



**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  $\mu$ 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**

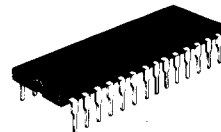
- Large Read Only Memory
- Random Logic
- Code Conversion
- Peripheral Controllers
- Look-Up and Decision Tables
- Microprogramming
- Address Mapping
- Character Generators
- Sequential Controllers

**TTL**

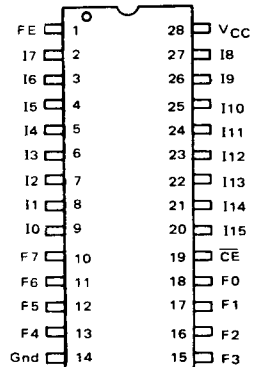
**FIELD PROGRAMMABLE LOGIC ARRAY**

(16 X 8 X 48 FPLA)

**L SUFFIX**  
CERAMIC PACKAGE  
CASE 733



**PIN ASSIGNMENT**



**ORDERING INFORMATION**

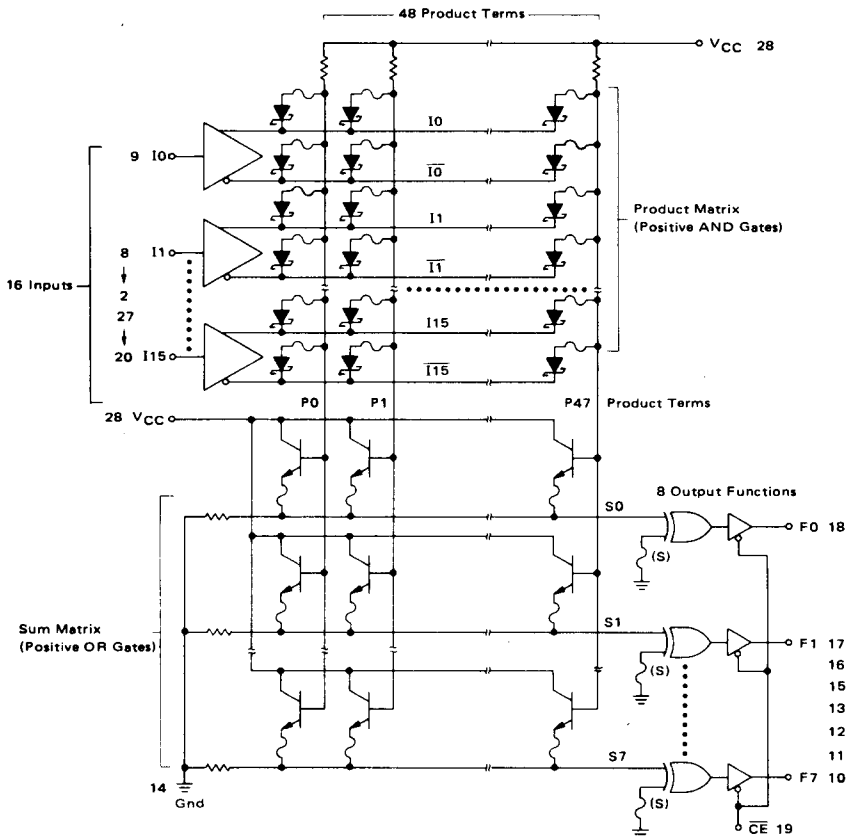
Temperature Range	Device	Device
0°C to +70°C	MC29100LC MC82100LC	MC29101LC MC82101LC
-55°C to +125°C	MC29100LM MC82100LM	MC29101LM MC82101LM

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

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BLOCK DIAGRAM



TRUTH TABLE

Let  $P_n = \prod_0^{15} (k_m I_m + j_m \bar{I}_m)$ ;  $k = 0, 1, X$  (Don't Care)  
 $n = 0, 1, 2, \dots, 47$

where

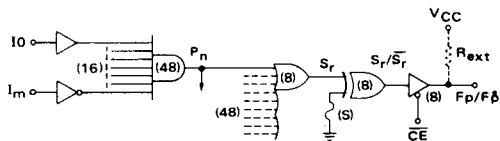
unprogrammed state:  $j_m = k_m = 0$

programmed state:  $j_m = \bar{k}_m$

$S_r = f(\sum_0^{47} P_n)$ ;  $r = p = 0, 1, 2, \dots, 7$

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

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).

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

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

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

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

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