Section 18

ADSP-BF533 Hardware Tools

ADSP-BF533 EZ-KIT LITE

ADSP-BF533 EZ-KIT LITE

- **ADSP-BF533 EZ-KIT LITE**
  - **Part # ADDS-BF533-EZLITE**
  - **VisualDSP++ Development Environment CD with Limited**
  - **EZ-KIT License**
    - **This license does not expire, but has some limitations.**
  - **ADSP-BF533 EZ-KIT Lite CD**
    - **USB Debugger Interface**
    - **USB driver files, example programs**
  - **Universal 7.5V DC Power Supply**
  - **5 Meter USB type A to type B cable**

  - **Note: Install the ADSP-BF533 EZ-KIT Lite under Windows 98, Windows 2000, or Windows XP. It does not work under Windows 95 or NT.**

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ADSP-BF533 EZ-KIT LITE

- **VisualDSP++ (EZ-KIT Version) License Restrictions**
  - **Internal Memory space limited to ¼ of L1 instruction memory space.**
  - **No connections to Simulator or Emulator sessions allowed**
    - **Use ADSP-BF533 EZ-KIT Lite Session (through USB Debugger Interface)**
  - **Only one EZ-KIT connection to host PC allowed at a time**

NOTE:

EZ-KIT can be used with the full VisualDSP++ license without restrictions
  - **Allows full access to entire memory space**
  - **Part # VDSP-BLKFN-PC-FULL**

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ADSP-BF533 EZ-KIT Lite
Board Diagram
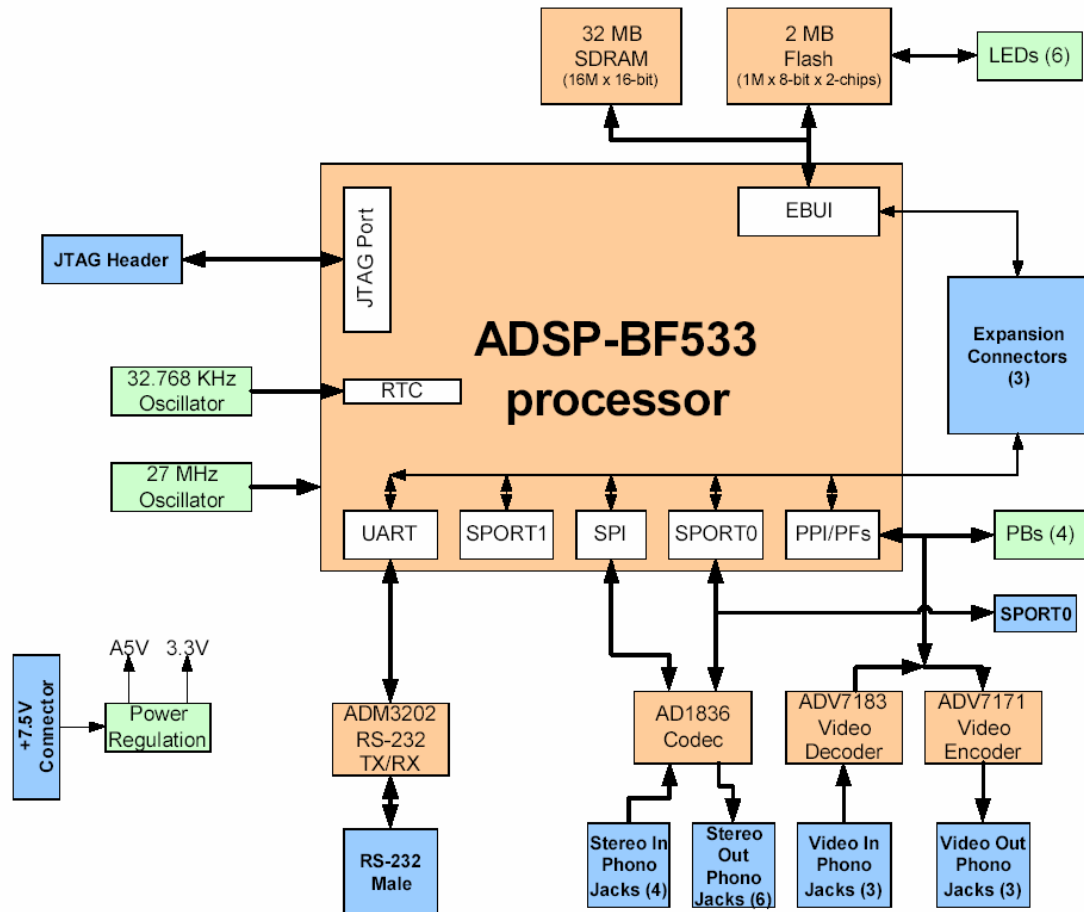
ADSP-BF533 EZ-KIT Lite

