

In-Circuit Emulator for 68HC05 and 68HC08

- Works with Cosmic, Metrowerks, Tasking and other compilers
- Up to 8MHz bus speed
- Support for 5V and 3.3V
- Dummy cycle blank-out in trace
- On chip EEPROM access
- Dual ported-memory
- Windows9x, NT and X windows interface

MC68HC05B16
MC68HC05B32
MC68HC05C
MC68HC05D
MC68HC05X
MC68HC08AB
MC68HC08AS
MC68HC08AT
MC68HC08AZ
MC68HC08AZ0
MC68HC08GP
MC68HC08XL36
MC68HC705-X32

TRACE32-ICE08 supports most members of the 68HC05 and 68HC08 family from Motorola. The modular and open technology of the system 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.

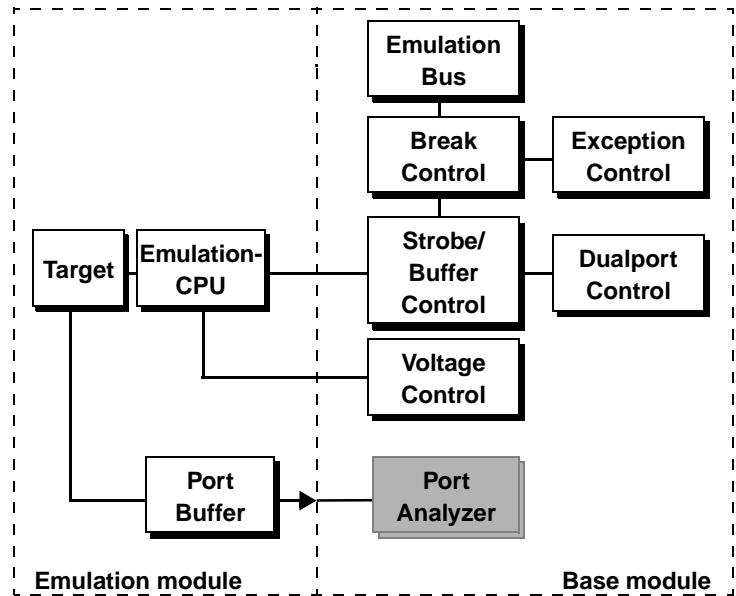
The system offers an interface to all C compilers.

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-ICE08 is also available as a compact 8-bit In-Circuit Emulator.

Features

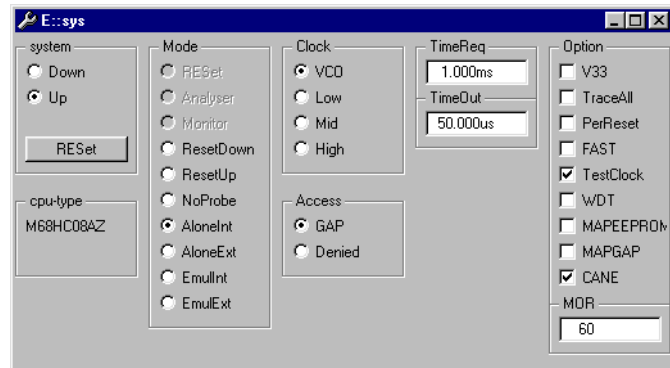
Basics of Operation



The ICE-08 probe is a high-performance emulation system for many derivatives of the 68HC08 and the 68HC05 family. The change between different CPU types is done by chang-

ing the adapter board. The probe supports high-speed emulation. It runs together with the 8 bit controller ECC8 or the 32 bit controller ECU32.

Operating Modes



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

Max. Operation Frequency

- 8 MHz Bus Clock

Emulation Mode

- Single-Chip

Multitask Debugging

- 1 foreground task
- 1 background task

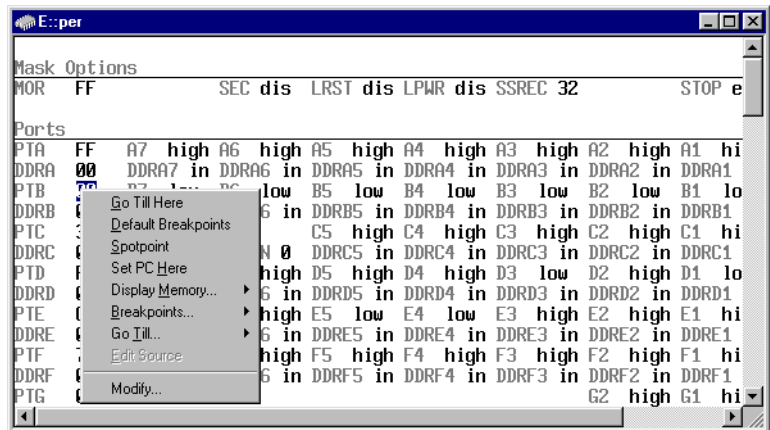
Trace Control

- TraceReset
- TraceWait
- TraceAll
- By default no prefetch or idle cycles are traced

