
POD Hardware Reference

Motorola 68EC000 ActivePOD rev. C

Ordering code	IC30451
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POD Hardware Reference

Active POD

Active PODs

Active PODs can be used connected to iC3000(HS) or iC4000 Emulator through the iBUS Active Emulator/Trace interface.

The following elements of interest are located on all Active PODs:

- emulation CPU - acts on behalf of target's CPU. On some PODs you must use the same CPU on the POD as it is used on the target (see your POD reference page). In such cases, remove the CPU from the POD and insert the CPU that you use in the target system, in its place.
- red LED - lit when CPU is running
- green LED - lit when Emulator is ready for emulation

For every POD following information is given:

- ordering code;
- information on available speed versions and required Emulator access time;
- size and position of PIN1 on the target adapter relative to bottom left corner.

The memory range specifies the range of addresses that a POD can address. If this specification is omitted the default 1MB is assumed.

PIN1 location on every component is also marked on the circuit board with a square block (PIN 1 pin is soldered a square block, other pins have a round pin).

Trace

The ActivePOD has integrated Trace capabilities that can be utilised if the interface iCard with trace capabilities is used. See the Trace section in the Hardware User's Guide for general information on Trace and POD information for specific information on trace signals (AUX, TrigOut, etc.).

Final Target Application Test

After the application is being more or less debugged and final application test is performed, it is recommended to remove all breakpoints and to close all debug windows (memory, SFR, watch...) to eliminate any possible influence of the emulator on the CPU execution. There were cases where the target application has been behaving differently with the target CPU inserted or the POD connected. If the debugger is configured to update some debug windows in real-time, the user may not be aware of that the CPU execution may be slightly disturbed. However, when the monitor access type is configured to update debug windows while the CPU is running, the CPU execution is disturbed significantly, depending on the necessary number of memory accesses to update opened debug windows.

There are cases when internal peripheral device requires read access of the particular register during the device configuration. The user has had SFR window opened and the necessary read access was actually performed by the debugger and not by the application as it would be correct. Therefore, the application was working fine with the emulator, but a standalone application didn't work correctly, as the peripheral device was not configured properly.

POD Hardware Reference

ActivePOD Emulator Unit II

Ordering code	IC30250
Board dimensions (mm)	98x82



This Emulator Unit is used on some ActivePODs and is used with an ActiveEmulator II iCard.

The following elements of interest are located on the Emulator Unit:

- Green LED LD1 - Emulation - lit when Emulator is ready for emulation
- Red LED LD2 – Running – lit when CPU is running
- LD3 – CPU Power LED – lit when the CPU is powered (either when the POD is not connected to a target or is connected to the target and the target power supply is on)
- LD4 – POD Power LED – lit when the Emulator is powered

The Emulator unit has a Target connector with the following signals:

19	17	15	13	11	9	7	5	3	1
AUX1	AUX3	AUX5	AUX7	AUX9	AUX11	AUX13	AUX15	TRIGOUT	GND
AUX0	AUX2	AUX4	AUX6	AUX8	AUX10	AUX12	AUX14	EXTBP	GND
20	18	16	14	12	10	8	6	4	2

- AUX0 – 15 – available AUX inputs (3V LVTTL, connected to FPGA)

Note: The number of AUX inputs depends of the ActivePOD.

- TrigOut – Trigger or Qualifier output (depending on the setting in the Trigger dialog), active low, when trigger condition occurred (3V LVTTL, connected to FPGA)

