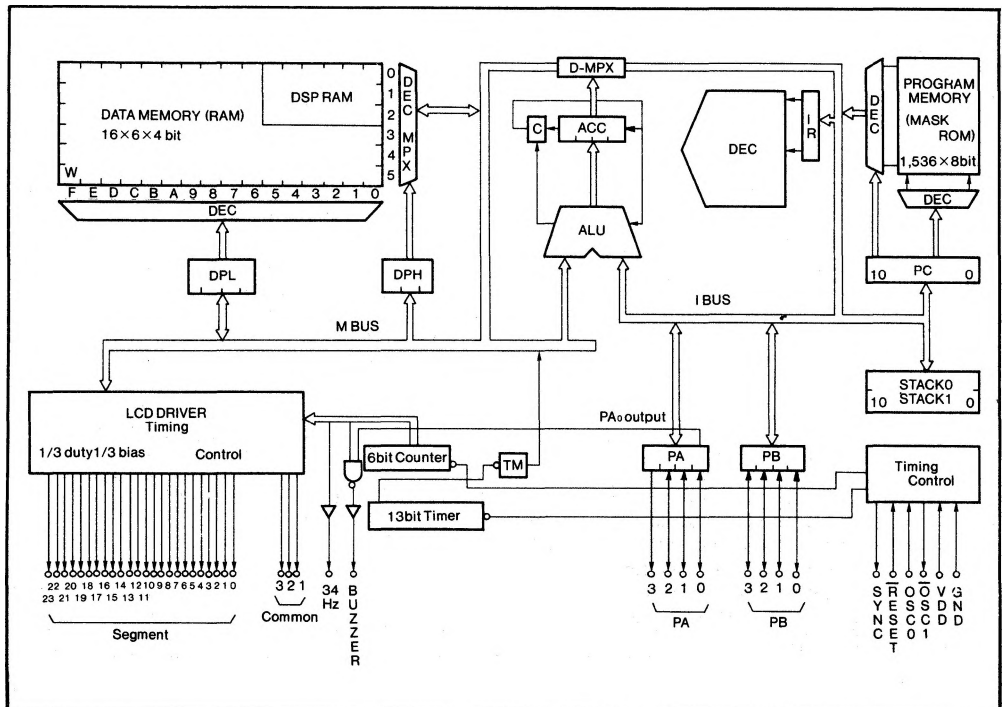
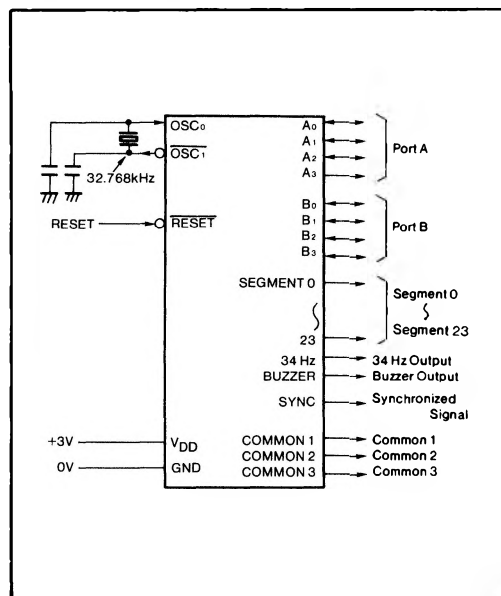
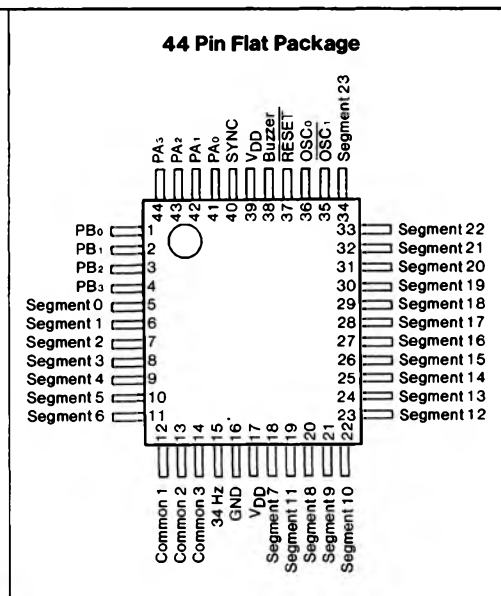




LOGIC SYMBOL



PIN CONFIGURATION



ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Conditions	Limits	Unit
Supply Voltage	V_{DD}	$T_a = 25^\circ\text{C}$	$-0.3 \sim 7$	V
Input Voltage	V_I		$-0.3 \sim V_{DD}$	V
Output Voltage	V_O		$-0.3 \sim V_{DD}$	V
Storage Temperature	T_{stg}	—	$-55 \sim +125$	$^\circ\text{C}$