Voltage and Clock Monitors for the Target System

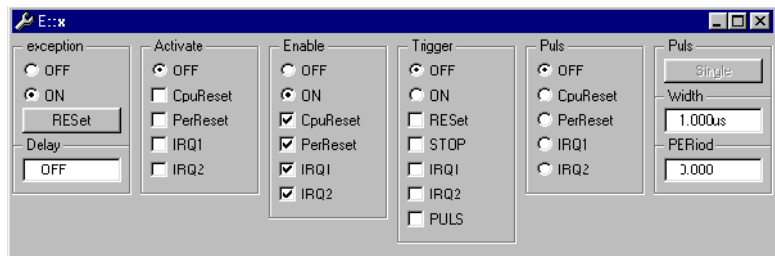
- 3.3 ... 5V Operation
- Clock monitor may be switched off

Peripheral Window



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

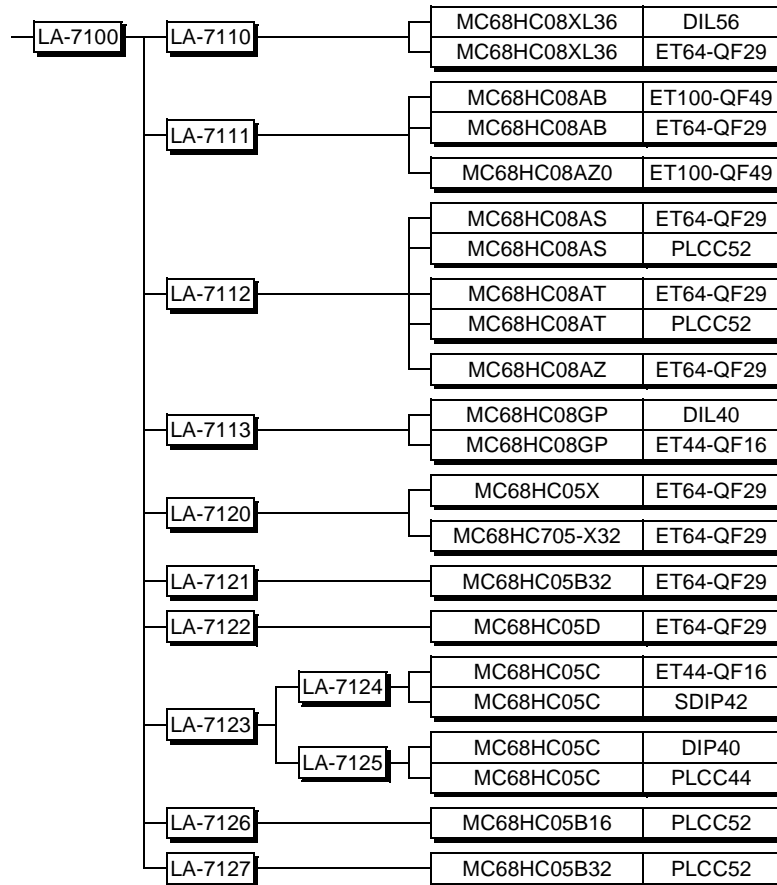
Exception Control



Exception system is used to control and simulate all special CPU lines like RESET or interrupt inputs. This is especially useful during the development phase, allowing to disable CPU input lines, or to simulate certain events.

- Static Exception Setting
 - Reset
- Target Exception Control
 - Reset
 - IRQ1
 - IRQ2
- Exception Trigger
 - Reset
 - IRQ1
 - IRQ2
 - Simulation
- Exception Simulation
 - Reset
 - IRQ1
 - IRQ2

Modules Overview



Debug Interfaces

TRACE32-PowerView supports most compilers, realtime 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

Language	Compiler	Company	Option	Comment
C	CX68HC08	Cosmic	COSMIC	
C	HICROSS-68HC08	Freescale	HICROSS	

RTOS Support

Name	Company	Comment
OSEK	-	via ORTI
ProOSEK	3Soft	via ORTI
uC/OS-II	Micrium Inc.	2.0 to 2.8

Debugger Support

CPU	Debugger	Company	Host
ALL	X-TOOLS / X32	blue river software	Windows
ALL	CODEWRIGHT	Borland	Windows
ALL	EASYCODE	EASYCODE GmbH	Windows
ALL	ECLIPSE	Eclipse.org	Windows
ALL	LDRA TOOL SUITE	LDRA Software Techn.	Windows
ALL	ATTOL TOOLS	MicroMax	Windows
ALL	VISUAL BASIC INTERFACE	Microsoft	Windows

CPU	Debugger	Company	Host
ALL	LABVIEW	NATIONAL INSTRUMENTS	Windows
ALL	CODE::BLOCKS	Open Source	-
ALL	RAPITIME	Rapita Systems Ltd.	Windows
ALL	DA-C	RistanCASE	Windows
ALL	RHAPSODY IN MICROC	Telelogic	Windows
ALL	RHAPSODY IN C++	Telelogic	Windows
ALL	WINDOWS CE PLATF. BUILDER	Windows	Windows

