

32bit	TX09 Series Under Development   <b>TMPA910CRBxBG</b>	361pin
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## 32-bit microcontroller based on highly functional ARM926EJ-S™ core incorporating Multi-layer internal bus

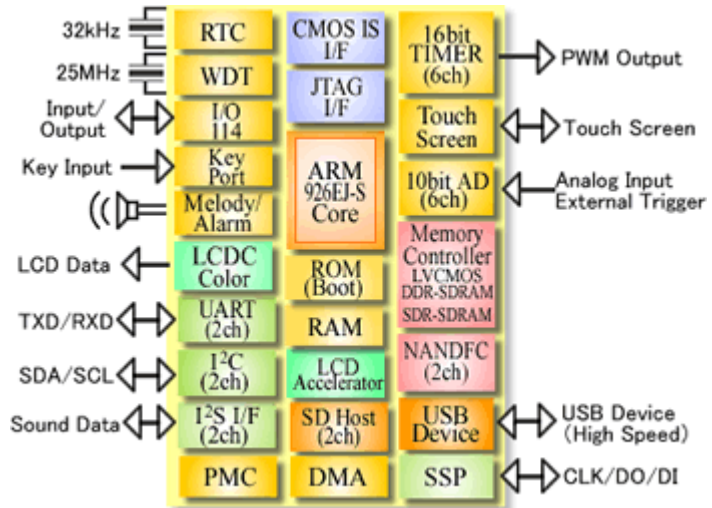
### Features

#### ● ARM926EJ-S™ CPU Core

- Operating voltage:  
Internal: 1.4 to 1.6 V I/O: 1.7 to 1.9 V, 3.0 to 3.6 V
- Minimum instruction execution time:  
6.67 ns: 150 MHz (internal) at -20 to 85°C
- Data cache: 16 Kbytes
- Instruction cache: 16 Kbytes
- Internal ROM: 16 Kbytes (Boot)
- Internal RAM: 56 Kbytes
- External data bus width: Up to 32 bits

#### ● On-chip Functions

- Color LCD controller (24-bit TFT/STN) : 1 channel
- LCD data process accelerator
- Memory controller
  - Static memory
  - SDR SDRAM
  - LVC MOS DDR SDRAM
- NAND Flash controller : 2 channels
- SD host controller : 2 channels
- CMOS image sensor interface : 1 channel
- USB (High-speed) device controller : 1 channel
- DMA controller : 8 channels
- SSP (SPI/MicroWire mode) : 2 channels
- RTC : 1 channel



- UART : 2 channels
- I<sup>2</sup>C : 2 channels
- I<sup>2</sup>S interface : 2 channels
- 10-bit AD converter : 6 channels
- 16-bit timer : 6 channels
- Touch-screen interface : 1 channel
- JTAG interface
- Power management circuit (PMC)

### Package Information

#### ● Pin Assignments

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19
E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E19
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15	F16	F17	F18	F19
G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	G17	G18	G19
H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17	H18	H19
J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	J13	J14	J15	J16	J17	J18	J19
K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	K17	K18	K19
L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L16	L17	L18	L19
M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19
N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19
P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18	R19
T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19
U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18	U19
V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19
W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17	W18	W19

Top View

- Package name:  
FBGA361-P-1616-0.80AZ

● Pin Numbers and Names (1/3)