OPERATING CONDITIONS

Parameter	Symbol	Condition	Limits	Unit
Supply Voltage	V_{DD}	$f(\text{OSC}) = 32.768 \text{ kHz}$	$2.7 \sim 3.3$	V
Operating Temperature	T_{OP}	—	$-20 \sim +70$	$^\circ\text{C}$

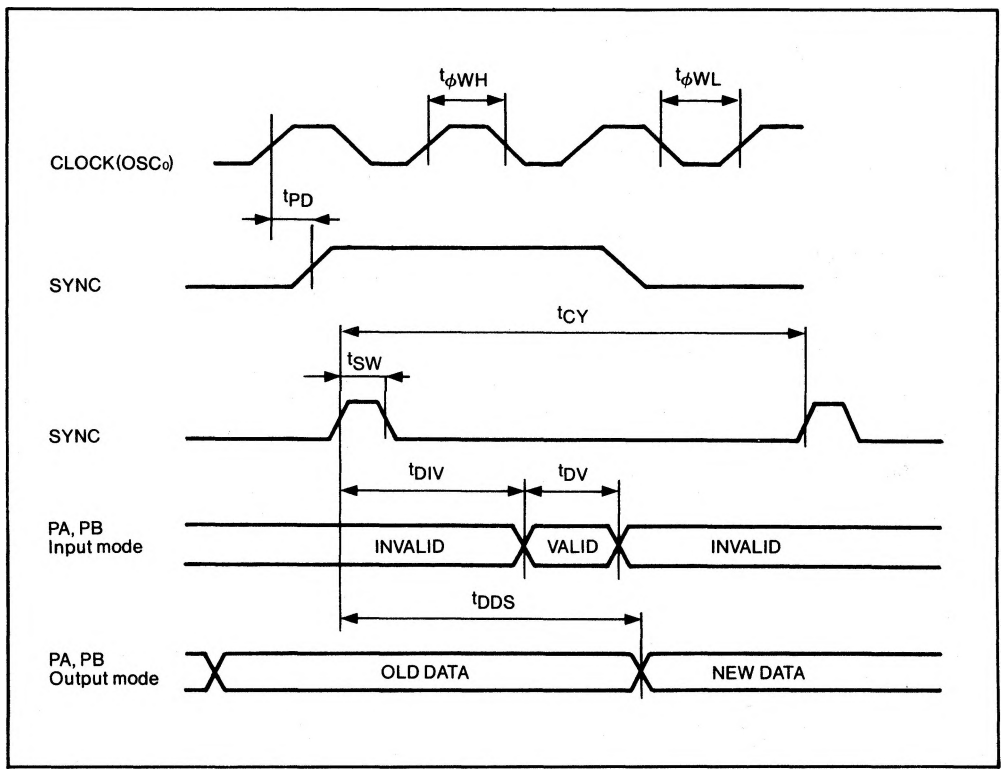
AC CHARACTERISTICS

($V_{DD} = 3V \pm 10\%$, $T_a = -20 \sim +70^\circ C$)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
SYNC Delay Time from Clock (OSC ₀)	t_ϕ	$C_L = 50 \text{ pF}$	—	—	5	μS
Clock (OSC ₀) Pulse Width	$t_{\phi WH}$ $t_{\phi WL}$		15	—	—	μS
Cycle Time	t_{CY}	—	Note (1)	—	—	μS
SYNC Pulse Width	t_{SW}	—	Note (2)	—	—	μS
PA, PB Data Valid Time	t_{DV}	—	Note (3)	—	—	μS
PA, PB Data Invalid Time	t_{DIV}	$C_L = 50 \text{ pF}$	—	—	Note (4)	μS
Data Delay Time	t_{DDS}	—	—	—	Note (5)	μS

Note: (1) $t_{CY} = 20 \times 1/f \text{ (OSC)}$
 (2) $t_{SW} = 2 \times 1/f \text{ (OSC)}$
 (3) $t_{DV} = 4 \times 1/f \text{ (OSC)}$
 (4) $t_{DIV} = 8 \times 1/f \text{ (OSC)} + 20 \mu S$
 (5) $t_{DDS} = 17 \times 1/f \text{ (OSC)} + 40 \mu S$

$f \text{ (OSC)} = 32.768 \text{ kHz}$
 $t_{CY} = 610 \mu S$
 $t_{SW} = 61 \mu S$
 $t_{DV} = 122 \mu S$
 $t_{DIV} = 264 \mu S$
 $t_{DDS} = 558.5 \mu S$



DC CHARACTERISTICS

($V_{DD} = 3V \pm 10\%$, $T_a = -20 \sim +70^\circ\text{C}$)

