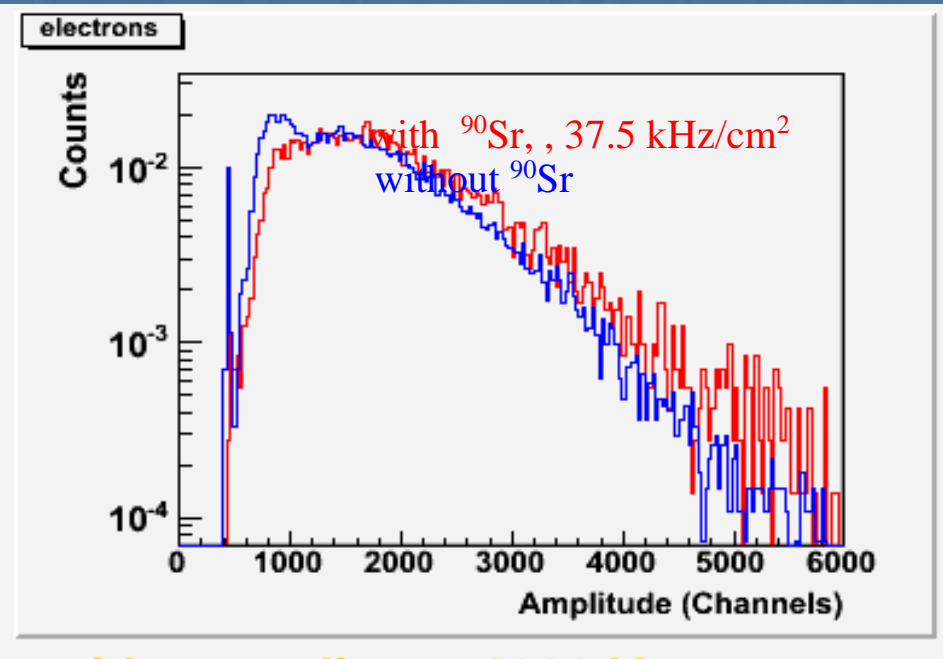
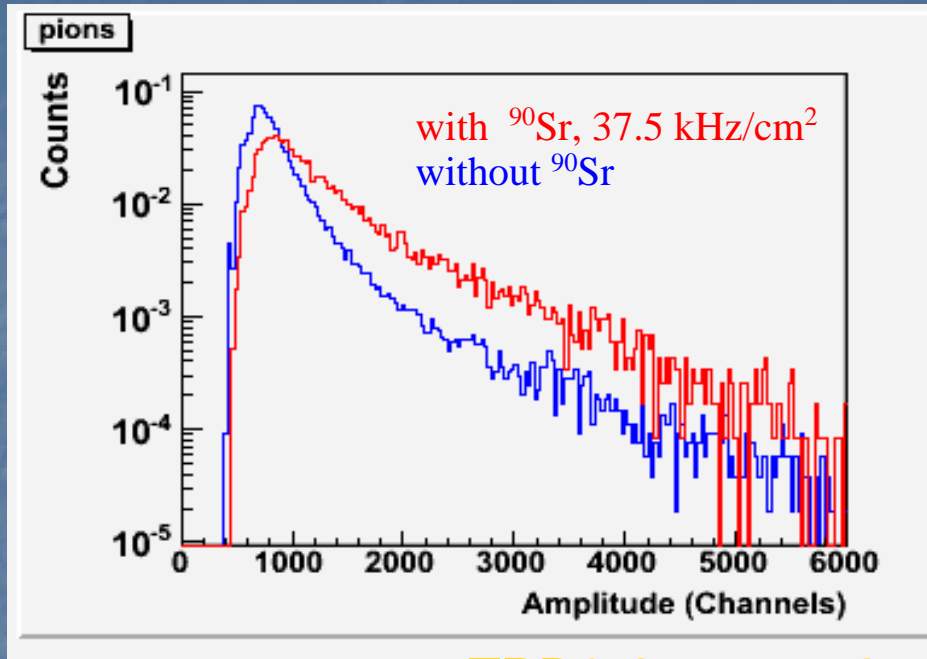


