



**MOTOROLA**

**MC29100/MC82100**  
**MC29101/MC82101**  
 (DUAL MARKED)

**Product Preview**

**FIELD PROGRAMMABLE LOGIC ARRAY**

The MC29100/MC82100 (three-state outputs) and the MC29101/MC82101 (open collector outputs) are bipolar programmable logic arrays, containing 48 product terms (AND terms), and 8 output functions. Each output function can be programmed either true active-High (Fp), or true active-Low (F $\bar{p}$ ). The true state of the output functions is controlled via an output sum (OR) matrix by a logical combination of 16-input variables, or their complements, up to 48 terms.

Both devices are field-programmable, which means that custom patterns are immediately available by following an appropriate fusing procedure.

The MC29100 and MC29101 are fully TTL compatible, and include a chip-enable clocking input for output de-skewing and inhibit. They feature either open collector or three-state outputs for ease of expansion of product terms and/or input variables.

**FEATURES**

- Field Programmable (Ni-Cr Link)
- Input Variables — 16
- Output Functions — 8
- Product Terms — 48
- Address Access Time — 50 ns, Maximum
- Power Dissipation — 600 mW, Typical
- Input Loading — ( $-100 \mu\text{A}$ ), Maximum
- Output Option:
  - Three-State Outputs — MC29100/MC82100
  - Open Collector Outputs — MC29101/MC82101
- Output Disable Function:
  - Three-State — Hi-Z
  - Open Collector — Hi
- Ceramic DIP

**APPLICATIONS**

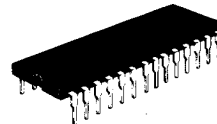
- Large Read Only Memory
- Random Logic
- Code Conversion
- Peripheral Controllers
- Look-Up and Decision Tables
- Microprogramming
- Address Mapping
- Character Generators
- Sequential Controllers

**TTL**

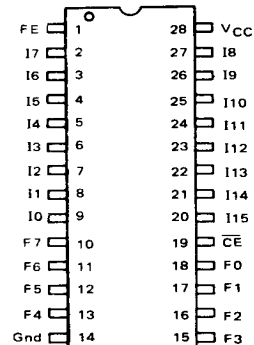
**FIELD PROGRAMMABLE  
LOGIC ARRAY**

( $16 \times 8 \times 48$  FPLA)

**L SUFFIX**  
 CERAMIC PACKAGE  
 CASE 733



**PIN ASSIGNMENT**

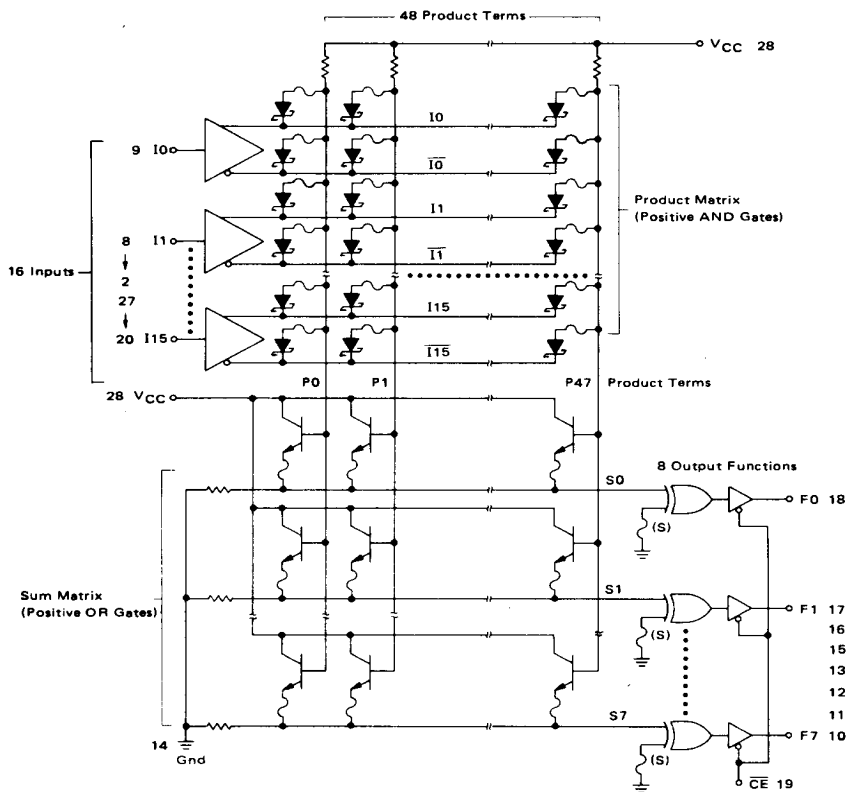


**ORDERING INFORMATION**

| Temperature Range | Device                 | Device                 |
|-------------------|------------------------|------------------------|
| 0°C to +70°C      | MC29100LC<br>MC82100LC | MC29101LC<br>MC82101LC |
| -55°C to +125°C   | MC29100LM<br>MC82100LM | MC29101LM<br>MC82101LM |

This is advance information and specifications are subject to change without notice.

BLOCK DIAGRAM



TRUTH TABLE

Let  $P_n = \prod_{k=0}^{15} (k_m I_m + i_m \bar{I}_m)$ ;  $k = 0, 1, X$  (Don't Care)  
 $n = 0, 1, 2, \dots, 47$

where

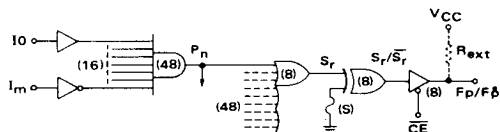
unprogrammed state:  $i_m = k_m = 0$

programmed state:  $i_m = k_m$

$S_r = f(\sum_{p=0}^{47} P_n)$ ;  $r = p = 0, 1, 2, \dots, 7$

| Mode                              | $P_n$ | $\overline{CE}$ | $F_p$ | $F_\beta$ | $S_r \stackrel{?}{=} f(P_n)$ |
|-----------------------------------|-------|-----------------|-------|-----------|------------------------------|
| Disabled<br>(MC29101/<br>MC82101) | X     | 1               | 1     | 1         | X                            |
| Disabled<br>(MC29100/<br>MC82100) |       |                 | Hi-Z  | Hi-Z      |                              |
| Read                              | 1     | 0               | 1     | 0         | Yes                          |
|                                   | 0     | 0               | 0     | 1         |                              |
|                                   | X     | 0               | 0     | 1         | No                           |

FPLA TYPICAL LOGIC PATH



NOTE: For each of the 8 outputs, either the function  $F_p$  (active High) or  $F_\beta$  (active Low) is available, but not both. The required function polarity is user-programmable via fuse (S).

$$P_n = I_0 \bar{I}_1 \bar{I}_2 I_3 \dots \bar{I}_m$$

$$S_r = P_0 + P_1 + P_2 + \dots + P_n$$

$$\bar{S}_r = \bar{P}_0 \cdot \bar{P}_1 \cdot \bar{P}_2 \cdot \dots \cdot \bar{P}_n$$

$$F_p = (\bar{CE}) + (S_r) = (\bar{CE}) + (P_0 + P_1 + P_2 + \dots + P_n) \text{ with } S = \text{Short}$$

$$F_\beta = (\bar{CE}) + (\bar{S}_r) = (\bar{CE}) + (\bar{P}_0 \cdot \bar{P}_1 \cdot \bar{P}_2 \cdot \dots \cdot \bar{P}_n) \text{ with } S = \text{Open}$$