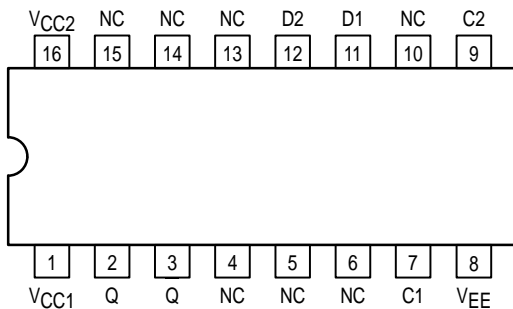


*Not Recommended for New Designs*  
*Consider MC12083 or MC10EL32*

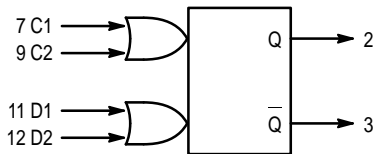
## UHF Prescaler

The MC12090 is a high-speed D master-slave flip-flop capable of toggle rates of over 700MHz. It was designed primarily for high-speed prescaling applications in communications and instrumentation. This device employs two data inputs, two clock inputs as well as complementary Q and  $\bar{Q}$  outputs. There are no SET or RESET inputs.

Pinout: 16-Lead Plastic (Top View)



LOGIC DIAGRAM



VCC1 = Pin 1  
VCC2 = Pin 16  
VEE = Pin 8

TRUTH TABLE

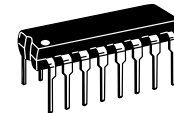
C	D	Q <sub>n</sub> + 1
L	X	Q <sub>n</sub>
H	X	Q <sub>n</sub>
	L	L
	H	H

