

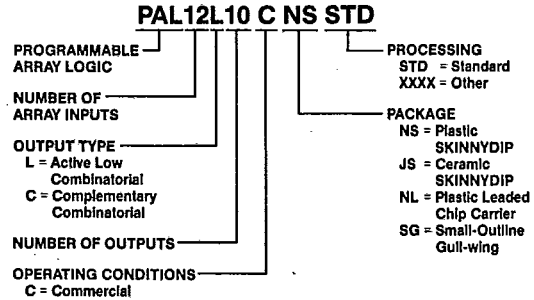
# Combinatorial PAL12L10 Series

# 12L10, 14L8, 16L6 18L4, 20L2, 20C1

### Features/Benefits

- Combinatorial architecture
- Security fuse

### Ordering Information



### PAL12L10 Series

DEVICE	INPUTS	OUTPUTS	POLARITY	t <sub>PD</sub> (ns)	I <sub>CC</sub> (mA)
PAL12L10	12	10	LOW	40	100
PAL14L8	14	8	LOW	40	100
PAL16L6	16	6	LOW	40	100
PAL18L4	18	4	LOW	40	100
PAL20L2	20	2	LOW	40	100
PAL20C1	20	2	BOTH	40	100

### Description

The PAL12L10 Series is made up of six combinatorial 24-pin PAL devices. They implement simple combinatorial logic, with no feedback.

### Performance

The standard series has a propagation delay (t<sub>PD</sub>) of 40 nanoseconds (ns). Standard supply current is 100 milliamperes (mA).

### Packages

The commercial PAL12L10 Series is available in the plastic SKINNYDIP (NS), ceramic SKINNYDIP (JS), plastic leaded chip carrier (NL), and small outline (SG) packages.

### Package Drawings

(refer to PAL Device Package Outlines, page 3-179)

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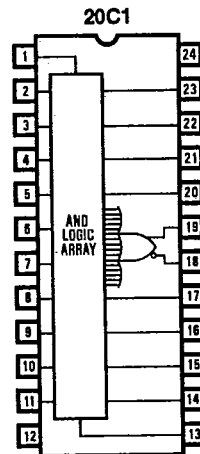
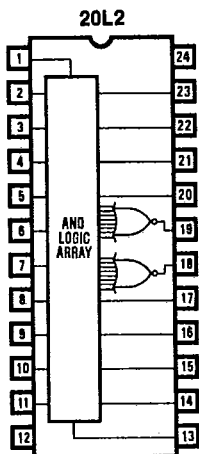
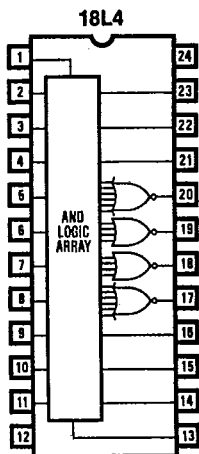
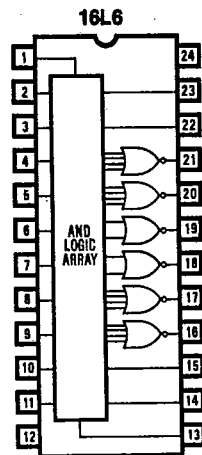
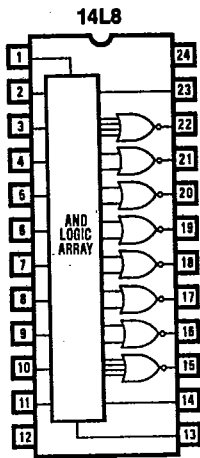
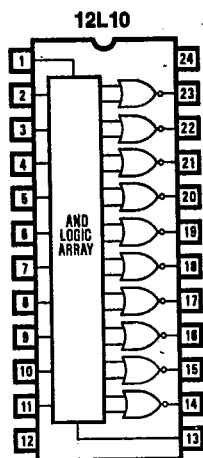
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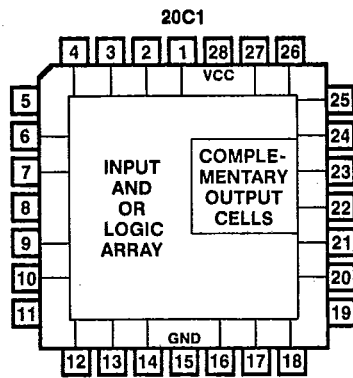
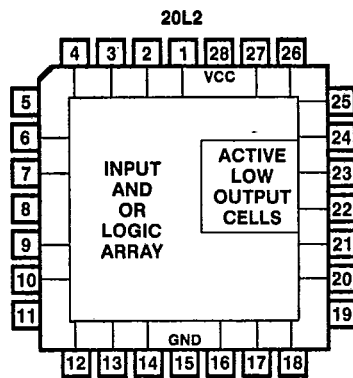
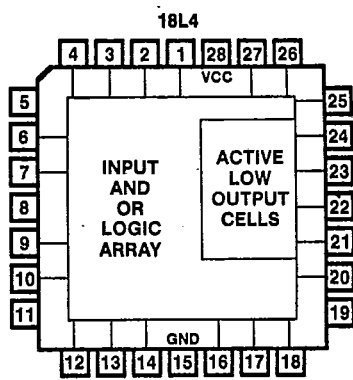
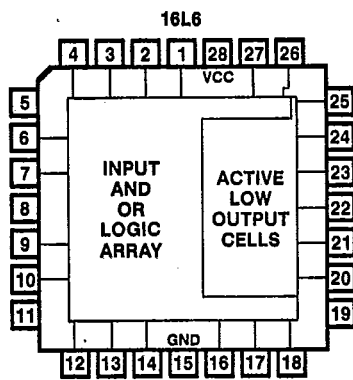
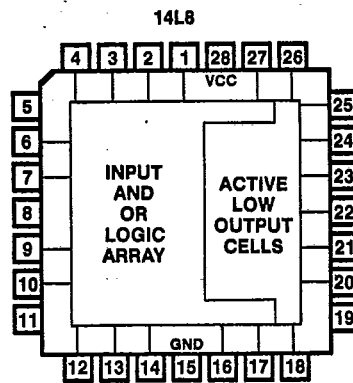
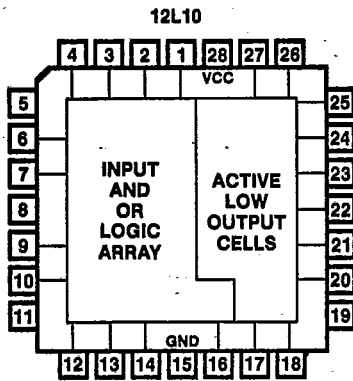
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**DIP/SO Pinouts**

