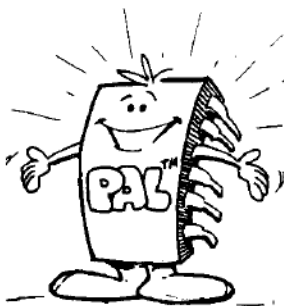
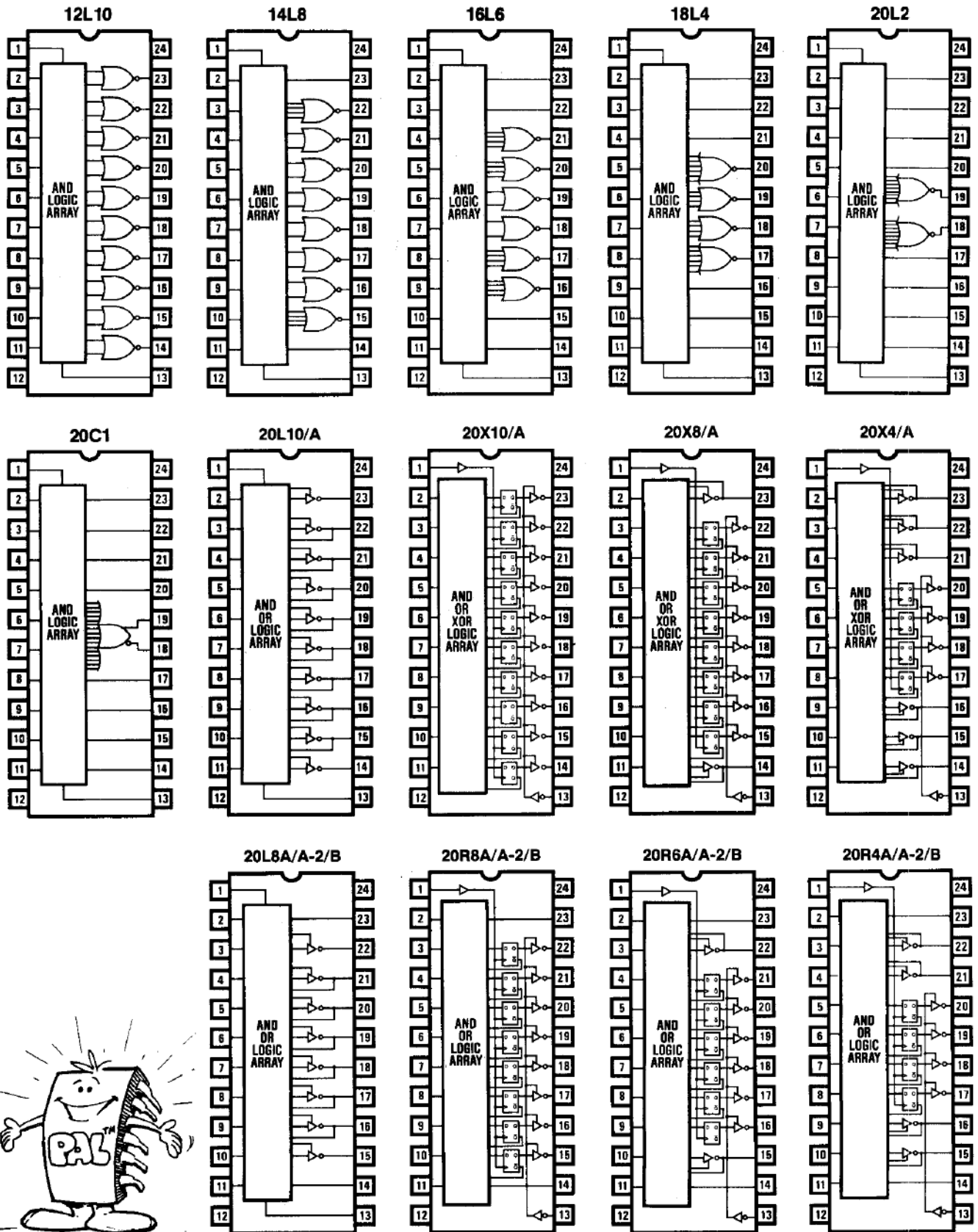
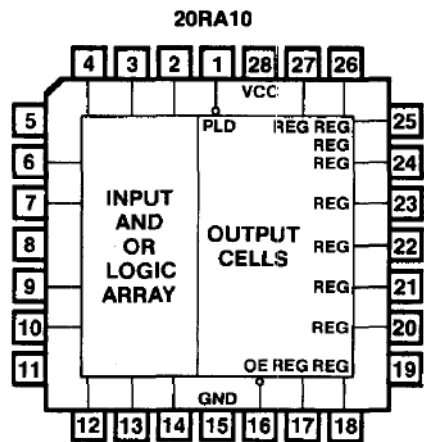
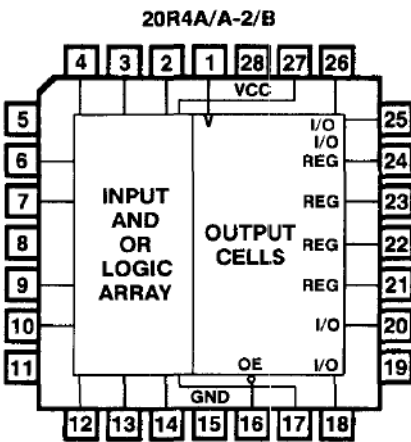
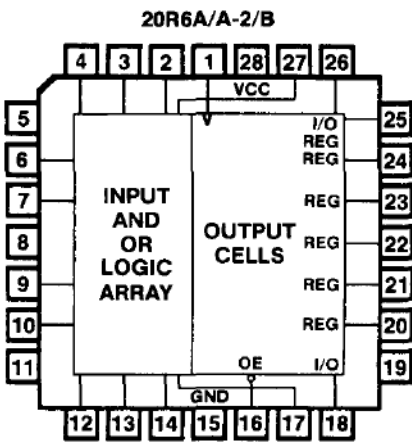
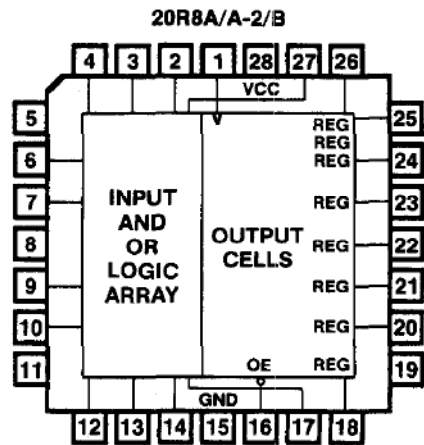