AUDIO IN **AUDIO OUT** **VIDEO IN/OUT**

Reset PB

RS-232

Power

DSP

SPORT 0

SDRAM

FlashLINK
(For configuring
Flash devices)

USB
(EZ-KIT I/F
to VDSP)

LEDs
(Connected to
I/O port on Flash)

JTAG **GP Pushbuttons**
(Connected to
PFx pins on
Blackfin)

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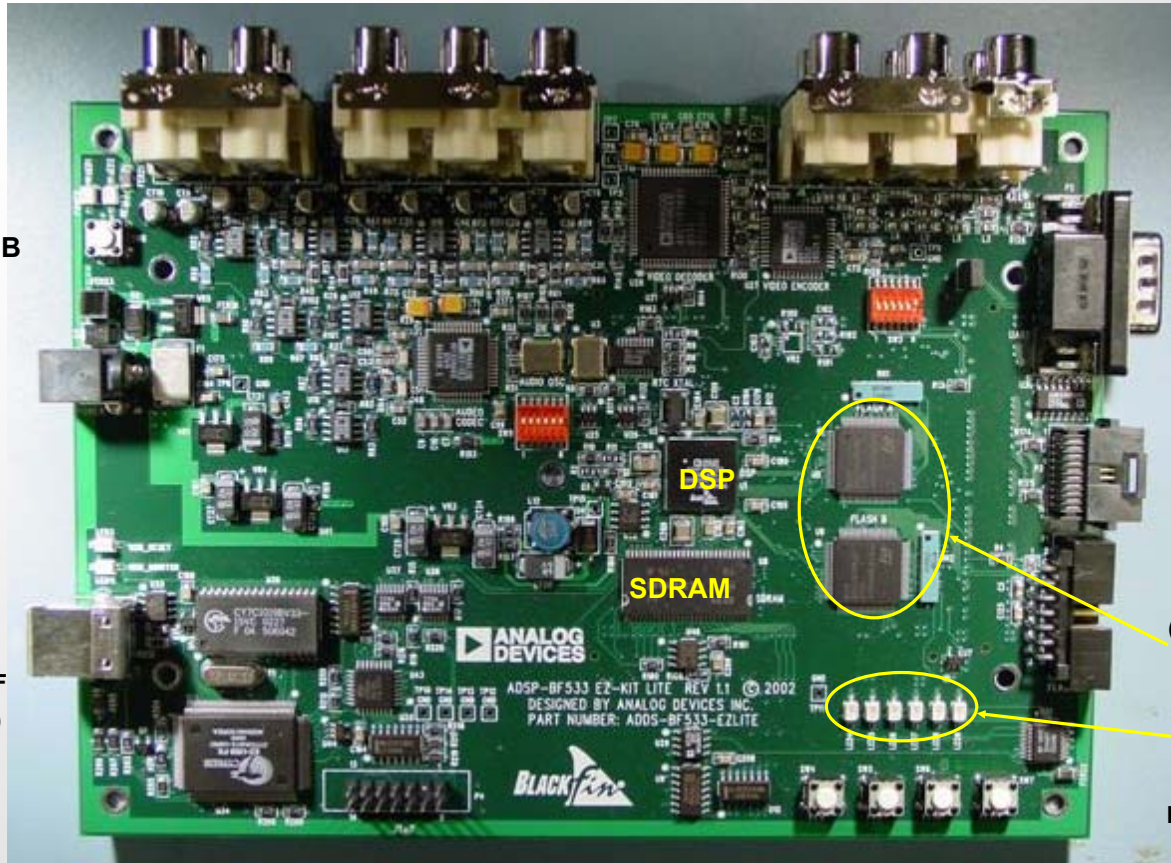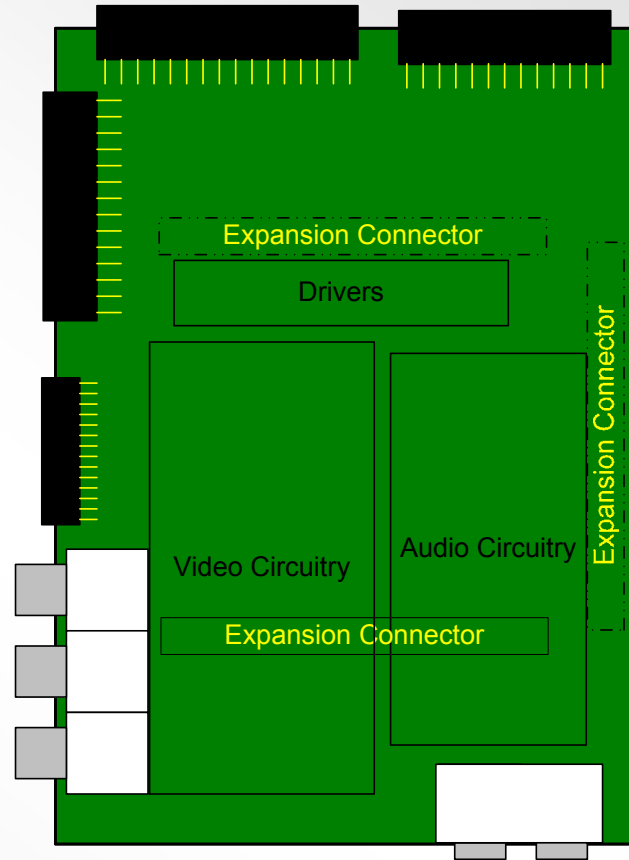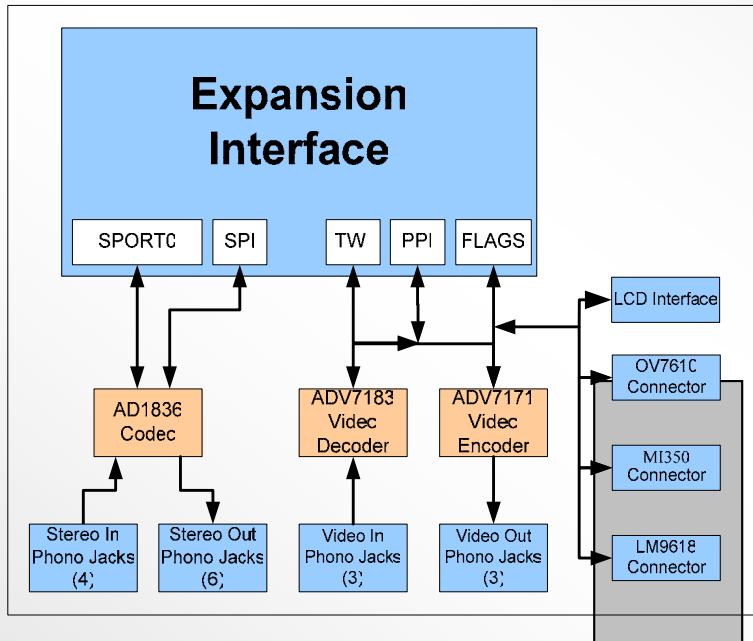
ADSP-BF533 EZ-KIT Lite

