides one upstream (device) and two downstream (host) USB 3.0 connections. A USB 2.0 downstream (host) interface is provided via the high-speed expansion.

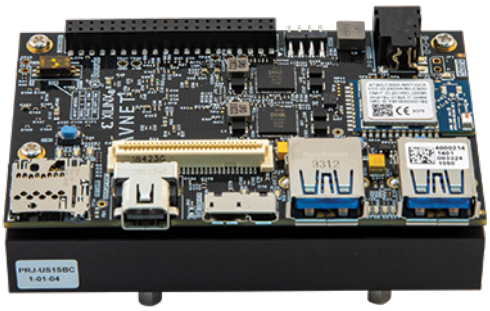
An IDT VersaClock 6E clock generator provides timing for USB 3.0, USB 2.0, DisplayPort, and the Xilinx MPSoC primary clock input.

The integrated Infineon programmable power regulators generate all on-board voltages from an external 12V supply (available as an accessory) as well as providing access to power telemetry through PMBus connectivity.

Related parts

Part number	Description	Resale
AES-ULTRA96-V2-G	ZU3EG Single Board Computer (Commercial Temp)	$249 USD
AES-ULTRA96-V2-I-G	ZU3EG Single Board Computer (Industrial Temp)	$499 USD

*Contact your local Avnet sales office for pricing on higher quantities.



Features

MPSoC

- Xilinx Zynq UltraScale+ MPSoC ZU3EG A484

Memory

- Micron 2 GB (512M x32) LPDDR4 Memory
- Delkin 16 GB microSD card + adapter
- Embedded Linux available via download

Communications and UI

- Microchip Wi-Fi / Bluetooth
- Mini DisplayPort (MiniDP or mDP)
- 1x USB 3.0 Type Micro-B upstream port
- 2x USB 3.0, 1x USB 2.0 Type A downstream ports

User I/O

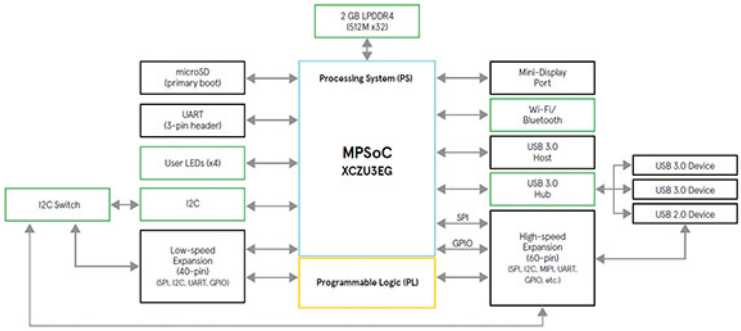
- 40-pin 96Boards Low-speed expansion header
- 60-pin 96Boards High-speed expansion header

Other

- IDT programmable LVDS and Single-ended clocks
- Infineon and ON Semiconductor voltage regulators
- Linaro 96Boards Consumer Edition compatible

Mechanical

- 85mm x 54mm form factor



Additional information and downloadable documentation for Ultra96-V2 can be obtained at avnet.me/ultra96v2

ULTRA96™ ACCESSORIES

USB-to-JTAG/UART Pod

Part number	Resale	SURL
AES-ACC-U96-JTAG	$39 USD	avnet.me/ultra96jtag

The Ultra96 USB-to-JTAG/UART Pod is an inexpensive and convenient way to add both USB-to-UART and Xilinx USB-to- JTAG capability. With a single microUSB connection to the host, this pod provides the transceivers to communicate with both the UART and JTAG headers on Ultra96. This then allows engineers to access a serial terminal and Xilinx JTAG tools for communication, debugging, and simulation.

External 96 Boards Compliant Power Supply Kit

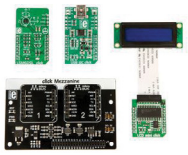
Part number	Resale	SURL
AES-ACC-U96-4APWR	$19.99 USD	avnet.me/96Board4APower

The External 96Boards Compliant Power Supply Kit is the highest power 96Boards-compatible power supply from Avnet that supplies 12V @ 4A. It ships with an international plug set and supports 100-240 VAC. This power supply is recommended for power through the expansion mezzanines or USB 3.0 host connectors.

96Boards Click Mezzanine

Part number	Resale	SURL
AES-ACC-U96-ME-MEZ	$16 USD	avnet.me/click-mezz

The 96Boards Click Mezzanine allows engineers to connect their low-speed (LS) mezzanine to Click Boards. The mezzanine breaks out the LS header to two MikroBUS sites, each supporting one Click board. Through common interfaces such as UART, SPI, and I2C, the MikroBUS standard offers many 100's of sensor, display, storage, timing, mixed-signal, and audio Click board.



96Boards Click Mezzanine Starter Kit

Part number	Resale	SURL
AES-ACC-U96-ME-SK	$49 USD	avnet.me/click-mezz-bundle

The 96Boards Click Mezzanine Starter Kit bundles the 96Boards Click Mezzanine with three Click boards that adds 6 Degree-of-freedom Inertial Measurement,2x16 Character Display, and USB-UART.

On-Semi Dual Camera Mezzanine

Part number	Resale	SURL
AES-ACC-U96-ONCAM-MEZ	$199 USD	avnet.me/U96DualCameraMezz

This 96Boards mezzanine card features two Polight IAScompatible imaging modules based on imaging sensors from ON Semiconductor. These sensors interface to an AP1302 imaging co processor. By using the 96Boards standard, this card is easily added to the Ultra96-V2 platform. This kit simplifies the complex process of developing with imaging sensors.

MIPI-CSI2 is widely used in the consumer industry for high-speed communications from host processor to image sensors, but many image sensor modules have varying connector formats which can lead to difficulties with experimenting with different camera modules. The Imager Access System (IAS) image sensor module format from ON Semiconductor provides access to all image sensor modules that are compatible within the IAS standard.

Ultra96-V2 Heatsink

Part number	Resale	SURL
AES-ACC-U96-PHS-1	$10 USD	avnet.me/ultra96-heatsink

Passive heatsink for the Ultra96-V2. This part may be used to replace the bracket/fan assembly on Ultra96-V2 Rev 1 with a date code earlier than 1940 (built prior to 40th week of 2019).

