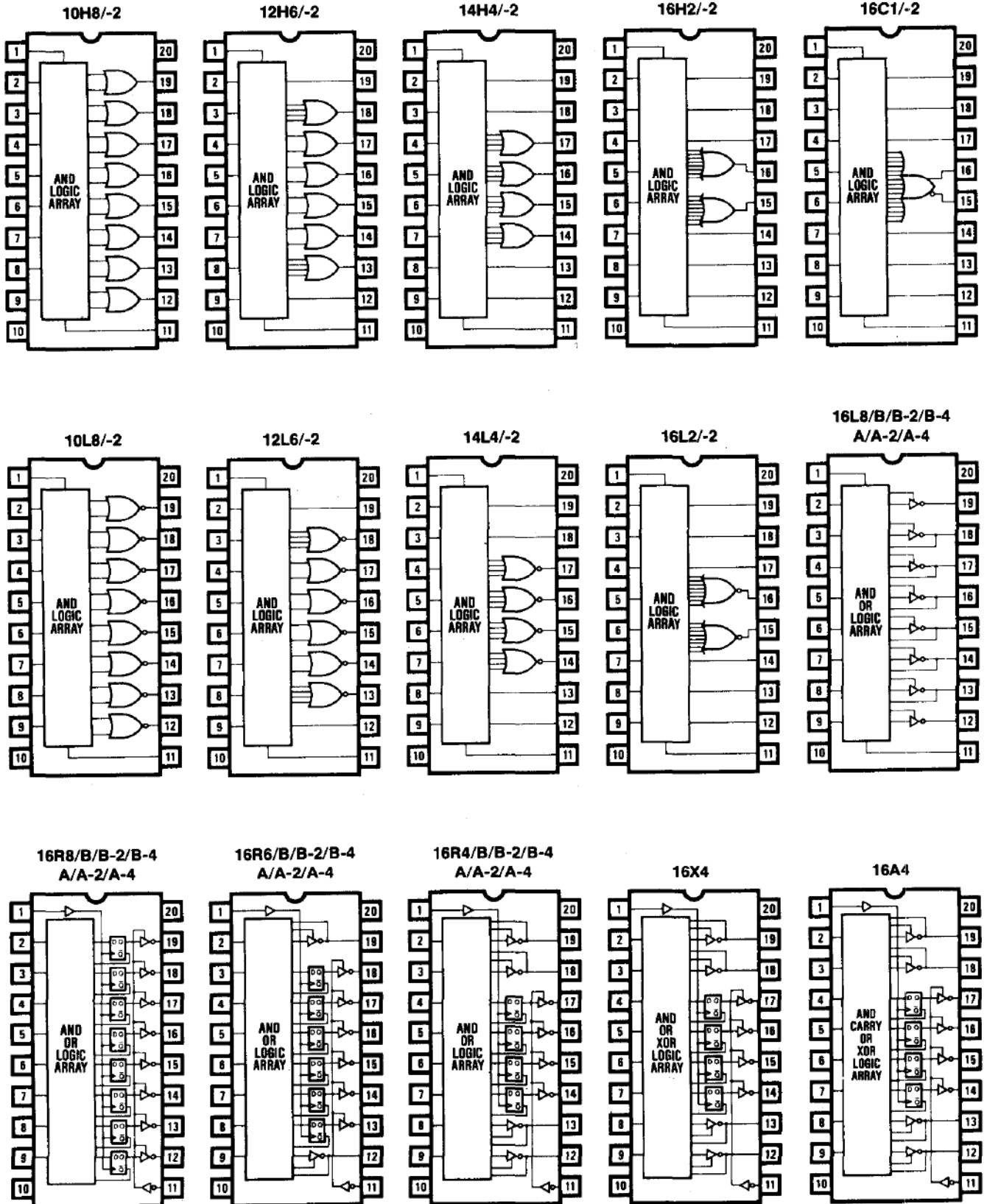
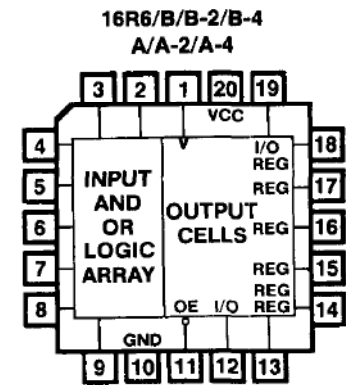
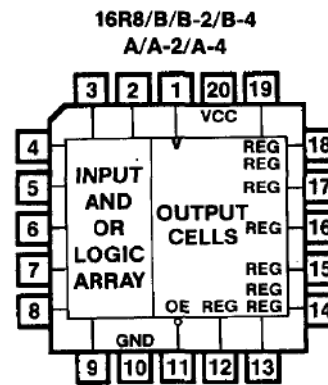
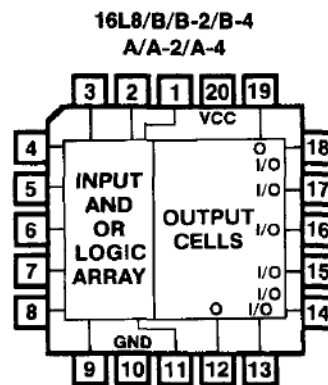
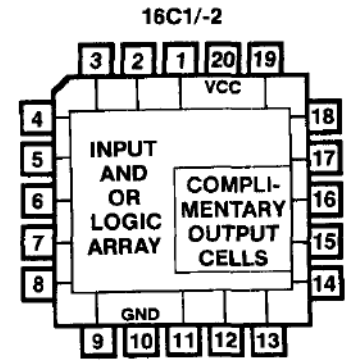
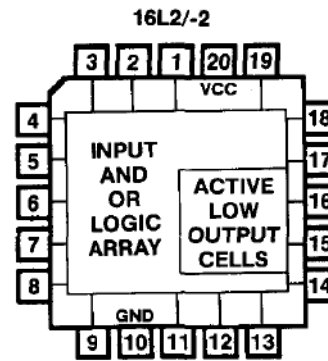
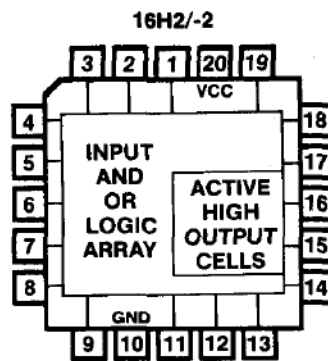