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**PLCC Pinouts**



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**Absolute Maximum Ratings**

	Operating	Programming
Supply voltage $V_{CC}$ .....	-0.5 V to 7.0 V	-0.5 V to 12.0 V
Input voltage .....	-1.5 V to 5.5 V	-1.0 V to 22.0 V
Off-state output voltage .....	5.5 V	12.0 V
Storage temperature .....		-65°C to +150°C

**Operating Conditions**

SYMBOL	PARAMETER	COMMERCIAL			UNIT
		MIN	TYP	MAX	
$V_{CC}$	Supply voltage	4.75	5	5.25	V
$T_A$	Operating free-air temperature	0	25	75	°C

**Electrical Characteristics Over Operating Conditions**

SYMBOL	PARAMETER	TEST CONDITIONS		MIN TYP MAX			UNIT
$V_{IL}^1$	Low-level input voltage				0.8		V
$V_{IH}^1$	High-level input voltage			2			V
$V_{IC}$	Input clamp voltage	$V_{CC} = \text{MIN}$	$I_I = -18 \text{ mA}$	-0.8	-1.5		V
$I_{IL}$	Low-level input current	$V_{CC} = \text{MAX}$	$V_I = 0.4 \text{ V}$	-0.02	-0.25		mA
$I_{IH}$	High-level input current	$V_{CC} = \text{MAX}$	$V_I = 2.4 \text{ V}$			25	$\mu\text{A}$
$I_I$	Maximum input current	$V_{CC} = \text{MAX}$	$V_I = 5.5 \text{ V}$			100	$\mu\text{A}$
$V_{OL}$	Low-level output voltage	$V_{CC} = \text{MIN}$	$I_{OL} = 8 \text{ mA}$		0.3	0.5	V
$V_{OH}$	High-level output voltage	$V_{CC} = \text{MIN}$	$I_{OH} = -3.2 \text{ mA}$	2.4	2.8		V
$I_{OS}^2$	Output short-circuit current	$V_{CC} = 5 \text{ V}$	$V_O = 0 \text{ V}$	-30	-70	-130	mA
$I_{CC}$	Supply current	$V_{CC} = \text{MAX}$			60	100	mA