/ULTRAZED-EG™

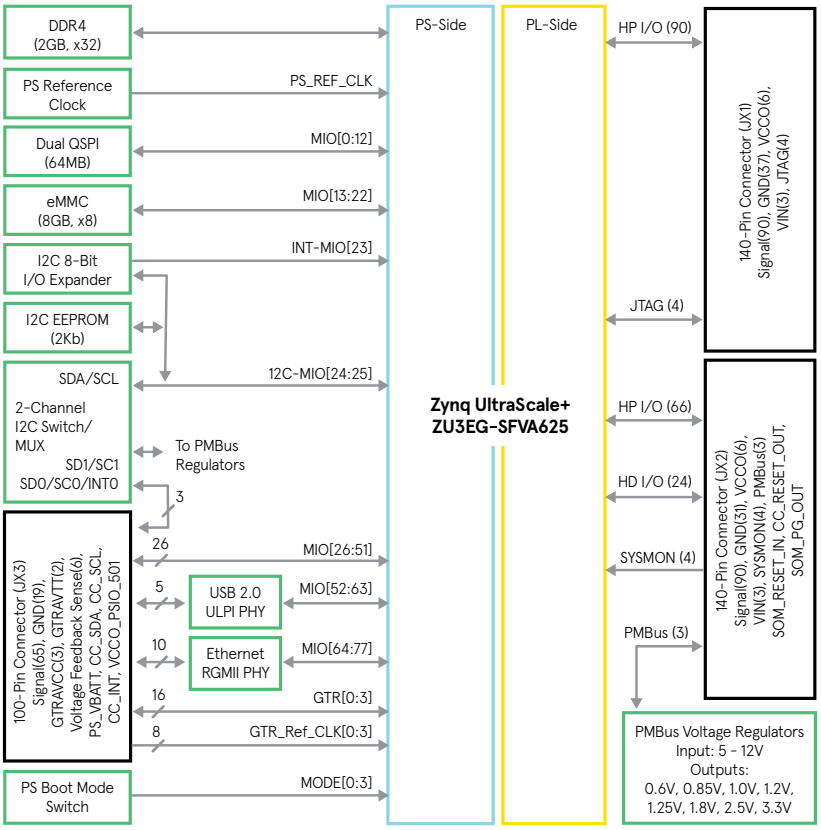
UltraZed-EG™ SOM is a highly flexible, rugged, System-On-Module (SOM) based on the Xilinx Zynq UltraScale+™ MPSoC. Designed in a small form factor, the UltraZed-EG SOM packages all the necessary functions such as system memory, Ethernet, USB, and configuration memory needed for an embedded processing system. The UltraZed-EG provides easy access to 180 user I/O pins, 26 PS MIO pins, and 4 high-speed PS GTR transceivers along with 4 GTR reference clock inputs through three I/O connectors on the backside of the module.

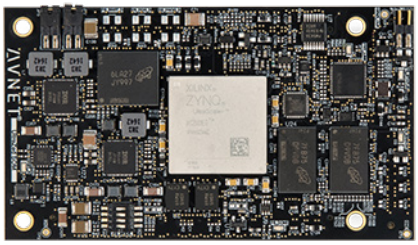
Designers can simply design their own carrier card, plug-in UltraZed-EG SOM, and start their application development with a proven Zynq UltraScale+ MPSoC sub-system. Available with the Zynq UltraScale+ MPSoC XCZU3EG-1SFVA625 device, the UltraZed-EG SOM enables designers to build high performance systems with confidence and ease. By simply plugging the off-the-shelf UltraZed-EG SOM into an application specific carrier card, system bring-up and debug time can be cut in half, while overall system cost can be reduced by 20% or more versus a standard chip-down design.

Parts

Part number	Description	Resale 1-99
AES-ZU3EG-1-SOM-G	UltraZed-EG SOM (Commercial Temp)	$485 USD
AES-ZU3EG-1-SOM-I-G	UltraZEd-EG SOM (Industrial Temp)	$535 USD

*Contact your local Avnet sales office for pricing on higher quantities





Features

MPSoC

- Xilinx XCZU3EG-1SFVA625 device
- Other options are available with MOQ=100

Memory

- DDR4 SDRAM (2GB, in x32 configuration)
- Dual QSPI Flash (64MB)
- I2C EEPROM (2Kb)
- eMMC Flash (8GB, in x8 configuration)

Communications

- USB 2.0 ULPI PHY
- Gigabit Ethernet PHY

Other

- PS reference clock input
- On-board voltage regulators
- Power-On Reset (POR) circuit
- 4-position boot mode slide switch
- Heatsink included

User I/O (via three board-to-board connectors)

- 3 JX micro-header connectors (2 x 140-pin, 1 x 100-pin) providing the following connections to the Carrier Cards
  - 180 user PL I/O pins
  - 26 user PS MIO pins (one full MIO bank)
  - 4 PS GTR transceivers
  - 4 PS GTR reference clock inputs
  - PS JTAG interface
  - PL SYSMON interface
  - USB 2.0 connector interface
  - PMBus interface
  - Carrier Card I2C interface
  - SOM Reset input
  - Carrier Card interrupt input
  - Carrier Card Reset output
  - Power Good output

Software

- Linux BSP and reference designs

Mechanical

- 3.5 inches x 2 inches (89 x 51 mm)

Additional information and downloadable documentation for UltraZed-EG can be obtained at avnet.me/ultrazed-eg

/ULTRAZED™

ULTRAZED-EG™ ACCESSORIES

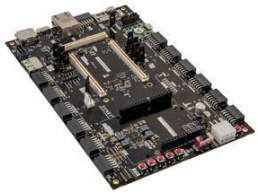
UltraZed-EG Starter Kit

Part number	Resale	SURL
AES-ZU3EG-1-SK-G	$995 USD	avnet.me/ultrazed-sk

The UltraZed-EG Starter Kit consists of the UltraZed-EG System-on-Module (SOM) and IO Carrier Card bundled to provide a complete system for prototyping and evaluating systems based on the Xilinx powerful Zynq UltraScale+ MPSoC device family.