C = C1 + C2, X = Don't Care  
D = D1 + D2

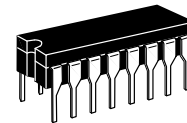
# MC12090

## MECL PLL COMPONENTS

### HIGH-SPEED PRESCALER



**P SUFFIX**  
16-LEAD PLASTIC PACKAGE  
CASE 648-08



**L SUFFIX**  
16-LEAD CERAMIC PACKAGE  
CASE 620-10

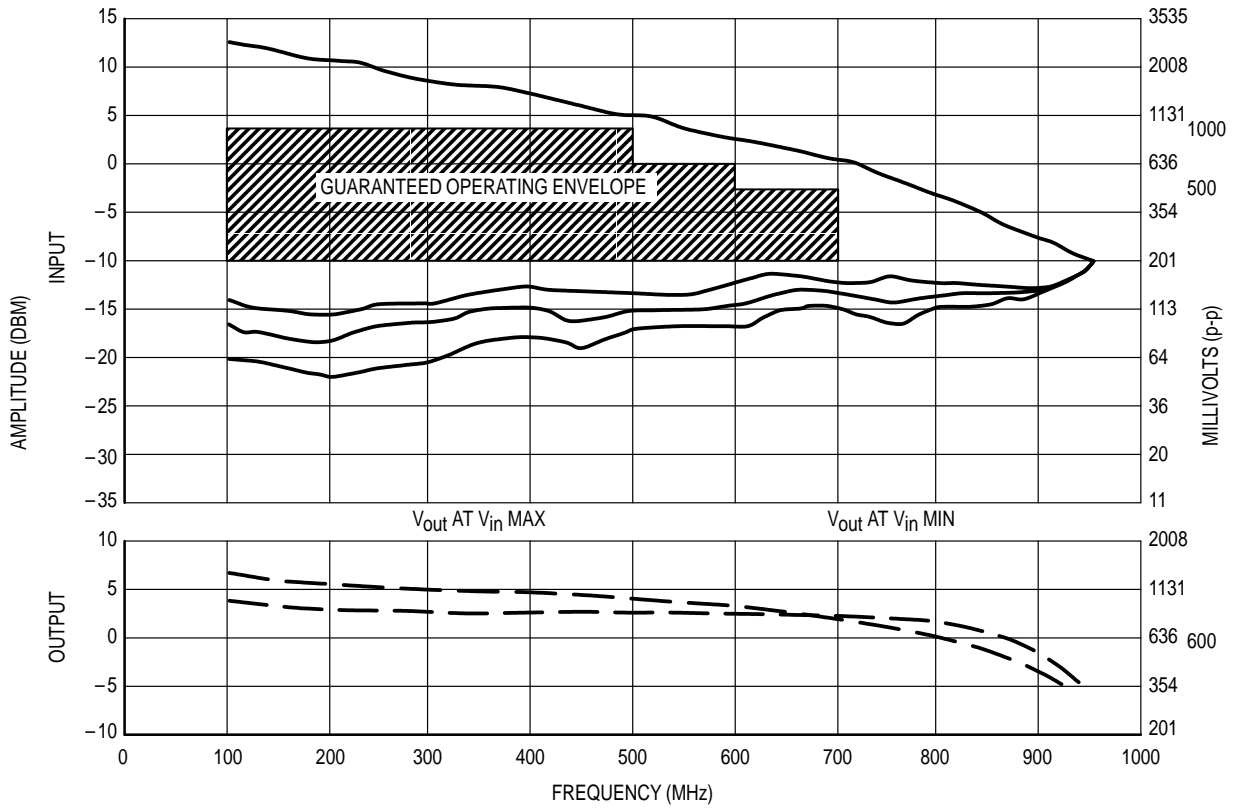
## ELECTRICAL CHARACTERISTICS

Symbol	Characteristic	0°C		25°C		75°C		Unit
		Min	Max	Min	Max	Min	Max	
I <sub>E</sub>	Power Supply Current		65		59		65	mA
I <sub>inH</sub>	Input Current HIGH Pins 7,9 Pins 11,12		400 435		260 280		260 280	μA
I <sub>inL</sub>	Input Current LOW	0.5		0.5		0.3		μA
V <sub>OH</sub>	Output Voltage HIGH	-1.02	-0.84	-0.98	-0.81	-0.92	-0.735	Vdc
V <sub>OL</sub>	Output Voltage LOW	-1.95	-1.63	-1.95	-1.63	-1.95	-1.60	Vdc
V <sub>IH</sub>	Input Voltage HIGH	-1.17	-0.84	-1.13	-0.81	-1.70	-0.735	Vdc
V <sub>IL</sub>	Input Voltage LOW	-1.87	-1.495	-1.85	-1.48	-1.83	-1.45	Vdc

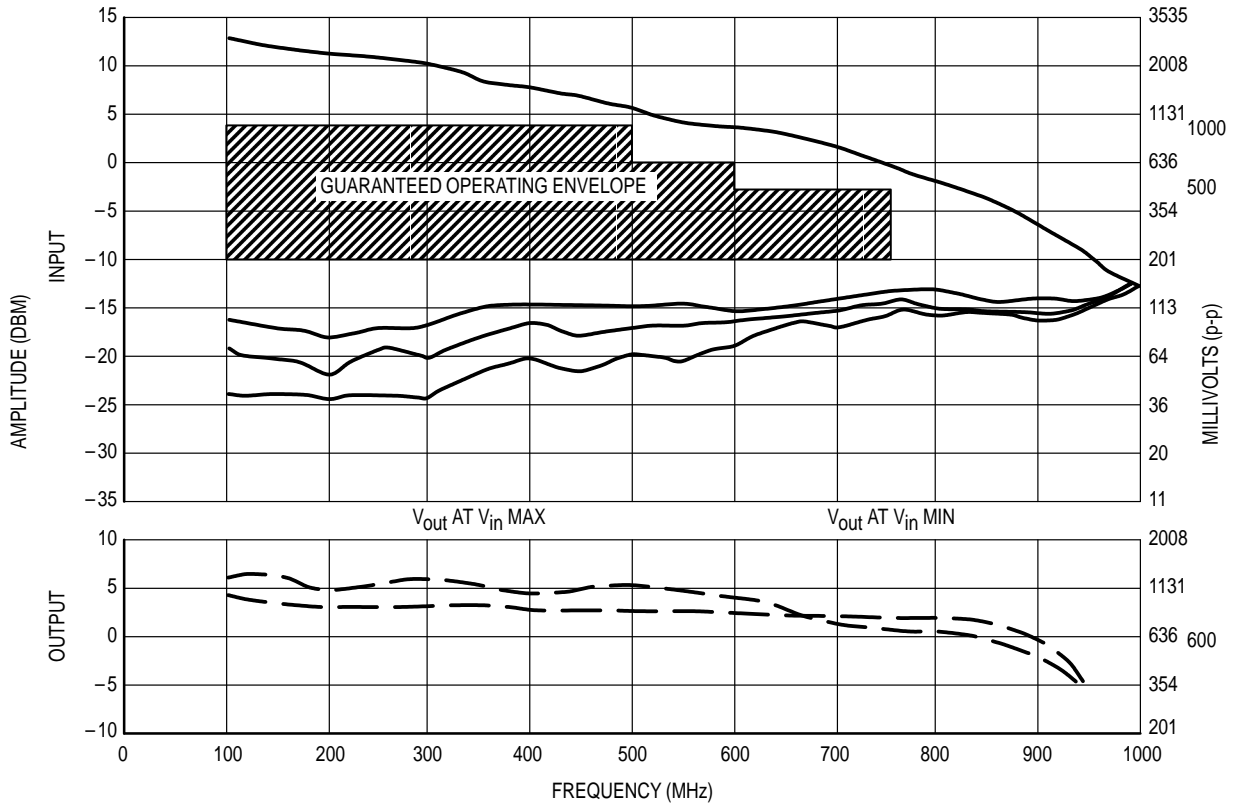


**ELECTRICAL CHARACTERISTICS**

Symbol	Characteristic	-30°C		0°C		25°C		75°C		85°C		Unit
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
$f_{tog}$	Toggle Frequency											MHz
<b>Typical (25°C)</b>												
$t_{pd}$	Propagation Delay (Clock to Output Pins 7,9,12)	1.3										ns
$t_s$	Setup Time	$t_{setup H}$		$t_{setup L}$		0.3		0.3				ns
$t_h$	Hold Time	$t_{hold H}$		$t_{hold L}$		0.3		0.3				ns
$t_r$	Rise Time	0.9										ns
$t_f$	Fall Time	0.9										ns



