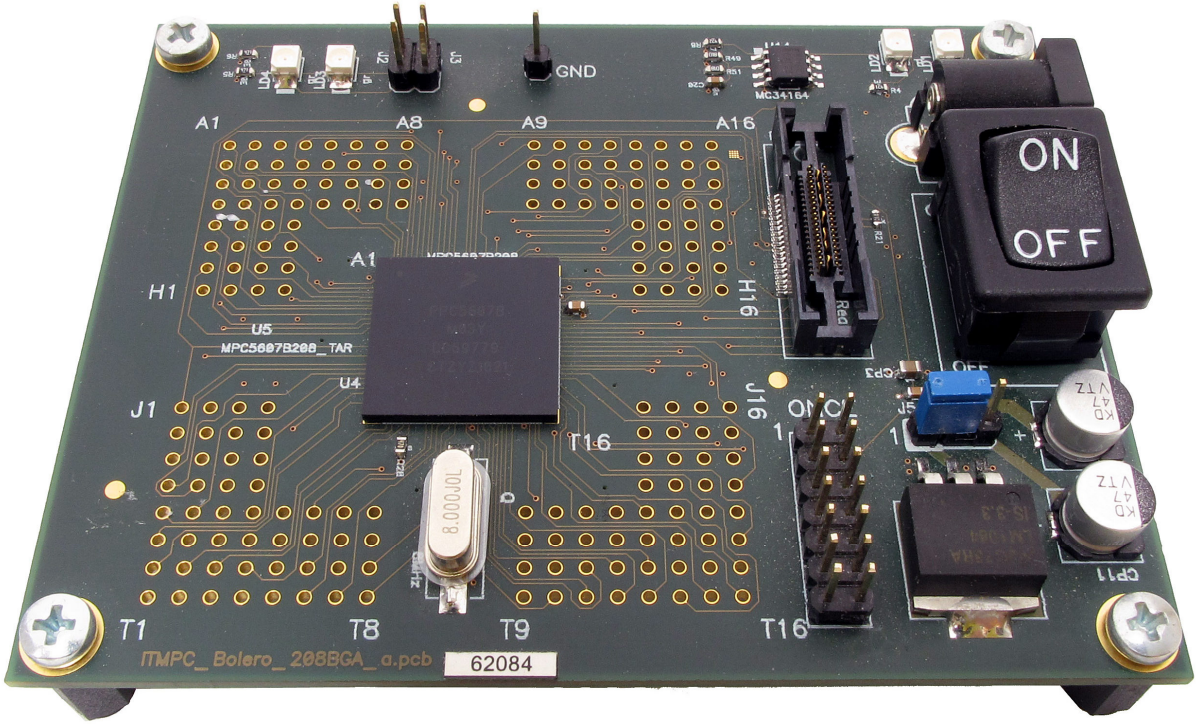
User's Manual

Freescale MPC5607B Bolero Mini Target Board

	Ordering code
MPC5607B Target Board	**ITMPC5607B-208**



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Features

This target board is an evaluation and a development system for Freescale MPC5607B microcontroller. The ITMPC5607B package features a target board populated with Freescale MPC5607B CPU in the BGA208 package, a ONCE debug and a Nexus (trace) connector. A power supply also comes along with the board. The application under the development or test can run from the internal microcontroller flash or SRAM.

Specifications

Clock Speed – up to 64 MHz
Power requirement: 6 - 12V DC, + in the center (minimum 4W)
Board Size: 94 mm x 73 mm

EVB-5607B Features

- MPC5607B, BGA208
- 8MHz clock (ext. crystal)
- Power Indicator – Supply voltage indication for 3.3V
- User Indicators – two LEDs connecting to the microcontroller
- Debug connections: ONCE (14-pin 2.54mm connector) and Nexus (Mictor 38-pin connector)

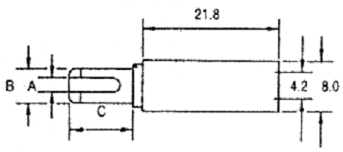
Software Development

The board has been tested with the microcontroller running at maximum frequency (64MHz). Software development can be performed by connecting the development tool to the ONCE (JTAG) or P2 (Nexus) connector. iSYSTEM provides various tools based on the iC5000 or the iC3000 unit. Contact iSYSTEM sales representative for more details on available tool options.

Power Supply

Permissible input voltage: 6-12 V DC, + **in the center.** The required current load capacity of the power supply depends on the specific configuration of the target board. A power supply with a minimum of 500mA is recommended and delivered in the package. Low voltage DC plug must conform to the DIN 45323 standards:

- The hole diameter is 1.95 – 2.5 mm (standard: 2.1 mm)
- The external diameter is 6.2 - 5.5 mm (standard: 5.5 mm)



Dimensions

A	B	C
2.1	5.5	9.5

Switch-on the target board after the AC power supply is plugged into the wall and connected to the target board. Check that power indicator (LD1) lit, indicating that 3.3V voltage is present.