**Switching Characteristics Over Operating Conditions**

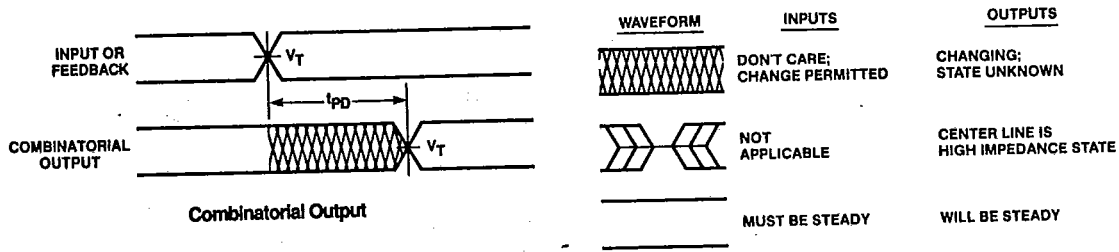
SYMBOL	PARAMETER	TEST CONDITIONS	MIN TYP MAX		UNIT	
$t_{PD}$	Input or feedback to output	$R1 = 560 \Omega, R2 = 1.1 \text{ K}\Omega$		25	40	ns

1. These are absolute values with respect to the ground pin on the device and include all overshoots due to system and/or tester noise. Do not attempt to test these values without suitable equipment.
2. No more than one output should be shorted at a time, and duration of the short circuit should not exceed one second.

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**Switching Waveforms**

**Key to Timing Diagrams**



- Notes:
1.  $V_T = 1.5V$ .
  2. Input pulse amplitude 0 V to 3.0 V.
  3. Input rise and fall times 2-5 ns typical.

**Switching Test Load**

(refer to page 5-164)

**Programmings/Development Systems**

(refer to Programmer Reference Guide, page 3-81)

**Schematic of Inputs and Outputs**

(refer to page 5-164)

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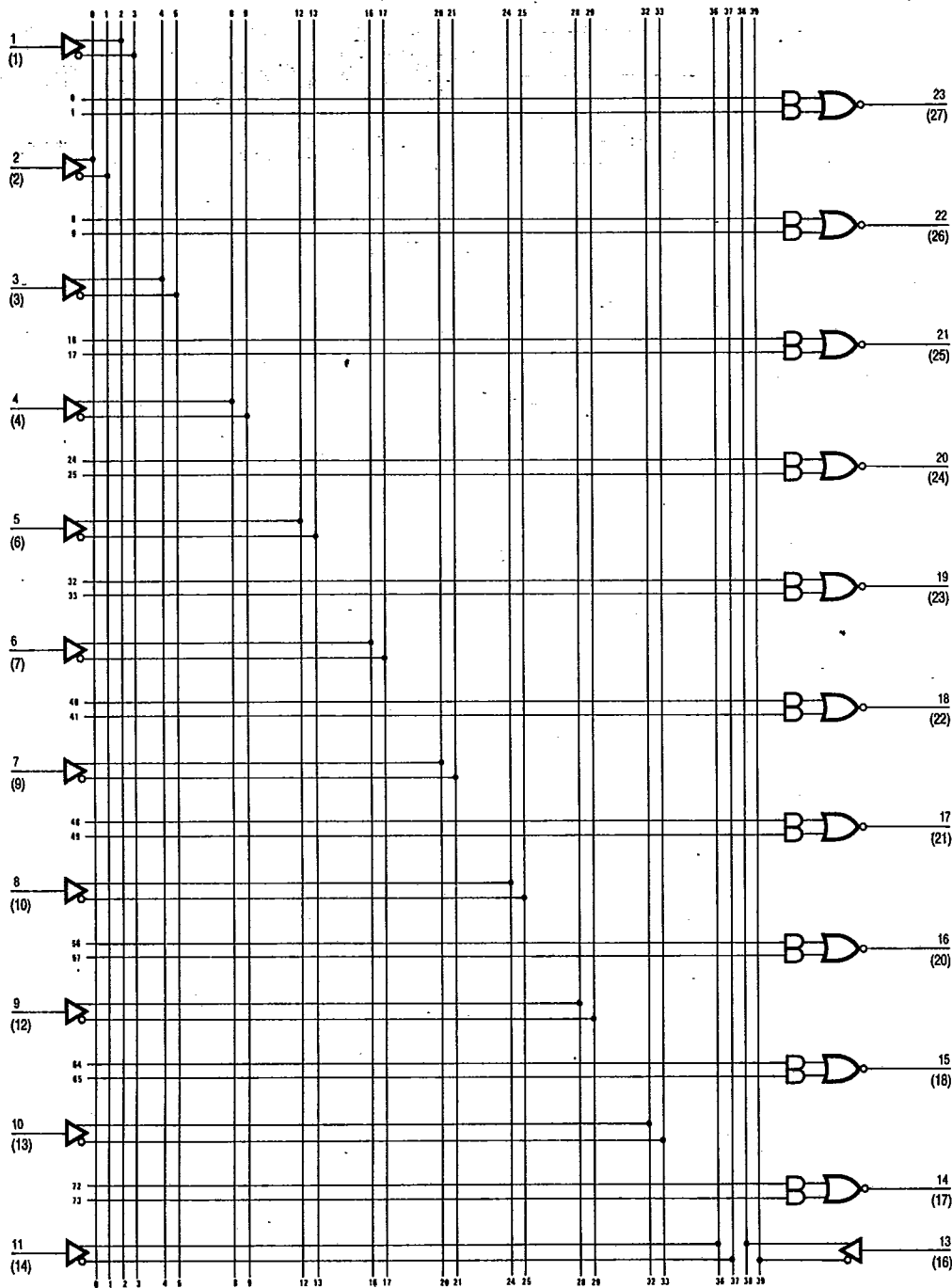
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**Logic Diagram DIP (PLCC) Pinouts 12L10**

