

ActivePRO POD NECV850ES/Sx2

Ordering code	IC30533
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Hardware Reference

ActivePRO POD General Notes

ActivePRO PODs can be used connected to iC3000 or iC4000 Emulator through the ActivePRO interface.

A green LED is lit when the ActivePRO POD is powered on.

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).

AUX Inputs

The POD has a special interface for an additional ActivePRO AUX card (IC30338), which provides 16 AUX auxiliary inputs. Signals connected to these inputs are either sampled with the trace cycle or on the signal edge change. Inputs are divided into two identical blocks with 8 inputs each. Every block has an adjustable input threshold from 0 to 3V. Inputs are 5V tolerant. For more information see the hardware reference for the ActivePRO AUX Card.

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.

Hardware Reference

ActivePRO POD NECV850ES/Sx2

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Trace Depth	512k Frames
Time Stamp Resolution	33.3ns
Time Reach	Unlimited
Operating Voltage	3.3V±10%

Emulated CPU family
NEC V850ES/SG2
NEC V850ES/SJ2

This POD supports the V850ES/Sx2 device family with 3.3V port I/O in single-chip applications with no external bus. For the latest list of emulated CPUs please contact your local sales representative.

Emulation

In-circuit emulation on this POD is done by using a special bondout chip from NEC connected to an emulation version of the target chip which performs clock generation and port replacement function.

1Mbyte emulation memory is connected to the bondout emulation bus. This allows downloading the code into the emulation RAM in place of the internal CPU Flash.

The shadow memory built in the emulator allows a real-time memory access.

Internal FLASH

Internal FLASH of the target chip can not be used. Programming of the CPU on a user board is supported by NEC flash programming tools. The POD must be removed before using the NEC tools.

POD Power Supply

The POD uses emulator power supply. The POD has a detection circuitry to detect 3 different cases, all assuming that emulator power is switched on.

- 1) Target is not connected to the POD. The POD operates in a standalone mode.
- 2) Target is connected to the POD, but has no power. The POD power is also switched off. The unit is not operational.
- 3) Target is connected to the POD, has power, as does the POD as well.

Emulation Notes

SFR Relocation - BPC register

Due to a bug of the NEC bondout chip, the Programmable peripheral I/O SFRs need to be located below 0x001FFFFFF. Under Emulation options/CPU Setup/Advanced dialog there is an option to preset the BPC accordingly.

By default the software suggests the value of 0x8040, as per NEC recommendation. This puts, for example, the CAN module registers just above 1MB limit, at 0x00100nnn

Reset, Watchdog Functionality

The POD is capable to ignore the reset signal from the target. The user must select the desired POD functionality in the Emulation Options dialog.

The watchdog counter is not running when the CPU is in STOP mode. However, a reset generated by the watchdog timeout cannot be ignored. User application must serve the watchdog registers accordingly.

Target POD Layout

The POD target layout is T_QFP144.