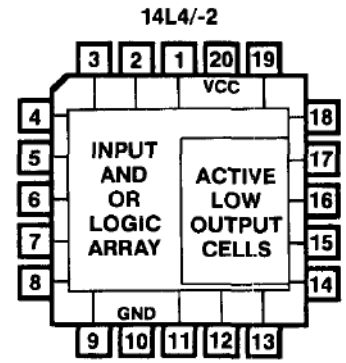
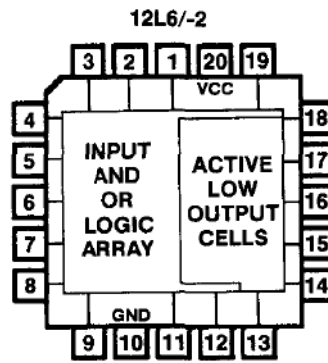
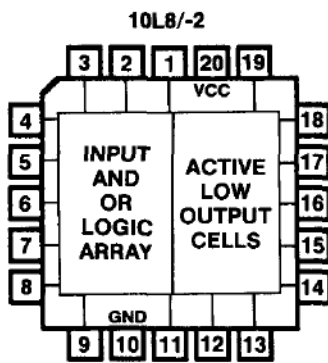
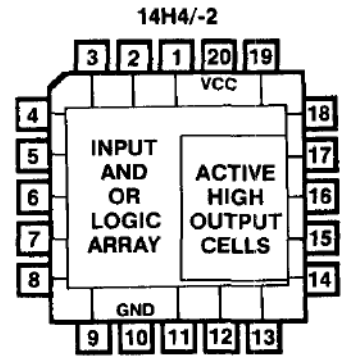
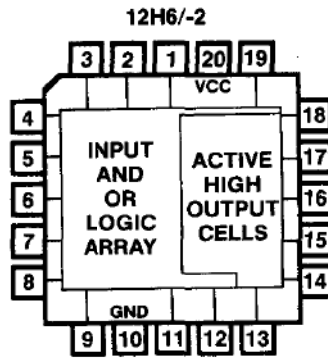
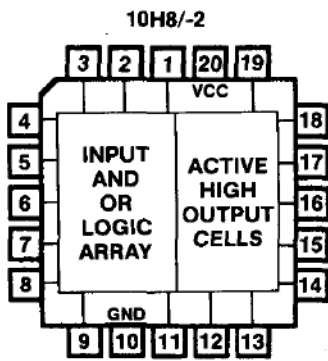


