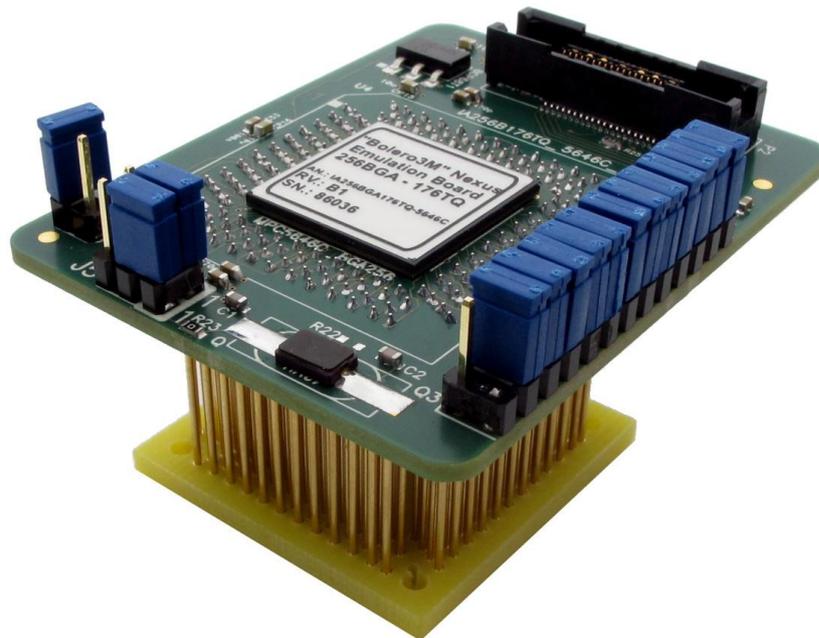

Adapters

“Bolero3M” Nexus Emulation Adapter 256BGA – 176TQ

Ordering code	IA256BGA176TQ-5646C
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Supported microcontrollers:

- Freescale MPC5644B, MPC5644C, MPC5645B, MPC5645C, MPC5646B and MPC5646C
- ST equivalent devices (SPC564B64, SPC564B70, SPC564B74, SPC56EC64, SPC56EC70, SPC56EC74)

Target CPU package: QFP176

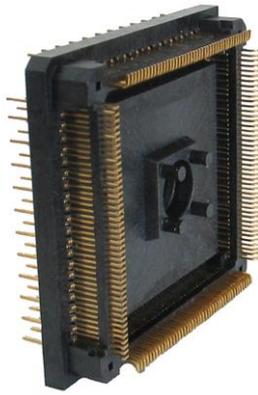
Original microcontroller in the QFP176 package has no Nexus port at all which may be a significant drawback during the development and test process.

“Bolero3M” Nexus Emulation Adapter is based on the MPC5646C microcontroller in the BGA256 package (emulation device), which also exposes 12-bit Nexus port. The Emulation Adapter exhibits the same behaviour to the target as the original 176-pin microcontroller and additionally provides the Nexus port, which allows advanced functionalities like trace, profiler and code coverage.

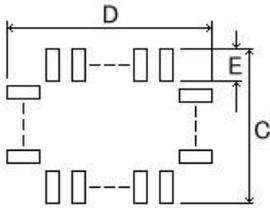
A 176-pin solder part, which must be ordered separately under the IA176TQ-SOLDER ordering code, is soldered to the target (PCB) instead of populating the original microcontroller in a 176-pin QFP package. Then the Emulation Adapter, which acts as the original microcontroller and additionally provides debug Nexus port, is connected on top.

Contact iSYSTEM sales representative for more details on available Nexus tools.

