

A vertical collage of images on the left side of the slide. From top to bottom: a fighter jet flying in a blue sky, a laptop computer, a server rack, a circuit board with a square component, a satellite in orbit above a globe, and a mobile phone.

Aeroflex Eclipse FPGA Rapid Prototyping

September 2008

www.aeroflex.com/FPGA

Introduction



- ◆ **Problem:**
 - **Customers are looking for a low cost prototyping capability for FPGAs**
- ◆ **Solution**
 - **Enable the customer to prototype with QuickLogic Commercial FPGAS or Aeroflex FPGAS in plastic, then switch to hermetic FPGAS for EM and FM builds**
- ◆ **Customer Choice:**
 - **Rapid Prototyping!**

Rapid Prototyping



- ◆ **Rapid Prototyping is more cost effective than using the hermetic FPGA Eclipse devices for prototype applications**
- ◆ **To support your Rapid Prototyping requirements, Aeroflex offers the Eclipse FPGA UT6325 in plastic packages that are form, fit, and functionally compatible with QuickLogic's QL6325**
 - **Compatible package options include:**
 - ◆ **208 PQFP**
 - ◆ **280 PBGA**
 - ◆ **484 PBGA**
- ◆ **Customers can then switch to the comparable ceramic packages for EM and FM flight boards**

Rapid Prototyping Plastic Package Options



- ◆ **Aeroflex Eclipse FPGA**
 - 208 PQFP (28x28 mm, 0.5 mm pitch)
 - 280 PBGA (17x17 mm, 0.8 mm pitch)
 - 484 PBGA (23x23 mm, 1.0 mm pitch)

- ◆ **QuickLogic Commercial FPGA**
 - 208 PQFP (28x28 mm, 0.5 mm pitch)
 - 280 PBGA (17x17 mm, 0.8 mm pitch)
 - 484 PBGA (23x23 mm, 1.0 mm pitch)

Rapid Prototyping for 208-CQFP

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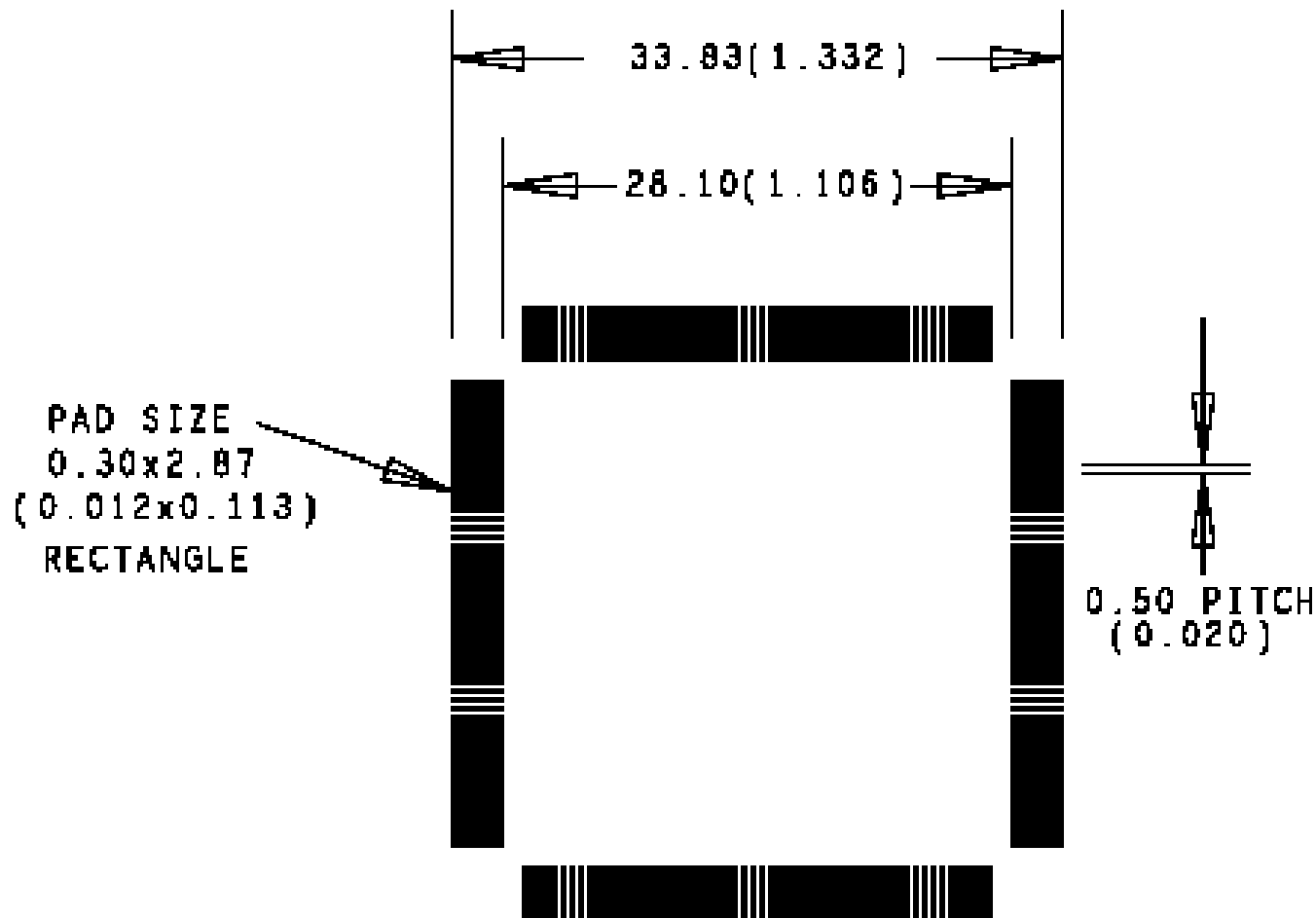
- ◆ Rapid Prototyping solution includes:
 - Aeroflex provides a recommended footprint that is compatible for both 208 CQFP package and 208 PQFP sockets. Due to footprint compatibility, no adapter is needed.
 - ◆ Aeroflex Part Number: UT8RHE-SKT208P
 - Lead forming instructions are also provided to ensure the 208 CQFP fits onto the recommended PCB footprint
 - Please visit www.aeroflex.com/FPGA for this information