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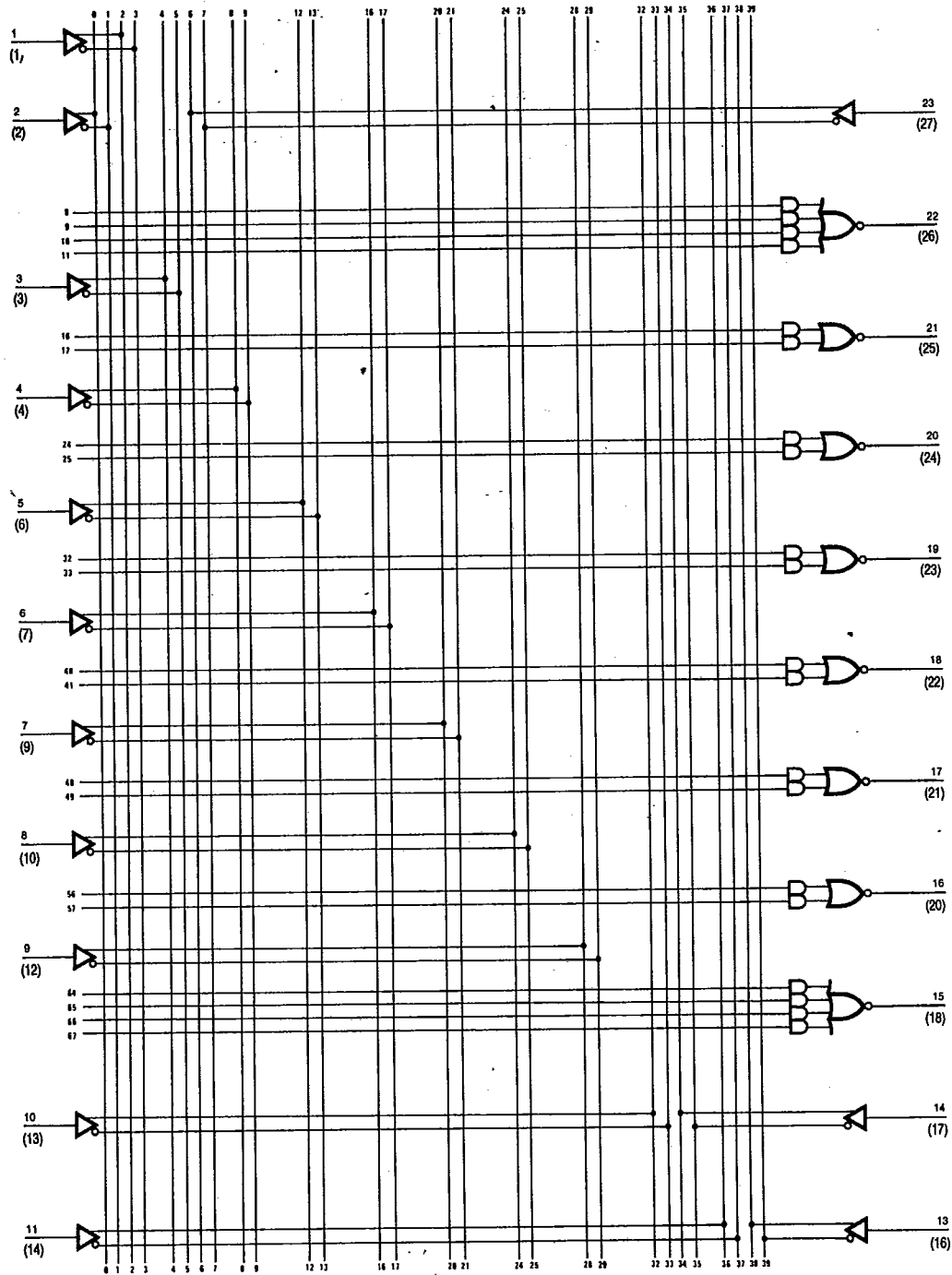