Kit includes

- UltraZed – EG SOM
- UltraZed IO Carrier Card
- 12V AC/DC Power Supply
- Quick Getting Started Card
- microUSB Cable
- UltraZed-EG SOM Mounting Hardware
- microSD Card 8GB
- RJ45 Cable



UltraZed-EG IO Carrier Card

Part number	Resale	SURL
AES-ZU-IOCC-G	$499 USD	avnet.me/ultrazed-cc

The UltraZed IO Carrier Card supports the UltraZed-EG System-on-Module (SOM), providing easy access to the full 180 user I/O, 26 PS MIO, and 4 PS GTR transceivers available from the UltraZed-EG SOM via three Micro Headers. Two 140-pin Micro Headers on the carrier card mate with the UltraZed-EG SOM, connecting 180 of the UltraZed-EG Programmable Logic (PL) I/O to 12 Digilent Pmod compatible interfaces, Arduino Shield, LVDS Touch Panel interface, push button switches, DIP switches, LEDs, Xilinx SYSMON, and clock oscillator.

UltraZed-EG PCIe Carrier Card

Part number	Resale	SURL
AES-ZU-PCIECC-G	$499 USD	avnet.me/ultrazed-pcie

The UltraZed PCIe Carrier Card supports the UltraZed-EG System-on-Module (SOM), providing easy access to the full 180 user I/O, 26 PS MIO, and 4 PS GTR transceivers available from the UltraZed-EG SOM via three Micro Headers. Two 140-pin Micro Headers on the carrier card mate with the UltraZed-EG SOM, connecting 180 of the UltraZed-EG Programmable Logic (PL) I/O to 2 Digilent Pmod™ compatible interfaces, FMC LPC slot, LVDS Touch Panel interface, push button switches, DIP switches, LEDs, Xilinx SYSMON, and clock oscillator.

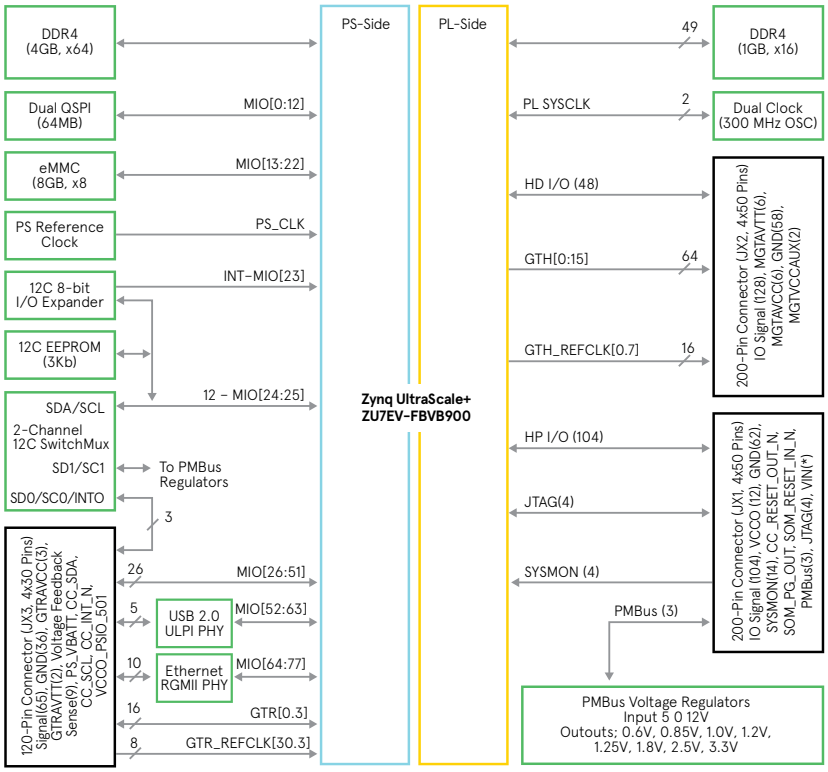
/ULTRAZED-EV™

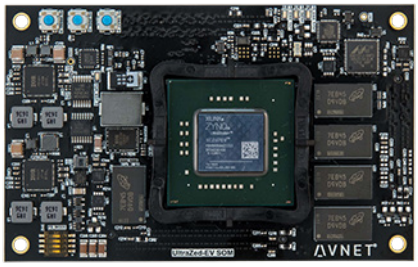
UltraZed-EV™ SOM is a high performance, full-featured, System-On-Module (SOM) based on the Xilinx Zynq UltraScale+™ MPSoC EV family of devices. Designed in a small form factor, the UltraZed-EV SOM on-board dual system memory, high-speed transceivers, Ethernet, USB, and configuration memory provides an ideal platform for embedded video processing systems. The UltraZed-EV provides easy access to 152 user I/O pins, 26 PS MIO pins, 4 highspeed PS GTR transceivers along with 4 GTR reference clock inputs, and 16 PL high-speed GTH transceivers along with 8 GTH reference clock inputs through three I/O connectors on the backside of the module. These connectors provide USB 2.0, USB 3.0, PCIe Gen2, DisplayPort, SATA 3.0, FMC-HPC and more! The MPSoC EV device with its integrated H.264 / H.265 video codec unit is capable of simultaneous encode and decode up to 4Kx2K (60fps).

Parts

Part number	Description	Resale 1-99
AES-ZU7EV-1-SOM-G	UltraZed-EV SOM (Commercial Temp)	$999 USD
AES-ZU7EV-1-SOM-I-G	UltraZed-EV SOM (Industrial Temp)	$1,199 USD

*Contact your local Avnet sales office for pricing on higher quantities





Features

MPSoC

- Xilinx XCZU7EV-1FBVB900 device (SOM also supports 4EV, 5EV, 4EG, 5EG, or 7EG device in the FBVB900 package)

Memory

- PS DDR4 SDRAM (4GB, in x64 configuration)
- PL DDR4 SDRAM (1GB, in x16 configuration)
- Dual QSPI Flash (64MB)
- I2C EEPROM (2Kb)
- eMMC Flash (8GB, x8)

Communications

- USB 2.0 ULPI PHY
- Ethernet PHY

Other

- On-board voltage regulators
- PS reference clock input

User I/O (via three board to-board connectors)

- Three JX connectors, providing
- PS JTAG interface
- PL SYSMON interface
- Gigabit Ethernet RJ45 connector interface
- PMBus interface
- Power Good output, input voltages, and output sense pins