Recommended Footprint for 208-PQFP Socket and 208-CQFP

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DIMENSIONS: mm(inches)



208-CQFP Lead Forming Guidelines



- ◆ Apply the following lead forming guidelines to ensure the 208-lead CQFP will fit onto the footprint:
 - First lead bend is $1.14 \pm .13$ ($.045 \pm .005$) from the body
 - Second lead bend is made $2.67 -0/+ .51$ ($.105 -0/+ .020$) to allow PWB to component body clearance
 - The Heal of the Foot is offset from the first bend by $0 - .46$ ($0 - .018$)
 - The foot of the lead is $1.14 + .13$ ($.045 + .005$)

Dimensions: mm (inches)

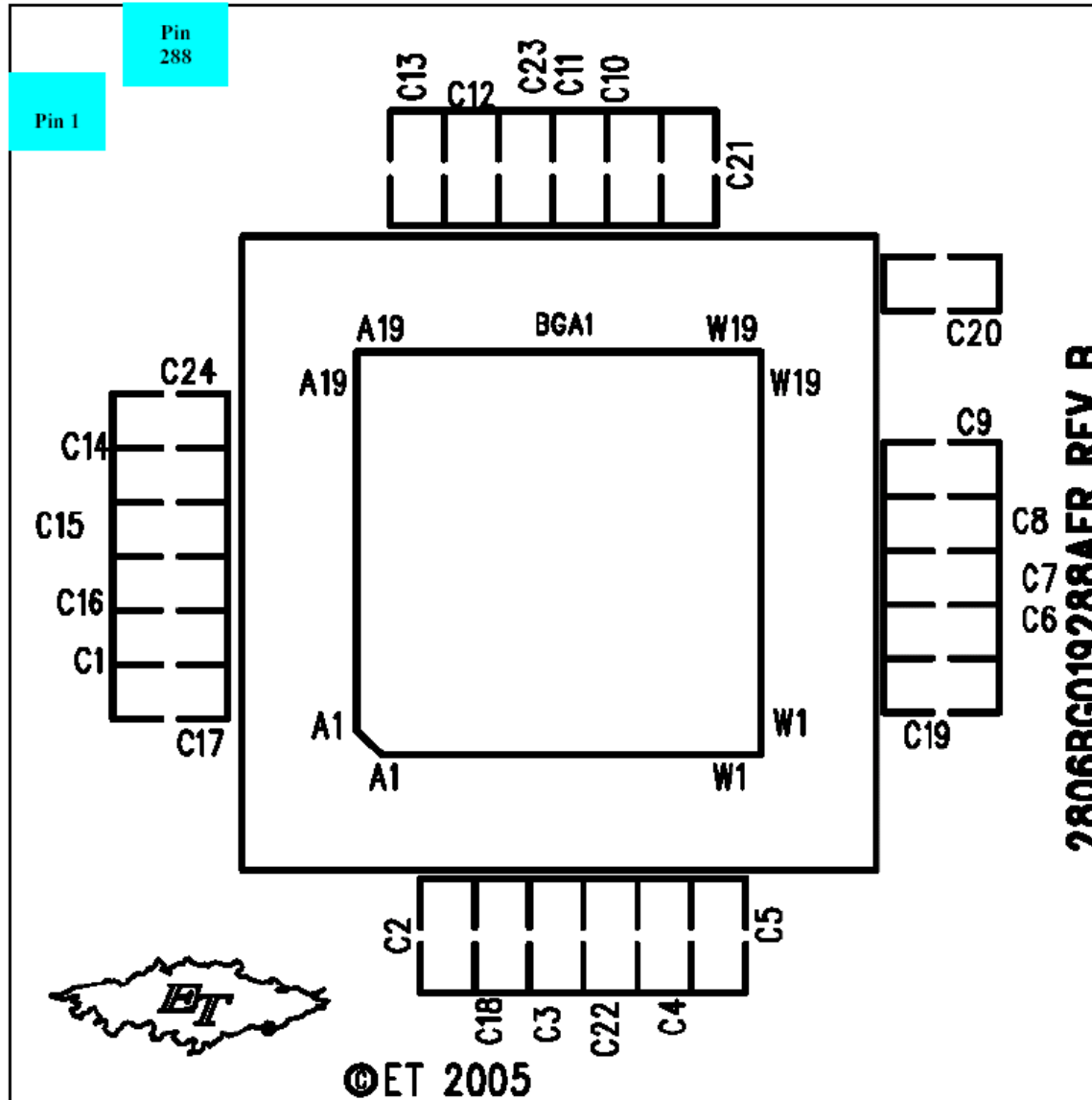
Rapid Prototyping for 288-CQFP



- ◆ **Rapid Prototyping solution includes:**
 - **280 PBGA Socket to 288 CQFP PCB Adapter enables the customer to mount the 280 PBGA socket onto a 288 CQFP footprint on the PCB**
 - ◆ **Aeroflex Part Number: UT8RHE-SKT280P**
 - **280 PBGA Socket to 288 CQFP PCB Adapter can be purchased from Aeroflex.**
 - ◆ **Aeroflex Part Number: UT8RHE-ADP288P**