**FEE based on FASP for
next in-beam tests of
Bucharest-Munster TRD
prototypes**

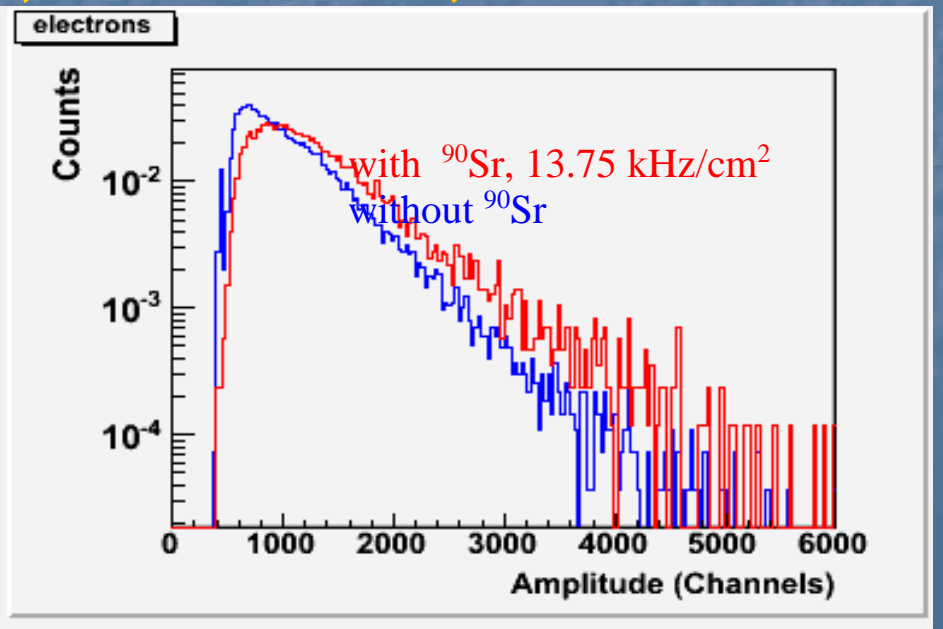
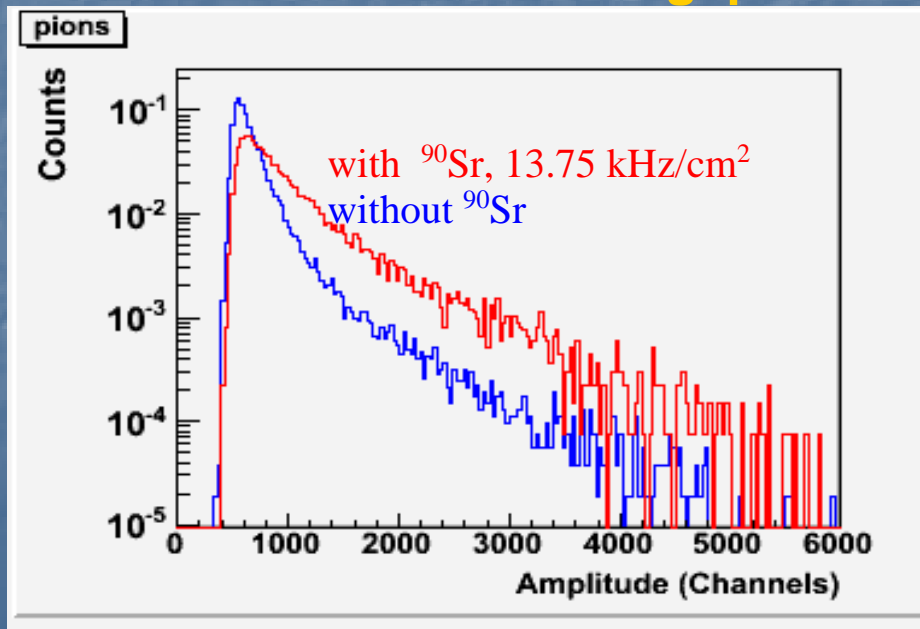
Florin Constantin
NIPNE, Bucharest

FASP Pile up

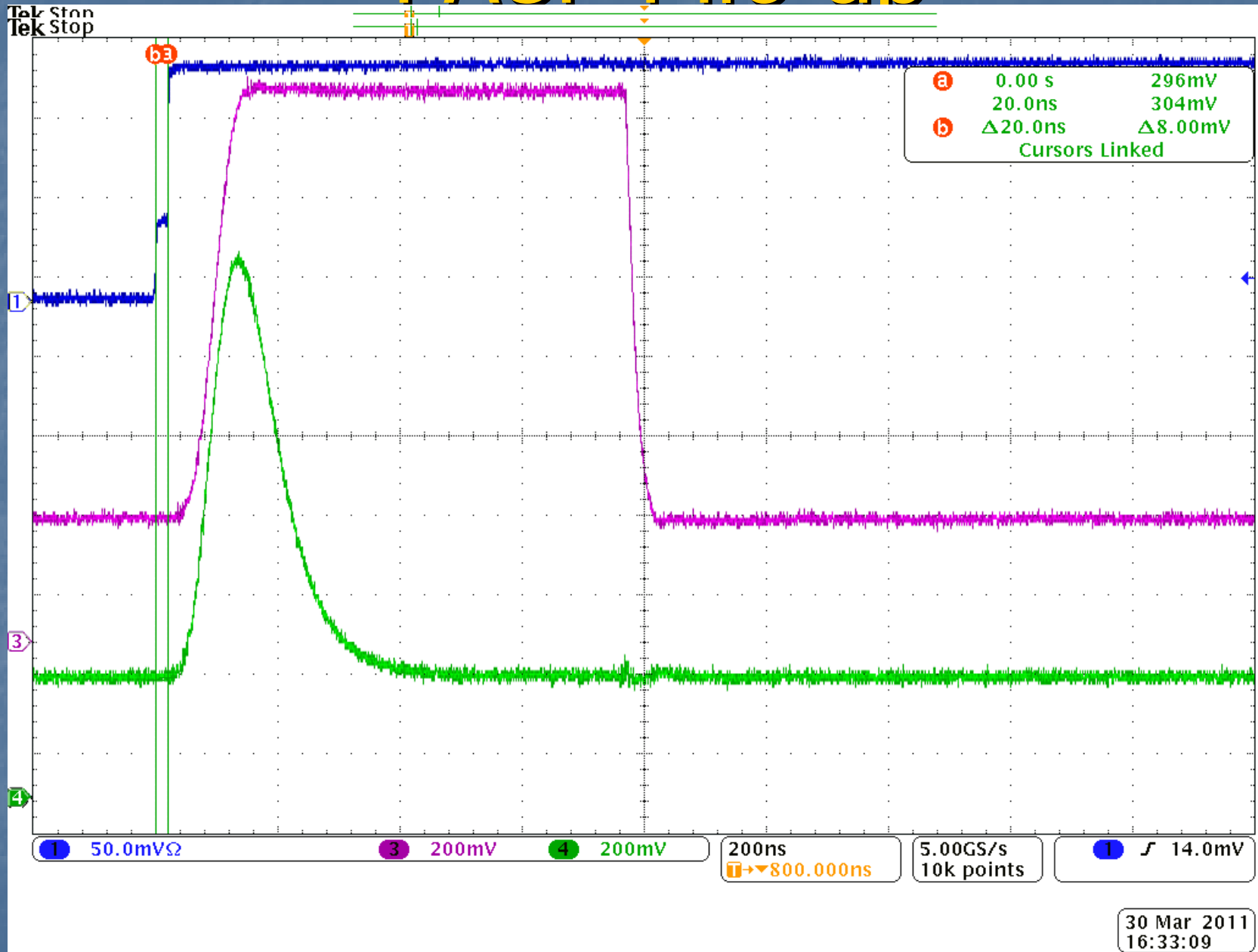
TRD1 4 gaps x 3 mm, with radiator, 1700 V