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**Combinatorial PAL12L10 Series**  
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**Logic Diagram DIP (PLCC) Pinouts 14L8**

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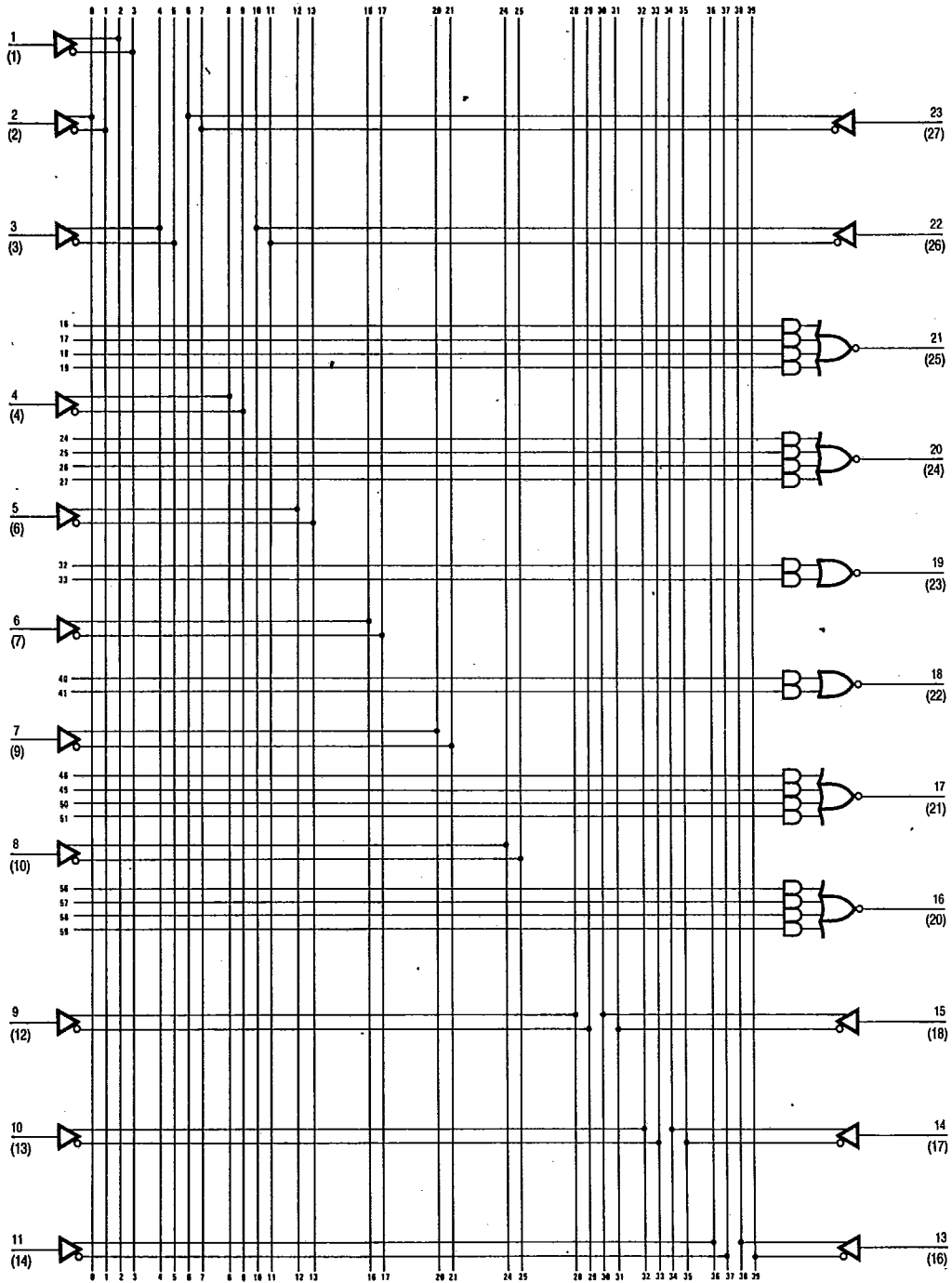
**Combinatorial PAL12L10 Series**  
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**Logic Diagram DIP (PLCC) Pinouts 16L6**