Operation Voltage and Frequency

Emulation Frequency

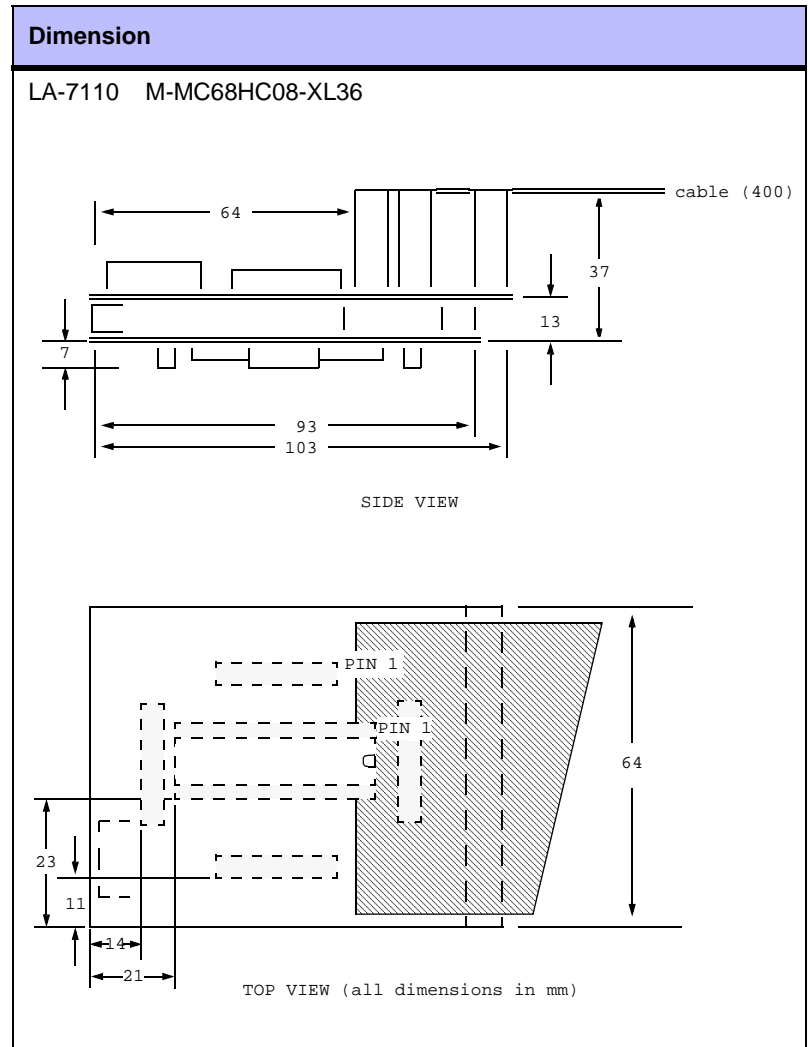
Module	CPU	FREQ.
LA-7126	MC68HC05B16	4.5+
LA-7121	MC68HC05B32	4.5+
LA-7123	MC68HC05C	4.5+
LA-7122	MC68HC05D	4.5+
LA-7120	MC68HC05X	4.5+
LA-7111	MC68HC08AB	8.0+
LA-7112	MC68HC08AS	8.0+
LA-7112	MC68HC08AT	8.0+
LA-7111	MC68HC08AZ	8.0+
LA-7110	MC68HC08XL36	8.0+
LA-7120	MC68HC705-X32	4.5+