Software

- Linux BSP and reference designs

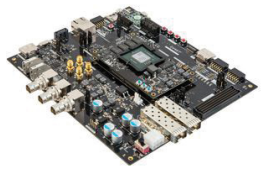
Mechanical

- 4 inches x 2.5 inches (102 x 63.5 mm)

Additional information and downloadable documentation for UltraZed-EV can be obtained at avnet.me/ultrazed-ev

/ULTRAZED™

ULTRAZED-EV™ ACCESSORIES



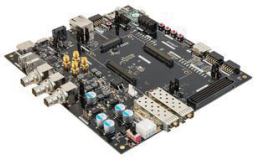
UltraZed-EV Starter Kit

Part number	Resale	SURL
AES-ZU7EV-1-SK-G	$1,595 USD	avnet.me/ultrazed-ev-sk

The UltraZed-EV™ Starter Kit consists of the UltraZed-EV System-on-Module (SOM) and Carrier Card bundled to provide a complete system for prototyping and evaluating systems based on the Xilinx powerful Zynq® UltraScale+™ MPSoC EV device family.

Kit includes

- UltraZed-EV SOM
- UltraZed-EV Carrier Card
- 12V AC/DC Power Supply
- Quick Start Card
- microUSB Cable
- UltraZed-EV SOM Mounting Hardware
- microSD Card 8GB
- RJ45 Cable



UltraZed-EV Carrier Card

Part number	Resale	SURL
AES-ZUEV-CC-G	$649 USD	avnet.me/ultrazed-ev-cc

The UltraZed-EV Carrier Card supports the UltraZed-EV System-on-Module (SOM), providing easy access to the full 152 user I/O, 26 PS MIO, 4 PS GTR transceivers, and 16 GTH transceivers available from the UltraZed-EV SOM via three Micro Headers. Two 200-pin Micro Headers on the carrier card mate with the UltraZed-EV SOM, connecting 152 of the UltraZed-EV Programmable Logic (PL) I/O along with 16 GTH transceivers to FMC HPC slot, LVDS Touch Panel interface, SFP+ interface, HDMI In/Out, 3G-SDI In/Out, push button switches, DIP switches, LEDs, Xilinx SYSMON, clock generators, and 2 Digilent Pmod compatible interfaces.

FMC ACCESSORIES

Network FMC Module

Part number	Resale	SURL
AES-FMC-NETW1-G	$149 USD	avnet.me/fmc-network1

The Avnet Network FMC Module enables Industrial Ethernet digital communications, which is a key component to Industry 4.0 applications. The module is designed to operate with any Avnet or Xilinx base board that is FMC enabled. Utilizing the dual compatible 10/100/1000 Ethernet PHYs, the Network FMC Module can quickly get you started with Xilinx FPGA and SoC based designs.

ISM Networking FMC v2 Module

Part number	Resale	SURL
AES-FMC-ISMNET2-G	$250 USD	avnet.me/fmc-ismnet2

The FMC-ISMNET2 enables a variety of digital communication interfaces common to industrial applications, including Industrial Ethernet. From dual 1588 compatible 10/100 Ethernet PHYs, to CAN, RS232, and RS485, the ISM Networking FMC can quickly get you started with Xilinx FPGA and SoC based designs.

Multicamera FMC Module

Part number	Resale	SURL
AES-FMC-MULTICAM4-G	$299 USD	avnet.me/fmc-multicam

The Avnet Multi-Camera FMC module supports up to four (4) high definition camera modules using MAXIM Integrated' s GMSL technology (Gigabit Multimedia Serial Link), that is widely used in the automotive industry for in-vehicle high speed communication of video streams.

Quad AR0231AT Camera FMC Bundle

Part number	Resale	SURL
AES-FMC-MC4-AR0231AT-G	$1,699 USD	avnet.me/fmc-quad-cam

The Quad AR0231AT Camera FMC Bundle combines the Avnet Multi-Camera FMC module, four AR0231AT camera modules with GMSL serialization and a cable assembly as a complete add-on solution for vision-guided applications.

HDMI I/O FMC Module

Part number	Resale	SURL
AES-FMC-HDMI-CAM-G	$250 USD	avnet.me/fmc-hdmi-cam

The FMC-HDMI-CAM FMC module provides high-definition video interfaces for Xilinx FMC-enabled baseboards. An HDMI video source can provide video content to the module. The module also provides an HDMI output to display FPGA driven video content. The FMC module also provides a camera interface for optional camera modules.

OTHER ACCESSORIES

ZedBoard

Part number	Resale	SURL
AES-Z7EV-7Z020-G	$449 USD	avnet.me/zedboard-dev-kit

ZedBoard is a low-cost development board for the Xilinx Zynq-7000 All Programmable SoC. This board contains everything necessary to create a Linux, Android, Windows or other OS/RTOS-based design. Additionally, several expansion connectors expose the processing system and programmable logic I/Os for easy user access.

Infineon TPM v2.0 Peripheral Module

Part number	Resale	SURL
AES-PMOD-TPM20-SLB9670-G	$29.95 USD	avnet.me/tpm2.0

The Trusted Platform Module (TPM) 2.0 Security Peripheral Module (Pmod) enables a root of trust for platform integrity, remote attestation, and cryptographic services as required by Industrial Internet of Things (IIoT) Applications.

ON Python 1300C Camera Module

Part number	Resale	SURL
AES-CAM-ON-P1300C-G	$499 USD	avnet.me/python1300

The camera module features ON Semiconductor's PYTHON-1300 color image sensor. The PYTHON-1300 is a 1/2 inch Super-eXtended Graphics Array (SXGA) CMOS image sensor with a pixel array of 1280 by 1024 pixels.

Murata 1DX Ble WiFi Bluetooth Pmod WiFi/BLE Module

Part number	Resale	SURL
AES-PMOD-MUR-1DX-G	$59 USD	avnet.me/pmod_1dx

The Murata 1DX Wi-Fi Bluetooth Pmod allows you to add wireless capabilities to your existing development kit. Examples for ZedBoard and UltraZed-EG Development Kits are provided that show how to enable and use the wireless functions from PetaLinux software. This product is an evaluation kit and for Development only. This kit should not to be placed on the Market for resale and is not certified for production use.