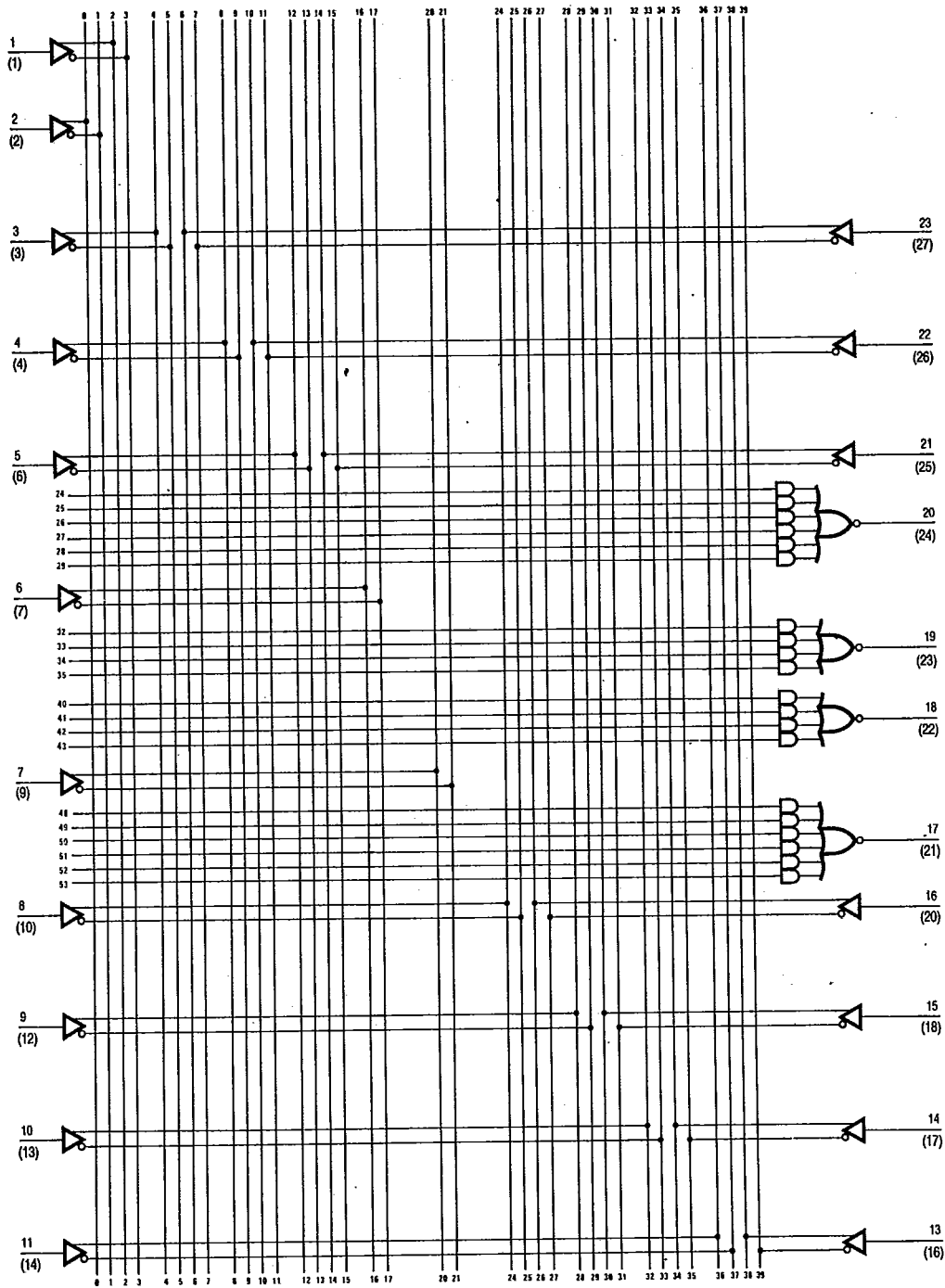
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Logic Diagram DIP (PLCC) Pinouts 18L4



