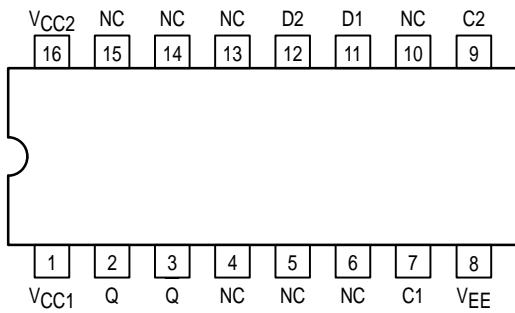


Not Recommended for New Designs
Consider MC12083 or MC10EL32

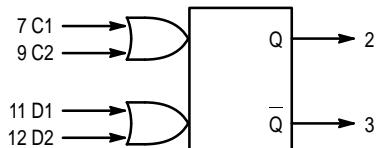
UHF Prescaler

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 Q outputs. There are no SET or RESET inputs.

Pinout: 16-Lead Plastic (Top View)



LOGIC DIAGRAM



V_{CC1} = Pin 1
 V_{CC2} = Pin 16
 V_{EE} = Pin 8

TRUTH TABLE

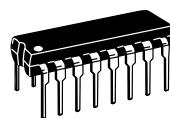
C	D	Q_{n+1}
L	X	Q_n
H	X	Q_n
—	L	L
—	H	H

$C = C_1 + C_2$, X = Don't Care
 $D = D_1 + D_2$

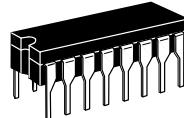
MC12090

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_E	Power Supply Current		65		59		65	mA
I_{inH}	Input Current HIGH Pins 7,9 Pins 11,12		400 435		260 280		260 280	μA
I_{inL}	Input Current LOW	0.5		0.5		0.3		μA
V_{OH}	Output Voltage HIGH	-1.02	-0.84	-0.98	-0.81	-0.92	-0.735	Vdc
V_{OL}	Output Voltage LOW	-1.95	-1.63	-1.95	-1.63	-1.95	-1.60	Vdc
V_{IH}	Input Voltage HIGH	-1.17	-0.84	-1.13	-0.81	-1.70	-0.735	Vdc
V_{IL}	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_{togg}	Toggle Frequency											MHz
Typical (25°C)												
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				ns
t_h	Hold Time	$t_{hold\ H}$	$t_{hold\ L}$					0.3				ns
t_r	Rise Time							0.9				ns
t_f	Fall Time							0.9				ns