- IA176TQ-SOLDER

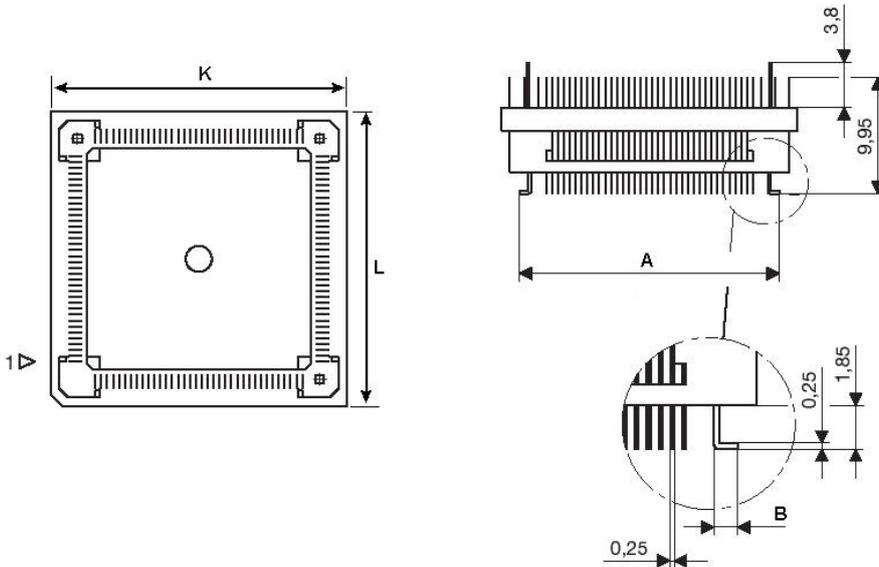


Solder part, which is being soldered to the target.



(Unit: mm)						
A	B	C	D	E	K	L
26.0	1.125	27.0	27.0	1.9	29.05	29.05

Recommended (by TET) PCB footprint size



IA176TQ-SOLDER dimensions

Jumper configuration

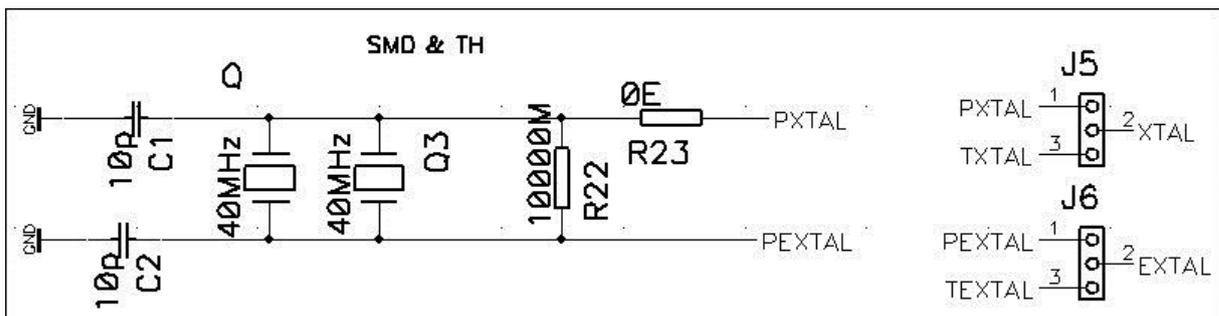
J5 and J6: clock source configuration

Jumpers J5 and J6 select a clock source for the emulation device. Per default, both jumpers are set to position 1-2, which yields a clock source being used from the emulation adapter.

For the first time after receiving the emulation adapter, it is recommended that it's tested with this setting. Once it's confirmed that is operational, target clock use (J5 & J6 position 2-3) can be tested.

Note that the emulation adapter may not operate when crystal circuit is used in the target. Typical design guideline is that a crystal should be as close as possible to the microcontroller. However, it may happen that the target crystal may not oscillate with the emulation adapter since clock lines (XTAL, EXTAL) between the target and the emulation device on the emulation adapter are prolonged. There should be no problem with the oscillator being used in the target.