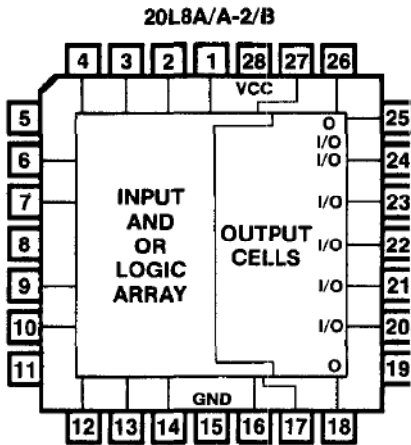
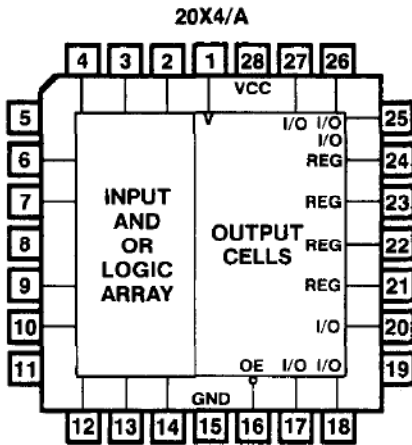
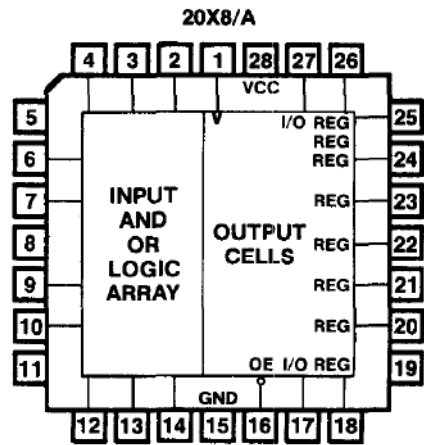
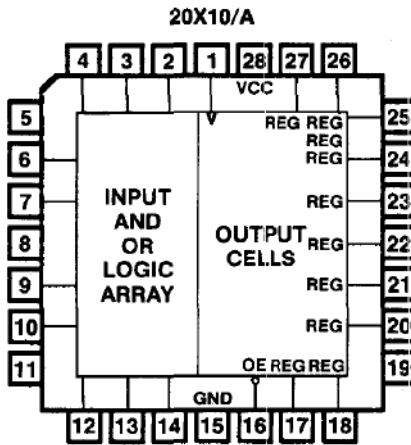
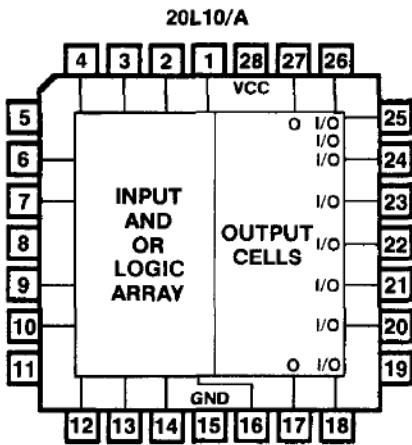