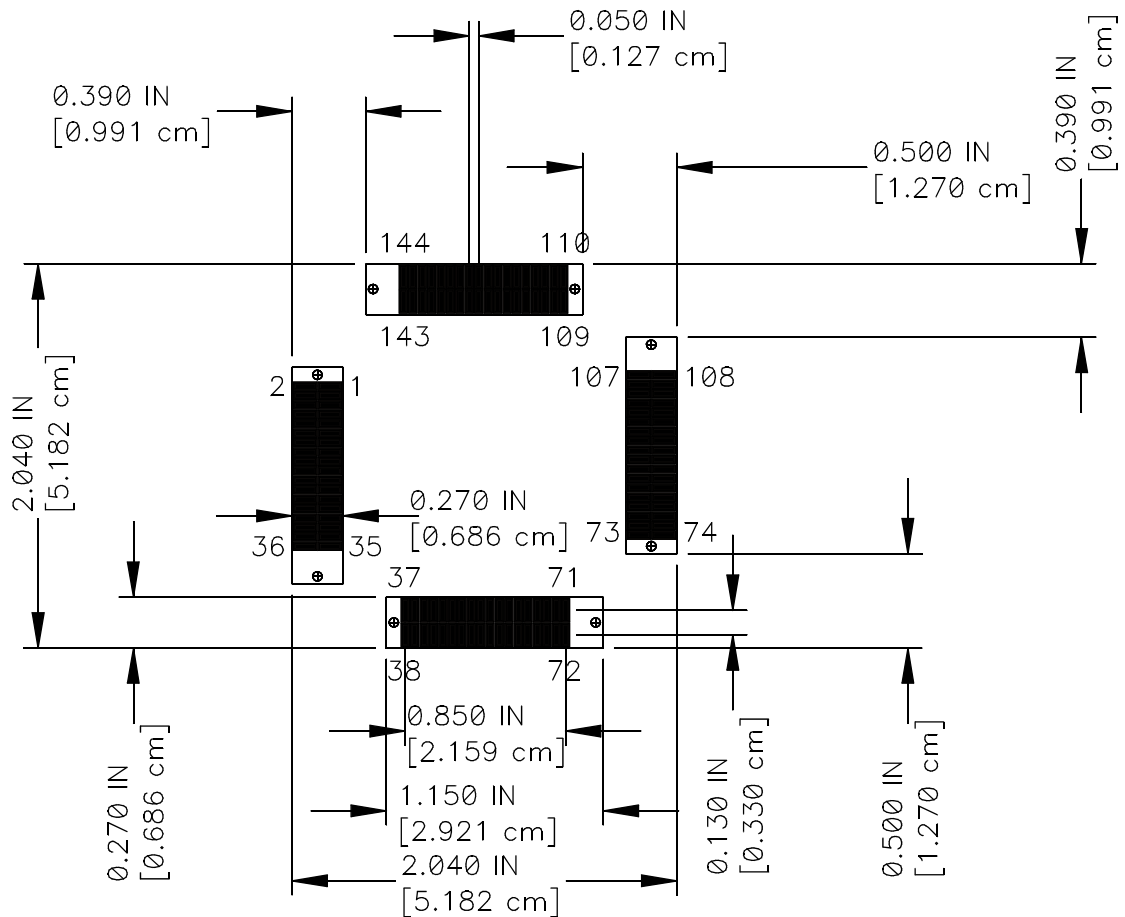
144	142	140	138	136	134	132	130	128	126	124	122	120	118	116	114	112	110
143	141	139	137	135	133	131	129	127	125	123	121	119	117	115	113	111	109

2	1
4	3
6	5
8	7
10	9
12	11
14	13
16	15
18	17
20	19
22	21
24	23
26	25
28	27
30	29
32	31
34	33
36	35

107	108
105	106
103	104
101	102
99	100
97	98
95	96
93	94
91	92
89	90
87	88
85	86
83	84
81	82
79	80
77	78
75	76
73	74

37	39	41	43	45	47	49	51	53	55	57	59	61	63	65	67	69	71
38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72

