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# USING PICKIT™ 3 IN-CIRCUIT DEBUGGER

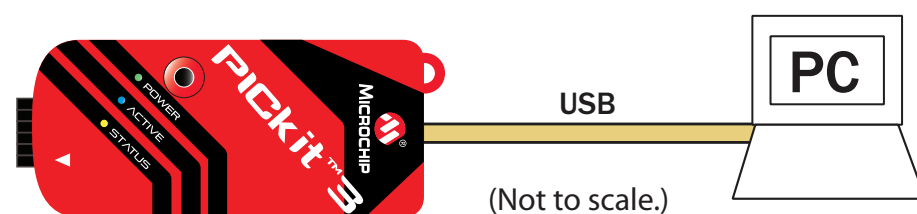
## 1 Install the Latest Software

Install the MPLAB® IDE software onto your PC using the MPLAB IDE CD-ROM or download the software from the MPLAB IDE page of the Microchip web site ([www.microchip.com/MPLAB](http://www.microchip.com/MPLAB)). Check the latest Release Notes for additional information.

## 2 Configure PC USB Communications

Connect the PICKIT™ 3 development programmer/debugger to a PC USB port via a USB cable. PICKIT 3 uses the standard HID USB Windows® driver.

**Note:** If a USB hub is used, the hub must be powered with its own power supply.



## 3 Build Your Project

1. Launch MPLAB IDE.
2. Load your project or use the Project Wizard to create a new one.
4. Build your project based on your configurations and options.
5. Select the PICKIT 3 as either a debugger (*Debugger>Select Tool>PICKIT 3*) or as a programmer (*Programmer>Select Programmer>PICKIT 3*).

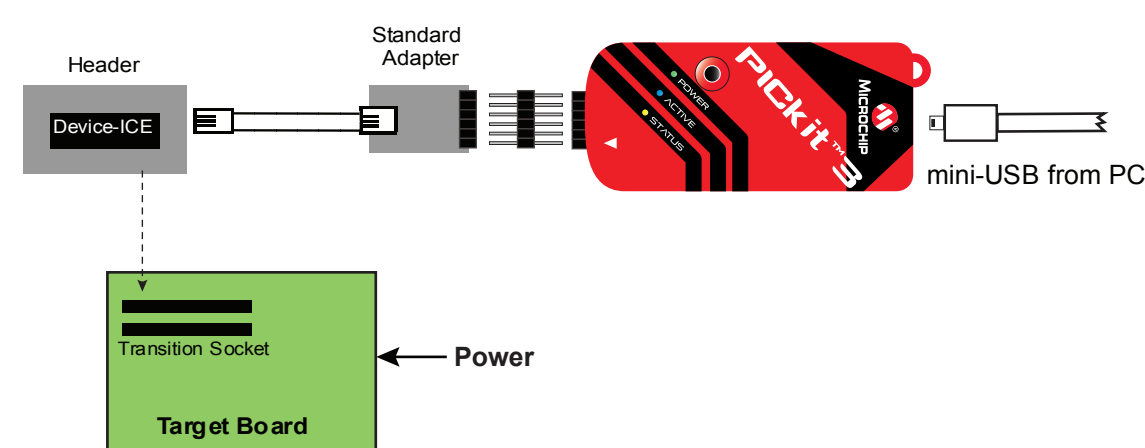
## 4 Connect to Target and Power

1. Attach the PICKIT 3 to the PC using the USB cable, if not already.
2. Attach the communications cable between the debugger and target board.
3. Connect power to the target board.

Typical Debugger System – Device With On-Board ICE Circuitry:



Alternate Debugger System – ICE Device:



## 5 Program and Debug

1. Program your device.
2. As a programmer, PICKIT 3 will automatically run your code. As a debugger, you can run, halt, single step and set breakpoints in your code.