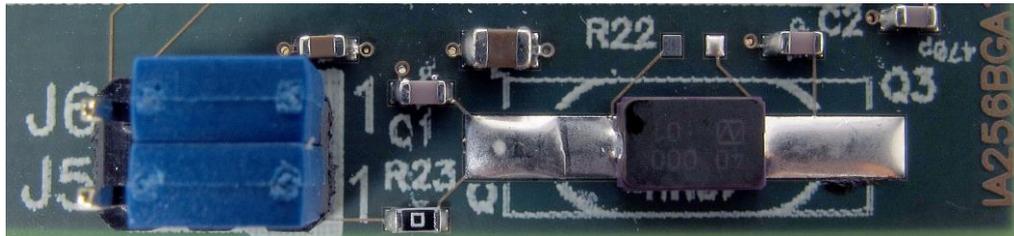
If an oscillator in the target is not an option and the target crystal doesn't oscillate in conjunction with the emulation adapter, clock from the emulation adapter must be used (J5 & J6 position 1-2). In this case, a crystal circuit must be assembled on the emulation adapter.



Crystal circuit

Note: Above schematic shows two crystals Q and Q3. This is only for the PCB design, which is ready for SMT and through-hole crystal. Physically one crystal only is populated.

Crystal circuit is located in the corner of the emulation adapter, next to the Nexus (Mictor) connector.



Per default 10pF capacitors are populated for C1 and C2, 0Ω resistor for R23 and 40MHz crystal for Q. R22 must not be populated. Note that these values are valid for 40MHz crystal only. If different crystal is used, appropriate capacitors and resistor must be soldered (replace original ones).

J3: target reset configuration

Jumper J3 connects the reset line between the emulation device and the target. By default J3 is not populated.

U5: power selection

The U5 header row is used for power supply selection. Power supplies are organized in groups and the same voltage must be supplied for each group.

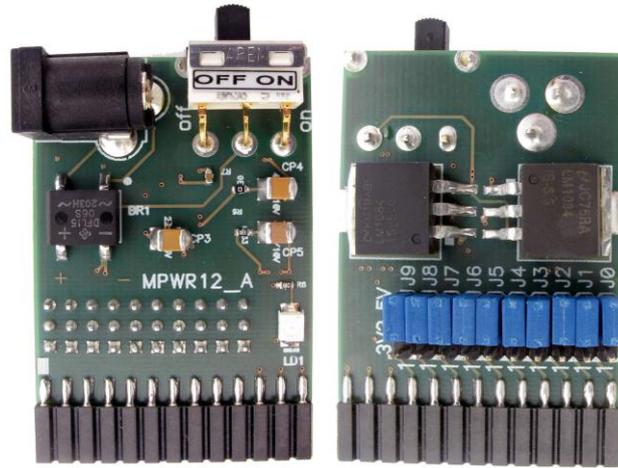
Refer to the microcontroller user manual for more details which power supply designation belongs to which power supply.

Signal direction	Signal	Pin	Pin	Signal	Signal direction	IEA-PS jumper
Target	TVDD_HV_A	1	2	CVDD_HV_A	CPU	J0
Target	TVDD_HV_B	3	4	CVDD_HV_B	CPU	J1
Target	TVDD_HV_ADC0	5	6	CVDD_HV_ADC0	CPU	J2
Target	TVDD_HV_ADC1	7	8	CVDD_HV_ADC1	CPU	J3
	NC	9	10	NC		J4
	NC	11	12	NC		J5
	NC	13	14	NC		J6
	NC	15	16	NC		J7
	NC	17	18	NC		J8
	NC	19	20	NC		J9
	GND	21	22	GND		
	GND	23	24	GND		
	GND	25	26	GND		