UT8RHE-ADP288P

Top Assembly Drawing

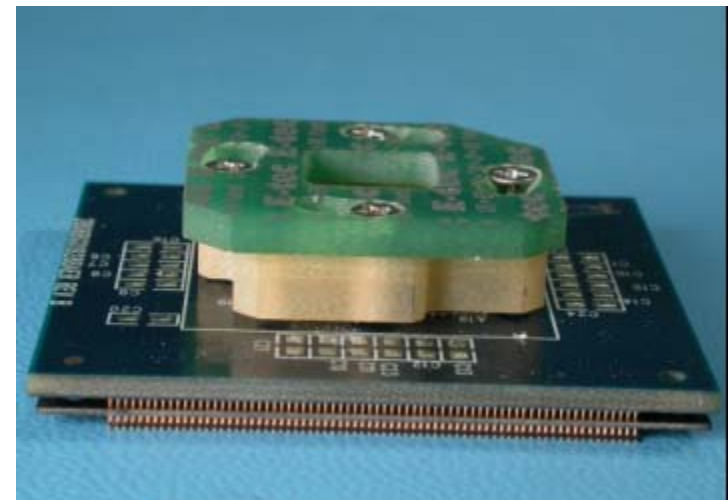
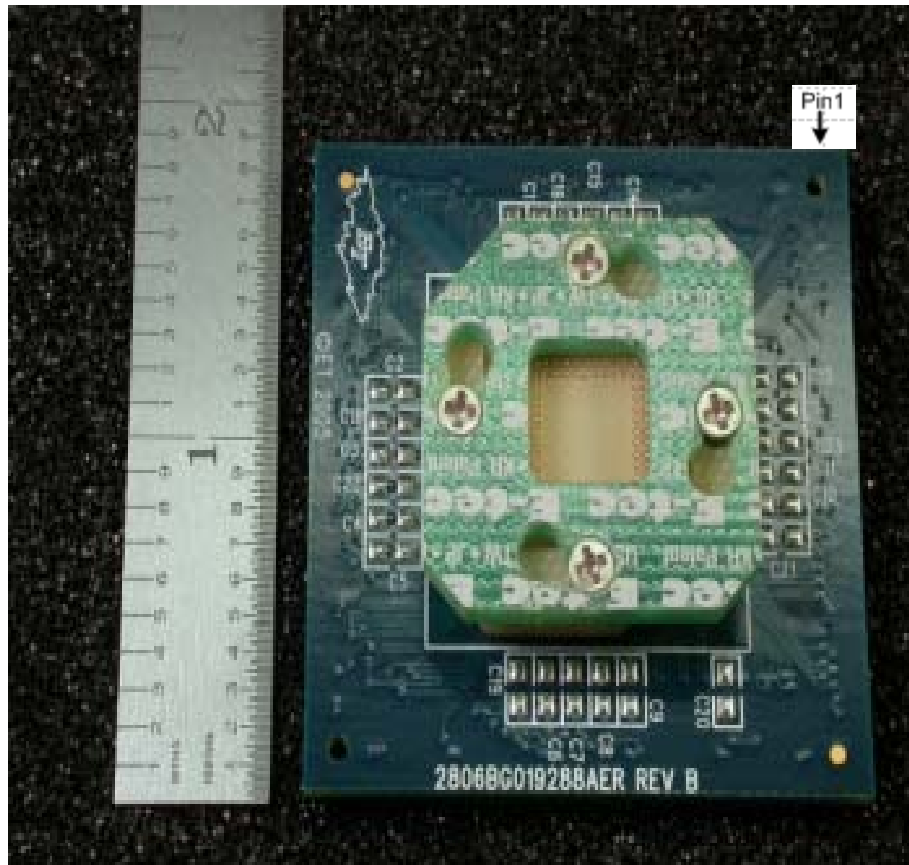


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UT8RHE-ADP288P Hardware Photographs

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Aeroflex Part Number: UT8RHE-ADP288P

