

# dsPICworks™ Visual Algorithm Analyzer

## Summary

dsPICworks is an easy to use data analysis and signal processing package for designs using dsPIC30F microcontrollers. It provides an extensive number of functions encompassing:

- Signal Generation
- Arithmetic Operations and Digital Signal Processing
- One, two and three-dimensional display and measurement capabilities
- Data Import/Export compatible with MPLAB® IDE and MPLAB ASM30 assembler

## Description

### Signal Generation

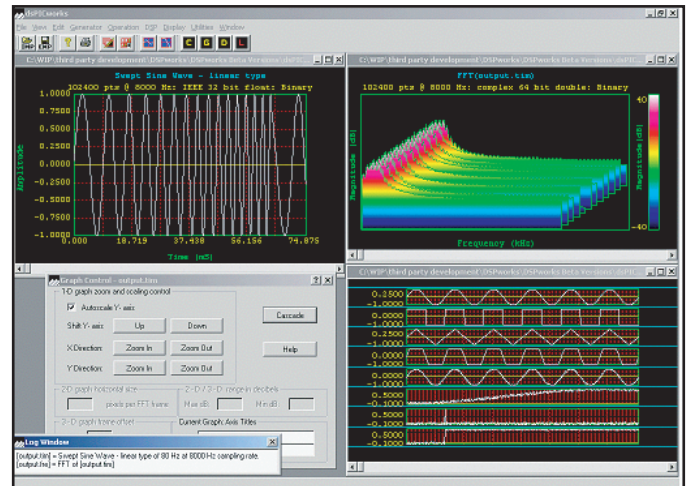
dsPICworks supports an extensive set of signal generators including basic sine, square and triangle wave generators as well as advanced generators for window functions, unit step, unit sample, sinc, exponential and noise functions. Noise, with specified distribution, can be added to any signal. Signals can be generated as 32 bit floating-point or as 16-bit fractional fixed point values for any desired sampling rate. The length of the generated signal is limited only by available disk space. Signals can be imported or exported from or to MPLAB file-register windows. Multi-channel data can be created by a set of multiplexing functions.

### Arithmetic and Digital Signal Processing (DSP) Operations

dsPICworks has a wide range of DSP and arithmetic functions which can be applied to signals. Standard DSP functions include transform operations – FFT and DCT, convolution and correlation, signal decimation, signal interpolation sample rate conversion and digital filtering. Digital filtering is an important part of dsPICworks. It uses filters designed by the sister-application, dsPIC® Digital Filter Design, and applies them to synthesized or imported signals. dsPICworks also features special operations such as signal clipping, scaling and quantization – all of which are vital in real practical analysis of DSP algorithms.

### Display and Measurement

dsPICworks has a wide variety of display and measurement options. Frequency domain data may be plotted in the form of 2-dimensional “spectrogram” and 3-dimensional “waterfall” options. The signals can be measured accurately by a simple mouse-click. The log window shows current cursor coordinates as well as derived values such as difference from last position and signal frequency. Signal strength may be measured over a particular range of frequencies. Special support also exists for displaying multi-channel/multiplexed data. Graphs allow zoom options. The user may choose from a set of color scheme options to customize display settings.



### File Import/Export – MPLAB and MPLAB ASM30 Support

dsPICworks allows data to be imported from the external world in the form of ASCII text or binary files. Conversely, it also allows data to be exported out in the form of files. dsPICworks supports all file formats supported by the MPLAB Import/Export-Table feature. This allows the user to bring in real-world data from MPLAB into dsPICworks for analysis. dsPICworks can also create ASM30 assembler files that can be included into the MPLAB workspace.

## Features

Key features of the dsPICworks Visual Algorithm Analyzer include:

- Wide variety of signal generators – Sine, Square, Triangular, Window functions, Noise
- Extensive DSP functions – FFT, DCT, Filtering, Convolution, Interpolation
- Extensive Arithmetic Functions – Algebraic expressions, data-scaling, clipping etc.
- 1-D, 2-D and 3-D displays
- Multiple Data Quantization and Saturation Options
- Multi-channel data support
- Automatic "script file"-based execution options available for any user-defined sequence of dsPICworks functions
- File Import/Export interoperable with MPLAB IDE
- Digital filtering options support filters generated by dsPIC Digital Filter Design
- ASM30 assembler file option to export data tables into dsPIC30F RAM



**MICROCHIP**

Development Systems

Microchip Technology Incorporated

## Host System Requirements

- PC-compatible system with an Intel Pentium® class or higher processor, or equivalent
- A minimum of 16 MB RAM
- A minimum of 40 MB available hard drive space
- CD ROM drive
- Microsoft Windows® 98, Windows 2000, Windows XP or Windows NT®

## Part Numbers and Ordering Information:

### dsPICworks Visual Algorithm Analyzer

| Part Number | Description                          | Availability |
|-------------|--------------------------------------|--------------|
| SW300023    | dsPICworks Visual Algorithm Analyzer | Q4 2003      |

Free download from the Microchip web site: [www.microchip.com](http://www.microchip.com)

### Development Tools from Microchip

|                                   |  |
|-----------------------------------|--|
| MPLAB® IDE                        | Integrated Development Environment (IDE)     |
| MPASM™ Assembler                  | Universal PICmicro macro-assembler           |
| MPLINK™ Linker/MPLIB™ Librarian   | Linker/Librarian                             |
| MPLAB C17                         | C compiler for PIC17CXXX MCUs                |
| MPLAB C18                         | C compiler for PIC18CXXX MCUs                |
| MPLAB SIM Simulator               | Software Simulator                           |
| MPLAB ICD 2                       | In-Circuit Debugger                          |
| MPLAB ICE 2000                    | Full-featured modular in-circuit emulator    |
| PICSTART® Plus Programmer         | Entry-level development kit with programmer  |
| PRO MATE® II Device Programmer    | Full-featured, modular device programmer     |
| KEELOQ® Evaluation Kit            | Encoder/Decoder evaluator                    |
| KEELOQ Transponder Evaluation Kit | Transmitter/Transponder evaluator            |
| microID™ Developer's Kit          | 125 kHz and 13.56 MHz RFID development tools |
| MCP2510 CAN Developer's Kit       | MCP2510 CAN evaluation/development tool      |

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Microchip Technology Inc. • 2355 W. Chandler Blvd. • Chandler, AZ 85224-6199 USA • (480) 792-7200 • FAX (480) 792-7277

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