- **Board Features:**
  - **ADSP-BF533 DSP running at maximum Core Clock Speed of 600 MHz**
  - **USB Debugger Interface**
  - **Memory**
    - **32 MB SDRAM (16M x 16 bits)**
    - **2 MB Flash Memory (2 devices, each 512k x 16 bits)**
  - **AD1836 Audio Codec on SPORT 0 (6 out/4 in RCA)**
  - **ADV7183 Video Decoder on PPI (3 in RCA)**
  - **ADV7171 Video Encoder on PPI (3 out RCA)**
  - **ADM3202 RS-232 Line Driver/Receiver on UART (DB9)**
  - **14-Pin JTAG Emulator connector**
  - **4 Input PF push buttons and 6 Output PF LEDs**
  - **Expansion Interface**

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Blackfin AV Extender 1 Extender Card

Expansion Interface

| SPORT0 | SPI | | TW | PPI | FLAGS |

- AD1836 Codec
- ADV7183 Video Decoder
- ADV7171 Video Encoder
- LCD Interface
- OV7610 Connector
- MI350 Connector
- LM9618 Connector

- Stereo In Phono Jacks (4)
- Stereo Out Phono Jacks (6)
- Video In Phono Jacks (3)
- Video Out Phono Jacks (3)

Expansion Connector
Drivers
Video Circuitry
Audio Circuitry
Expansion Connector
Expansion Connector

Same functionality on BF533 and BF561 Ez-Kits

Developed for use on BF537 EZ-Kit
Also provides connectivity to LCDs and sensors for BF533/561 EZ-Kits

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Ez-Kit Daughter Card – Available today
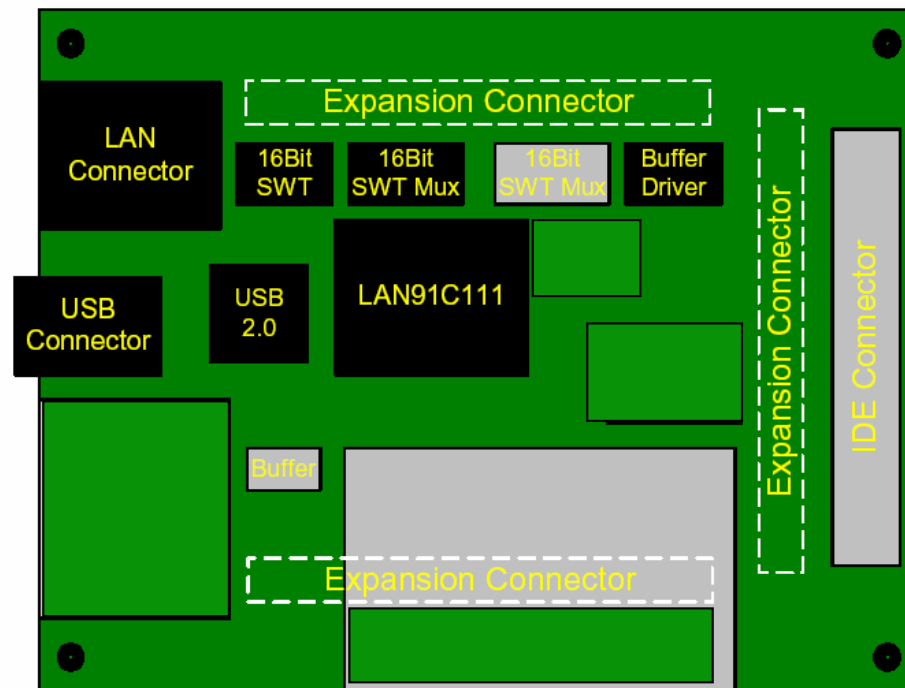
USB 2.0 High speed: Very useful for moving large files on/off chip
Ethernet (for BF561 and BF533 EZ-Kits)

- **Demo Programs:**
  - **Audio Codec Talk Through:**
    - **ASM and C based I2S AD1836 talk through**
    - **ASM and C based TDM AD1836 talk through**
  - **Blink:**
    - **ASM based LED-blinking program**
    - **C based LED-blinking program**
  - **Loader File:**
    - **VisualDSP++ project demonstrating how to use the Flash Programmer Utility to generate a loader file from the ASM blink program, and burn into flash memory.**
  - **MemDMA:**
    - **ASM based program that configures a register-based MemDMA**
    - **ASM based program that configures a descriptor-based MemDMA**