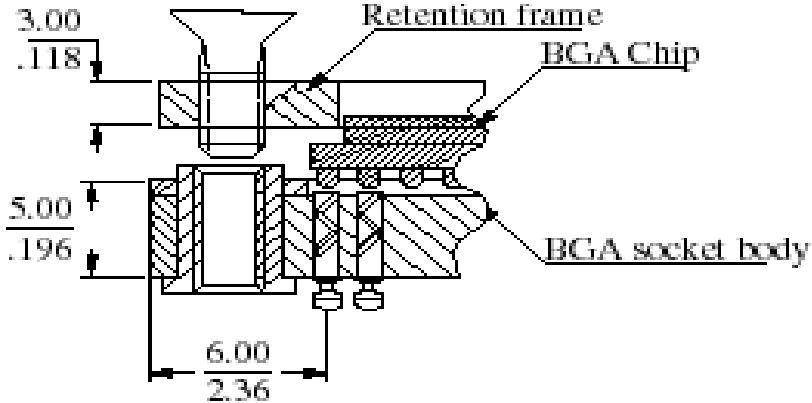
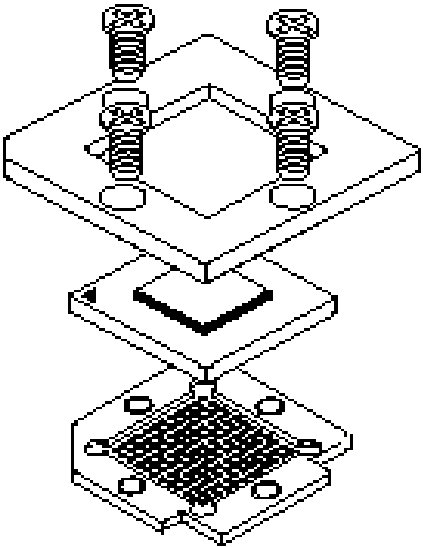
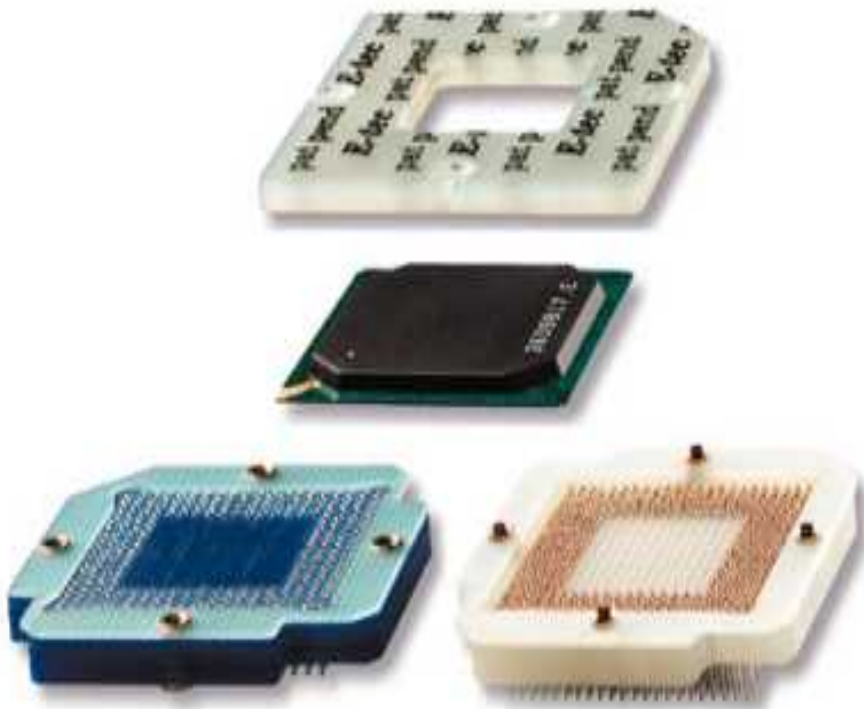


Rapid Prototyping for 484-CLGA/CCGA



- ◆ **Rapid Prototyping solution includes:**
 - **484-PBGA Socket to 484-CCGA/CLGA PCB Adapter enables the customer to mount the 484-PBGA socket onto a 484-CCGA/CLGA footprint located on the PCB**
 - ◆ **Aeroflex Part Number: UT8RHE-SKT484P**
 - **484-PBGA Socket to 484-CCGA/CLGA PCB Adapter can be purchased from Aeroflex**
 - ◆ **Aeroflex Part Number: UT8RHE-ADP484P**
 - **NOTE: Adapter includes the socket referenced above**