Note: When connecting an external debugger, make sure that the debugger is powered on first, then the target board and vice versa when switching off the system. First, switch off the target and then the emulator.

Settings and Options

Jumpers

Jumper J2 connects user LD4 LED to the MPC5607B pin G4 and jumper J3 connects user LD3 LED to the pin F3.

Jumper J5 is used to select 3,3V (position 1-2) or 5V (position 2-3). Per default 3,3V is selected.

Status Indicators

LD1 LED indicates a presence of the power supply voltage. It lits when the power is applied to the evaluation board and the power switch is switched on.

LD2 LED indicates reset line status.

LD3 and LD4 are available for the user.

Component List

Name	Description
U4	Freescale MPC5607B CPU
P2	Nexus (Mictor) debug connector
P3	Power supply connector
ONCE	JTAG debug connector
J2	Connects LD4 to CPU G4
J3	Connects LD3 to CPU F3
J1	GND signal
J5	3,3V or 5V power supply
LD1	Power LED
LD2	Reset indication LED
LD3	User LED
LD4	User LED
SW1	Power switch

Connectors

14-pin 2.54mm ONCE debug connector

CPU_TDI	**1**	**2**	GND
CPU_TDO	**3**	**4**	GND
CPU_TCK	**5**	**6**	GND
N.C.	**7**	**8**	N.C.
CPU_RESET	**9**	**10**	CPU_TMS
3V3	**11**	**12**	N.C.
N.C.	**13**	**14**	CPU_TRST

Mictor 38-pin Nexus debug connector

Signal	Pin	Pin	Signal
NC	1	2	NC
NC	3	4	NC
NC	5	6	NC
NC	7	8	NC
RSTIN	9	10	EVTIN
TDO	11	12	VCC
NC	13	14	NC
TCK	15	16	NC
TMS	17	18	NC
TDI	19	20	NC
TRST	21	22	NC
NC	23	24	MDO3
NC	25	26	MDO2
NC	27	28	MDO1
NC	29	30	MDO0
NC	31	32	EVTO
NC	33	34	MCKO
NC	35	36	NC
NC	37	38	MSEO0

Note: External debug tool must connect to one debug connector only! Only Mictor 38-pin connector exposes Nexus debug interface.

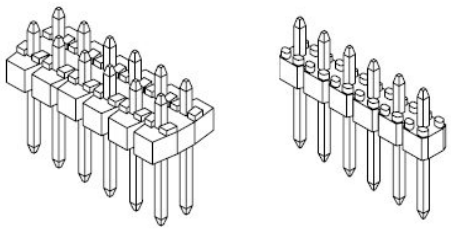
CPU expansion connection

The target board exposes all MPC5607B pins/signals, which allow easy expansion of the development system.

The expansion array uses the same numbering scheme as the original microcontroller in the BGA208 package and also matches with the MPC5607B BGA208 pinout.

By populating the expansion array with 2.54mm pitch headers, the board can be easily connected to another custom tailored board.

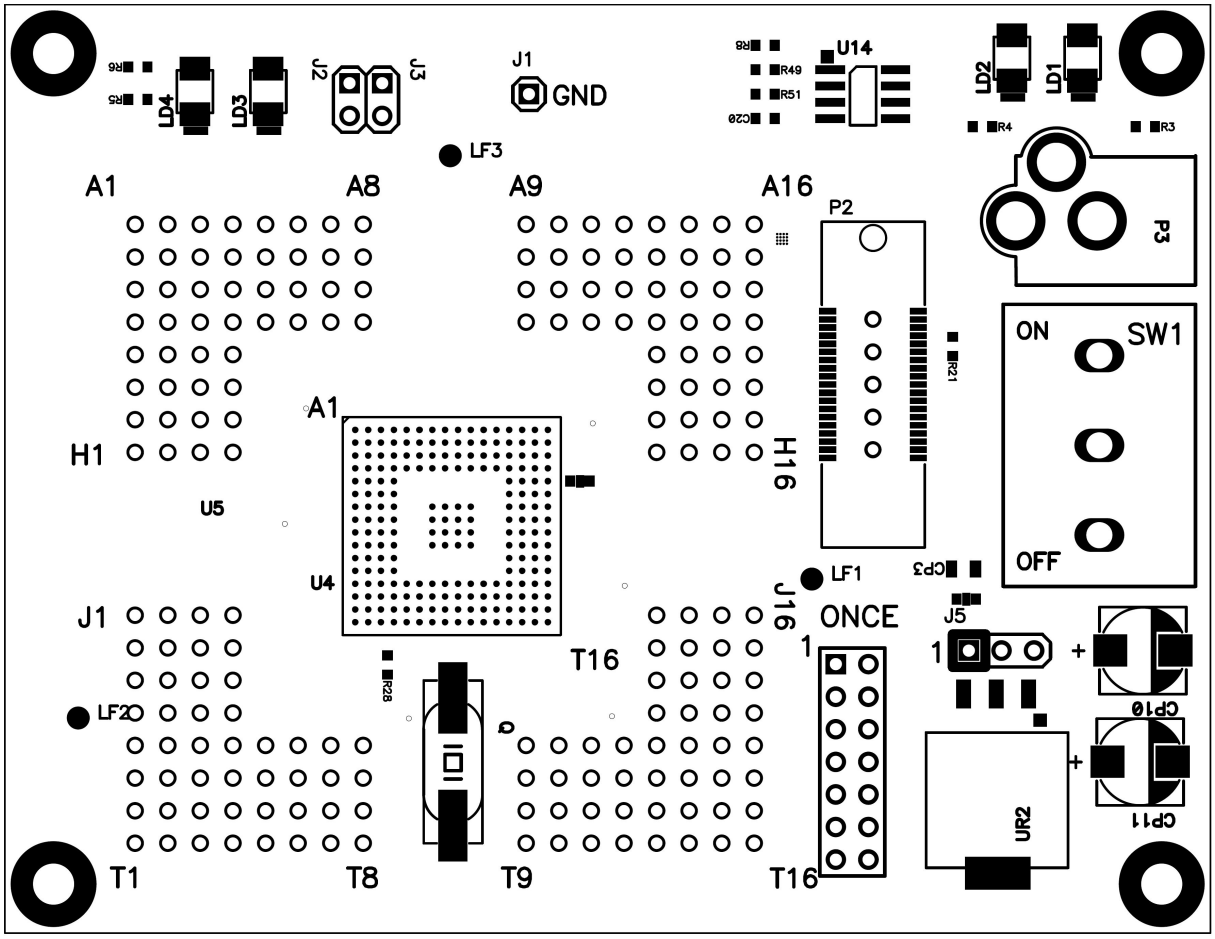
An example of breakaway dual and single row 2.54mm pitch headers, which can be easily stacked side-to-side:



