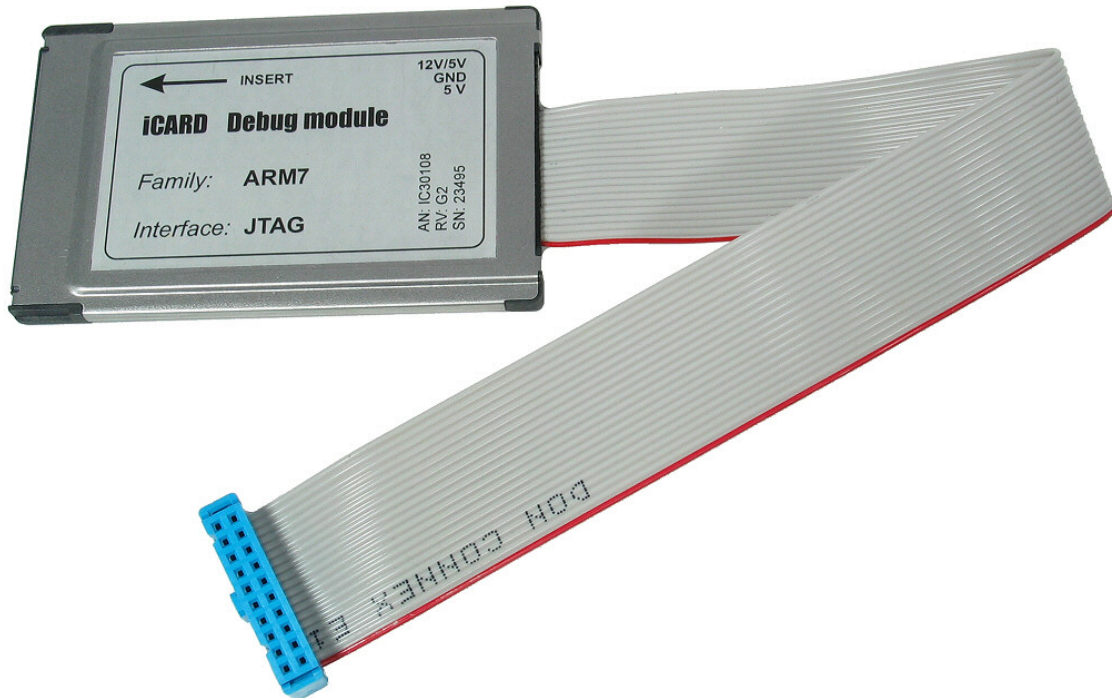


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## Hardware Reference

### ARM7 family iCARD Debug module

Ordering code	IC30108
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### iCard General Notes

The iC3000 and iC4000 support a wide range of serial debug interfaces like Motorola's Background Debug Mode (BDM), the Serial Debug Interface (SDI) and the On-Chip Emulation (OnCE) interface. JTAG based debug interfaces are also supported by these Emulators. For each specific debug interface a special iCARD is available.

The iCARD is a PCMCIA-style interface card which contains all necessary adaptations including the target interface cable for a selected serial debug interface. The iCARD plugs into the PCMCIA-style card slot of the iC3000 unit. Features like on-chip-, in-system programming and programming voltage generation are standard features.

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Note: Whenever connecting to the target both target and the Emulator must be switched off. The Emulator is first switched on, and the target right afterwards. Note that otherwise during connecting the target a massive current spike may flow during static discharge or ground potential equalization.

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On debugging iCards beside the interface specific cable there's a 3-pin connector. The 5V/300mA output provides power to small low-power targets. On some iCards, also the 12V/60mA programming voltage is available and also generated by the iC3000/4000 development system and routed to the iCARD's 3-pin connector. Note that the 12V output is controlled by the software. The output defaults to 5V. On the iC3000 the current for 12V flows from the 5V source. Thus, a 12V/50mA load represents 120mA load on the 5V power source. Note that on interface cards for ActiveEmulator, iTRACE and similar this connector is not available, and also on some iCards, the 12V output is not available since it is not needed.

When not in use, the iCARD should be kept in its protective antistatic bag to ensure its dependability and keep the 68-pin PC-Card connector clean.

**The iCard is a delicate piece of equipment. Always handle it with care, make sure not to bend it or deform it in any way, to keep it clean, etc. If these instructions are not followed, damage to the iCard or the Emulator can occur.**

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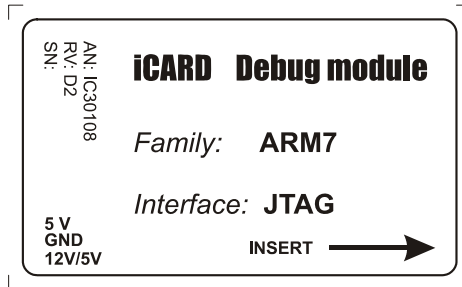
Note: Despite using the same format, iCARDS are not pin compatible with PCMCIA cards. Do NOT use iCARDS in PCMCIA slots and vice-versa! If the iCARD is inserted into a PCMCIA slot, damage to the iCARD and/or the PCMCIA slot will occur. If a PCMCIA card is inserted into the iCARD slot, damage to the PCMCIA card and/or the Emulator will occur.