TRD2 4 gaps x 4 mm, without radiator, 1900 V



FASP Pile up



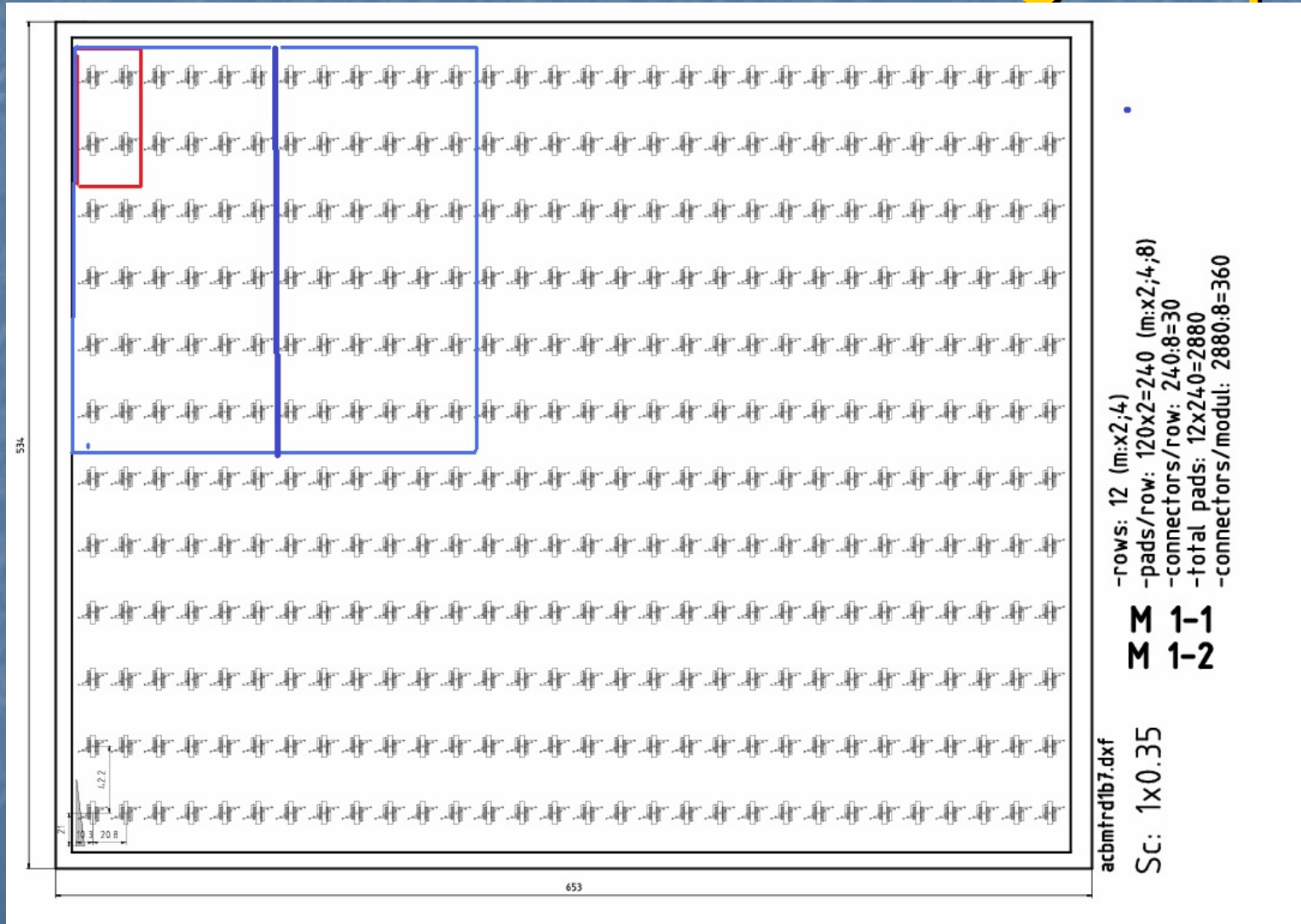
FASP Pile up

Two opposite conditions:

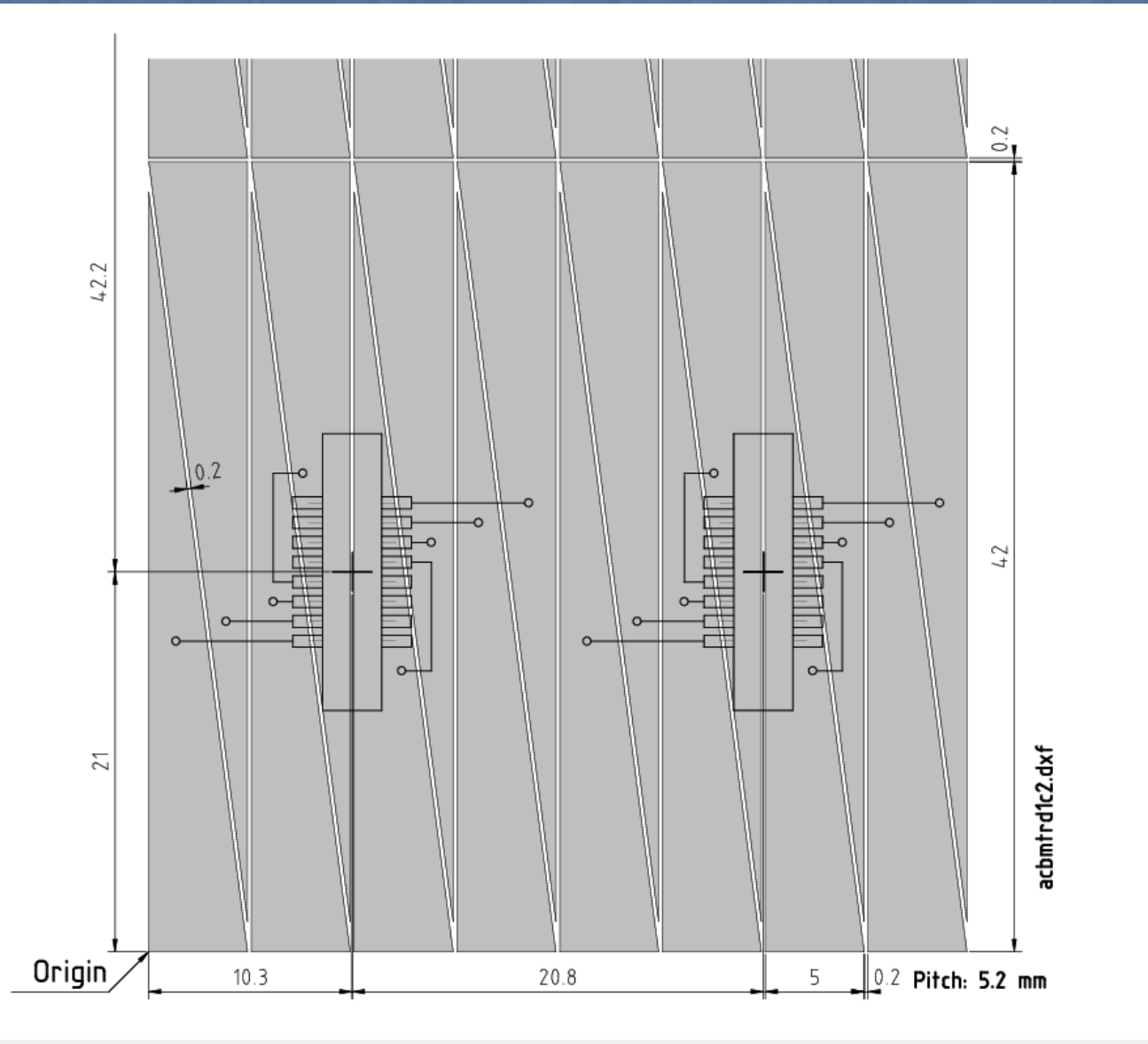
- Preserve a large input window time in order to collect all the charges generated (mainly those generated in the drift area).
- Lower the input time window in order to prevent Pile Up

Supermodule Layout

360 connectors x 8 analog outputs



Connectors



TRD super module

Requirements

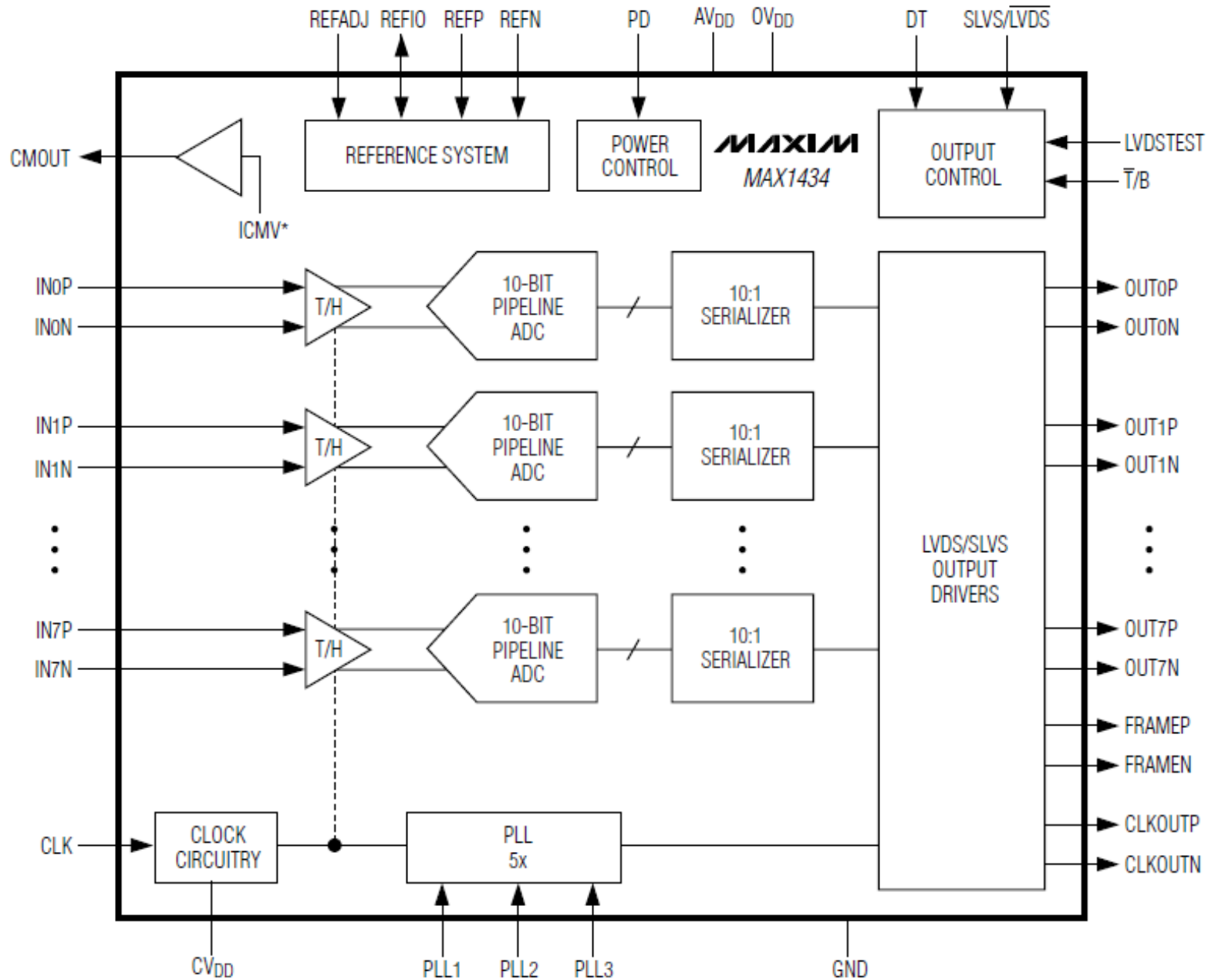
- Send out only digitized data
- Increased data flow rate > 100 kEvents/sec
- Low cost
- Radiation hardness