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- **Demo Programs:**

  - **RTC: ASM based program that generates an interrupt every second and blinks and LED**

  - **UART RS-232 HyperTerminal session: ASM based example that illustrates autobaud detection and UART polling and interrupt operation.**

  - **Video Output: ASM based program that uses the DSP to generate a color bar pattern and store in SDRAM memory, sets up the PPI port and DMA registers, and DMAs the data from SDRAM memory out to the PPI port.**

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ADSP-BF533 EZ-KIT LITE
USB Debugger

- **VisualDSP++ Development Environment Features:**
  - **C and Assembly Source Level Debug**
  - **Load, Single step, Run, Halt**
  - **Set Software Breakpoints**
  - **View and Modify Core and Peripheral Registers**
  - **View and Modify Memory**
  - **Plot Memory**
  - **Fill or Dump Memory**
  - **Statistical Profiling**
  - **Background Telemetry Channel (BTC)**
  - **Trace**
  - **Performance Monitor**

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VisualDSP++ IDDE
Session Dialog Box for an ADSP-BF533 EZ-KIT Lite Session

In Circuit Emulators

In Circuit Emulator

- **Permits debugging at the hardware level**
- **Supports most of the same debug features the Simulator supports**
- **Access to the DSP system through the JTAG serial boundary scan interface**
- **Non- Intrusive operation**
- **Extensive software & hardware breakpoint ranges**
- **VisualDSP Debugging Environment**
- **Supports C/C++ source level debugging**
- **ICE Hardware**
  - **PCI   --   HPPCI-ICE™**
  - **USB   --   USB-ICE & HP USB-ICE**
- **The ICE software drivers are included with VisualDSP++**
  - **The full version**

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HPPCI-ICE

PCI-based emulator for Analog Devices JTAG DSPs

The new High Performance PCI-based emulator offers code download speeds of up to 2.2 MB/sec with the JTAG clocked five times faster than its predecessor as well as the ability to seamlessly exchange real-time data from the host to target application. The PCI–based emulator provides a high-speed emulation solution for Analog Devices (ADI) state-of-the-art JTAG DSPs.

The new high performance PCI-based Emulator consists of a small-shielded pod and cable allowing for a non-intrusive debug interface to all of the ADI JTAG DSPs. The HP PCI-based Emulator auto-detects voltages for 1.8V, 2.5V, 3.3V and 5.0V targets as indicated by the display LEDs. The cable extends 6-feet from the host PC to the emulator pod, and 1-foot from the pod to DSP target. This new cable assembly greatly extends the reach of the emulator, helping to reduce clutter in the hardware lab.

Part Number: ADDS-HPPCI-ICE

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HPPCI-ICE

- **Attributes:**
  - **Plug-n-Play, PCI revision 2.2 compliant**
  - **Multiple emulator support**
  - **Multiple DSP I/O voltage support**
  - **1.8V, 2.5V, and 3.3V compliant and tolerant**
  - **5V tolerant and 3.3V compliant for 5V DSPs**
  - **JTAG clock operation up to 50 MHz**
  - **Multiprocessor support**

- **System Requirements:**
  - **Windows® 98, Windows NT, Windows 2000, or Windows XP**
  - **Intel (or comparable) 166MHz processor**
  - **VGA Monitor and color video card**
  - **50MB free on hard drive**
  - **32 MB RAM**
  - **One available PCI slot**

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USB-Based Emulator and High Performance USB-Based Emulator

Cost-effective USB-based emulator and high speed High Performance (HP) USB-based emulator provide a portable, non-intrusive, target-based debugging solution for ADI JTAG processors and DSPs. These easy-to-use USB-based emulators perform a wide range of emulation functions, including single-step and full speed execution with pre-defined breakpoints, and viewing and/or altering of register and memory contents. The USB and HP USB emulators enable users to communicate with all of the ADI JTAG processors using either a full speed USB 1.0 or high speed USB 2.0 port on the host PC. Applications and data can easily (and rapidly in the case where the HP USB emulator is connected to a high speed USB 2.0 port on users' host PC) be tested and transferred between the emulators and the separately available VisualDSP++™ development and debugging environment.