Operation Voltage

All modules can work from 3.0V to 5.5V

Dimensions

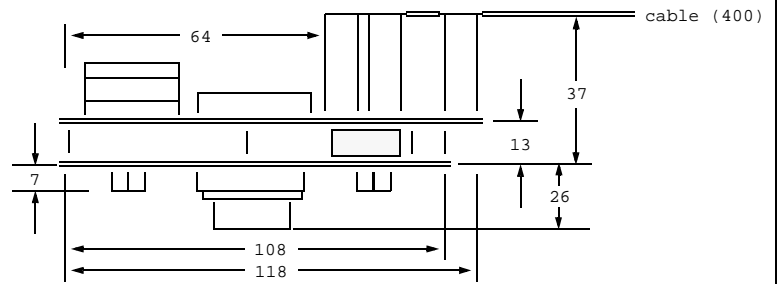
Module Dimensions



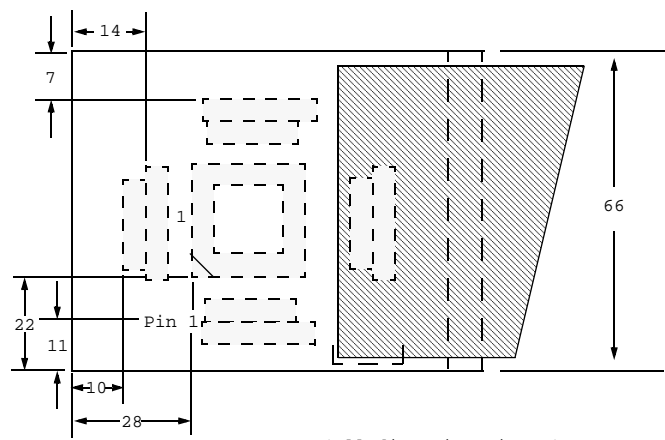
Dimension

LA-7111 M-MC68HC08-AZ0/AB0

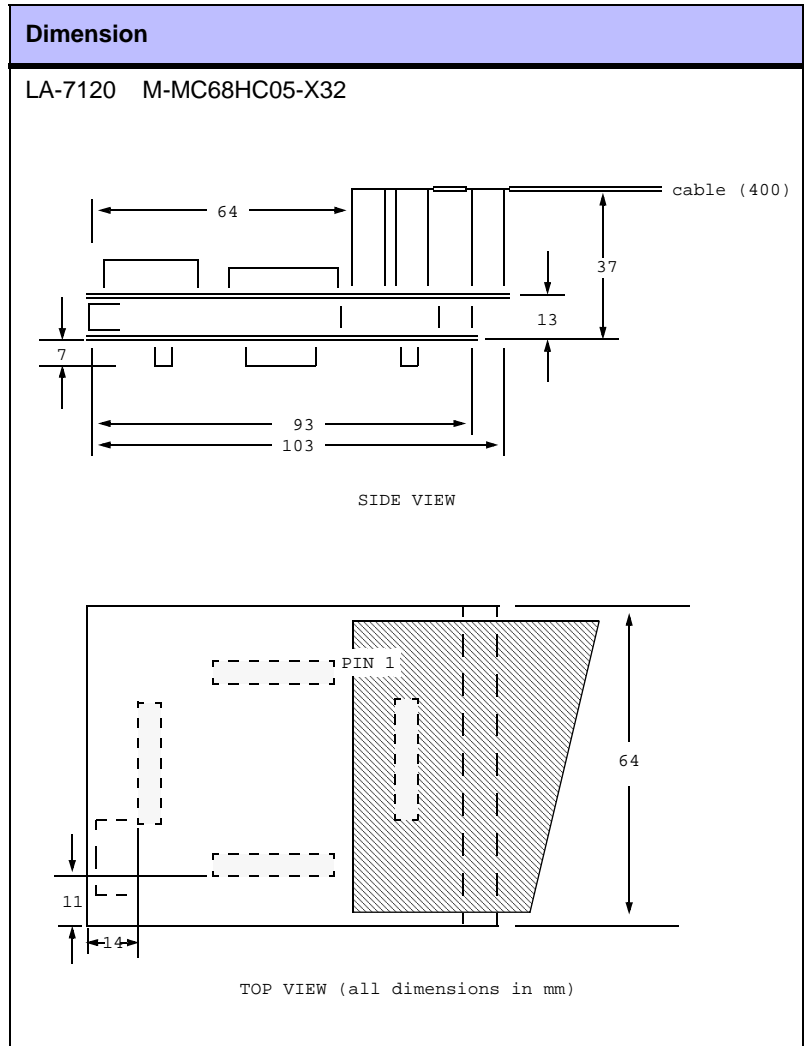
LA-7112 M-MC68HC08-AT



SIDE VIEW



TOP VIEW (all dimensions in mm)