**Note:** For information on Reserved Resources used by the debugger, see the PICKIT 3 on-line help.

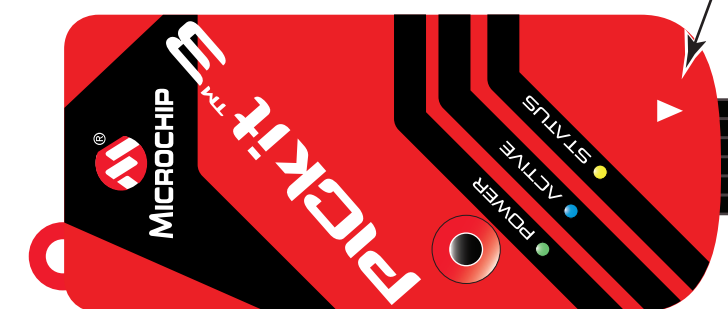
## ADDITIONAL INFORMATION

### Circuitry and Connector Pinouts

Target Connector Pinout

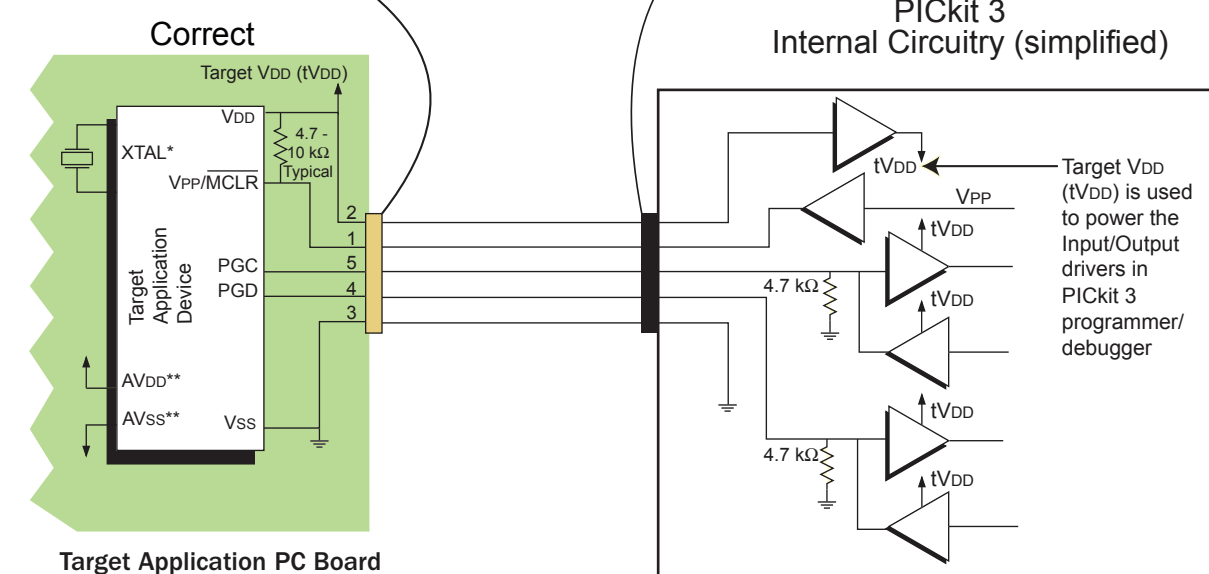
Pin	Signal
1	MCLR/VPP
2	VDD Target
3	VSS Ground
4	ICSPDAT/PGD
5	ICSPCLK/PGC
6	LVP

Pin 1 Indicator



PICKIT 3 Connector Pinout

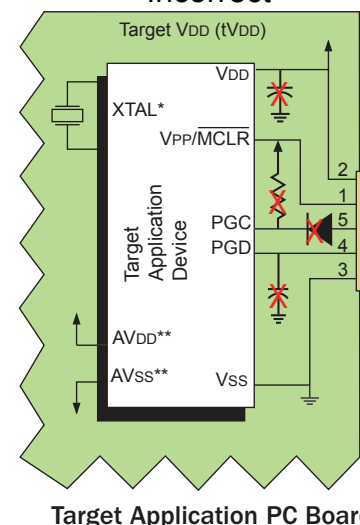
Pin	Signal
1	MCLR/Vpp
2	VDD Target
3	VSS Ground
4	ICSPDAT/PGD
5	ICSPCLK/PGC
6	LVP



\*Target device must be running with an oscillator for the debugger to function as a debugger.  
\*\*If the device has AVDD and AVSS lines, they must be connected for the debugger to operate.

### Target Circuit Design Precautions

Incorrect



- **Do not use multiplexing on PGC/PGD** – they are dedicated for communications to PICKIT 3.
- **Do not use pull-ups on PGC/PGD** – they will divide the voltage levels since these lines have 4.7 kΩ pull-down resistors in PICKIT 3.
- **Do not use capacitors on PGC/PGD** – they will prevent fast transitions on data and clock lines during programming and debug communications.
- **Do not use capacitors on MCLR** – they will prevent fast transitions of Vpp.
- **Do not use diodes on PGC/PGD** – they will prevent bidirectional communication between PICKIT 3 and the target PIC® MCU.

### Recommended Settings

COMPONENT	SETTING
Oscillator	• OSC bits set properly • Running
Power	Supplied by target
WDT	Disabled (device dependent)
Code Protect	Disabled
Table Read Protect	Disabled
LVP	Disabled
BOD	VDD > BOD VDD min
JTAG	Disabled
AVDD and AVSS	Must be connected
PGCx/PGDx	Proper channel selected, if applicable
Programming	VDD voltage levels meet programming specs

**Note:** See the PICKIT 3 User's Guide for more component and setting information.

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