U3 signal description

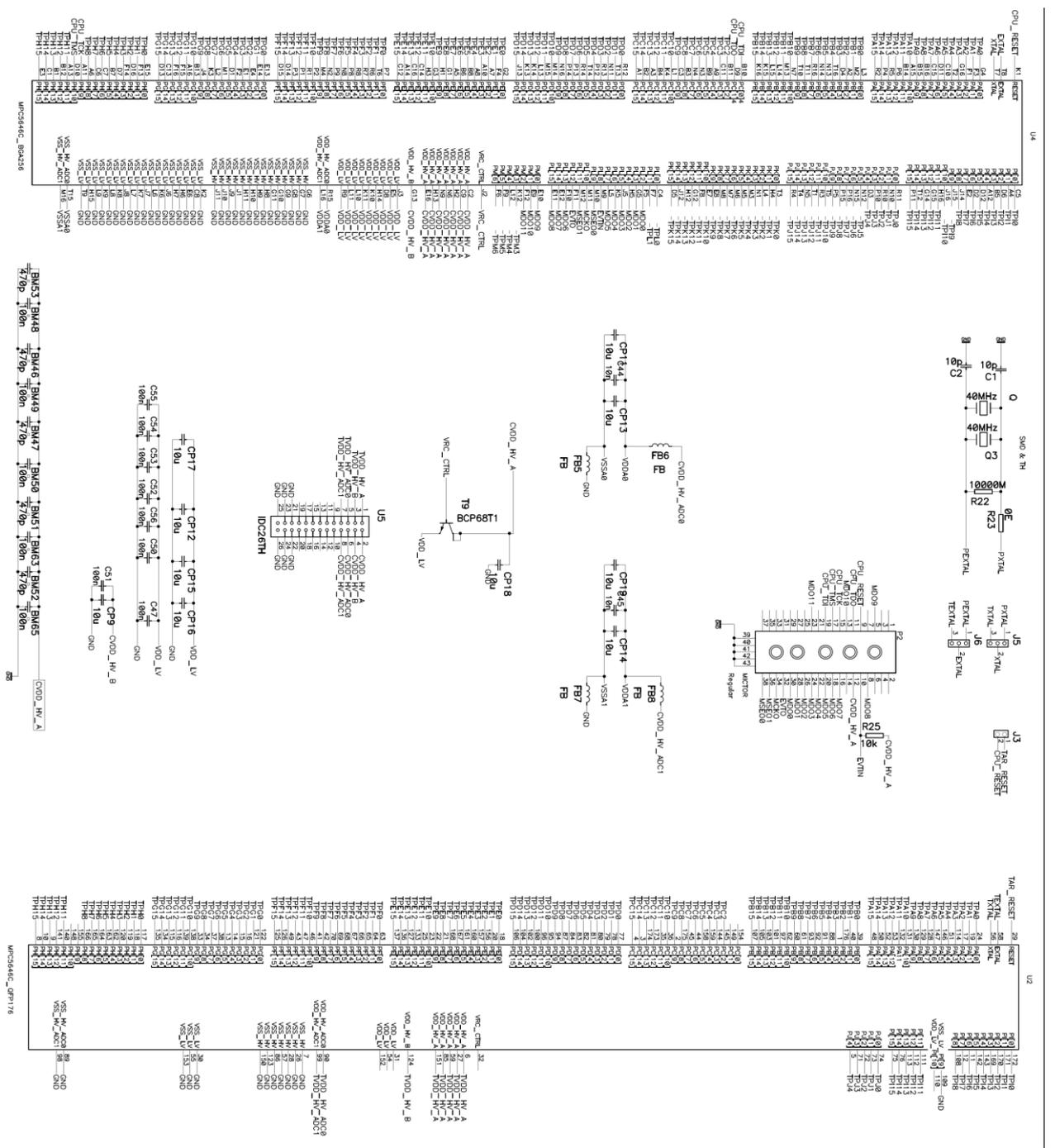
By default all jumpers are set even though only some jumpers affect the configuration. When jumpers are set, target power supply coming from the target gets connected to the microcontroller residing on the emulation adapter. If a different power source is to be used (e.g. in case of a standalone operation), jumpers must be removed and power source must be applied to CVDD_HV_A (pin2), CVDD_HV_B (pin4), CVDD_HV_ADC0 (pin6), CVDD_HV_ADC1 (pin8), and GND (pins 21-26) signals.

iSYSTEM power supply adapter can be ordered separately under the IEA-PS ordering code. It connects on top of the emulation adapter directly to the U5 header row and allows standalone usage of the emulation adapter. 3.3V or 5V voltage can be selected for each group with appropriate jumpers J0-J9. This is convenient when the target is not available or it's not adjusted for the emulation adapter connection yet.



IEA-PS (optional emulation adapter power supply)

Schematic



Notes:

Notes:

Disclaimer: iSYSTEM assumes no responsibility for any errors which may appear in this document, reserves the right to change devices or specifications detailed herein at any time without notice, and does not make any commitment to update the information herein.

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