TOSHIBA
Leading Innovation

March 2007

32bit | TX19 Family TX19A Series | 281pin

TMP19A64F20BXBG

FLASH
NANO FLASH™

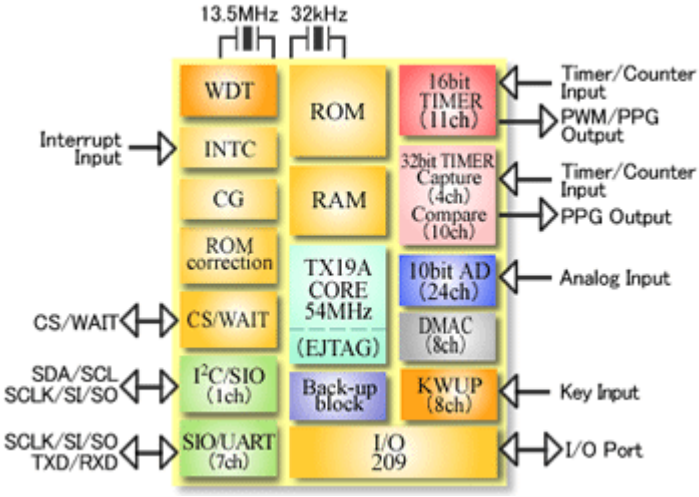
32-bit high performance RISC microcontroller containing industry's largest 2-MB Flash memory

TX System RISC

Features

TX19A CPU Core

·Operating voltage:
I/O = 1.65 to 3.3 V
Internal = 1.35 to 1.65 V
·Maximum Operating frequency:
54 MHz (13.5 MHz × 4 by PLL)
·Internal ROM: 2 Mbytes
·Internal RAM: 64 Kbytes



Built-in Functions

·10-bit AD converter	:	24 channels
·DMA controller	:	8 channels
·16-bit timer	:	11 channels
·32-bit timer	:	1 channel
Compare register	:	10 channels
Capture register	:	4 channels
·SIO/UART	:	7 channels
·I^2C/SIO	:	1 channel
·Key-on wake-up	:	8 channels

·Multiplex /separate bus selectable
·ROM correction function
·Back-up block

Product Lineup

Part number	ROM	RAM
TMP19A64C1DXBG	1.5 Mbytes	56 Kbytes

› For further information about Toshiba microcomputers, please visit http://www.semicon.toshiba.co.jp/eng/product/micro/index.html
› Contact the Toshiba sales representative for information about RoHS compliance before you purchase any components.

Development Systems

Software Products

Toshiba Integrated Development Environment (TIDE)		Real-Time OS (µITRON 4.0)
C Compiler	Integrated Development Environment	
SW1ACN0-ZCC: 1 license SW1ACN3-ZCC: 10 licenses	SW00MN0-ZCC: 1 license SW00MN3-ZCC: 10 licenses	SW1ARN5-ZCC: Object code can be freely copied. SW1ARNF-ZCC: Object code can be freely copied. With source code.

Hardware Products

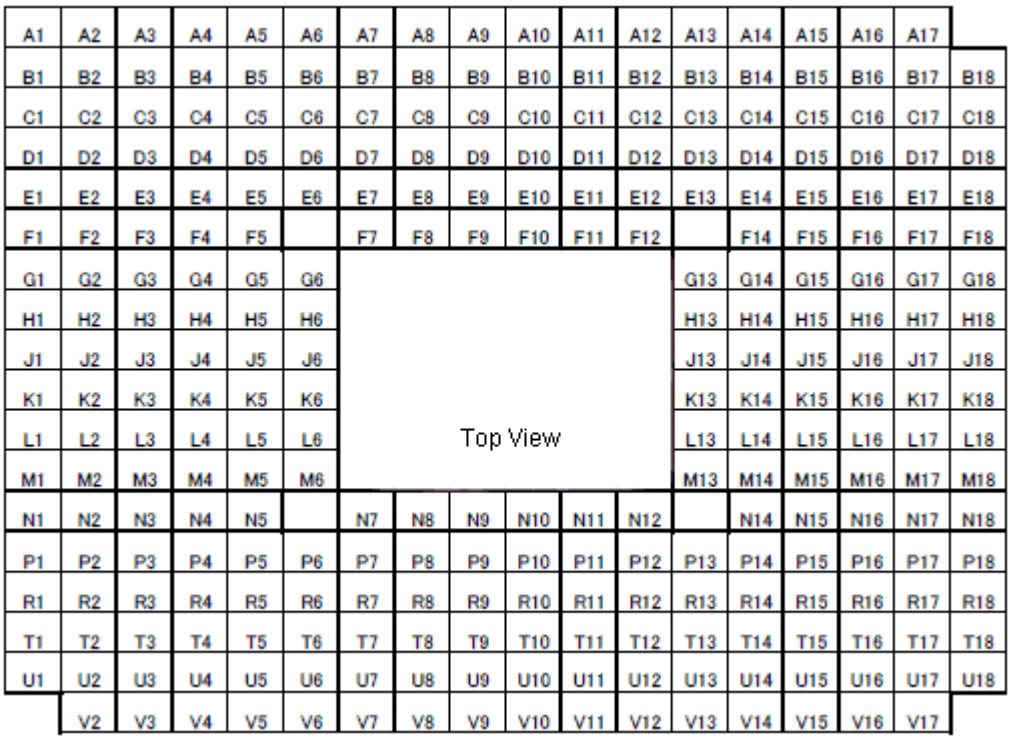
Part number	Emulator
	DSU PROBE model 110/120
TMP19A64F20BXBG	BM1210R0A/BM1211R0A