## 24-Pin PAL/HA/ Devices



## 24-Pin PAL/HA/ Devices-PLCC



## PAL Device Series 24B Very High Speed Programmable Array Logic

### Operating Conditions

SYMBOL	PARAMETER		MIN	COMMERCIAL		UNIT
				TYP	MAX	
V <sub>CC</sub>	Supply voltage		4.75	5	5.25	V
t <sub>w</sub>	Width of clock	Low	10	6		ns
		High	12	8		
t <sub>su</sub>	Setup time from input or feedback to clock		15	10		ns
t <sub>h</sub>	Hold time		0	-10		ns
T <sub>A</sub>	Operating free-air temperature		0	25	75	°C

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### Electrical Characteristics Over Operating Conditions

SYMBOL	PARAMETER	TEST CONDITION		COMMERCIAL			UNIT
				MIN	TYP	MAX	
V <sub>IL</sub> *	Low-level input voltage				0.8		V
V <sub>IH</sub> *	High-level input voltage			2			V
V <sub>IC</sub>	Input clamp voltage	V <sub>CC</sub> = MIN	I <sub>I</sub> = -18 mA	-0.8	-1.5		V
I <sub>IL</sub> †	Low-level input current	V <sub>CC</sub> = MAX	V <sub>I</sub> = 0.4 V	-0.02	-0.25		mA
I <sub>IH</sub> †	High-level input current	V <sub>CC</sub> = MAX	V <sub>I</sub> = 2.4 V		25		μA
I <sub>I</sub>	Maximum input current	V <sub>CC</sub> = MAX	V <sub>I</sub> = 5.5 V		1		mA
V <sub>OL</sub>	Low-level output voltage	V <sub>CC</sub> = MIN	I <sub>OL</sub> = 24 mA	0.3	0.5		V
V <sub>OH</sub>	High-level output voltage	V <sub>CC</sub> = MIN	I <sub>OH</sub> = -3.2 mA	2.4	2.8		V
I <sub>OZL</sub> †	Off-state output current	V <sub>CC</sub> = MAX	V <sub>O</sub> = 0.4 V		-100		μA
I <sub>OZH</sub> †			V <sub>O</sub> = 2.4 V		100		μA
I <sub>OS</sub> **	Output short-circuit current	V <sub>CC</sub> = 5 V	V <sub>O</sub> = 0 V	-30	-70	-130	mA
I <sub>CC</sub>	Supply current	V <sub>CC</sub> = MAX		140	210		mA

### Switching Characteristics Over Operating Conditions

SYMBOL	PARAMETER		TEST CONDITIONS	MIN	COMMERCIAL		UNIT
					TYP	MAX	
t <sub>PD</sub>	Input or feedback to output 20L8B, 20R6B, 20R4B		Commercial R <sub>1</sub> = 200 Ω R <sub>2</sub> = 390 Ω		12	15	ns
t <sub>CLK</sub>	Clock to output or feedback except 20L8B				8	12	ns
t <sub>PZX</sub>	Pin 13 to output enable except 20L8B				10	15	ns
t <sub>PXZ</sub>	Pin 13 to output disable except 20L8B				8	12	ns
t <sub>PZX</sub>	Input to output enable 20R6B, 20R4B, 20L8B				12	18	ns
t <sub>PXZ</sub>	Input to output disable 20R6B, 20R4B, 20L8B				12	15	ns
f <sub>MAX</sub>	Maximum frequency 20R8B, 20R6B, 20R4B	Feedback			37	40	
		No feedback		45	50		