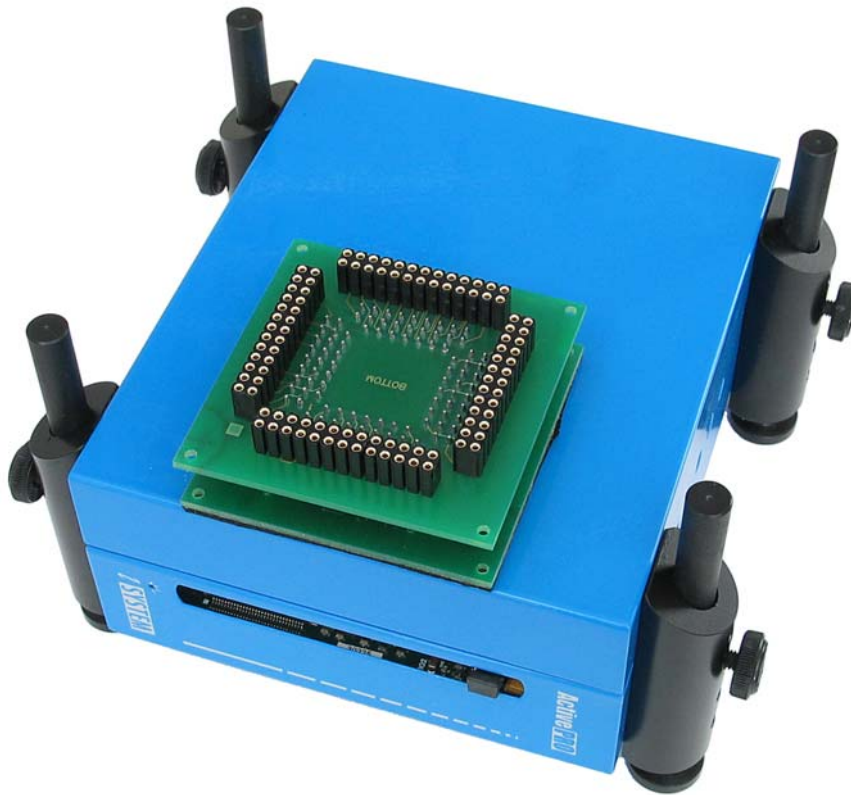
T_QFP144 – Top POD view



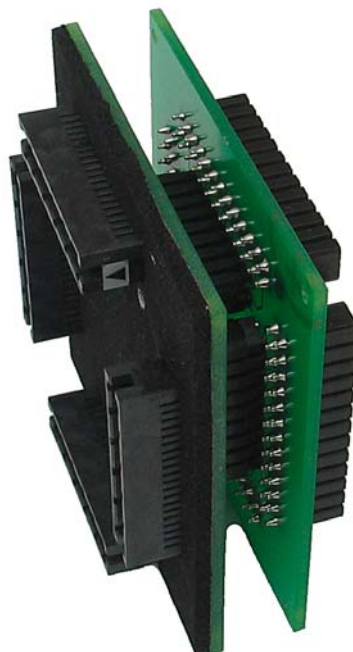
T_QFP144 – Dimensions

Pinout Adapters

An adapter is shipped with the ActivePRO POD which is used to adapt the POD to the T_QFP100S pinout.



ActivePRO POD with attached adapter



The T_QFP144 to T_QFP100 adapter board

The Adapter Target Layout is T_QFP100S.

25	23	21	19	17	15	13	11	9	7	5	3	1
n.c.	24	22	20	18	16	14	12	10	8	6	4	2

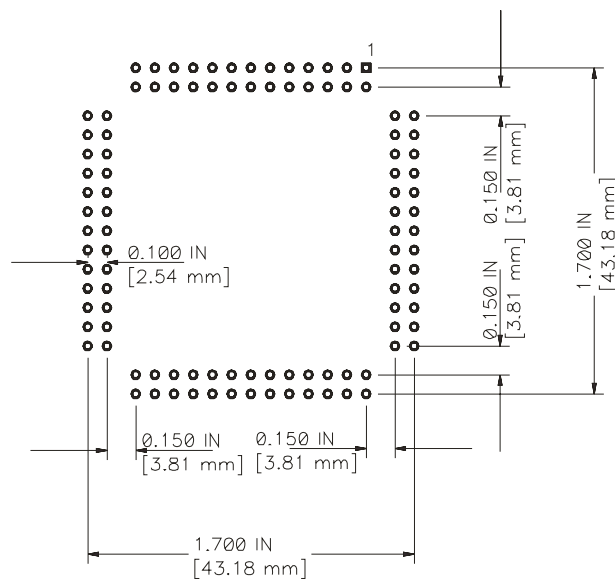
26	27
28	29
30	31
32	33
34	35
36	37
38	39
40	41
42	43
44	45
46	47
48	49
50	n.c.

n.c.	100
99	98
97	96
95	94
93	92
91	90
89	88
87	86
85	84
83	82
81	80
79	78
77	76

52	54	56	58	60	62	64	66	68	70	72	74	n.c.
51	53	55	57	59	61	63	65	67	69	71	73	75

T_QFP100S Target POD Layout, Top view

Please put special attention to the PIN1 position as marked on the POD to get the correct view of the POD layout.



T_QFP100S Pinout Dimensions

Target Adapters

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

Notes: