


32bit	TX19 Family TX19A Series  <h1 style="margin: 0;">TMP19A64F20BXBG</h1>	 281pin
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**32-bit high performance RISC microcontroller  
containing industry's largest 2-MB Flash memory**



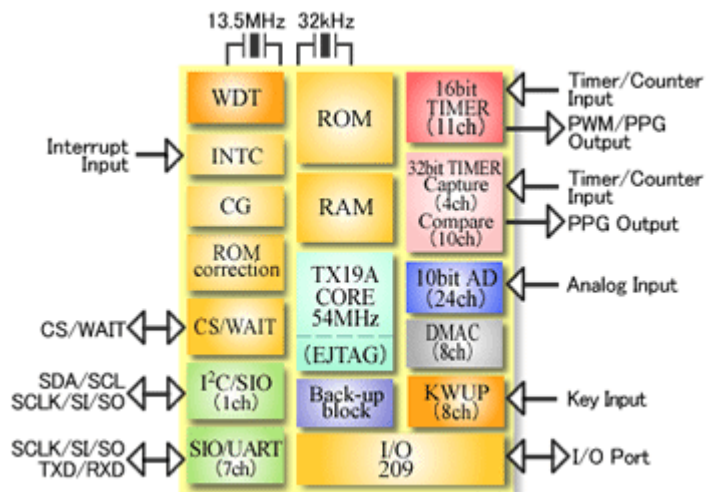
## Features

### ● 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<sup>2</sup>C/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
TMP19A64CIDXBG	1.5 Mbytes	56 Kbytes

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 > 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
	TMP19A64F20BXBG

>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>

## Package Information

### ● 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	TD0 (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	TD1 (EJTAG)	K16	P14/INT4	P2	PA2/TB00UT	T10	PC3/TXD1
D11	P03/INT3	G3	FVCC15	K17	DVCC30	P3	PA3/TB1IN0/INT7	T11	PH4/TCOUT8
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	PS3/A3
D14	PM2	G6	BW0	L2	P01/TPD1/TPC1 (EJTAG)	P6	PB6/TBAIN0	T14	P61/A9
D15	DVCC34	G13	PK7/KEY7	L3	P02/TPD2/TPC2 (EJTAG)	P7	P62/TC2IN	T15	P21/A17/A1/A17
D16	PK2/KEY2	G14	BRESET	L4	P03/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/TB80UT
E2	PCST1 (EJTAG)	G18	FVCC15	L14	P17/D15/AD15/A15	P12	P62/A10	U2	PB3/TB70UT
E3	TRST (EJTAG)	H1	NM1	L15	FVCC15	P13	P65/A13	U3	PB7/TBAIN1
E4	PCST4 (EJTAG)	H2	DVCC31	L16	P10/INT0	P14	P26/A22/A6/A22	U4	PF1/S1/SCL
E5	END1AN	H3	PP7/TPD7 (EJTAG)	L17	P45/CS5	P15	P02/D2/AD2	U5	PF5/DRE03
E6	P97/AN23	H4	BW1	L18	PJ3/DACK3	P16	P10/D8/AD8/A8	U6	PG1/TC1IN
E7	P87/AN15	H5	PLLOFF	M1	P00/TPD0/TPC0 (EJTAG)	P17	P12/D10/AD10/A10	U7	P02/RXD3
E8	P76/AN6	H6	TCK (EJTAG)	M2	P07/TPD7/TPC7 (EJTAG)	P18	P11/D9/AD9/A9	U8	DVCC32
E9	P77/AN7	H13	TEST1	M3	P04/TPD4/TPC4 (EJTAG)	R1	PA0/TB0IN0/INT5	U9	PC7/RXD2
E10	PL6	H14	P31/WR	M4	PE3	R2	PA1/TB0IN1/INT6	U10	PH1/TCOUT5
E11	PL7	H15	P32/HMR	M5	PA7/TB30UT	R3	PF3/DRE02	U11	PH5/TCOUT9
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/TB1IN	U13	P55/A5
E14	PK5/KEY5	H18	P40/CS0	M14	P07/D7/AD7	R6	P67/TCOUT3	U14	DVCC33
E15	BVCC	J1	PP2/TPD2 (EJTAG)	M15	DVSS	R7	P64/TCOUT0	U15	P64/A12
E16	PK1/KEY1	J2	PP3/TPD3 (EJTAG)	M16	PJ0/DRE02	R8	P05/RXD4	U16	P20/A16/A0/A16
E17	PK0/KEY0	J3	PP4/TPD4 (EJTAG)	M17	PJ2/DRE03	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/TCOUT7	V2	PB5/TB90UT
F2	TWS (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/S0/SDA
F4	BUSMD	J14	P47	N4	PE1/RXD5	R14	P66/A14	V5	PG3/TC3IN
F5	BOOT	J15	N.C.	N5	PA6/TB20UT	R15	P25/A21/A5/A21	V6	PG6/TCOUT2
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/BUSR0	N9	DVCC15	R18	P05/D5/AD5	V9	PC6/TXD2
F10	DVCC34	K1	PP0/TPD0 (EJTAG)	N10	DVSS	T1	PB0/TB40UT	V10	PH2/TCOUT6
F11	P02/INT2	K2	PP1/TPD1 (EJTAG)	N11	P56/A6	T2	PB1/TB50UT	V11	PH0/TCOUT4
F12	DVSS	K3	P05/TPD5/TPC5 (EJTAG)	N12	DVSS	T3	PB2/TB60UT	V12	PH7
F14	— BUPND	K4	P06/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	P65/TCOUT1	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

A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	
B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18
C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18
E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18
F1	F2	F3	F4	F5		F7	F8	F9	F10	F11	F12		F14	F15	F16	F17	F18
G1	G2	G3	G4	G5	G6	Top View						G13	G14	G15	G16	G17	G18
H1	H2	H3	H4	H5	H6							H13	H14	H15	H16	H17	H18
J1	J2	J3	J4	J5	J6							J13	J14	J15	J16	J17	J18
K1	K2	K3	K4	K5	K6							K13	K14	K15	K16	K17	K18
L1	L2	L3	L4	L5	L6							L13	L14	L15	L16	L17	L18
M1	M2	M3	M4	M5	M6							M13	M14	M15	M16	M17	M18
N1	N2	N3	N4	N5		N7	N8	N9	N10	N11	N12		N14	N15	N16	N17	N18
P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18
R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15	R16	R17	R18
T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18
U1	U2	U3	U4	U5	U6	U7	U8	U9	U10	U11	U12	U13	U14	U15	U16	U17	U18
	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	

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