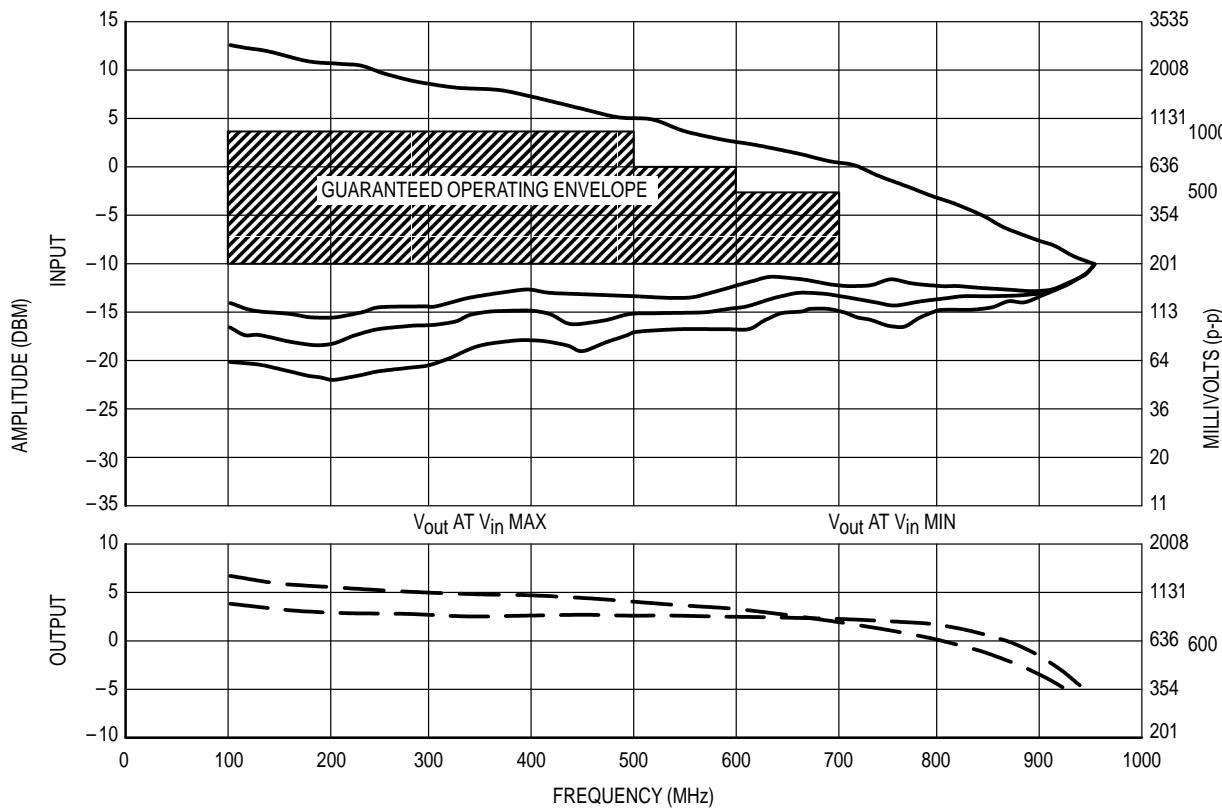


Figure 1. Guaranteed Range of Operation
(Temp = 75°C, 5 Devices, $V_{CC} = 2.0V$, $V_{EE} = -3.2V$, $V_{Bias} = 0.710V$)