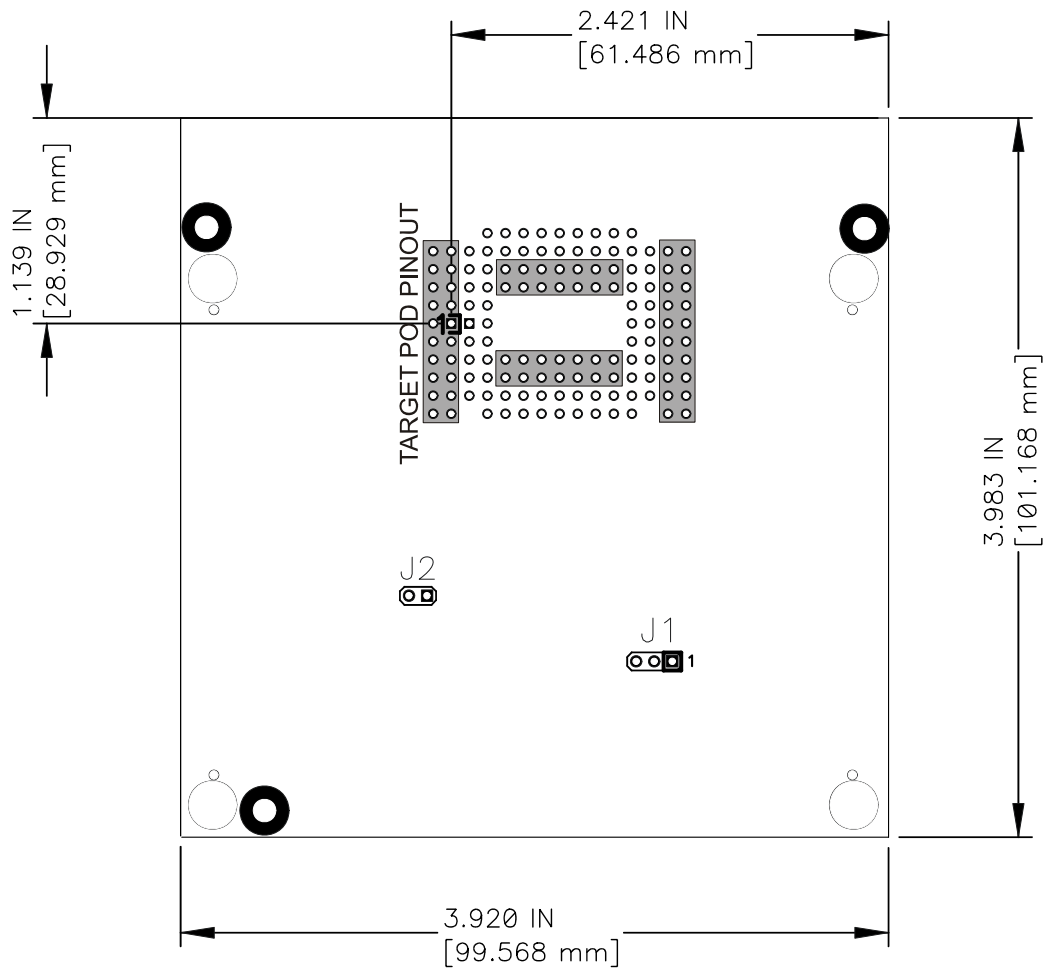
The Trigger output is approx. 160µs wide.

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Ordering code	IC30451
POD Speed (MHz)	20
Exchange CPU	NO
Emulation Memory	16 MB
Trace Buffer Depth	64k frames

This POD is connected to the ActivePOD Emulator Unit II.



Motorola 68EC000 ActivePOD, bottom view

Emulated CPU
68EC000

Jumper Settings

All jumpers, with the exception of J1, must not be moved and must remain set as set in the factory.

Voltage setting

Jumper J1 determines the voltage level. Remove the bottom housing plate in order to access it.

Position	Vcc level
1-2	3.3 V
2-3	5.0 V (default)

Jumper J1 settings

Emulation Notes

Checksum

When performing any kind of checksum in the emulated (code) area, note that all breakpoints must be removed before, otherwise the results are distorted. Note that the emulator forces "breakpoint" instruction on the data bus when executing the code at the address where breakpoint is set.

Clock

Clock source can be either used internal from the emulator or external from the target. It is recommended to use the internal clock when possible. When using the clock from the target, it may happen that the emulator cannot initialize any more.

It is dissuaded to use a crystal in the target as a clock source during the emulation. It is recommended that the oscillator is used instead. Normally, a crystal and two capacitors are connected to the CPU's clock inputs in the target application as stated in the CPU datasheets. A length of clock paths is critical and must be taken into consideration when designing the target. During the emulation, the distance between the crystal in the target and the CPU (on the POD) is furthermore increased, therefore the impedance may change in a manner that the crystal doesn't oscillate anymore. In such case, a standalone crystal circuit, oscillating already without the CPU must be built or oscillator used.