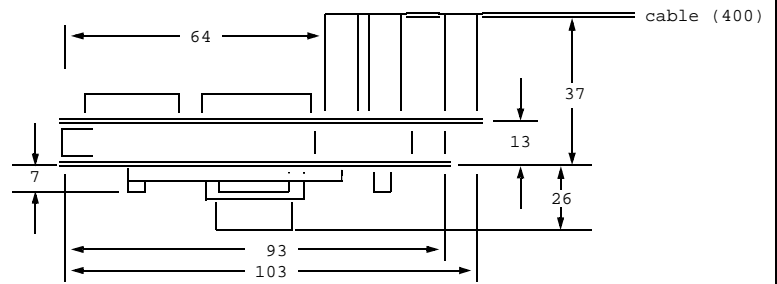


Dimension

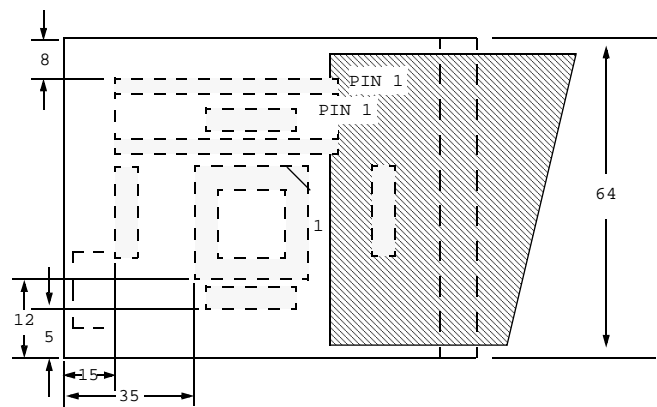
LA-7121 M-MC68HC05-B32-ET64

LA-7126 M-MC68HC05-B16

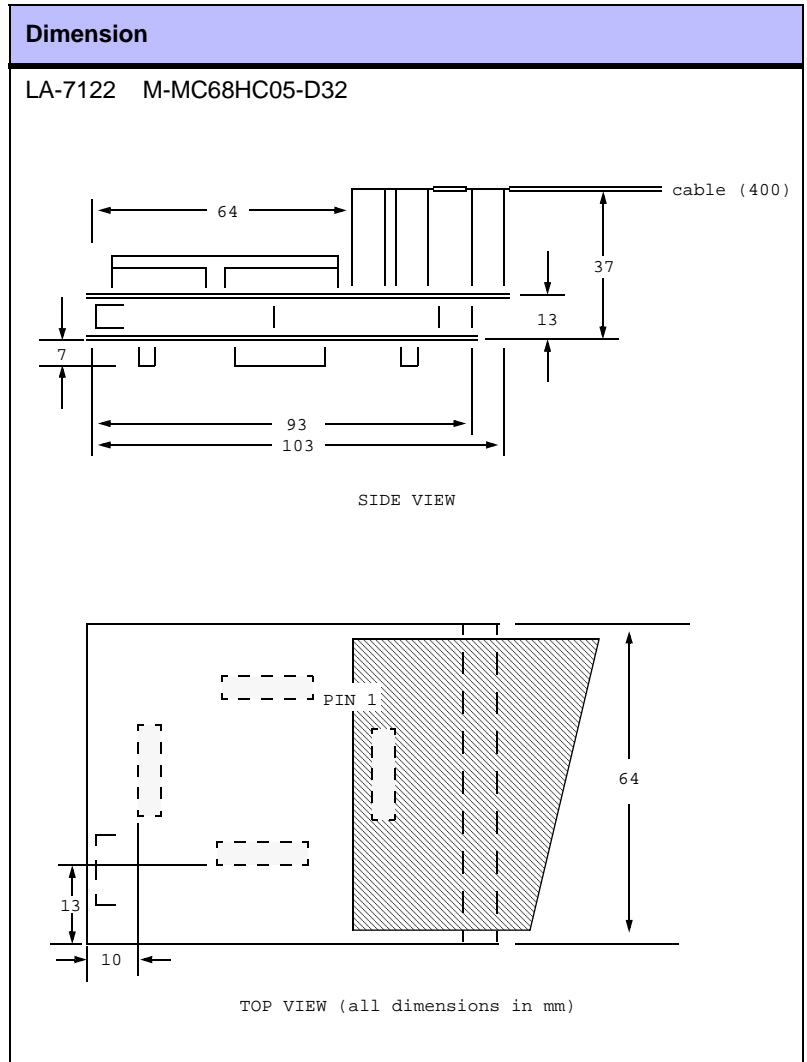
LA-7127 M-MC68HC05-B32-PLCC

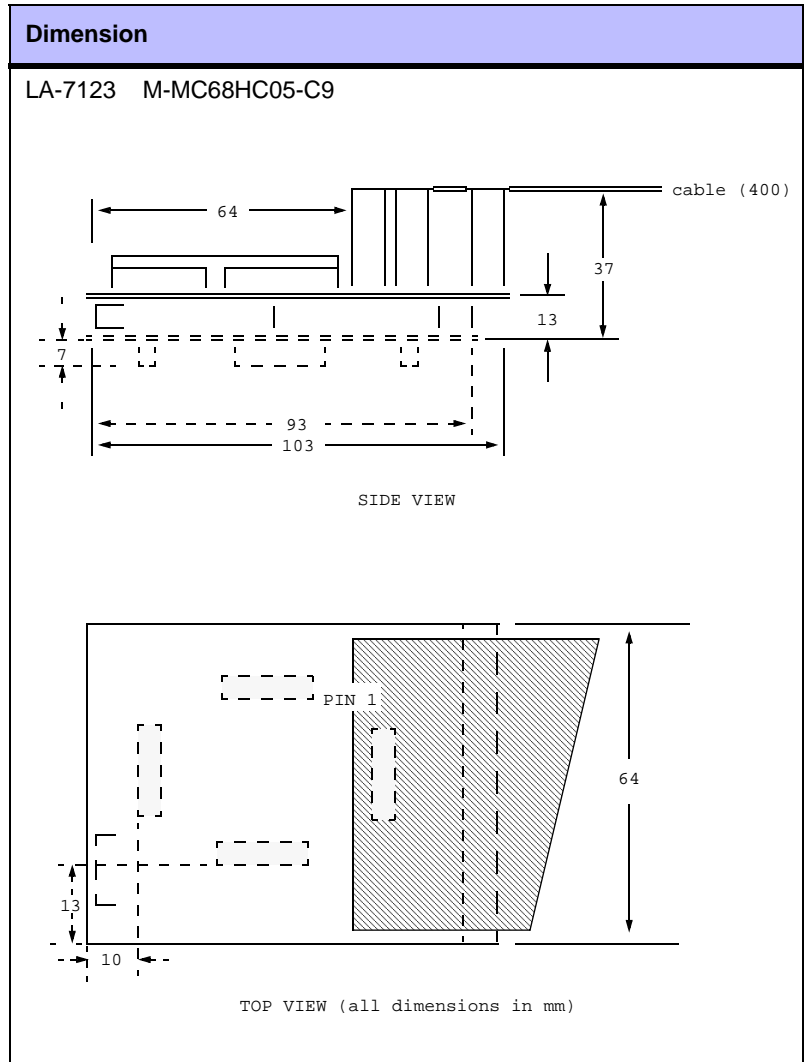


SIDE VIEW



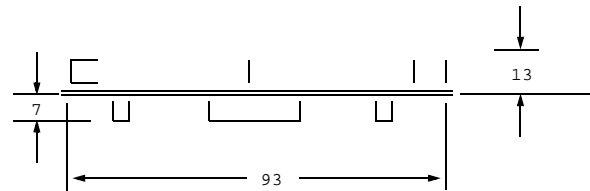
TOP VIEW (all dimensions in mm)