Part Numbers:

USB-Based Emulator – ADDS-USB-ICE

HP USB-Based Emulator – ADDS-HPUSB-ICE

# USB-Based Emulator and HP USB-Based Emulator - Features

- **Support for all ADI JTAG processors and DSPs**
- **Multiple processor and DSP I/O voltage support with automatic detection**
  - **1.8V, 2.5V, and 3.3V compliant and tolerant**
  - **5V tolerant and 3.3V compliant for 5V processors and DSPs**
- **Multiprocessor support**
- **14-pin JTAG connector**
- **3-meter USB cable for difficult-to-reach targets**
- **CE-certified**
- **USB-Based Emulator – Full speed USB interface and connector**
- **HP USB-Based Emulator – High speed USB 2.0 (backward compatible with full speed USB 1.0) interface and connector**
- **HP USB-Based Emulator – JTAG clock operation up to 50 MHz**

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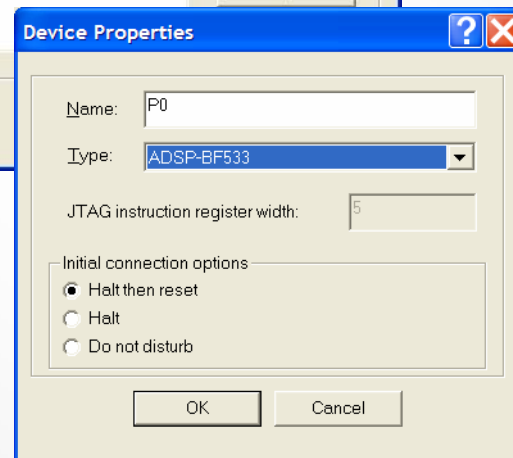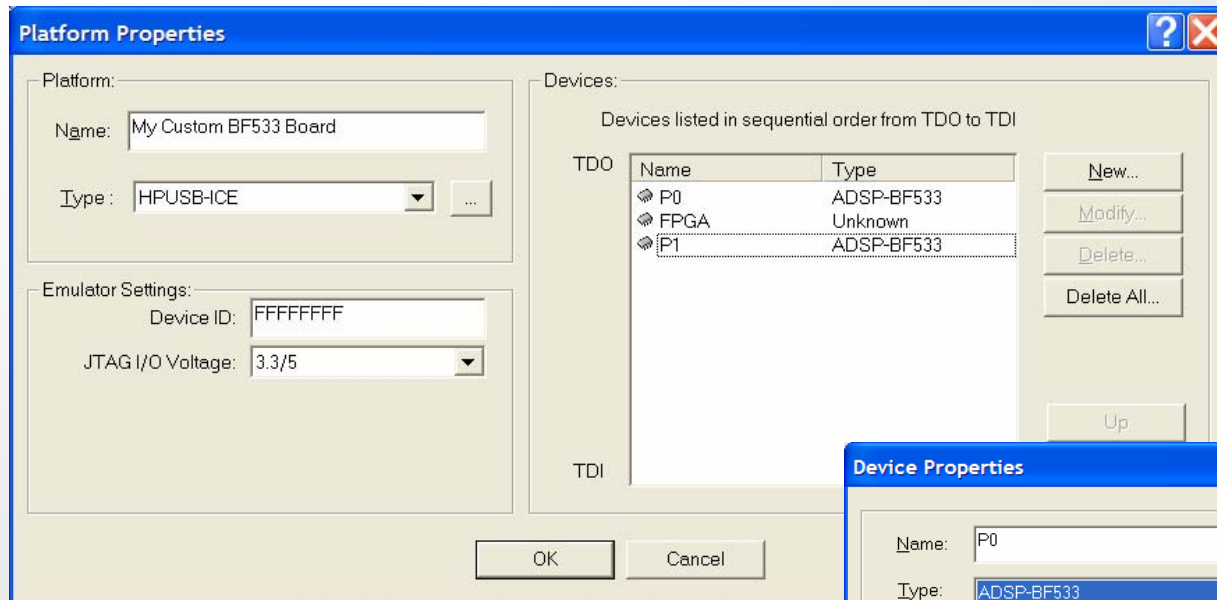ANALOG DEVICES