## 20-Pin PAL/HAL Devices



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



**Standard PAL/HAL Devices Series 20**  
**10H8, 12H6, 14H4, 16H2, 16C1, 10L8, 12L6, 14L4, 16L2**

**Operating Conditions**

| SYMBOL          | PARAMETER                      | MILITARY |     |     | COMMERCIAL |     |      | UNIT |    |
|-----------------|--------------------------------|----------|-----|-----|------------|-----|------|------|----|
|                 |                                | MIN      | TYP | MAX | MIN        | TYP | MAX  |      |    |
| V <sub>CC</sub> | Supply voltage                 | 4.5      | 5   | 5.5 | 4.75       | 5   | 5.25 | V    |    |
| T <sub>A</sub>  | Operating free-air temperature | -55      |     |     | 0          |     |      | 75   | °C |
| T <sub>C</sub>  | Operating case temperature     |          |     |     | 125        |     |      |      | °C |

**Electrical Characteristics** Over Operating Conditions

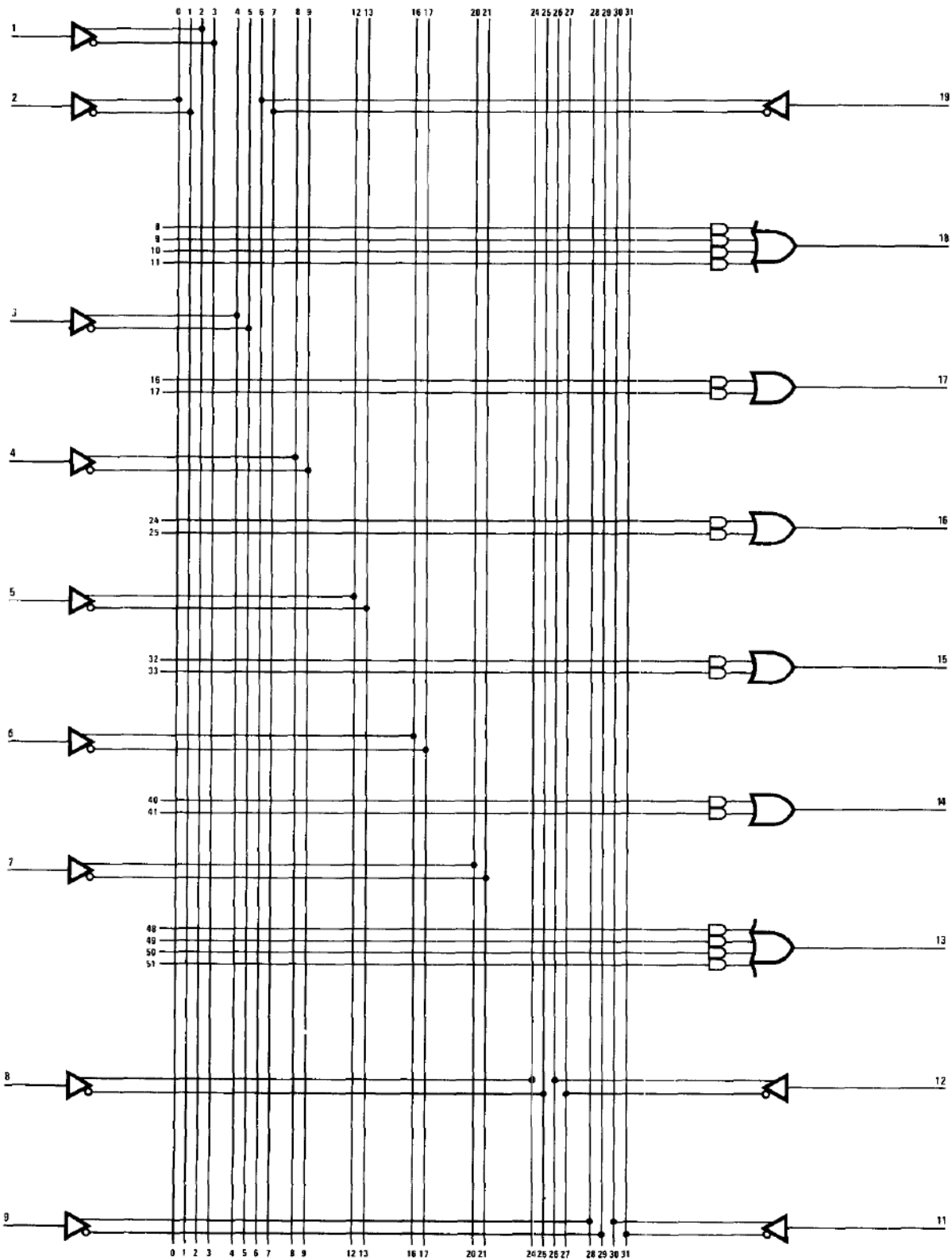
| SYMBOL            | PARAMETER                      | TEST CONDITIONS       |                        | MIN                      | TYP   | MAX  | UNIT |
|-------------------|--------------------------------|-----------------------|------------------------|--------------------------|-------|------|------|
| 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> = -18mA | -0.8                     | -1.5  |      | V    |
| I <sub>IL</sub>   | Low-level input current        | V <sub>CC</sub> = MAX | V <sub>I</sub> = 0.4V  | -0.02                    | -0.25 |      | mA   |
| I <sub>IH</sub>   | High-level input current       | V <sub>CC</sub> = MAX | V <sub>I</sub> = 2.4V  |                          |       | 25   | μA   |