›The DSU PROBE comes with one download license of the Integrated Development Environment.
›For further information about Toshiba microcomputer development systems, please visit http://www.semicon.toshiba.co.jp/eng/product/micro/index.html

Pin Numbers and Names

Pin No.	Pin Name	Pin No.	Pin Name	Pin No.	Pin Name	Pin No.	Pin Name	Pin No.	Pin Name
A1	N.C.	A13	PN2	B8	P75/AN5	C2	PCST3 (EJTAG)	C14	PM7
A2	VREFL	A14	PN0	B9	PL0	C3	P92/AN18	C15	PM3
A3	P90/AN16	A15	PM5	B10	PL3	C4	P95/AN21	C16	PK3/KEY3
A4	P93/AN19	A16	PM1	B11	P05/TXD6	C5	P82/AN10	C17	CVCC15
A5	P80/AN8	A17	X2	B12	P01/INT1	C6	P85/AN13	C18	XT2
A6	P83/AN11	B1	AVCC31	B13	PN3	C7	P72/AN2	D1	TDO (EJTAG)
A7	P70/AN0	B2	VREFH	B14	PN1	C8	AVSS	D2	PCST2 (EJTAG)
A8	P74/AN4	B3	P91/AN17	B15	PM4	C9	PL1	D3	DINT (EJTAG)
A9	P07/SCLK6/CTS6	B4	P94/AN20	B16	PM0	C10	PL4	D4	DVCC15
A10	PL2	B5	P81/AN9	B17	CVSS/BVSS	C11	P04/INT4	D5	P96/AN22
A11	P06/RXD6	B6	P84/AN12	B18	X1	C12	PN6	D6	P86/AN14
A12	P00/INT0	B7	P71/AN1	C1	PCST0 (EJTAG)	C13	PN4	D7	P73/AN3
D8	DVCC15	F18	P46/SCOUT	K14	P11/INT1	N18	P14/D12/AD12/A12	T8	PD4/TXD4
D9	DVSS	G1	RESET	K15	P13/INT3	P1	PE4	T9	PC0/TXD0
D10	PL5	G2	TDI (EJTAG)	K16	P14/INT4	P2	PA2/TB0OUT	T10	PC3/TXD1
D11	P03/INT3	G3	FVCC15	K17	DVCC30	P3	PA3/TB1IN0/INT7	T11	PH4/TC0UT8
D12	PN7	G4	DVSS	K18	P12/INT2	P4	PA4/TB1IN1/INT8	T12	PH6
D13	PN5	G5	TOVR/TSTA (EJTAG)	L1	FVCC3	P5	PA5/TB1OUT	T13	P53/A3
D14	PM2	G6	BW0	L2	PQ1/TPD1/TPC1 (EJTAG)	P6	PB6/TBAIN0	T14	P61/A9
D15	DVCC34	G13	PK7/KEY7	L3	PQ2/TPD2/TPC2 (EJTAG)	P7	PG2/TC2IN	T15	P21/A17/A1/A17
D16	PK2/KEY2	G14	BRESET	L4	PQ3/TPD3/TPC3 (EJTAG)	P8	PD6/SCLK4/CTS4	T16	P23/A19/A3/A19
D17	PK4/KEY4	G15	P41/CS1	L5	PE6/INTA	P9	PC2/SCLK0/CTS0	T17	P00/D0/AD0
D18	XT1	G16	P37/ALE	L6	PE7/INTB	P10	PC5/SCLK1/CTS1	T18	P01/D1/AD1
E1	DCLK (EJTAG)	G17	P35/BUSAK	L13	P13/D11/AD11/A11	P11	P52/A2	U1	PB4/TB8OUT
E2	PCST1 (EJTAG)	G18	FVCC15	L14	P17/D15/AD15/A15	P12	P62/A10	U2	PB3/TB7OUT
E3	TRST (EJTAG)	H1	NMI	L15	FVCC15	P13	P65/A13	U3	PB7/TBAIN1
E4	PCST4 (EJTAG)	H2	DVCC31	L16	P10/INT0	P14	P26/A22/A6/A22	U4	PF1/SI/SCL
E5	END1AN	H3	PP7/TPD7 (EJTAG)	L17	P45/CS5	P15	P02/D2/AD2	U5	PF5/DREQ3