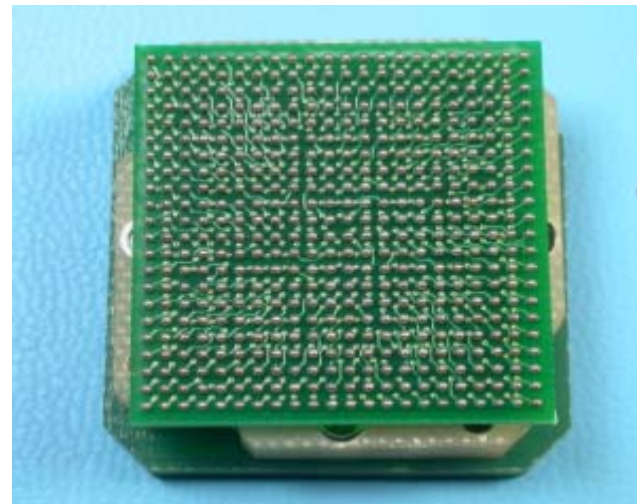
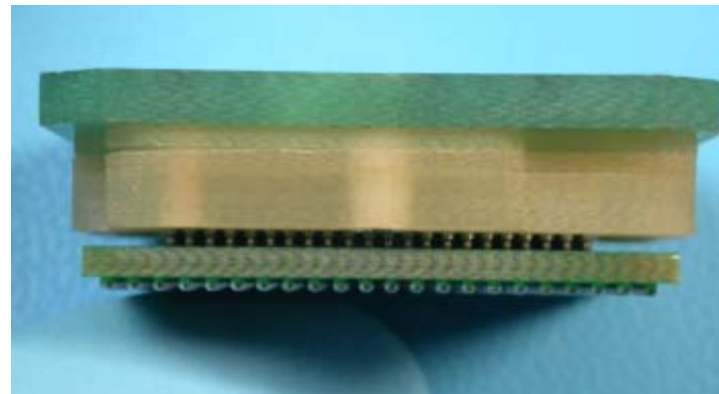
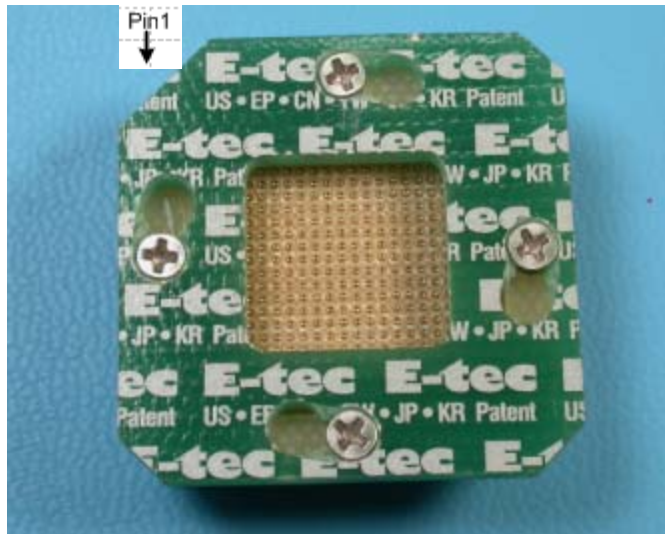
484-PBGA Socket Example



UT8RHE-ADP484P Hardware Photographs

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Aeroflex Part Number: UT8RHE-ADP484P



PCB Footprints



- ◆ **Additional Rapid Prototyping support includes PCB footprint and lead-forming guidelines available on the Aeroflex website at: www.aeroflex.com/FPGA**

- ◆ **The PCB footprints and lead-forming guidelines provide support for the following package and prototyping configuration scenarios:**
 - **208 CQFP**
 - **208 CQFP with 208 PQFP socket compatibility**
 - **288 CQFP**
 - **288 CQFP with 280 PBGA socket compatibility**

RadHard Eclipse Products and Accessories

RadHard Eclipse Devices

	Proto OOE	QML P Production (SMD Released)	Evaluation Board	Socket	Adaptor: Plastic Package to Ceramic Footprint	Lead Forming Guide (Available at www.aeroflex.com)	Programming Adaptor	Programming Algorithm
UT6325-W** 208-PQFP	✓	N/A	UT8RHEEB-208PC	UT8RHE-SKT208P	N/A	N/A	QT-SG-PQ208	✓
UT6325-X** 208-CQFP	✓	✓	UT8RHEEB-208PC	UT8RHE-SKT208C	UT8RHE-SKT208P with proper land pads	✓	UT-SG-CQ208	✓
UT6325-P** 280-PBGA	✓	N/A	UT8RHEEB-288PC	UT8RHE-SKT280P	N/A	N/A	QT-SG-PT280	✓
UT6325-Y** 288-CQFP	✓	✓	UT8RHEEB-288PC	UT8RHE-SKT288C	UT8RHE-ADP288P	✓	UT-SG-CQ288	✓
UT6325-R** 484-PBGA	✓	N/A	UT8RHEEB-484P UT8RHEEB-484PL	UT8RHE-SKT484P	N/A	N/A	QT-SG-PS484	✓
UT6325-Z** 484-CLGA	✓	✓	UT8RHEEB-484L UT8RHEEB-484PL	UT8RHE-SKT484L	UT8RHE-ADP484P	N/A	UT-SG-CL484	✓
UT6325-Z** 484-CLGA with Column Attach Service⌘	✓	✓	UT8RHEEB-484C UT8RHEEB-484PC	UT8RHE-SKT484C	UT8RHE-ADP484P	N/A	UT-SG-CC484	✓

⌘ Aeroflex offers solder column attachment as a service for prototype, reduced high-rel, and QML purchases of the UT6325 in the 484-Ceramic Land Grid Array Package.