JTAG HS3 Programming

Part number	Resale	SURL
210-299P-KIT	$59 USD	avnet.me/jtaghs3

The HS3 builds on the successful JTAG-HS1 by adding an open-drain buffer to pin 14 allowing for the debugging of Xilinx Zynq-SOC processors. It can be attached to target boards using Xilinx's 2x7 connector, and is compatible with all Xilinx tools.

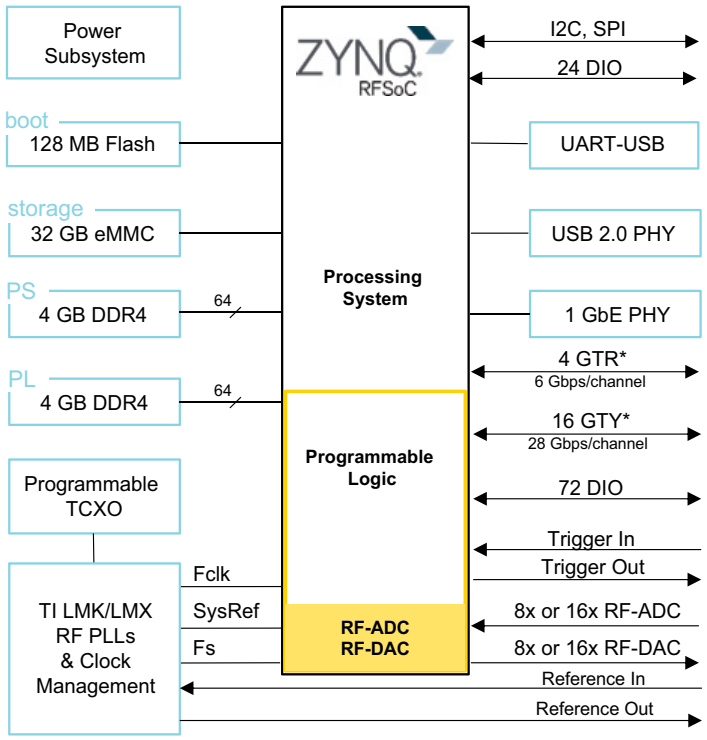
XRF™ RFSOC SYSTEM-ON-MODULES

Avnet XRF™ RFSoC System-on-Modules are designed for large-scale integration into deployed RF systems demanding small footprint, low power, and real-time processing. XRF modules feature the Xilinx Zynq® UltraScale+™ RFSoC Gen-2 / Gen-3 with up to 16 RF-ADC and 16 RF-DAC channels supporting up to 6 GHz analog bandwidth.

Combine the production-ready XRF module with an XRF Carrier Card and Avalon™ software suite to jump-start proof-of-concept and application development. Then deploy your system with the same XRF module used for proof-of-concept. Example code and tutorials demonstrate Xilinx RFSoC multi-tile sync (multi-converter sync) and multi-module synchronized analog capture.

Parts

Part number	Description	Resale
AES-XRF16-ZU39-G	XRF16 Xilinx RFSoC Gen2 System-On-Module	$21,995 USD
AES-XRF8-ZU47-G	XRF8 Xilinx RFSoC Gen3 System-On-Module	$22,995 USD
AES-XRF8-ZU48-G	XRF8 Xilinx RFSoC Gen3 System-On-Module	TBD
AES-XRF16-ZU49-G	XRF8 Xilinx RFSoC Gen3 System-On-Module	$24,995 USD



* Xilinx GTY high-speed serial transceivers available to implement high-speed communication links including 100GbE, PCIe, Xilinx Aurora. GTR transceiver can implement USB3, SATA, and PCIe.

Features

XRF16 Gen2 with Xilinx ZU+ RFSoC ZU39DR-2

- 5 GHz analog bandwidth
- 16x ADCs, 12-bit up to 2.22 GSPS
- 16x DACs, 14-bit up to 6.554 GSPS

XRF16 Gen3 with Xilinx ZU+ RFSoC ZU49DR-2

- 6 GHz analog bandwidth
- 16x ADCs, 14-bit up to 2.5 GSPS
- 16x DACs, 14-bit up to 9.85 GSPS (10 GSPS available)

XRF8 Gen3 with Xilinx ZU+ RFSoC ZU47DR/48DR-1

- 6 GHz analog bandwidth
- 8x ADCs, 14-bit up to 5.0 GSPS
- 8x DACs, 14-bit up to 8.92 GSPS (10 GSPS available)
- Optional ZU48DR enables 8x SD-FEC engines

High-Speed Data Transfer

- 16x serial links up to 28 Gbps available for 10/25/100 GbE, PCIe Gen 3x16, eCPRI, OCuLink, and Aurora
- Quad Mesh™ firmware achieves 4x 61.6 Gbps full-duplex Aurora data exchange, facilitating tiling in multi-module high performance real-time systems

Clocks & Synchronization

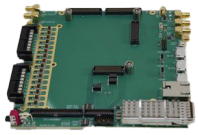
- Ultra-low jitter programmable sampling clocks using Texas Instruments LMK/LMX RF PLLs
- External or onboard programmable TCXO reference clock
- Phase coherent synchronous sampling across all converters & multiple modules
- External input for PPS and trigger

Memory

- 4 GB DDR4 @ Programmable Logic
- 4 GB DDR4 @ Processor Subsystem
- 32 GB eMMC persistent storage
- 128 MB QSPI boot storage

Additional information and downloadable documentation for the XRF SOMs can be obtained at avnet.me/xrf-family

XRF SOM ACCESSORIES



XRF8 Carrier Card

Part number	Resale	SURL
AES-XRF8-CC-G	$4,995 USD	avnet.me/xrf8-cc

XRF16 Carrier Card

Part number	Resale	SURL
AES-XRF-CC-G	$4,995 USD	avnet.me/xrf16-cc

The XRF Xilinx RFSoC System-on-Modules (SOM) are designed for integration into your deployed system. The XRF Carrier Cards and Avalon software suite provide a rapid prototype platform, enabling you to develop application code for XRF SOMs that is ready for deployment when your custom carrier arrives.

The XRF Carrier provides connection to standard SOM peripherals including USB2.0, 1 Gb Ethernet, PCIe, UART, SPI, I2C, GPIO, and JTAG. High-speed digital connectivity is available through sixteen 28Gbps Xilinx GTY transceivers, enabling standards like PCIe over OCuLink, 10/25/100 GbE, and Xilinx Aurora.