A small plastic bag with headers comes along the target board already.

Appendix A

View of the ITMPC5607B



Expansion Connection as seen from the top.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A	PC[8]	PC[13]	PH[15]	PJ[4]	PH[8]	PH[4]	PC[5]	NC	PI[0]	PI[1]	PC[2]	PI[4]	PE[15]	PH[11]	NC	NC	A
B	PC[9]	PB[2]	PH[13]	PC[12]	PE[6]	PH[5]	PC[4]	NC	NC	PI[2]	PC[3]	PG[11]	PG[15]	PG[14]	PA[11]	PA[10]	B
C	PC[14]	VDD_HV	PB[3]	PE[7]	PH[7]	PE[5]	PE[3]	VSS_LV	NC	PI[3]	PA[5]	PI[5]	PE[14]	PE[12]	PA[9]	PA[8]	C
D	PH[14]	PI[6]	PC[15]	PI[7]	PH[6]	PE[4]	PE[2]	NC	VDD_HV	NC	PA[6]	PH[12]	PG[10]	PF[14]	PE[13]	PA[7]	D
E	PG[4]	PG[5]	PG[3]	PG[2]									PG[1]	PG[0]	PF[15]	VDD_HV	E
F	PE[0]	PA[2]	PA[1]	PE[1]									PH[0]	PH[1]	PH[3]	PH[2]	F
G	PE[9]	PE[8]	PE[10]	PA[0]									VDD_HV	PI[12]	PI[13]	NC	G
H	NC	PE[11]	VDD_HV	NC									NC	NC	NC	NC	H
J	RESET	VSS_LV	NC	NC									PI[8]	PI[9]	PI[10]	PI[11]	J
K	NC	NC	VDD_BV	NC									VDD_HV _ADC1	PG[12]	PA[3]	PG[13]	K
L	PG[9]	PG[8]	NC	NC									PB[15]	PD[15]	PD[14]	PB[14]	L
M	PG[7]	PG[6]	PC[10]	PC[11]									PB[13]	PD[13]	PD[12]	PB[12]	M
N	PB[1]	PF[9]	PB[0]	VDD_HV	PJ[0]	PA[4]	VSS_LV	NC	VDD_HV	PF[0]	PF[4]	VSS_HV _ADC1	PB[11]	PD[10]	PD[9]	PD[11]	N
P	PF[8]	PJ[3]	PC[7]	PJ[2]	PJ[1]	PA[14]	NC	NC	PB[10]	PF[1]	PF[5]	PD[0]	PD[3]	VDD_HV _ADC0	PB[6]	PB[7]	P
R	PF[12]	PC[6]	PF[10]	PF[11]	VDD_HV	PA[15]	PA[13]	PI[14]	PB[8]	PF[3]	PF[7]	PD[2]	PD[4]	PD[7]	VSS_HV _ADC0	PB[5]	R
T	NC	NC	NC	NC	NC	PF[13]	PA[12]	PI[15]	PB[9]	PF[2]	PF[6]	PD[1]	PD[5]	PD[6]	PD[8]	PB[4]	T
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	

NC = Not connected

Schematic