| I <sub>I</sub>    | Maximum input current          | V <sub>CC</sub> = MAX | V <sub>I</sub> = 5.5V  |                          |       | 1    | mA   |
| V <sub>OL</sub>   | Low-level output voltage       | V <sub>CC</sub> = MIN | MIL                    | I <sub>OL</sub> = 8mA    | 0.3   | 0.5  | V    |
|                   |                                |                       | COM                    | I <sub>OL</sub> = 8mA    |       |      |      |
| V <sub>OH</sub>   | High-level output voltage      | V <sub>CC</sub> = MIN | MIL                    | I <sub>OH</sub> = -2mA   | 2.4   | 2.8  | V    |
|                   |                                |                       | COM                    | I <sub>OH</sub> = -3.2mA |       |      |      |
| I <sub>OS</sub>   | Output short-circuit current** | V <sub>CC</sub> = 5V  | V <sub>O</sub> = 0V    | -30                      | -70   | -130 | mA   |
| I <sub>CC</sub>   | Supply current                 | V <sub>CC</sub> = MAX |                        | 55                       |       | 90   | mA   |

**Switching Characteristics**

| SYMBOL          | PARAMETER                    | TEST CONDITIONS         | MILITARY    |     |     | COMMERCIAL |     |     | UNIT |
|-----------------|------------------------------|-------------------------|-------------|-----|-----|------------|-----|-----|------|
|                 |                              |                         | MIN         | TYP | MAX | MIN        | TYP | MAX |      |
| t <sub>PD</sub> | Input or feed-back to output | R1 = 560Ω<br>R2 = 1.1kΩ | Except 16C1 |     | 25  | 45         | 25  | 35  | ns   |
|                 |                              |                         | 16C1        |     | 25  | 45         | 25  | 40  |      |

# PAL/HAL Devices Logic Diagram

## 12H6



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