The SOM RF-ADC and RF-DAC ports are made available using Samtec IsoRate connectors that easily convert to SMA with cable adapters. Synchronization is enabled by external reference clock connection, external in/out triggers, and software examples demonstrating RFSoC multi-tile sync (multi-converter sync) and multi-board synchronized analog capture.

XRF Fansink Active Cooling Solution

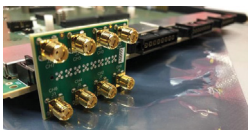
Part number	Resale	SURL
AES-XRF-FANSINK-G	$185 USD	avnet.me/xrf-fansink

Avnet XRF RFSoC System-on-Modules require heat dissipation solutions for most applications. An active heatsink, consisting of a heat frame plus fansink, was created to meet this need. The heat frame makes a mechanical connection to the RFSoC device via thermal pad. The entire assembly is secured to the board with precision spacers and screws.

XRF Heatsink Passive Cooling Solution

Part number	Resale	SURL
AES-XRF-HEATSINK-G	$295 USD	avnet.me/xrf-passive-cooling

Avnet XRF RFSoC System-on-Modules require heat dissipation solutions for most applications. A passive heatsink was created to meet this need within enclosed systems. The AES-XRF-HEATSINK-G kit is compatible with all Avnet XRF modules. The assembly is shown below attached to an XRF16 Gen2 module, mounted to the XRF16 Carrier.



XRF Samtec Isorate®-to-SMA Breakout Board

Part number	Resale	SURL
AES-XRF-ISORATEBB-G	$285 USD	avnet.me/isorate-board

A compact, high performance breakout board which converts the XRF carrier Samtec Isorate® 8 position connector to 8 standard SMA.

ZYNQ® ULTRASCALE+ RFSOC DEVELOPMENT KIT

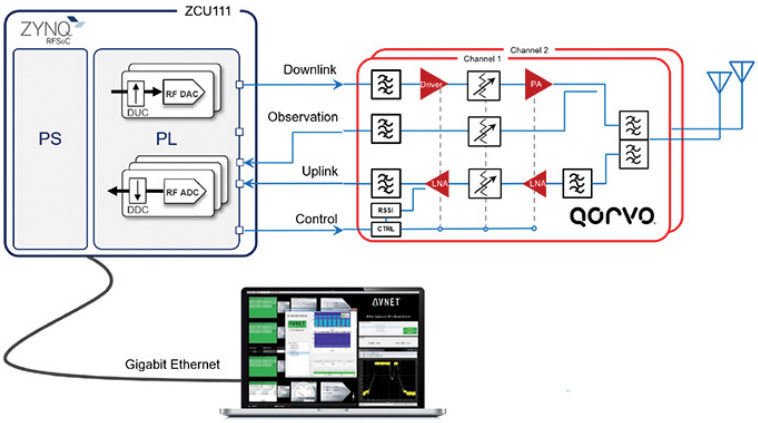
The Avnet Zynq® UltraScale+™ RFSoC Development Kit enables system architects to explore the entire signal chain from antenna to digital using tools from MathWorks and industry-leading RF components from Qorvo. We extend the functionality of the Xilinx Zynq UltraScale+ RFSoC ZCU111 Evaluation Kit by adding a Qorvo 2-Channel RF Front-end 1.8 GHz Card for over-the-air transmission, plus native connection to MATLAB® & Simulink® with Avnet's RFSoC Explorer® application.

Qorvo 2-Channel RF Front-end 1.8 GHz Card

The Qorvo 2-Channel RF Front-end 1.8 GHz Card extends the functionality of the Xilinx Zynq UltraScale+ RFSoC ZCU111 Evaluation Kit, enabling over-the-air transmission, plus native connection to MATLAB® & Simulink® with Avnet's RFSoC Explorer® application.

Parts

Part number	Description	Price
AES-ZU-RFSOC-SK-RVS-G	Zynq® UltraScale+TM RFSoC Development Kit	$9,495



Features

- Avnet RFSoC Explorer for Signal Capture & Analysis with MATLAB and Simulink
- Radio-in-the-loop co-simulation (Gigabit Ethernet)
- Over-the-air testing with 2x2 LTE 1800MHz FDD front end
- Direct-RF sampling without an external RF mixer

Starter kit includes

- Xilinx Zynq ZCU111 Evaluation Kit
- Qorvo 2-Channel RF Front-end 1.8 GHz Card
- MATLAB® & Simulink® with Avnet's RFSoC Explorer® application

Additional information and downloadable documentation for Zynq UltraScale+ RFSoC Dev Kit can be obtained at avnet.me/rfsockit

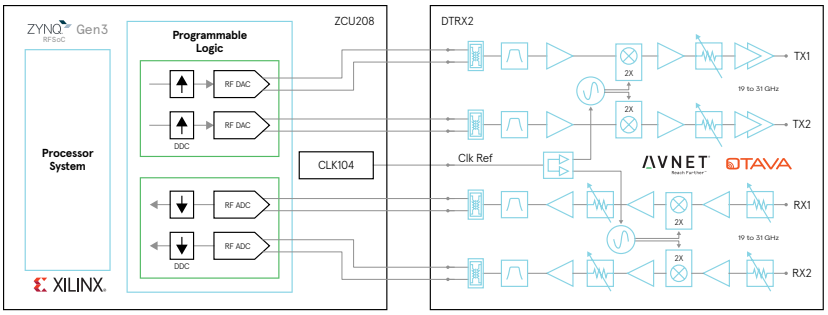
WIDEBAND mmWAVE RADIO DEVELOPMENT KIT FOR RFSOC GEN-3

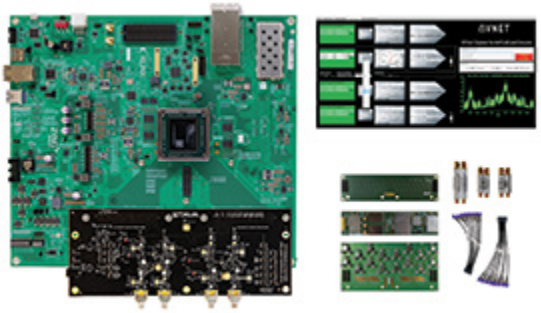
The Avnet Wideband mmWave Radio Development Kit for RFSoC Gen-3 is ideal for prototyping RF applications in mmW bands including 5G NR FR2, wireless backhaul, as well as K/Ka band radar and SATCOM. This platform combines the Otava DTRX2 Dual Transceiver mmWave Radio Card - jointly developed by Otava and Avnet - with the Xilinx Zynq UltraScale+™ RFSoC ZCU208 Evaluation Kit.

