

4-BIT MICROCONTROLLERS

TLCS-47 Series (CMOS)

FEATURES

Basic Functions

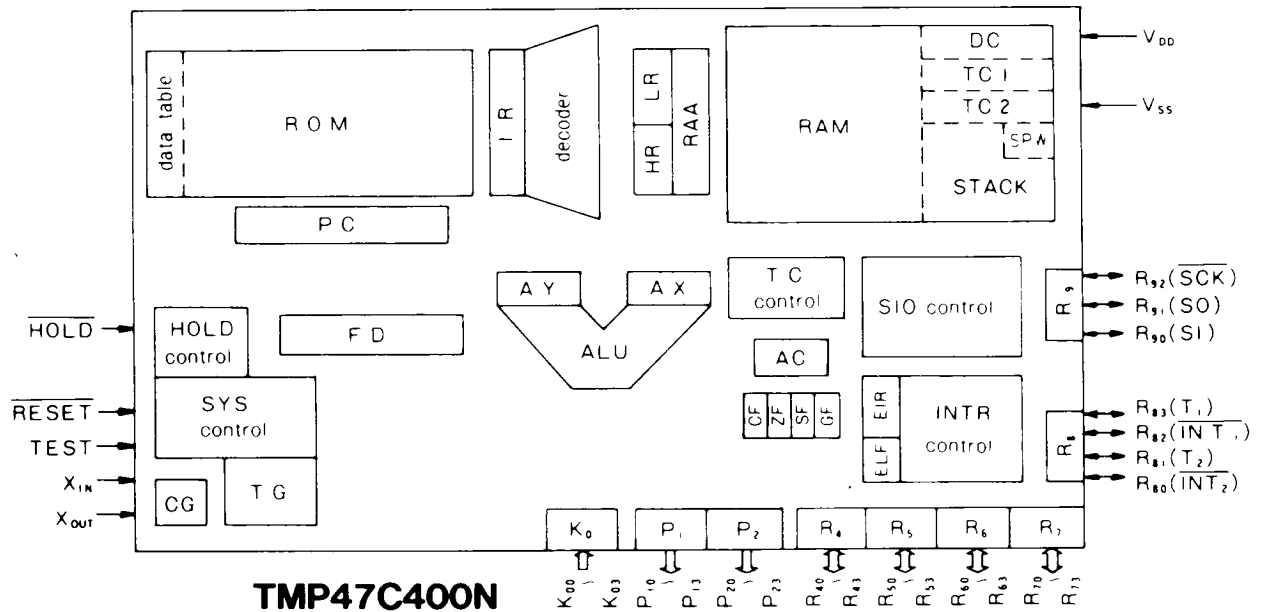
- (1) Max. 4K byte ROM and max. 768-nibble RAM
- (2) 90 instructions; min. execution time $1.9\mu\text{s}$ (at 4.19 MHz)
- (3) ROM data read-out function by Table Look-up instruction
- (4) 5-bit to 8-bit data conversion instruction
- (5) Max. 15 levels of subroutine nesting
- (6) 6 interrupt sources (2 external/4 internal)
- (7) Two 12-bit timer/counters
- (8) Interval timer
- (9) Serial interface

Specific On-Board Functions

Devices with the following on-chip functions are available:

- (1) VFT driver (12×8 or 16×8)
- (2) LCD driver (24×4 or 32×4)
- (3) LED driver (8 lines)
- (4) HOLD function with low power consumption
- (5) Many inputs/outputs
- (6) D/A conversion output (pulse width modulation)
- (7) A/D conversion input circuit
- (8) A/D converter
- (9) DTMF generator
- (10) Watchdog timer
- (11) Dual clock system

BLOCK DIAGRAM



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4-BIT MICROCONTROLLER – TLCS47 CMOS SERIES

PART NUMBER	FUNCTIONS		ROM (bit)	RAM (bit)	I/O (bit)	MINIMUM CYCLE TIME (μS)	SUPPLY VOLTAGE (V)	PACKAGE							
TMP47C200AN TMP47C200AF	STANDARD (LED DRIVER)		2048 × 8	128 × 4	36	1.9	4.5–6.0	42-PIN SDIP 44-PIN PQFP							
TMP47C400AN TMP47C400AF			4096 × 8	256 × 4				58	64-PIN SDIP						
TMP47C460AN TMP47C460AF					42-PIN SDIP 44-PIN PQFP										
TMP47C210AN TMP47C210AF	VFT DRIVER		2048 × 8	128 × 4	36			42-PIN SDIP 44-PIN PQFP							
TMP47C410AN TMP47C410AF			4096 × 8	256 × 4					35	42-PIN SDIP					
TMP47C212AN			2048 × 8	128 × 4							55	1.9 (244)	64-PIN SDIP		
TMP47C412AN			4096 × 8	256 × 4	67-PIN PQFP										
TMP47C475AN						D/A CONVERSION PWM OUTPUT WATCHDOG TIMER, DUAL CLOCK		28						1.9	64-PIN PQFP
TMP47C220AF						2048 × 8			192 × 4	27	1.9 (244)	67-PIN PQFP			
TMP47C420AF			4096 × 8	256 × 4	24	30-PIN SDIP									
TMP47C221AF	2048 × 8	192 × 4	36	42-PIN SDIP											
TMP47C421AF	4096 × 8	256 × 4						22	30-PIN SDIP						
TMP47P421AF	OTP 4096 × 8				24	42-PIN SDIP									
TMP47C423AF	HIGH SPEED EVENT COUNTER		23	34						42-PIN SDIP 44-PIN PQFP					
TMP47C425AF	DUAL CLOCK SYSTEM							24	1.9 (244)		64-PIN PQFP				
TMP47C231AN	4-BIT A/D CONV. INPUT, 8-BIT SERIAL I/O REMOTE CONTROL PRE-PROCESSING				23	1.9 (244)						64-PIN PQFP			
TMP47C232AN	D/A CONVERSION	3-STATE A/D CONVERSION INPUT	2048 × 8	128 × 4						36			42-PIN SDIP		
TMP47C432AN		4096 × 8						256 × 4							
TMP47C233AN	LED DRIVER	3-BIT A/D CONVERSION INPUT	2048 × 8	128 × 4	36	1.9		2.2–6.0	42-PIN SDIP 44-PIN PQFP						
TMP47C433AN			4096 × 8	256 × 4						22	30-PIN SDIP				
TMP47C236AN		OSD (3-COL)	2048 × 8	128 × 4	24							42-PIN SDIP 44-PIN PQFP			
TMP47C336AN			3072 × 8	192 × 4						23	34		64-PIN PQFP		
TMP47C237AN		OSD (BAR DISPLAY)	2048 × 8	128 × 4	24							30-PIN SDIP			
TMP47C337AN			3072 × 8	192 × 4						23	34		42-PIN SDIP 44-PIN PQFP		
TMP47C242AN	A/D CONVERTER	LED DRIVER	2048 × 8	128 × 4	34	1.9 (244)		2.2–6.0	42-PIN SDIP 44-PIN PQFP						
TMP47C440AN TMP47C440AF		WATCHDOG TIMER	VFT DRIVER	4096 × 8						256 × 4	24	1.9 (244)	64-PIN PQFP		
TMP47C441AN TMP47C441AF														LCD DRIVER DUAL CLOCK	30-PIN SDIP
TMP47C446AF															
TMP47C451AN	DTMF GENERATOR	LCD DRIVER DUAL CLOCK	4096 × 8	768 × 4	35	8.3	2.2–6.0	42-PIN SDIP 44-PIN PQFP							
TMP47C452AN TMP47C452AF									8.3/16.7 (244)	2.7–6.0					
TMP47C455AF											8.3 (244)	2.2–6.0			
TMP47C456AF													8.3	2.2–6.0	
TMP47C453AN TMP47C453AF	8.3	2.2–6.0													