Configuring the ICE

EZ-ICE Configurator Program

- **Must be run before the user starts the Debugger.**

- **Allows the user to define *PLATFORMS*
  (target boards that the ICE can attach to).**

- **Each *PLATFORM* requires one or more *DEVICES* to be**

  defined. *DEVICES* can include:

  - **Other DSPs**

  - **Any ICs that conform to the JTAG specification**

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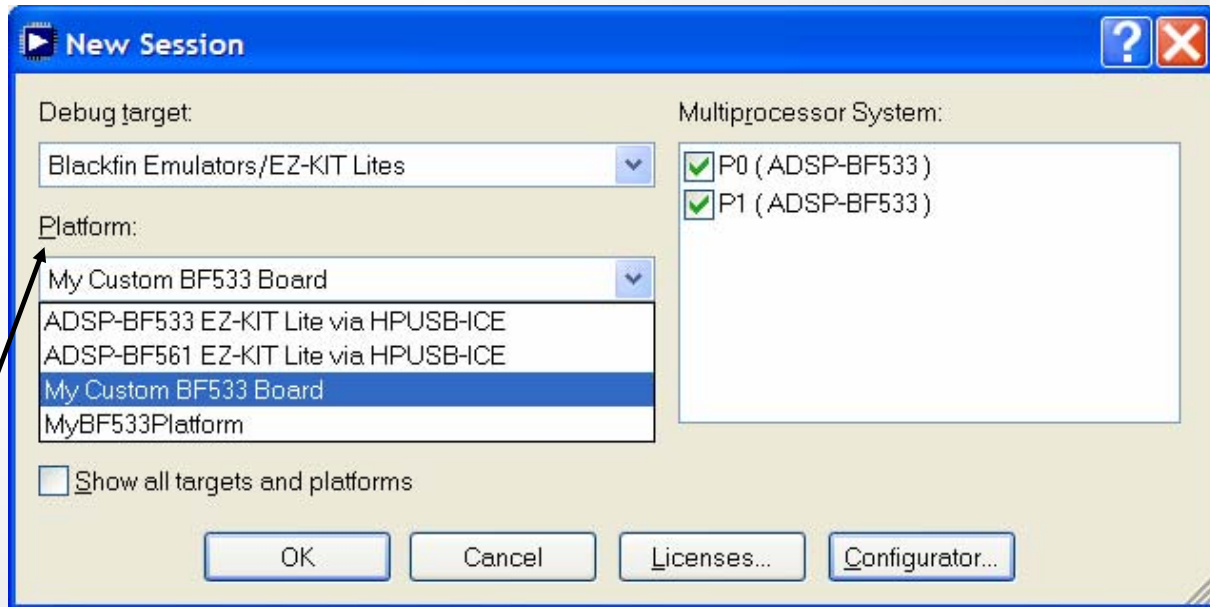**ENGINEERING**

