In-Circuit Emulator for 8051

- Up to 32 MHz emulation
- Boundout and non bondout support
- Dual ported memory
- Trigger on internal SFR access
- Banking up to 16 MB (256 Banks)
- Interface with all compilers
- C/C++ support
- CASE tools interface
- RTOS support
- Windows9x, NT and Xwindows interface

The TRACE32-ICE51 supports most of the members of the 8051-family from Infineon and others. The system is designed for bondout and non-bondout controllers. Its modular and open technology allows the fast integration of new chip designs.

TRACE32-ICE is a state of the art In-Circuit Emulator, which offers unlimited hardware breakpoints and up to 16MByte dual-ported emulation memory. The real-time trace and trigger work up to the max. speed of the CPU. The analyzer offers selective trace as well as performance analysis and statistic functions.

TRACE32 works with the highest variety of host interfaces. The communication link to the host is done by the printer port, a fibre optic interface or ethernet allowing a high-speed transfer.

TRACE32-ICE51 is also available as a compact 8-bit In-Circuit Emulator.
The ICE-51 is a high-performance emulation system for most of the members of the 8051 family from Siemens and others.
Port Analyzer

On the emulation base there is an extra slot for the TRACE32 Port Analyzer. The Port Analyzer can either be used as a timing analyzer, or as a state analyzer trace extension. Depending on the 8051 derivative, the following additional signals can be traced:

- Port 2
- Port 3
- Port 4
- Port 6
- Port 7
- Port 8

Operating Modes

The Emulator can work in stand-alone mode with internal clock or in active mode with internal or the target clock. On power-down of the target system the emulator tristates its output buffers and isolates its internal emulation circuits.

The operation modes are as follows:

- Reset Down
- Reset Up
- Alone Internal
- Alone External
- Emulation Internal
- Emulation External

Clock

- Operation with external or internal Clock, up to 32 MHz depending on the derivative
- 0.75..35 MHz internal clock can be chosen using an VCO.

Target Clock and Voltage Monitoring

This feature prevents failures caused by missing clock or undervoltage.
**Dual-Port Access**

All TRACE32 memories are dual-ported. The dual-port access makes it possible to display and modify the contents of the overlay memory, to set or delete breakpoints or use the flag memory while the application is running in real-time. All modes do not touch real time program execution. However for different demands the user may choose different access modes.

The dual-port access to the emulation memory has 4 different modes:
- Slow
- Fast
- Advanced (for high speed emulation)
- Denied (no dual port access)

**Memory Banking**

To extend the limited address space of the 8051 kernel, sometimes external memory must be added. The TRACE32-ICE51 supports nearly all additional memory constructions up to 16MByte.

- Max. 256 banks
- With external bank logic
- With internal bank logic
- Banked EPROM

For an external bank logic a separate input probe is needed.
Background Task

The background task allows:

- To process interrupts
- To maintain the refresh of a target DRAM while the emulation is stopped.

HLL debugging

The TRACE32 debugger provides an interface to C, PASCAL, and PLM for all standard compilers. For more information on the supported compilers refer to the section “Debug Interfaces”.

Full support in real-time for:

- Single chip, external memory only and mixed memory applications
- Break-before-line operation
- HLL single step in real-time
- Trigger and trace on local variables
- Trigger on bit variables

Dedicated Breakpoints

To react to accesses to internal SFRs and to memory area, there are several additional break and trigger capabilities.

- Bit write direct
- Bit read direct
- Byte read direct
- Byte write direct
Exception Control

The TRACE32 exception controller allows you to permanently activate an exception, to enable or disable specific exceptions, or to stimulate an exception.

Real-Time Trace and Trigger

In conjunction with the trace analyzer, there are powerful trace and trigger capabilities during real time program execution. Nearly unlimited combinations of address, data, access type, counter results and additional external signals, allow to solve nearly all often needed trace, break and count requirements of the user.

- Trace 32K by 88/120bit
- Timestamp 25/100ns
- 3 Universal counter
- Independent trigger unit
- Statistics
- Performance analysis
Peripheral Window

- Display of onchip peripherals
- User definable display of the onchip peripherals
- Definition is done interactive supported by softkeys
- Pull down menus for settings
- Additional description for each field
Modules Overview

tbd
Debug Interfaces

TRACE32-PowerView supports most compilers, real-time operation systems and debuggers. New integrations are mostly done on customers request. If your compiler or RTOS is not supported now, please ask us!

Compiler Support

<table>
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<tr>
<th>CPU</th>
<th>Language</th>
<th>Compiler</th>
<th>Company</th>
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# RTOS Support

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# Debugger Support

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<td>UML DEBUGGER</td>
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<td>VISUAL BASIC INTERFACE</td>
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<td>LABVIEW</td>
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<td>Timing Architects GmbH</td>
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<tr>
<td>VECTORCAST CODE COVERAGE</td>
<td>Vector Software</td>
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Operation Voltage and Frequency

The maximum operation frequency of TRACE32-ICE depends on:

- The max. frequency of the CPU
- The access time of the overlay memory (15ns or 35ns)
- The mapper mode (Slow or Fast)
- The number of waitstates (WO = 0 waitstates, W1 = 1 waitstate)
- The dual-port access mode

Denied Access
Dimensions

Module Dimensions

tbd
Connectors

On each emulation module there are half-size connectors to:

- Connect the emulation module directly to the target by providing the corresponding connectors also on the target hardware.

- Connect a standard adapter from Emulation Technology, YAMAICHI, AMP, TOKYO ELETECH etc.

The following table lists the physical dimensions of these connectors.

| Dimensions | tbd |
Adapter

The adapters connect in different ways

- With Clip-Over Adapters the CPU can stay on the target board.
- With Solder-ON adapters the CPU must be removed

- YAMAICHI and AMP adapters fit to the CPU socket

The following table lists the physical dimensions of these adapters.

Not necessary.
Available Tool Chain

TRACE32 provides a complete set of development tools for this family. This includes:

- The In-Circuit Emulator TRACE32-ICE
- The high speed RISC Emulator TRACE32-FIRE
- The BDM/JTAG/ONCE etc. based In-Circuit Debugger TRACE32-ICD
- The ROM Monitor based In-Circuit Debugger TRACE32-ICD
- The ICD Trace, a trace extension to the BDM/JTAG debuggers or ROM monitors
- Evaluation boards, which can be used until the target hardware is available.
- The Instruction Set Simulator (SIM), a software tool for code test without any hardware

The following list give an overview which development tools are available for the specific derivatives of this family.

TBD
Order Information

Module Description
Detailed Order Information
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