Explore the entire signal chain from millimeter wave RF to IF sampling in RFSoC Gen-3 data converters reaching 6 GHz. Native connection to MATLAB and Simulink is provided by Avnet's RFSoC Explorer, featuring graphical control of the platform and intuitive APIs for programmatic access.

Parts

Part number	Description	Resale
AES-ZCU208-DTRX2-SK-G	Multi-purpose high performance radio kit for mmWave applications, built on XilinxZynq UltraScale+ RFSoC Gen-3 ZCU208 evaluation kit	$19,995 USD





Features

Xilinx Zynq UltraScale+ RFSoC ZCU208 Evaluation Kit

- Complete OEM kit including CLK104, XM650, and XM655 add-on cards
- Features the Zynq UltraScale+ RFSoC ZU48DR with integrated gigasample data converters and programmable gain control
- 8x 14-bit 5 GSPS ADCs
- 8x 14-bit 10 GSPS DACs
- 4GB 64-bit DDR4 programmable logic memory
- 4GB 64-bit DDR4 processor system memory
- RF Mezzanine Card 2.0 interface for RF expansion
- FPGA Mezzanine Card (FMC+) interface for I/O expansion

Otava DTRX2 mmWave Radio Card for Xilinx RFSoC ZCU208 Evaluation Kit

- 2 TX channels up convert from high IF frequencies to mmWave frequencies
- 2 RX channels down convert from mmWave frequencies to high IF frequencies
- Independent TX and RX LO PLLs with integrated frequency synthesizer, onchip VCO, and common reference from the Xilinx ZCU208 CLK104 module
- Digital Step Attenuators (DSA) for gain control
- Independent signal chain enable/disable for TDD operation
- TDD and FDD modes supported
- RF band select filters can be added externally based on operating frequency
- Powered from a single 12V DC connector

Additional information and downloadable documentation for the Wideband mmWave RFSoC Dev Kit can be obtained at avnet.me/rfsoc-mmwave

OTAVA BEAMFORMER IC EVALUATION KIT

The Otava Beamformer IC Evaluation Kit allows for the rapid evaluation of the Otava OTBF103, a ground-breaking device for mmW and 5G development, in a lab environment. The kit includes the Otava Beamformer Evaluation Board, a MicroZed SOM based on the Zynq 7010 SoC, supporting hardware and a custom GUI. Using the MicroZed and GUI software, engineers can immediately focus on manipulating the RF signals and evaluating the Beamformer IC. The control interface has been fully implemented and the device can be controlled from a PC using USB or Ethernet.

Evaluate and explore the OTBF103 Otava Beamformer IC

Otava's Beamformer IC (BFIC), the OTBF103, is a mmW wideband time-division-duplexing beamformer. The BFIC consists of eight transmit channels and eight receive channels in the 24 GHz to 40 GHz frequency range, which encompasses numerous worldwide 5G bands.

Each channel has individual phase and gain adjustment controls and an on-board 4K byte memory that allows for fast operational steering between 64 programmable positions. An SPI control interface (LVDS or LVCMOS) is used for programming the 158 registers and memory locations. The BFIC can be evaluated by using the OTBF103-EVAL board from Otava.

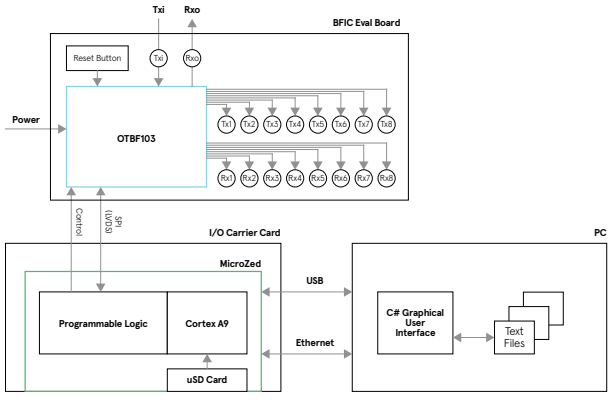
Avnet implemented the control interface using a MicroZed 7010 Zynq module and a GUI that runs on a PC. This enables rapid BFIC familiarization without having to first create custom software.

Parts

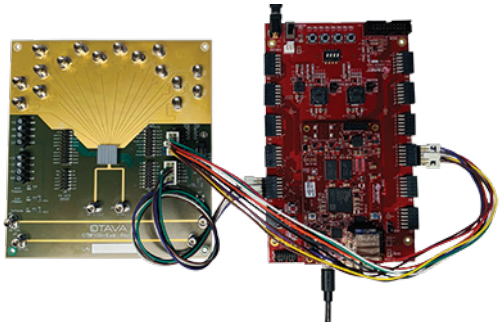
Part number	Description	Resale
AES-Z7MB-OTVBFIC1-SK-G	Otava Beamformer Evaluation Kit	$7,995 USD

Related parts

Part number	Description	Resale
OTBF103	Otava Beamformer IC	Contact sales
OTBF103-EVAL	Otava Beamformer Evaluation Board	$7,499 USD



Additional information and downloadable documentation for the Otava Eval Kit can be obtained at avnet.me/otavabfic



Features

- Register-level Otava Beamformer IC control and evaluation
- Re-programmable MicroZed Zynq 7010 implementation with source
- Save and recall custom configurations

Target apps

- mmW, small cell, 5G development
- Radar, EW
- Satellite communications

Kit includes

Otava Beamformer IC Eval Board

- The OTBF103 Beamformer IC
- High-performance 2.4 mm vertical mount connectors for all mmW signals
- Terminal blocks for external power
- PMOD male headers for digital control

MicroZed 7010 Xilinx Zynq system-on-module (SOM)