Max 1434

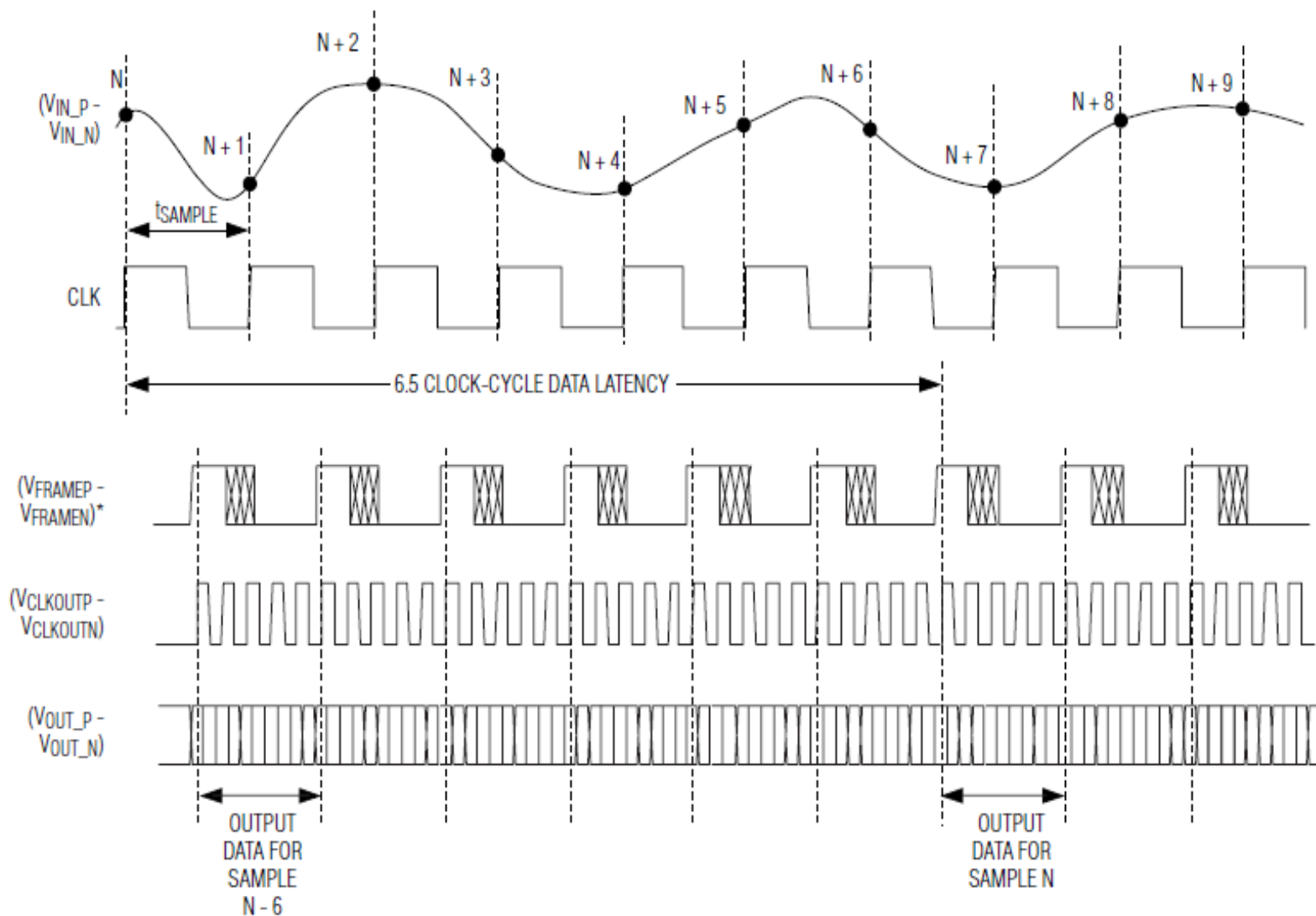
Analog to Digital Converter

- Max 50 Msps
- 10 bits resolution
- 8 independent ADCs
- 100 pins capsule
- 800 mW power

Max 1434



Max 1434



*DUTY CYCLE VARIES DEPENDING ON INPUT CLOCK FREQUENCY.