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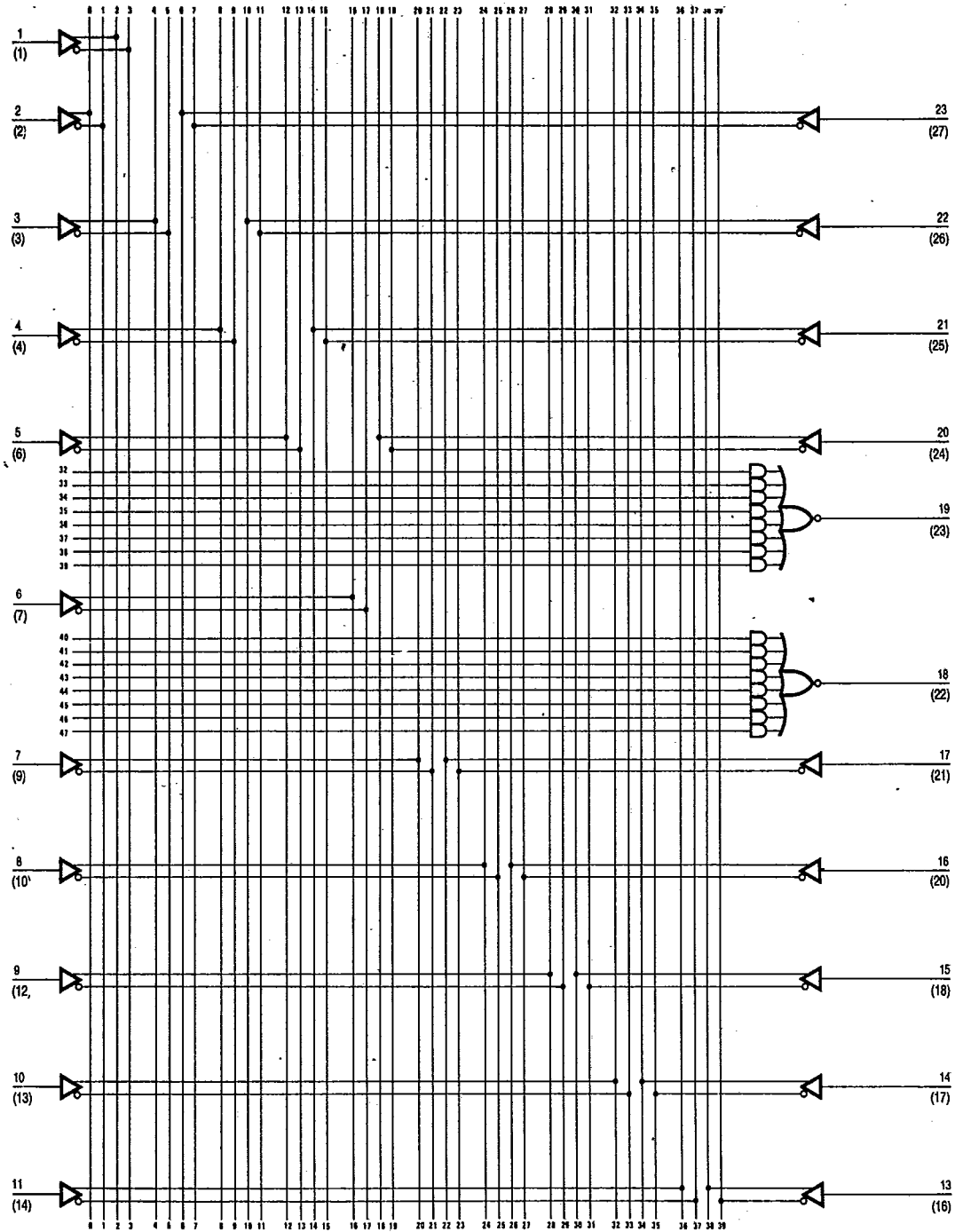
**Combinatorial PAL12L10 Series**  
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**Logic Diagram DIP (PLCC) Pinouts 20L2**