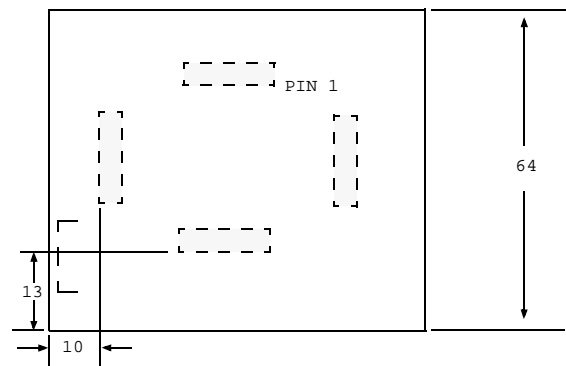


Dimension

LA-7124 A-MC68HC05-C9-E/S



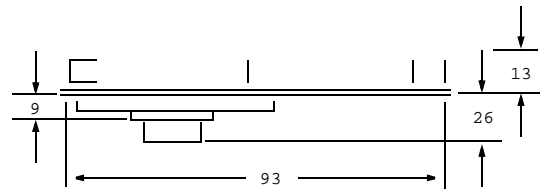
SIDE VIEW



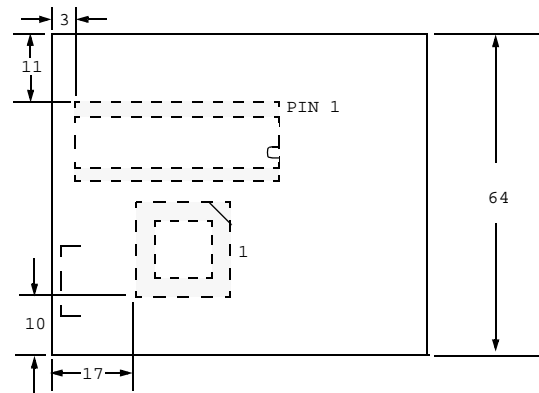
TOP VIEW (all dimensions in mm)

Dimension

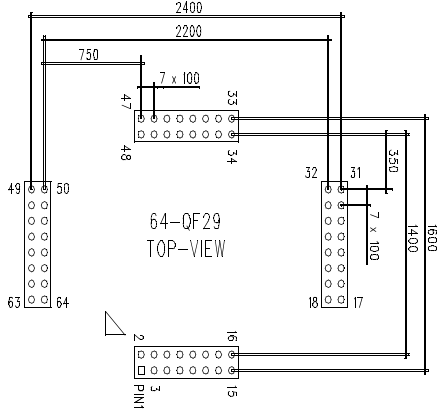
LA-7125 A-MC68HC05-C9-P/D



SIDE VIEW



TOP VIEW (all dimensions in mm)

CPU	Dimension
MC68HC05B32 MC68HC05D MC68HC05X MC68HC08AB MC68HC08AS MC68HC08AT MC68HC08AZ MC68HC08XL36 MC68HC705-X32	<p data-bbox="927 371 1054 398">ET64-QF29</p>  <p data-bbox="975 461 1417 875"> The diagram shows a top view of the ET64-QF29 CPU package. It is a square package with a total width of 2400 and a total height of 1600. The package has four pins on each side, labeled 1 through 16. The top pins are labeled 1, 2, 3, and 4. The right pins are labeled 5, 6, 7, and 8. The bottom pins are labeled 9, 10, 11, and 12. The left pins are labeled 13, 14, 15, and 16. The package is labeled '64-QF29 TOP-VIEW'. Dimensions are given in millimeters: 2400 (total width), 2200 (width of the main body), 1600 (total height), 750 (width of the top-left corner), 7 x 100 (width of the top-right corner), 7 x 100 (width of the bottom-right corner), 350 (width of the bottom-right corner), 47 (width of the top-left corner), 48 (width of the top-left corner), 33 (width of the top-right corner), 34 (width of the top-right corner), 32 (width of the bottom-right corner), 31 (width of the bottom-right corner), 18 (width of the bottom-right corner), 17 (width of the bottom-right corner), 49 (width of the left side), 50 (width of the left side), 63 (width of the left side), 64 (width of the left side), 16 (width of the bottom side), 15 (width of the bottom side), and 2 (width of the bottom side). </p>

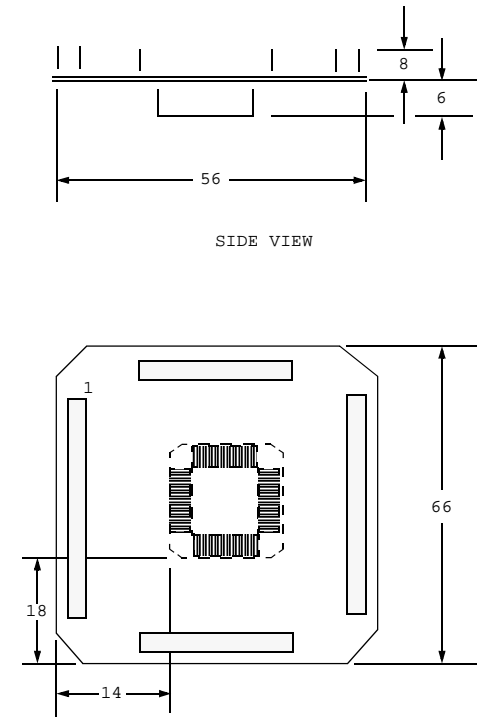
Adapter

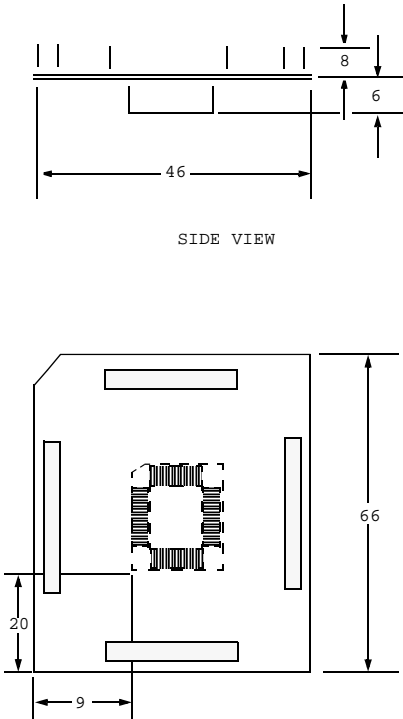
The adapters connect in different ways

- 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.

Socket CPU	Adapter
ET100-QF49 MC68HC08AB MC68HC08AZ0	YA-1091 ET100-EYA-QF49 Emul. Adapter for YAMAICHI socket ET100-QF49  <p style="text-align: center;">SIDE VIEW</p> <p style="text-align: center;">TOP VIEW (all dimensions in mm)</p>

Socket CPU	Adapter
<p>ET64-QF29</p> <p>MC68HC05B32 MC68HC05D MC68HC05X MC68HC08AB MC68HC08AS MC68HC08AT MC68HC08AZ MC68HC08XL36 MC68HC705-X32</p>	<p>YA-1121 ET64-EYA-QF29 Emul. Adapter for YAMAICHI socket ET064-QF29</p>  <p>SIDE VIEW</p> <p>TOP VIEW (all dimensions in mm)</p>

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.

CPU	ICE	FIRE	ICD DEBUG	ICD MONITOR	ICD TRACE	POWER INTEGRATOR	INSTRUCTION SIMULATOR
MC68HC05B16	YES						YES
MC68HC05B32	YES						YES
MC68HC05C	YES						YES
MC68HC05D	YES						YES
MC68HC05X	YES						YES
MC68HC08AB	YES						YES
MC68HC08AS	YES						YES
MC68HC08AT	YES						YES
MC68HC08AZ	YES						YES
MC68HC08AZ0	YES						YES
MC68HC08GP	YES						YES
MC68HC08XL36	YES						YES
MC68HC705-X32	YES						YES

Order Information

Module Description

OrderNo Code	Text
LA-7100 ICE-08	ICE-08 Base Module emulation module for 68HC08 and 68HC05 families, exception generator, code sequencer, slot for port analyzer
LA-7110 M-MC68HC08- XL36	Module MC68HC08-XL36 supports MC68HC08 up to 8 MHz Bus Frequency in microcontroller mode target connection ET64-QF29
LA-7111 M-MC68HC08- AZ0/AB0	Module MC68HC08-AZ0/AB0 supports only MC68HC08-AZ0 and only MC68HC08-AB0 up to 8 MHz Bus Frequency target connection ET64-QF29 and ET100-QF49
LA-7115 M-MC68HC08- AZ60A	Module MC68HC08-AZ60A supports MC68HC08-AZ60A (MC68HC08-AT, -AZ16 .. -AZ60 and -AS derivatives without ROM protect) up to 8 MHz Bus Frequency target connection ET64-QF29 and PLCC52 (-AS)
LA-7112 M-MC68HC08- AT	Module MC68HC08-AT/AS/AZ16-AZ60 supports MC68HC08-AT, -AZ16 .. -AZ60 and -AS derivatives up to 8 MHz Bus Frequency target connection ET64-QF29 and PLCC52 (-AS)
LA-7113 M-MC68HC08- GP	Module MC68HC08-GP supports MC68HC08-GP20, MC68HC08-GP32 target connection DIL40, ET44-QF16 5V, 8 MHz bus frequency
LA-7116 M-MC68HC08- GT	Module MC68HC08-GT supports MC68HC08-GT16 target connection DIL40, ET44-QF16 5V, up to 8 MHz bus frequency
LA-7117 M-MC68HC08- AB32	Module MC68HC08-AB32 supports MC68HC08-AB32 up to 8 MHz Bus Frequency target connection ET64-QF29
LA-7120 M-MC68HC05- X32	Module MC68HC05-X32 supports MC68HC05-X up to 4.5 MHz Bus Frequency in microcontroller mode target connection ET64-QF29
LA-7121 M-MC68HC05- B32-ET64	Module MC68HC05-B32/ET64 supports MC68HC05-B up to 4.5 MHz Bus Frequency in microcontroller mode target connection ET64-QF29
LA-7122 M-MC68HC05- D32	Module MC68HC05-D32 supports MC68HC05-D up to 4.5 MHz Bus Frequency in microcontroller mode target connection ET-44 target connection DIL-40

OrderNo Code	Text
LA-7123 M-MC68HC05-C9	Module MC68HC05-C9 supports MC68HC05-C up to 4.5 MHz Bus Frequency in microcontroller mode target connection: adapter LA-7124 or LA-7125
LA-7124 A-MC68HC05-C9-E/S	Adapter MC68HC05-C9 ET/SDIP target adapter for LA-7123 target connection: ET 44 target connection: SDIP 42
LA-7125 A-MC68HC05-C9-P/D	Adapter MC68HC05-C9 PLCC/DIP target adapter for LA-7123 target connection: PLCC 44 target connection: DIP 40
LA-7128 M-MC68HC05-JJ/JP	Module MC68HC05-JJ/JP supports MC68HC05-JJ/JP up to 2.1 MHz Bus Frequency in microcontroller mode target connection DIL-20 target connection DIL-28 target connection SO-20
LA-7126 M-MC68HC05-B16	Module MC68HC05-B16 supports MC68HC05-B16 up to 4.5 MHz Bus Frequency in microcontroller mode supports also MC68HC05-B32 by changing the CPU target connection PLCC52
LA-7127 M-MC68HC05-B32-PLCC	Module MC68HC05-B32/PLCC52 supports MC68HC05-B32 up to 4.5 MHz Bus Frequency in microcontroller mode supports also MC68HC05-B16 by changing the CPU target connection PLCC52

Detailed Order Information

Order No.	Code	Text
LA-7100	ICE-08	ICE-08 Base Module
LA-7110	M-MC68HC08-XL36	Module MC68HC08-XL36
LA-7111	M-MC68HC08-AZ0/AB0	Module MC68HC08-AZ0/AB0
LA-7115	M-MC68HC08-AZ60A	Module MC68HC08-AZ60A
LA-7112	M-MC68HC08-AT	Module MC68HC08-AT/AS/AZ16-AZ60
LA-7113	M-MC68HC08-GP	Module MC68HC08-GP
LA-7116	M-MC68HC08-GT	Module MC68HC08-GT
LA-7117	M-MC68HC08-AB32	Module MC68HC08-AB32
LA-7120	M-MC68HC05-X32	Module MC68HC05-X32
LA-7121	M-MC68HC05-B32-ET64	Module MC68HC05-B32/ET64
LA-7122	M-MC68HC05-D32	Module MC68HC05-D32
LA-7123	M-MC68HC05-C9	Module MC68HC05-C9
LA-7124	A-MC68HC05-C9-E/S	Adapter MC68HC05-C9 ET/SDIP
LA-7125	A-MC68HC05-C9-P/D	Adapter MC68HC05-C9 PLCC/DIP
LA-7128	M-MC68HC05-JJ/JP	Module MC68HC05-JJ/JP
LA-7126	M-MC68HC05-B16	Module MC68HC05-B16
LA-7127	M-MC68HC05-B32-PLCC	Module MC68HC05-B32/PLCC52
Additional Options		
TO-1250	ET100-ETO-QF49	Emul. Adapter for T0 socket ET100-QF49
TO-1255	ET100-ETO-SE	Emul. Adapter for T0 socket ET100-SE 0.4mm
YA-1091	ET100-EYA-QF49	Emul. Adapter for YAMAICHI socket ET100-QF49
ET-1092	ET100-SET-QF49	Surface Mountable Adapter for ET100-QF49
TO-1251	ET100-STO-QF49	Emul. Adapter TO-surface mount. ET100-QF49
TO-1340	ET44-ETO-QF16	Emul. Adapter for T0 socket ET44-QF16
TO-1341	ET44-STO-QF16	Emul. Adapter TO-surface mount. ET44-QF16
TO-1240	ET64-ETO-QF29	Emul. Adapter for T0 socket ET64-QF29

Order No.	Code	Text
YA-1121	ET64-EYA-QF29	Emul. Adapter for YAMAICHI socket ET064-QF29
ET-1122	ET64-SET-QF29	Surface Mountable Adapter for QF29
TO-1241	ET64-STO-QF29	Emul. Adapter TO-surface mount. ET64-QF29
LA-6450	PA64	Port Analyzer
LA-1921	PLCC-BLOCK-44	PLCC Block 44 Pins
LA-1922	PLCC-BLOCK-52	PLCC Block 52 Pins
LA-1925	PLCC-TEST-ADAPTER-44	PLCC Test Adapter 44 Pins
LA-8805	SIM-08	Instruction Set Simulator for HC05/HC08
YA-1160	YA-SOCKET-QF29	YAMAICHI Socket ET64-QF29

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