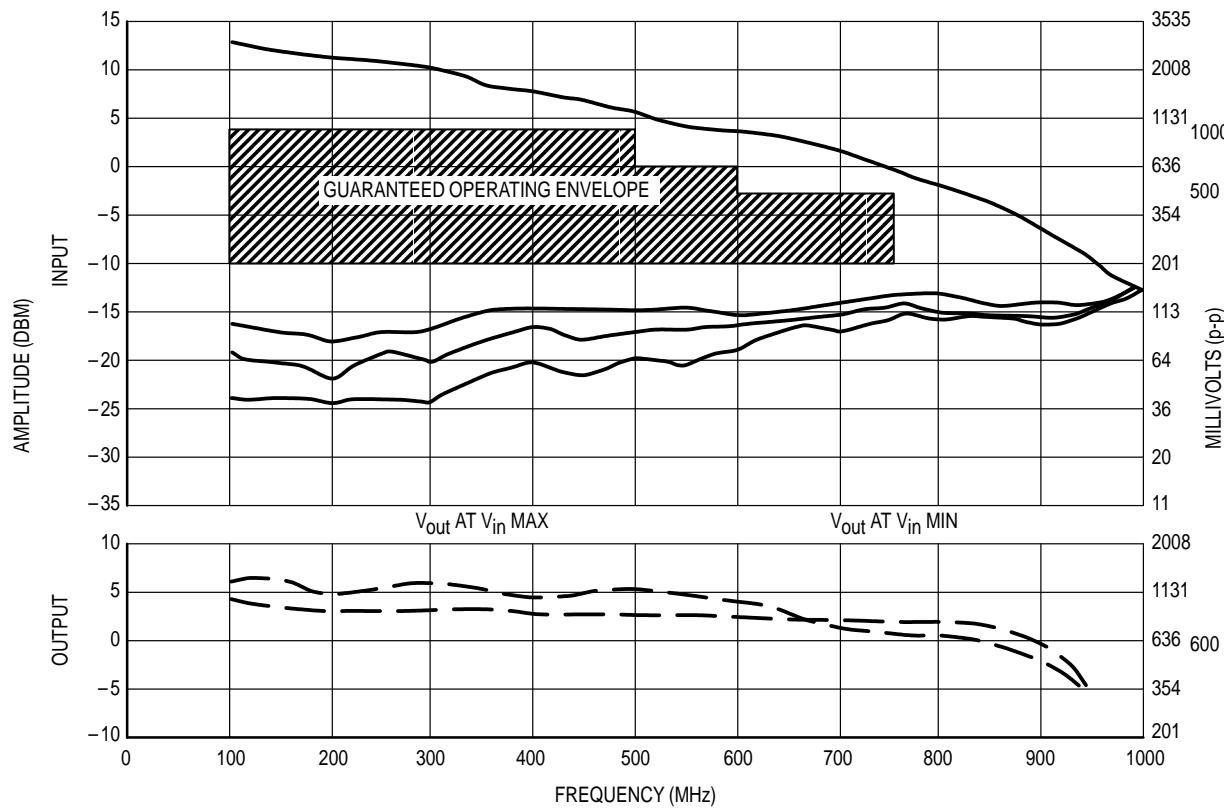
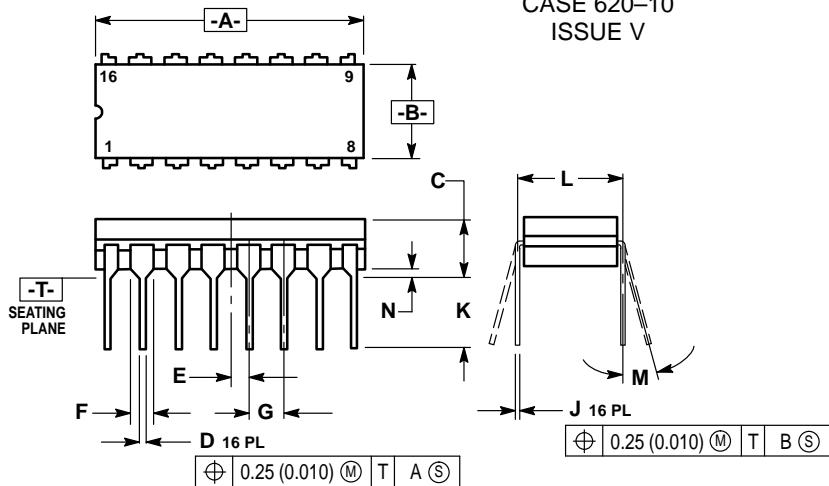


Figure 2. Guaranteed Range of Operation
 (Temp = 25°C, 5 Devices, V_{CC} = 2.0V, V_{EE} = -3.2V, V_{Bias} = 0.710V)

OUTLINE DIMENSIONS

L SUFFIX
CERAMIC PACKAGE
CASE 620-10
ISSUE V

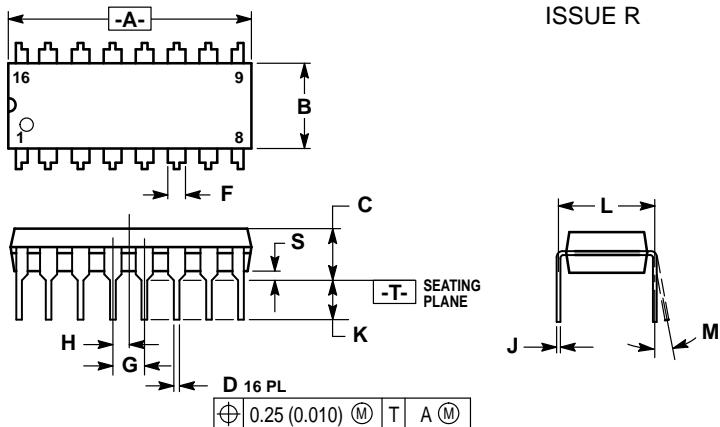


NOTES:

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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MC12090/D