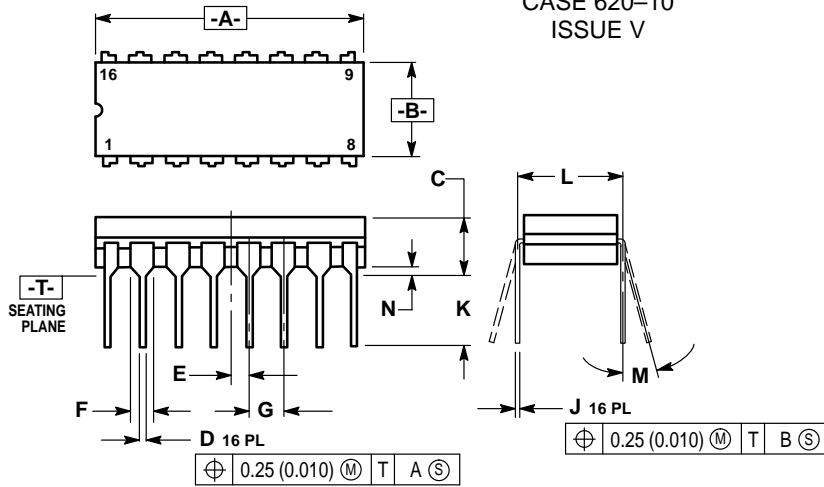
**Figure 1. Guaranteed Range of Operation**  
 (Temp = 75°C, 5 Devices, VCC = 2.0V, VEE = -3.2V, VBias = 0.710V)



**Figure 2. Guaranteed Range of Operation**  
 (Temp = 25°C, 5 Devices, V<sub>CC</sub> = 2.0V, V<sub>EE</sub> = -3.2V, V<sub>Bias</sub> = 0.710V)

OUTLINE DIMENSIONS

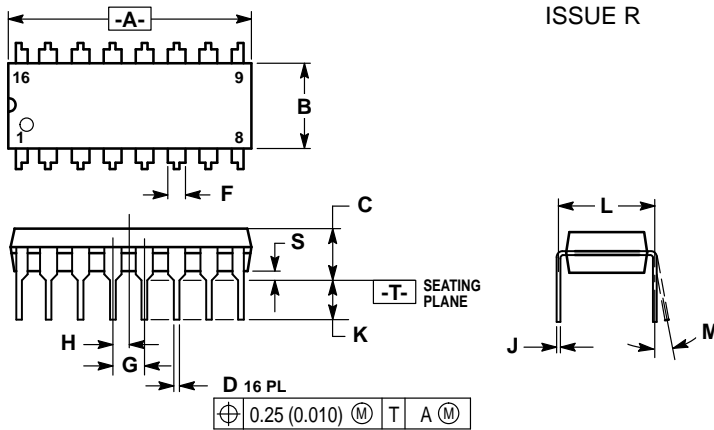
**L SUFFIX  
CERAMIC PACKAGE  
CASE 620-10  
ISSUE V**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
  4. DIMENSION F MAY NARROW TO 0.76 (0.030) WHERE THE LEAD ENTERS THE CERAMIC BODY.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.750	0.785	19.05	19.93
B	0.240	0.295	6.10	7.49
C	—	0.200	—	5.08
D	0.015	0.020	0.39	0.50
E	0.050 BSC		1.27 BSC	
F	0.055	0.065	1.40	1.65
G	0.100 BSC		2.54 BSC	
J	0.008	0.015	0.21	0.38
K	0.125	0.170	3.18	4.31
L	0.300 BSC		7.62 BSC	
M	0°	15°	0°	15°
N	0.020	0.040	0.51	1.01

**P SUFFIX  
PLASTIC PACKAGE  
CASE 648-08  
ISSUE R**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
  2. CONTROLLING DIMENSION: INCH.
  3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
  4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
  5. ROUNDED CORNERS OPTIONAL.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.740	0.770	18.80	19.55
B	0.250	0.270	6.35	6.85
C	0.145	0.175	3.69	4.44
D	0.015	0.021	0.39	0.53
F	0.040	0.070	1.02	1.77
G	0.100 BSC		2.54 BSC	
H	0.050 BSC		1.27 BSC	
J	0.008	0.015	0.21	0.38
K	0.110	0.130	2.80	3.30
L	0.295	0.305	7.50	7.74
M	0°	10°	0°	10°
S	0.020	0.040	0.51	1.01

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