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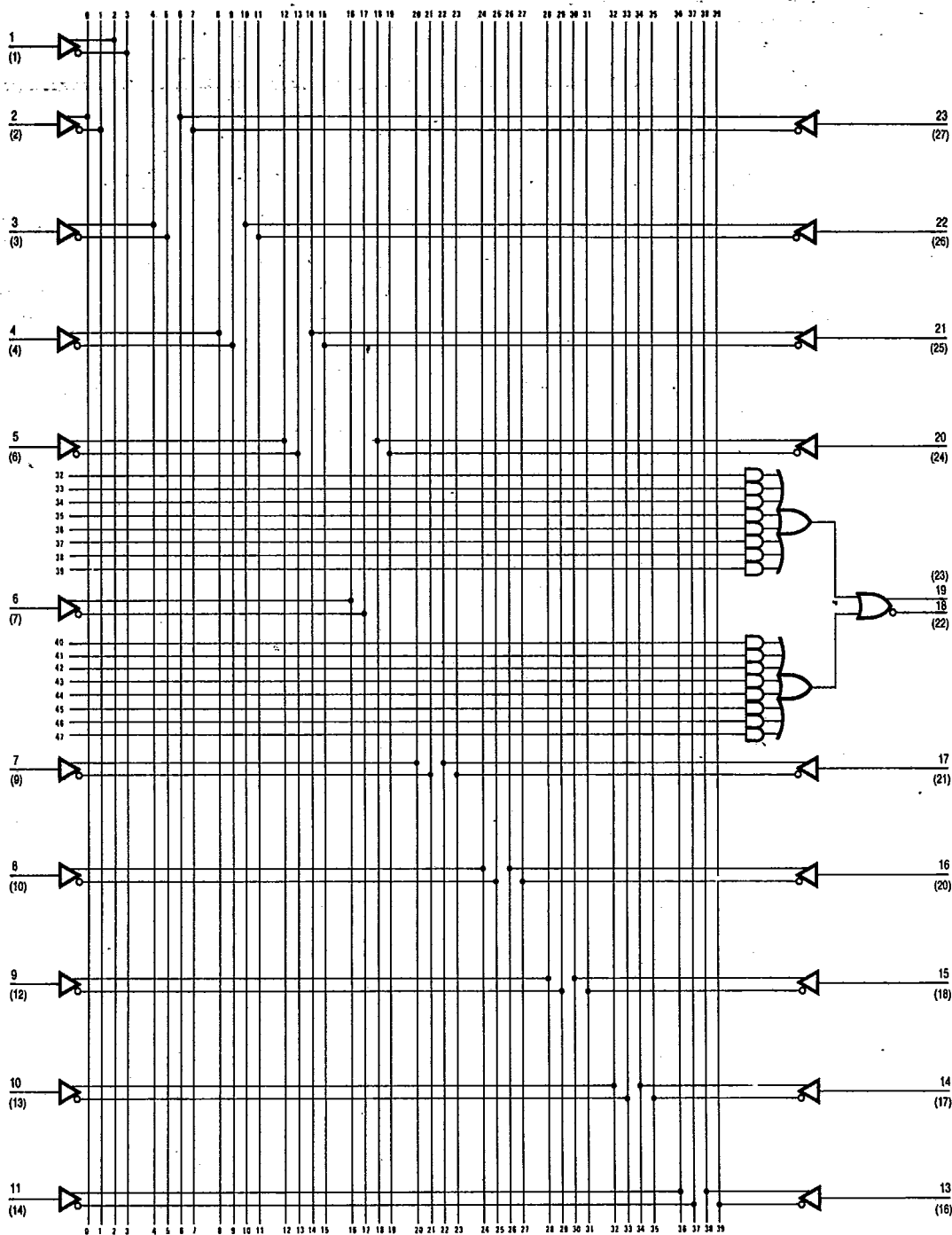
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Logic Diagram DIP (PLCC) Pinouts 20C1

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