Ball No.	Pin Name	Ball No.	Pin Name	Ball No.	Pin Name
C3	SP0/TCK	L6	PC5/MLDALM/INT8	T6	SW2/NDAL
D4	SP1/TMS	K2	DVCC3D4	N8	SW1/NDWE
F8	DVSSCOM1	L5	PC6/DCOCL	U6	SV3/ND03
D3	SP2/TDI	L1	PC2/PWE	W3	DVCC3D9
B1	DVCC3D1	L4	PT5/URXD	N9	SV6/ND06
E5	SP5/TDO	K3	DVSSCOM7	R7	SV2/ND02
E4	SP4/RTCK	N7	PT4/URTXD	N10	SW0/NDRE
F5	SP3/TRST	M1	PC7/DCODA/INT9	R8	PP2/INT2
G6	DVCC3CMS1	T1	SM4/RESET	V4	DVCC1A3
G5	PF6/DCICL	P7	PG5/SDC0WP	T7	SV5/ND05
F4	PF7/DCIDA/INTC	L2	DVCC3D5	V5	SV1/ND01
H7	PF1/CMSHY	N6	PG4/SDC0CMD	P9	PP1/INT1
J7	PE7/CMSD7	L3	PG3/SDC0DAT3	-	-
E3	PF2/CMSH8K	M2	PG2/SDC0DAT2	P10	SV4/ND04
D2	PF3/CMSVSY	M8	DVSSCOM8	U7	SV0/ND00
-	-	P1	PG7/SDC0CLK	R9	PP0/INT0
F3	PF0/CMSPCK	M4	PH5/SDC1WP	W4	DVCC3D10
L7	PE5/CMSD6	M3	PG6/SDC0CD	M10	DVSSCOM12
C2	PE3/CMSD3	M5	PG1/SDC0DAT1	V6	SN2/SELUTAG
G4	PE4/CMSD4	N2	DVCC3D6	T8	SM6/AM0
E2	PE5/CMSD5	N5	PG0/SDC0DAT0	U8	SM7/AM1
H6	DVCC3CMS2	R2	DVCC1A2	W5	DVCC3D11
C1	PE0/CMSD0	P6	PH6/SDC1CD	R10	SN0/SELMEMC
H5	PE1/CMSD1	R1	PH4/SDC1CMD	T10	SN1/SELDVCCM
G3	PE2/CMSD2	R6	PH2/SDC1DAT2	W6	DVCC1C
J8	DVSSCOM3	P2	PH1/SDC1DAT1	W7	SM0/X1
D1	PT2/SPD0	P4	DVSSCOM9	V7	DVSS1C
H4	PT0/SP0FSS	N3	PH0/SDC1DAT0	W8	SM1/X2
E1	DVCC3D2	N1	PH7/SDC1CLK	V8	DVCC1C
H6	PN1/URXD/SIR0IN	N4	PH3/SDC1DAT3	U9	PT7/X1US6
F2	PN0/URTXD/SIR0OUT	P3	DVCC3D7	T9	DVCC1A4
J5	PT3/SPD1	T2	VREFH	K9	DVSSCOM13
F1	DVCC1A1	U2	VREFL	V9	AVDD3C
-	-	U1	AVSS3AD	W9	SR4/SENSE
H3	PT1/SPCLK	V1	AVCC3AD	V10	SR3/REXT
K5	PT6/URCTS	P5	PD5/AN5/MY	W10	AVSS3C
G2	PN4/UDSR/INTD	R3	PD4/AN4/MX	U10	AVDD3T1
M6	PN7/UDTRS/INTG	R5	PD3/AN3	V11	AVSS3T3
G1	DVCC3D3	R4	PD2/AN2	U11	AVSS3T2
J4	PN3/UDCD	T5	PD1/AN1	W11	SR1/DM
H2	PN5/URIN/INTE	T3	PD0/AN0	W12	SR0/DP
K4	PN2/UDCTS	U3	PD6/PX/INTA(TS)	V12	AVSS3T1
H1	PN6/UDTR/INTF	T4	PD7/PY/INTB	U12	AVSS3T1
L8	DVSSCOM5	V2	DVCC3D8	W13	AVSS3T0
J1	SM2/XT1	V3	SW5/NDRE	V13	AVDD3T0
K1	SM3/XT2	U4	SW4/NDCE	J10	DVSSCOM14
M9	DVSSCOM6	W2	SW5/NDCE	V14	DVCC1A5
J3	PC4/FS0UT/PWM0OUT	U5	SW3/NDCLE	T11	PM0/IS1WS
M7	DVCC1B1	L9	DVSSCOM10	V15	PM2/IS1DAT0
J2	PC3/MLDALM/PWM0OUT	P8	SV7/ND07	R11	PL2/IS0DAT1/SP1D0

● Pin Numbers and Names (2/3)