**ANALOG
DEVICES**

JTAG ICE Configurator
Platform Templates Dialog Box
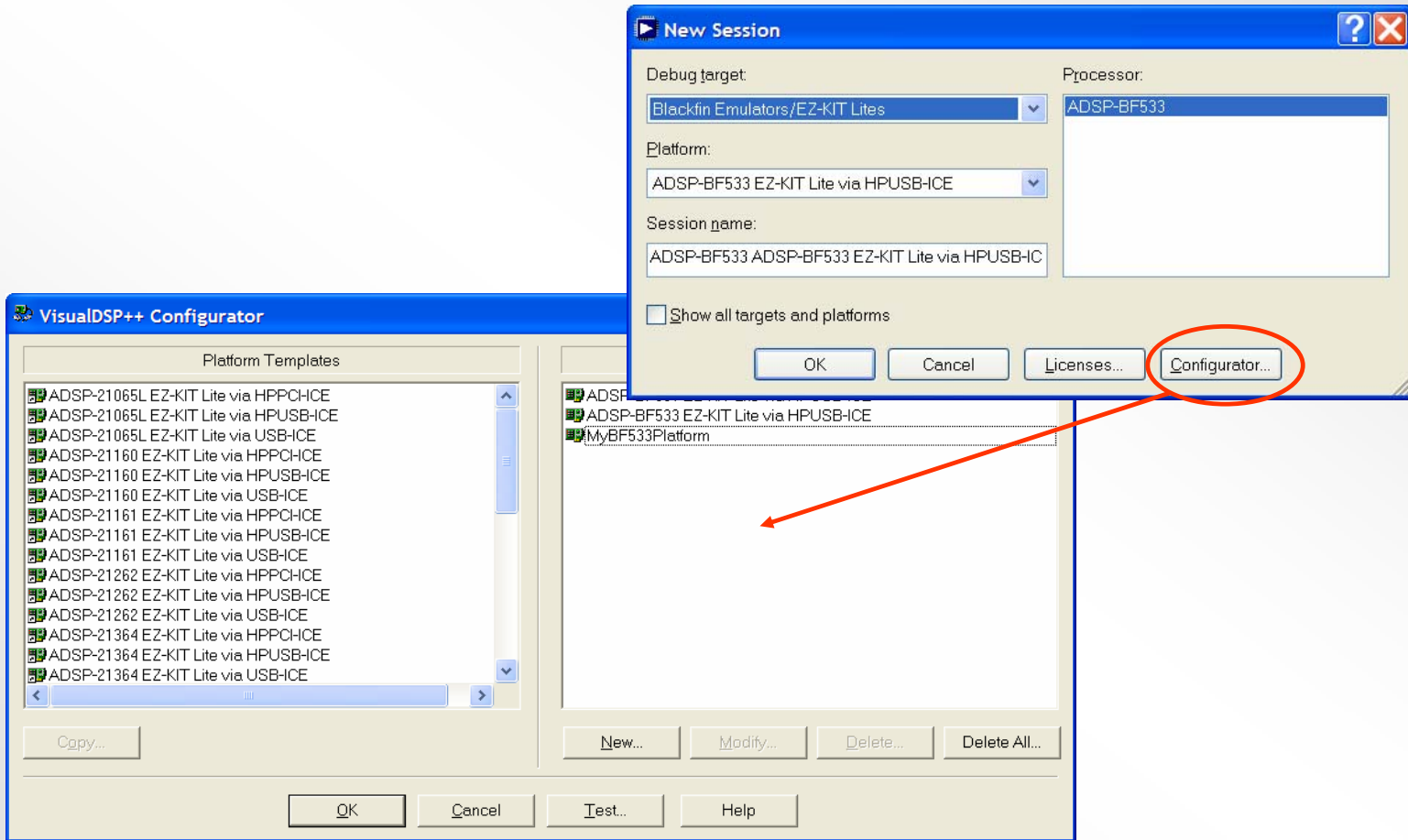
JTAG ICE Configurator
Platform Properties Dialog Box

VisualDSP++ IDDE
Session Dialog Box for an ADSP-BF533 Emulator Session

New Session

Debug target:

Blackfin Emulators/EZ-KIT Lites

Platform:

My Custom BF533 Board

| ADSP-BF533 EZ-KIT Lite via HPUSB-ICE |
| ADSP-BF561 EZ-KIT Lite via HPUSB-ICE |
| My Custom BF533 Board |
| MyBF533Platform |

☐ Show all targets and platforms

Multiprocessor System:

☑ P0 (ADSP-BF533)
☑ P1 (ADSP-BF533)

OK   Cancel   Licenses...   Configurator...

**Select the Platform
you just created**

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