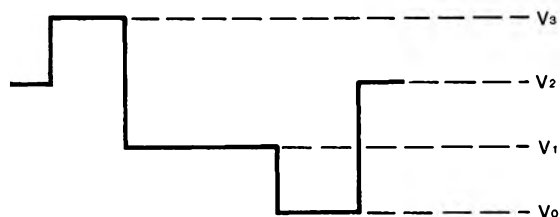
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
"H" Input Voltage	V_{IH}	—	$V_{DD} - 0.2$	—	—	V
"L" Input Voltage	V_{IL}	—	—	—	0.3	V
*1 Common, Segment Output Voltage	V_0	Applicable to Common 1~3 Segment 0~23	0	—	0.2	V
	V_1		$\frac{1}{3}V_{DD} - 0.2$	—	$\frac{1}{3}V_{DD} + 0.2$	V
	V_2		$\frac{2}{3}V_{DD} - 0.2$	—	$\frac{2}{3}V_{DD} + 0.2$	V
	V_3		$V_{DD} - 0.2$	—	V_{DD}	V
"H" Output Voltage *2 *3 *4	V_{OH}	$I_O = 1\mu\text{A}$	$V_{DD} - 0.2$	—	—	V
"L" Output Voltage *2	V_{OL}	$I_O = 1\mu\text{A}$	—	—	0.2	V
"L" Output Voltage *3 *4	V_{OL}	$I_O = 1\text{mA}$	—	—	1.0	V
OSC ₀ Input Current	I_{IH}/I_{IL}	$V_I = V_{DD}/V_I = 0V$	—	—	5/-5	μA
RESET Input Current	I_{IH}/I_{IL}	$V_I = V_{DD}/V_I = 0V$	—	—	1/-15	μA
Current Consumption	I_{DD}	$V_{DD} = 3V$ $f = 32.768\text{kHz}$, no load	—	50	100	μA

Note: *1 Applicable to PA₀~2, PB₀~3, SYNC and 34 Hz

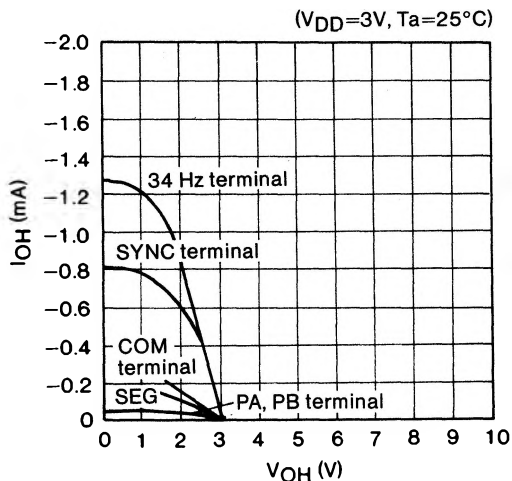
*2 Applicable to PA₃

*3 Applicable to BUZZER

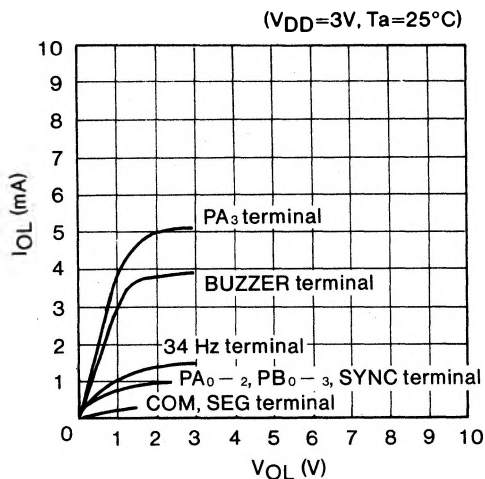
Level of Output Voltage for Common, Segment



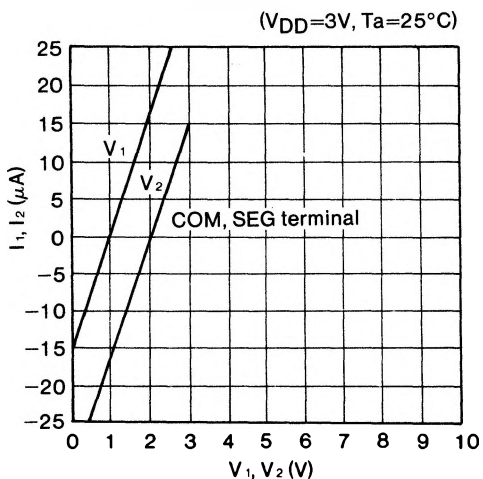
TYP. Output Current (I_{OH}) vs Output Voltage (V_{OH}) for High-level State



TYP. Output Current (I_{OL}) vs Output Voltage (V_{OL}) for Low-level State



TYP. Output Current (I_1 , I_2) vs Output Voltage (V_1 , V_2) for Middle-level State



Supply Current (I_{DD}) vs Supply Voltage (V_{DD})