Ball No.	Pin Name	Ball No.	Pin Name	Ball No.	Pin Name
W14	PL4/2S9CLK	M14	SD3/D27	E19	DVCC1A9
T12	DVCC3D51	R18	SB1/D9	H14	SD6/D30
U13	PL1/2S0CLK/SP1CLK	M15	SD2/D26	F18	SE4/A4
P11	PM3/2S1MCLK	T19	DVCCM6	G15	SG4/A20
W16	PM1/2S1CLK	M16	SB7/D15	J11	DVSSCOM26
N11	PL3/2S0MCLK/SP1DI	P18	SB4/D12	G16	SG2/A18
L10	DVSSCOM15	L11	DVSSCOM21	G17	SF4/A12
R12	PL0/2S0WS/SP1FSS	L12	PP3/INT3	F15	SG5/A21
U14	DVCC3D52	M17	PP4/INT4	D19	DVCCM9
T13	PR0/RESETOUT1	L13	PP5/INT5	F16	SG3/A19
W15	PR1/SMCWP1/FCOUT	R19	PP6/INT6	E18	SE5/A5
W17	DVCC1A6	L14	PP7/INT7	F17	SF5/A13
U15	DVCCM1	N18	PA0/K0	G14	DVSSCOM27
R13	SC3/D19	P19	DVCC3D12	E15	SG6/A22
V16	SA0/D0	N19	PA1/K1	D18	SE6/A6
P12	SC6/D22	L15	PA2/K2	C19	SE7/A7
M11	DVSSCOM16	L17	PA3/K3	E16	DVCCM10
P13	SC5/D21	L16	PA4/K4	C18	SF1/A9
W18	SL6/DMCCLKIN	M18	PA5/K5	E17	SF6/A14
P14	SC4/D20	-	-	D17	SF7/A15
-	-	M19	PA6/K6	H13	DVSSCOM28
T14	SC1/D17	K16	PA7/K7	B19	SF0/A8
V17	SA1/D1	L19	DVCC1A8	C17	SG0/A16
V18	SA2/D2	K15	PB0/K0	D16	DVSSCOM29
-	-	L18	PB1/K1	B18	SH3/DMCSDQM3
R14	SC2/D18	K13	PB2/K2	A18	SH2/DMCSDQM2
R15	SC0/D16	K17	SM5	D15	DVCCM11
U16	SA3/D3	K19	DVCC3D13	C16	SL2/DMCAP
T15	DVCCM3	K18	PB3/K3	E14	SG7/A23
T16	SA5/D5	K14	PB4/K4	D14	DVSSCOM30
U17	SL4/DMCDDQS0	J19	PB5/K5	C15	SL4/DMC6A0
V19	SL5/DMCDDQS1	K11	DVSSCOM23	C14	SL5/DMC6A1
N13	DVSSCOM18	J18	PB6/K6	F14	DVSSCOM31
T17	SA6/D6	J15	PB7/K7	F13	SH1/A25
R17	SB0/D8	H19	PC0/K0	E13	DVCC1A10
R16	SA7/D7	J16	PC1/K0	B17	SH0/DMCSDQM0/DMCDDM0
P15	DVCCM4	-	-	B16	DVCCM12
N14	SD0/D24	J14	DVCC1B2	G13	SH0/A24
U18	SA4/D4	J17	SF2/A10	A17	DVSSCOM32
P16	SB2/D10	J13	SD7/D31	D13	SH7/SMC6E31
M12	DVSSCOM19	H18	SE2/A2	C13	SH2/DMCPAS1
N15	SD7/D23	K12	DVCCM7	B13	DVSSCOM33
P17	SB3/D11	G19	SE0/A0	D12	SH5/SMC6E11
U19	DVCC1A7	H16	SG1/A17	H12	PR2/INTH
N12	SD1/D25	G18	SE3/A3	B15	DVCCM13
T18	DVCCM5	J12	DVSSCOM25	F12	SH2/SMC6E01
M13	SD4/D28	H17	SF3/A11	C12	SH6/SMC6E21
N17	SB6/D14	H15	SD5/D29	E12	SH4/SMCWE1
N16	SB5/D13	F19	SE1/A1	A14	DVSSCOM34
K10	DVSSCOM20	-	-	A16	SL0/DMCCLKP

## ● Pin Numbers and Names (3/3)

Ball No.	Pin name	Ball No.	Pin name
A15	SL1/DMCCLIN	A4	DVCC3LCD4
-	-	J6	PJ2/LD10
B14	SK1/DMCSDQM1/DMCDDM1	B3	PJ1/LD9
D11	SJ7/SMCAVD	E7	SU2/LCLLE
F10	DVCCM14	C6	DVSSCOM43
G12	SJ1/DMCWE	G8	PJ5/LD13
A13	SL3/SMCLK	A3	PJ4/LD12
F11	DVCC1A11	D6	PJ3/LD11
B11	DVSSCOM36	A2	DVCC3LCD5
E11	SJ0/SMCOE	C4	SU1/LCLAC
B12	SJ3/DMCCAS	B5	PJ7/LD15
A12	DVSSCOM37	D5	PJ6/LD14
B10	SH5/SMCCS2	H9	DVSSCOM44
E10	SH6/SMCCS3	C5	SU3/LCLFP
-	-	F7	SU4/LCLLP
D10	SH3/SMCCS0	F6	PI7/LD23
A11	SJ6/DMCKE	B2	DVCC1A14
-	-		
C10	SH4/SMCCS1		
C11	SH7/DMCCS		
A10	DVSSCOM39		
G11	SL7/SMCWAIT		
A9	DVCC1A12		
G10	PI1/LD17		
B9	PI0/LD16		
D9	DVCC3LCD1		
C9	ST2/LD2		
E9	ST1/LD1		
A8	ST0/LD0		
H11	DVSSCOM40		
B8	PI4/LD20		
F9	PI3/LD19		
A7	PI2/LD18		
D8	DVCC3LCD2		
B7	ST5/LD5		
G9	ST4/LD4		
C8	ST3/LD3		
H10	DVSSCOM41		
A6	SU0/LCLCP		
B8	PI6/LD22		
B6	PI5/LD21		
D7	DVCC3LCD3		
C7	PJ0/LD8		
H8	ST7/LD7		
B5	ST6/LD6		
J9	DVSSCOM42		
A5	DVCC1A13		
F8	SU7/LPRG2		
B4	SU6/LPRG1		
I7	SU5/LPRG0		

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