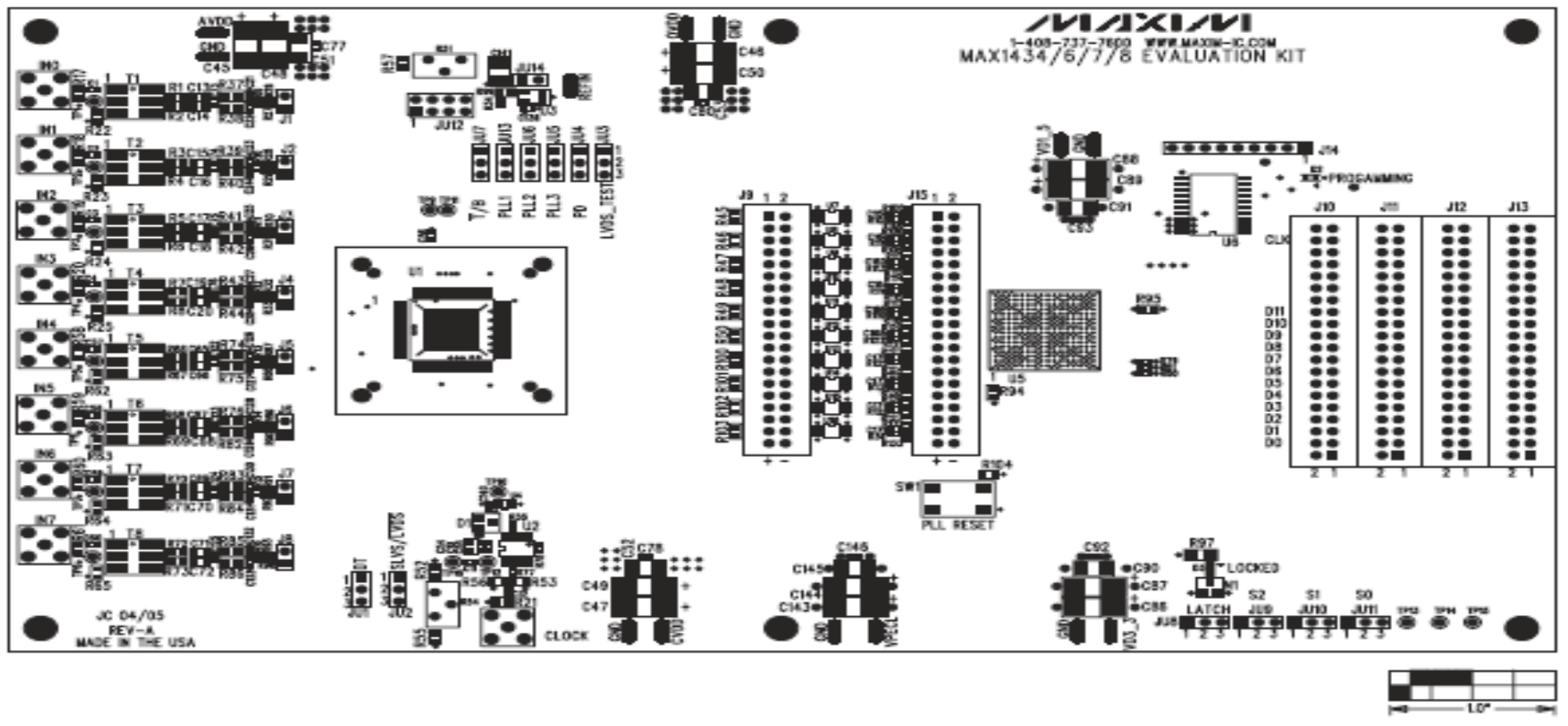
DAQ Implementation

- Max1434 Evaluation Kit
- PIC32 Ethernet Starter Kit

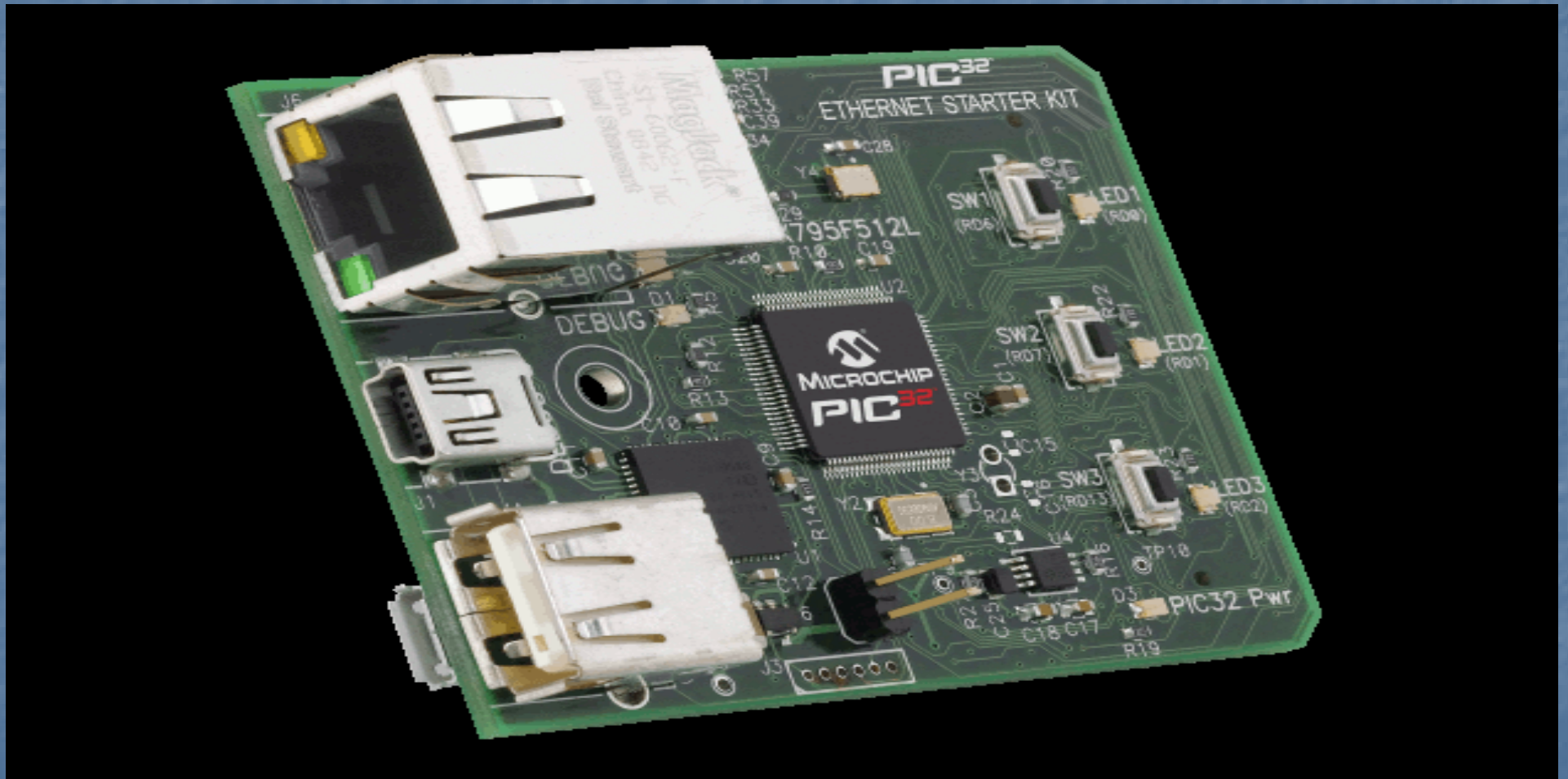
MAX1434 Evaluation Kit

- **Low-Voltage and Low-Power Operation**
- **On-Board Deserializer**
- **LVDS Test Mode**
- **Fully Assembled and Tested**