- Xilinx Zynq 7010 SoC with dual-core ARM® Cortex™-A9-based application processor unit (APU)
- 1 GB DDR3 SDRAM, 128 Mb QSPI flash
- 10/100/1000 Ethernet and USB-UART
- 4GB Micro SD card
- Micro USB cable

Modified MicroZed I/O Carrier Card

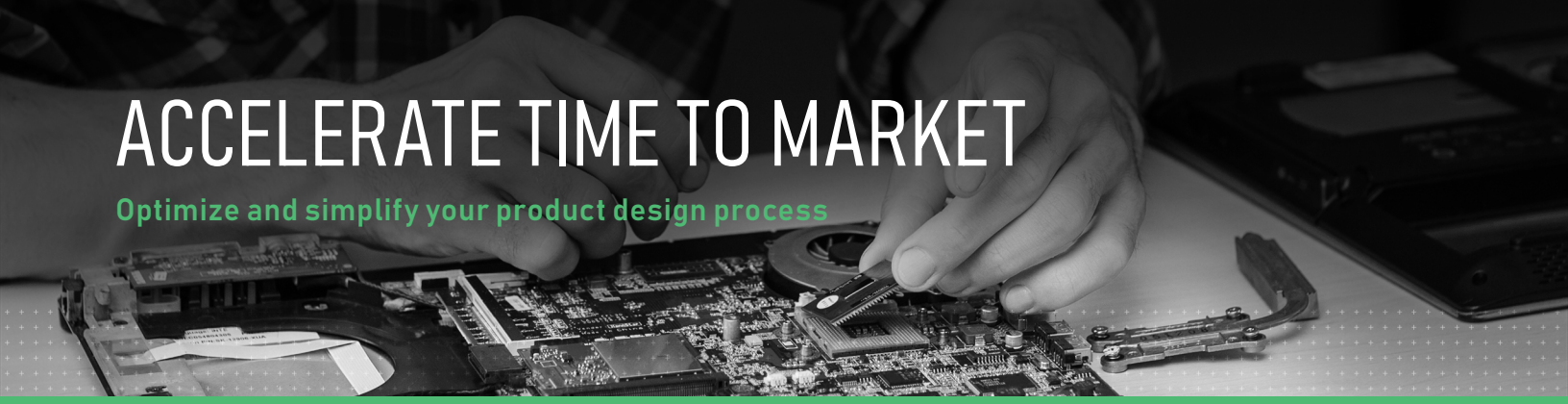
- 12 PMOD-compatible interfaces for access to 80 MicroZed user I/O
- 5V @ 3A power supply
- Modified from AES-MBCC-IO-G to support 1.2V on VCCIO_34

Two custom cable assemblies from Samtec

- Connect digital controls between MicroZed and the BFIC Eval board

C# GUI

- Allows access to all 158 BFIC registers 4kByte SRAM
- Graphing of ADC outputs of temperature sensors and RMS Tx and Rx levels
- Read/write defaults from/to text files
- BFIC diagnostics



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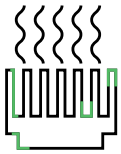
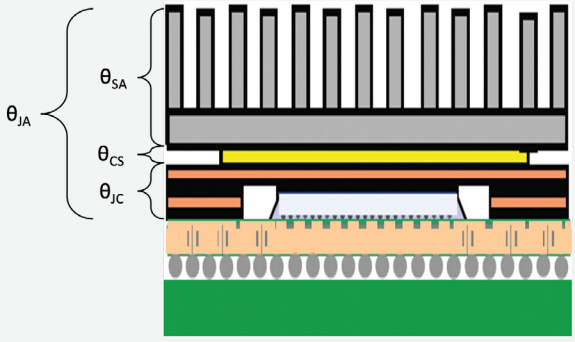
LOOKING FOR THERMAL SOLUTIONS?

Semiconductors require thermal relief – the importance of the thermal solution will continue to be a critical piece of any design

Thermal solutions are not just "fans", the largest component to proper thermal management is the heatsink and interface material which for most high-performance devices is semi-custom to full custom.



Avnet is focused helping customers manage their thermal performance by helping in the selection and design of thermal relief solutions.



Diagram

- Junction to Ambient – Θ_{JA}
- Sink to Ambient – Θ_{SA}
- Case to Sink – Θ_{CS}
- Junction to Case – Θ_{JC}

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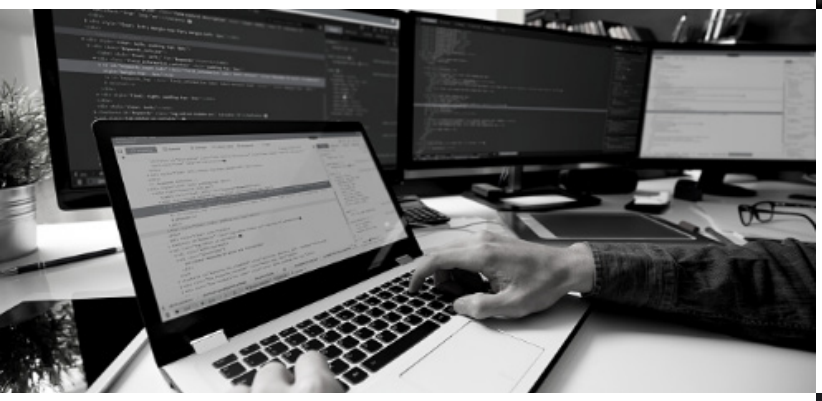

Experience and Integration

- **Vivado** and **PetaLinux** Tools to achieve a working **embedded Linux kernel** on Zynq/ZU+ platforms.
- Vivado and **Vitis** tools to run FreeRTOS on Zynq platforms, **modifications on BSP and application** to interact with the programmable logic side.
- Address the **bottlenecks in SoC** system-level integration and implementation.

Embedded Linux Development & Debugging

- **Linux kernel architecture** on Zynq/ZU+.
- **Linux drivers** for custom FPGA IPs, and write applications to test and verify them.
- Embedded Linux **application debug** on various platforms.
- **Linux BSP adaptation** for the Zynq and Zynq UltraScale+ MPSoC platforms.

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Avnet is a global electronic components distributor with extensive design, product, marketing and supply chain expertise for customers and suppliers at every stage of the product lifecycle. For the past 100 years, Avnet has helped its customers and suppliers around the world realize the transformative possibilities of technology.

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