E6	P97/AN23	H4	BW1	L18	PJ3/DACK3	P16	P10/D8/AD8/A8	U6	PG1/TC1IN
E7	P87/AN15	H5	PLLOFF	M1	PQ0/TPD0/TPC0 (EJTAG)	P17	P12/D10/AD10/A10	U7	PD2/RXD3
E8	P76/AN6	H6	TCK (EJTAG)	M2	PQ7/TPD7/TPC7 (EJTAG)	P18	P11/D9/AD9/A9	U8	DVCC32
E9	P77/AN7	H13	TEST1	M3	PQ4/TPD4/TPC4 (EJTAG)	R1	PA0/TB0IN0/INT5	U9	PC7/RXD2
E10	PL6	H14	P31/WR	M4	PE3	R2	PA1/TB0IN1/INT6	U10	PH1/TC0UT5
E11	PL7	H15	P32/HWR	M5	PA7/TB3OUT	R3	PF3/DREQ2	U11	PH5/TC0UT9
E12	PM6	H16	P33/WAIT/RDY	M6	DVCC32	R4	PF4/DACK2	U12	P50/A0
E13	PK6/KEY6	H17	P30/RD	M13	P06/D6/AD6	R5	PF7/TBTIN	U13	P55/A5
E14	PK5/KEY5	H18	P40/CS0	M14	P07/D7/AD7	R6	PG7/TC0UT3	U14	DVCC33
E15	BVCC	J1	PP2/TPD2 (EJTAG)	M15	DVSS	R7	PG4/TC0UT0	U15	P64/A12
E16	PK1/KEY1	J2	PP3/TPD3 (EJTAG)	M16	PJ0/DREQ2	R8	PD5/RXD4	U16	P20/A16/A0/A16
E17	PK0/KEY0	J3	PP4/TPD4 (EJTAG)	M17	PJ2/DREQ3	R9	PC1/RXD0	U17	P24/A20/A4/A20
E18	DVCC15	J4	PP5/TPD5 (EJTAG)	M18	PJ1/DACK2	R10	PC4/RXD1	U18	FVCC3
F1	DVSS	J5	PP6/TPD6 (EJTAG)	N1	PE5	R11	PH3/TC0UT7	V2	PB5/TB9OUT
F2	TMS (EJTAG)	J6	FVCC15	N2	PE0/TXD5	R12	P51/A1	V3	PG0/TC0IN
F3	EJE (EJTAG)	J13	DVSS	N3	PE2/SCLK5/CTS5	R13	P57/A7	V4	PF0/SO/SDA
F4	BUSMD	J14	P47	N4	PE1/RXD5	R14	P66/A14	V5	PG3/TC3IN
F5	BOOT	J15	N.C.	N5	PA6/TB2OUT	R15	P25/A21/A5/A21	V6	PG6/TC0UT2
F7	AVSS	J16	P44/CS4	N7	DVSS	R16	P03/D3/AD3	V7	PD1/TXD3
F8	AVSS	J17	P36/ R/W	N8	PD7/INT9	R17	P04/D4/AD4	V8	PD0/SCLK2/CTS2
F9	AVCC32	J18	P34/BUSRQ	N9	DVCC15	R18	P05/D5/AD5	V9	PC6/TXD2
F10	DVCC34	K1	PP0/TPD0 (EJTAG)	N10	DVSS	T1	PB0/TB4OUT	V10	PH2/TC0UT6
F11	P02/INT2	K2	PP1/TPD1 (EJTAG)	N11	P56/A6	T2	PB1/TB5OUT	V11	PH0/TC0UT4
F12	DVSS	K3	PQ5/TPD5/TPC5 (EJTAG)	N12	DVSS	T3	PB2/TB6OUT	V12	PH7
F14	BUPMD	K4	PQ6/TPD6/TPC6 (EJTAG)	N14	P27/A23/A7/A23	T4	PF2/SCK	V13	P54/A4
F15	P42/CS2	K5	DVSS	N15	P15/D13/AD13/A13	T5	PF6/DACK3	V14	P60/A8
F16	P43/CS3	K6	DVSS	N16	TEST3	T6	PG5/TC0UT1	V15	P63/A11
F17	DVCC33	K13	TEST2	N17	P16/D14/AD14/A14	T7	PD3/SCLK3/CTS3	V16	P67/A15
								V17	P22/A18/A2/A18

Pin Assignments



Package name FBGA281-P-1313-0.65B6

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Semiconductor Company

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