MAX1434 Evaluation Kit



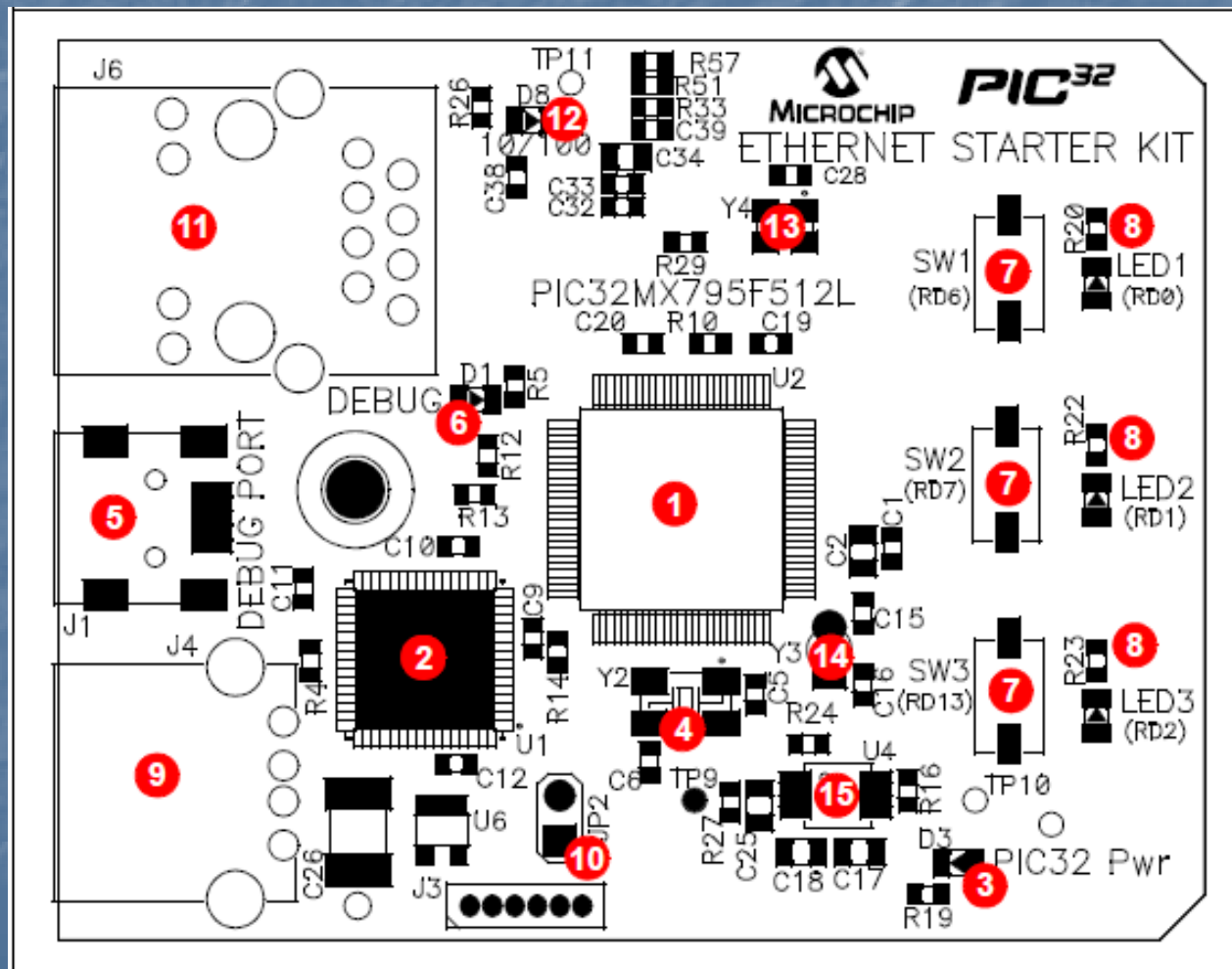
PIC32 Ethernet Starter Kit



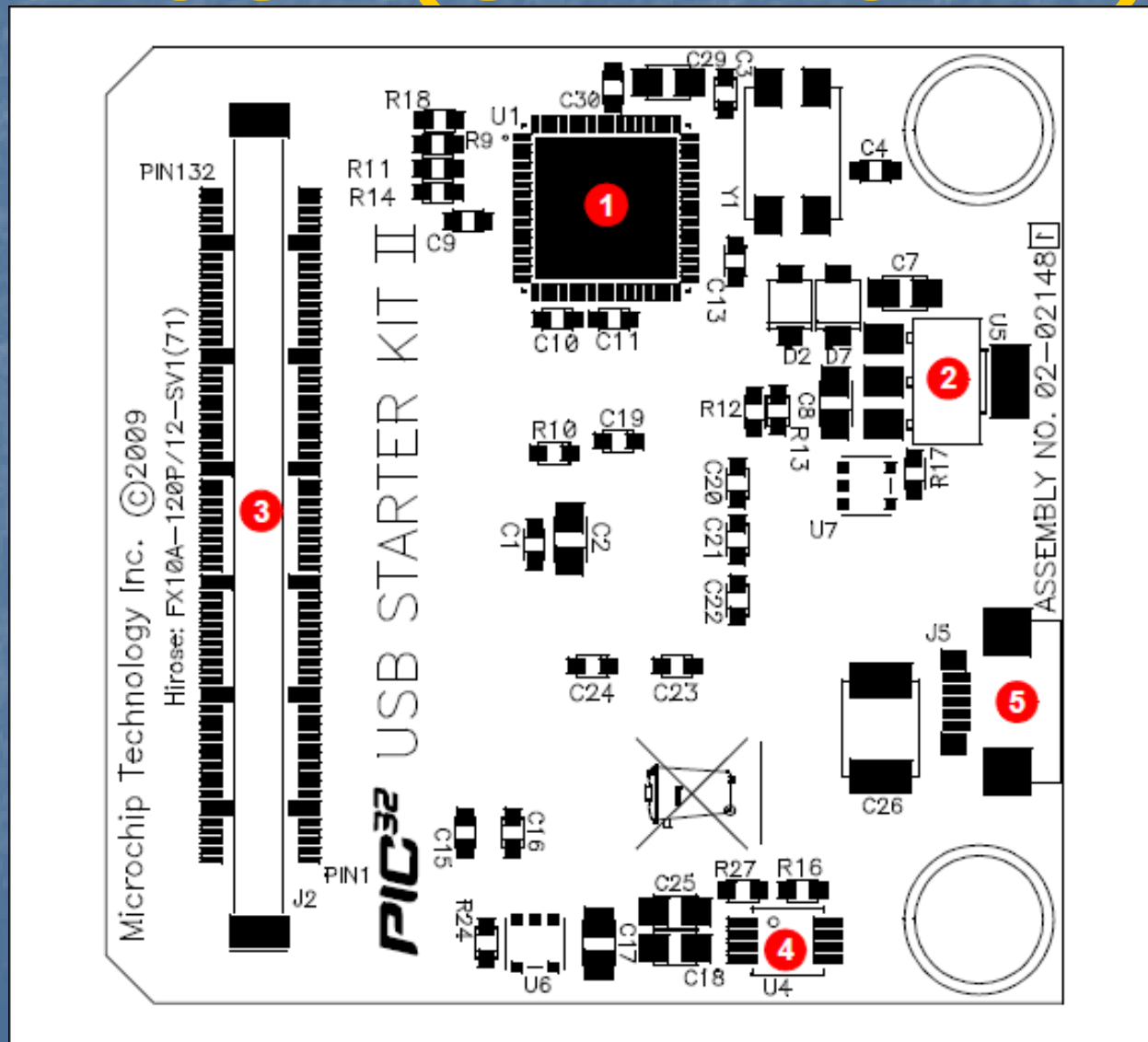
PIC32 Ethernet Starter Kit

- PIC32MX795F512L 32-bit microcontroller.
- PIC32MX440F512H USB microcontroller for on-board debugging.
- On-board crystal for precision microcontroller clocking (8 MHz).
- RJ-45 Ethernet port.
- 50 MHz Ethernet PHY oscillator.

PIC32 ETHERNET STARTER KIT LAYOUT (TOP SIDE)



PIC32 USB STARTER KIT II LAYOUT (UNDERSIDE)



Conclusions

- Solution based on Development Kits
- Large in size and expensive in euro/ channel
- Offers hardware solutions for a custom design
- Easy commissioned and programmed