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## Hardware Reference

### ARM7 family iCARD Debug module

<b>Ordering code</b>	<b>IC30108</b>
<b>Dimensions (WxLxH, mm)</b>	<b>54x84x5</b>



<b>Supported CPU family</b>
ARM7

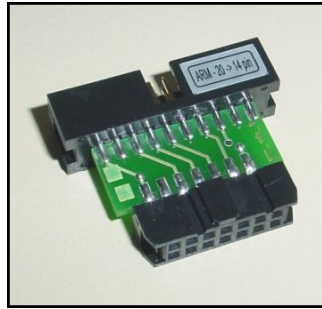
<b>Supported CPU cores</b>
ARM7DI
ARM7TDMI

The following pinout is valid on the target side:

Signal direction	Signal description	Signal	Pin	Pin	Signal	Signal description	Signal direction
Input	Reference voltage	VTref	1	2	TVcc	Target Vcc	Input
Output	Standard JTAG	nTRST	3	4	GND	Ground	
Output	Standard JTAG	TDI	5	6	GND	Ground	
Output	Standard JTAG	TMS	7	8	GND	Ground	
Output	Standard JTAG	TCK	9	10	GND	Ground	
Input	Return TCK	RTCK	11	12	GND	Ground	
Input	Standard JTAG	TDO	13	14	GND	Ground	
In/Out	System Reset	nSRST	15	16	GND	Ground	
Output	Debug request	DBGREQ	17	18	GND	Ground	
Input	Debug Acknowledge	DBACK	19	20	GND	Ground	

ARM 20-pin target connector

An adapter for 14-pin pinouts is also available.



With the adapter, the following pinout is valid on the target side:

Signal direction	Signal description	Signal	Pin	Pin	Signal	Signal description	Signal direction
Input	Target Vcc	TVcc	1	2	GND	Ground	
Output	Standard JTAG	nTRST	3	4	GND	Ground	
Output	Standard JTAG	TDI	5	6	GND	Ground	
Output	Standard JTAG	TMS	7	8	GND	Ground	
Output	Standard JTAG	TCK	9	10	GND	Ground	
Input	Standard JTAG	TDO	11	12	nSRST	System Reset	In/Out
Input	Reference voltage	VTref	13	14	GND	Ground	

*ARM 14-pin target connector*

Texas Instruments has created an alternative target connector with a slightly different pinout. An adapter is also available for this 14-pin pinout.



With this adapter, the following pinout is valid on the target side:

Signal direction	Signal description	Signal	Pin	Pin	Signal	Signal description	Signal direction
Output	Standard JTAG	TMS	1	2	nTRST	Standard JTAG	Output
Output	Standard JTAG	TDI	3	4	GND	Ground	
Input	Reference voltage	VTref	5	6	n.c.	Not connected	
Input	Standard JTAG	TDO	7	8	GND	Ground	
Input	Return TCK	RTCK	9	10	GND	Ground	
Output	Standard JTAG	TCK	11	12	GND	Ground	
Input	Debug Acknowledge	BERR	13	14	nSRST	System Reset	In/Out

*ARM7 14-pin TI target connector*

A jumper is present on the adapter. If this jumper is set, the SYSTEM RESET line is connected to pin 14 on the target side. If SYSTEM RESET is not needed, then this jumper should be removed.

<b>Ordering code</b>	<b>IAARMPIN20MIC38</b>
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Besides to the standard ARM 20-pin debug connector, the JTAG debugger can optionally connect to the target Mictor38 debug connector, which the target provides for the development tools supporting the on-chip trace port (ARM ETM or MAC7x00 Nexus). Using a small converter, which can be ordered under the IAARMPIN20MIC38 ordering code, the customer can connect the JTAG debugger to the target Mictor38 debug connector which complies with ARM ETM pinout or Freescale MAC7x00 Nexus pinout.

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Note: When connecting the ARM iCARD to the target via an adapter, pay special attention to use the proper adapter to prevent any damages of the hardware, which may result from using an incorrect adapter.

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Note: Despite using the same format, iCARDS are not pin compatible with PCMCIA cards. Do NOT use iCARDS in PCMCIA slots and vice-versa!

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Note also the direction in which the iCARD is inserted into the iCARD slot. The side with the label is the top side; the arrow shows the direction in which the iCARD should be inserted.

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