Target Adapters

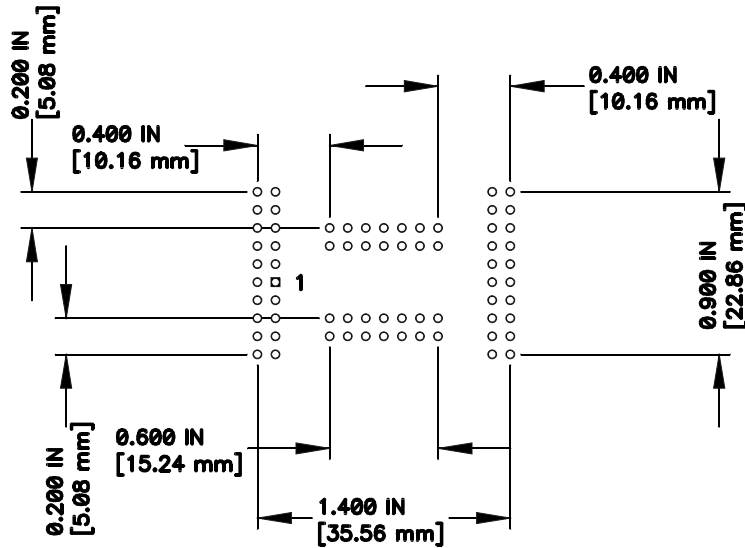
iSYSTEM offers various adapter solutions for this POD. Please refer to the adapter documentation for more details.

Target POD Pinout

Target POD pinout is T_PLCC68.

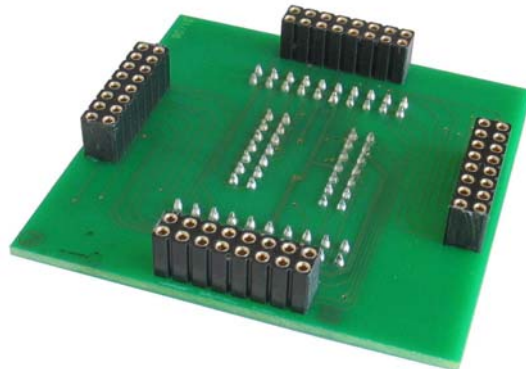
62	60							44	45	
64	61							43	42	
66	63	59	57	55	53	51	49	47	41	40
68	65	58	56	54	52	50	48	46	39	38
2	67							37	36	
4	1							35	34	
6	3							33	32	
8	5	12	14	16	18	20	22	24	31	30
11	7	13	15	17	19	21	23	25	29	28
10	9							27	26	

T_PLCC68 Target POD Pinout – Top View



Target POD Pinout –Dimensions

An adapter is shipped with the POD to adapt it to the T_QFP64 pinout.



The Adapter Target Layout is T_QFP64.

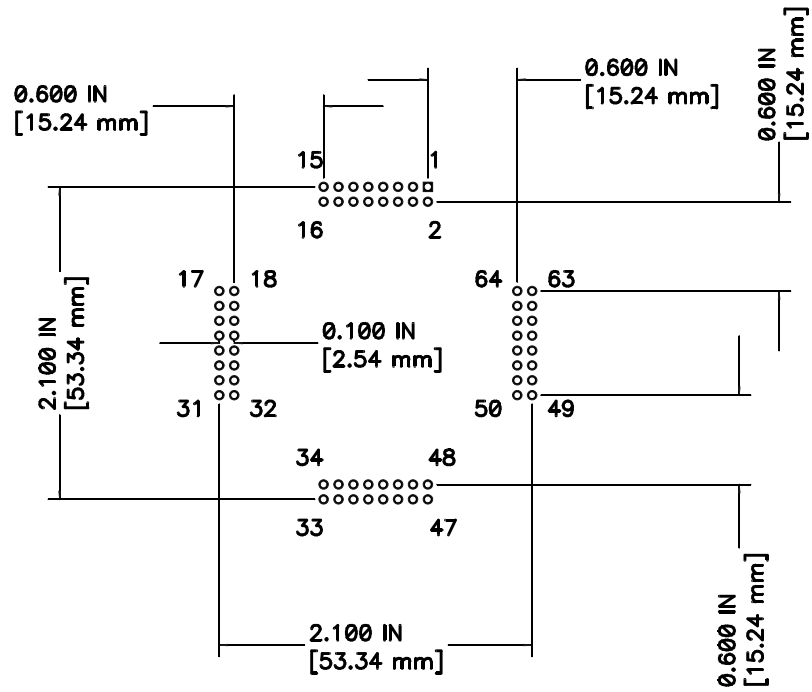
15	13	11	9	7	5	3	1
16	14	12	10	8	6	4	2

17	18
19	20
21	22
23	24
25	26
27	28
29	30
31	32

64	63
62	61
60	59
58	57
56	55
54	53
52	51
50	49

34	36	38	40	42	44	46	48
33	35	37	39	41	43	45	47

T_QFP64 – Bottom POD View



T_QFP64 – Dimensions (Top View)

Notes: