Not Recommended for New Designs
Consider MC12083 or MC10EL32

UHF Prescaler

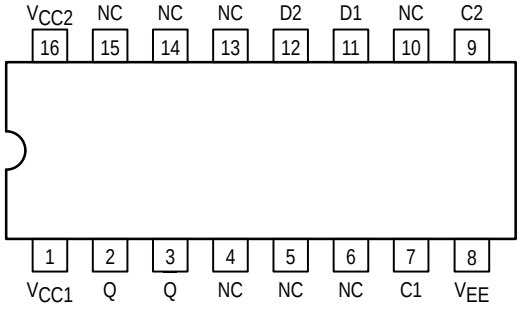
MC12090

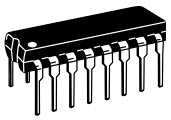
MECL PLL COMPONENTS

HIGH–SPEED PRESCALER

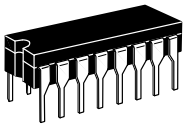
The MC12090 is a high–speed D master–slave flip–flop capable of toggle rates of over 700MHz. It was designed primarily for high–speed prescaling applications in communications and instrumentation. This device employs two data inputs, two clock inputs as well as complementary Q and Q outputs. There are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

Pinout: 16-Lead Plastic (Top View)



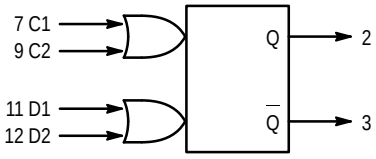


P SUFFIX
16–LEAD PLASTIC PACKAGE
CASE 648–08



L SUFFIX
16–LEAD CERAMIC PACKAGE
CASE 620–10

LOGIC DIAGRAM



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

TRUTH TABLE

C	D	Qn + 1
L	X	Qn
H	X	Qn
⎍	L	L
⎍	H	H

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

ELECTRICAL CHARACTERISTICS

Symbol	Characteristic	0°C Min	0°C Max	25°C Min	25°C Max	75°C Min	75°C Max	Unit
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_{tog}	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 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

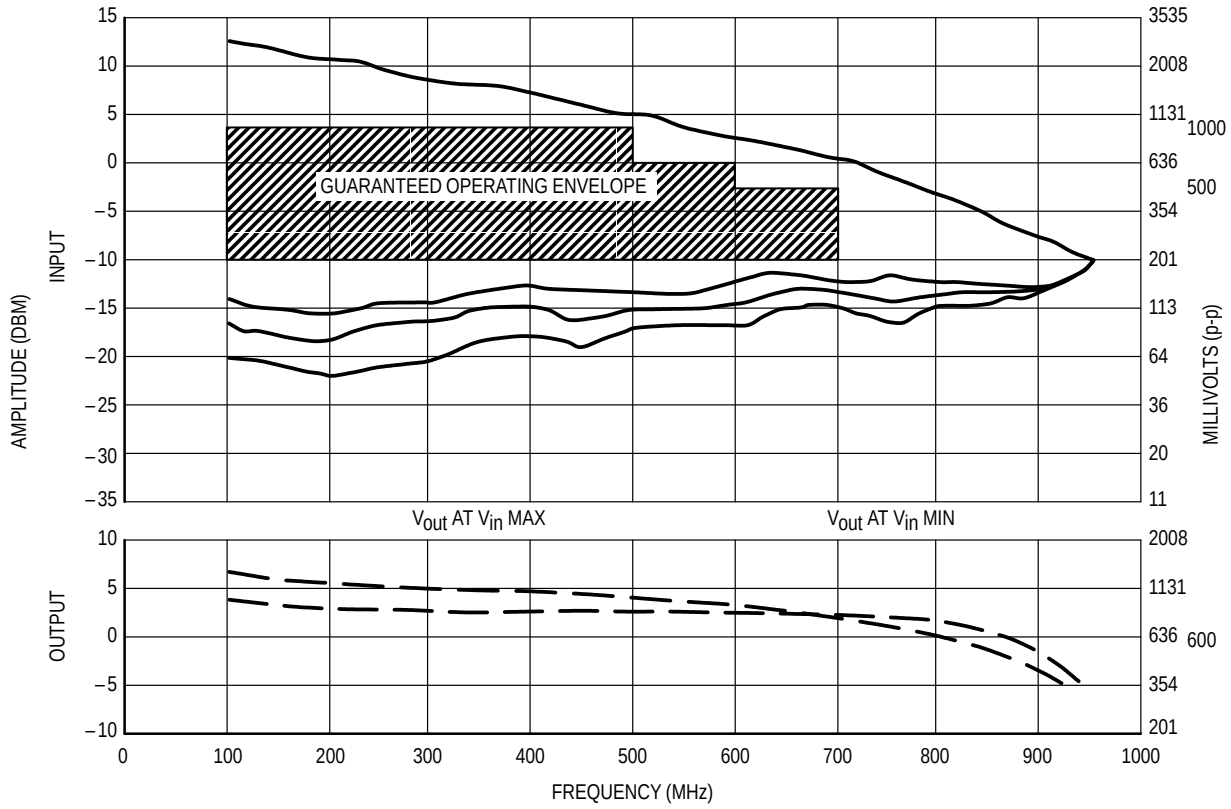


Figure 1. Guaranteed Range of Operation
(Temp = 75°C, 5 Devices, V_{CC} = 2.0V, V_{EE} = –3.2V, V_{Bias} = 0.710V)

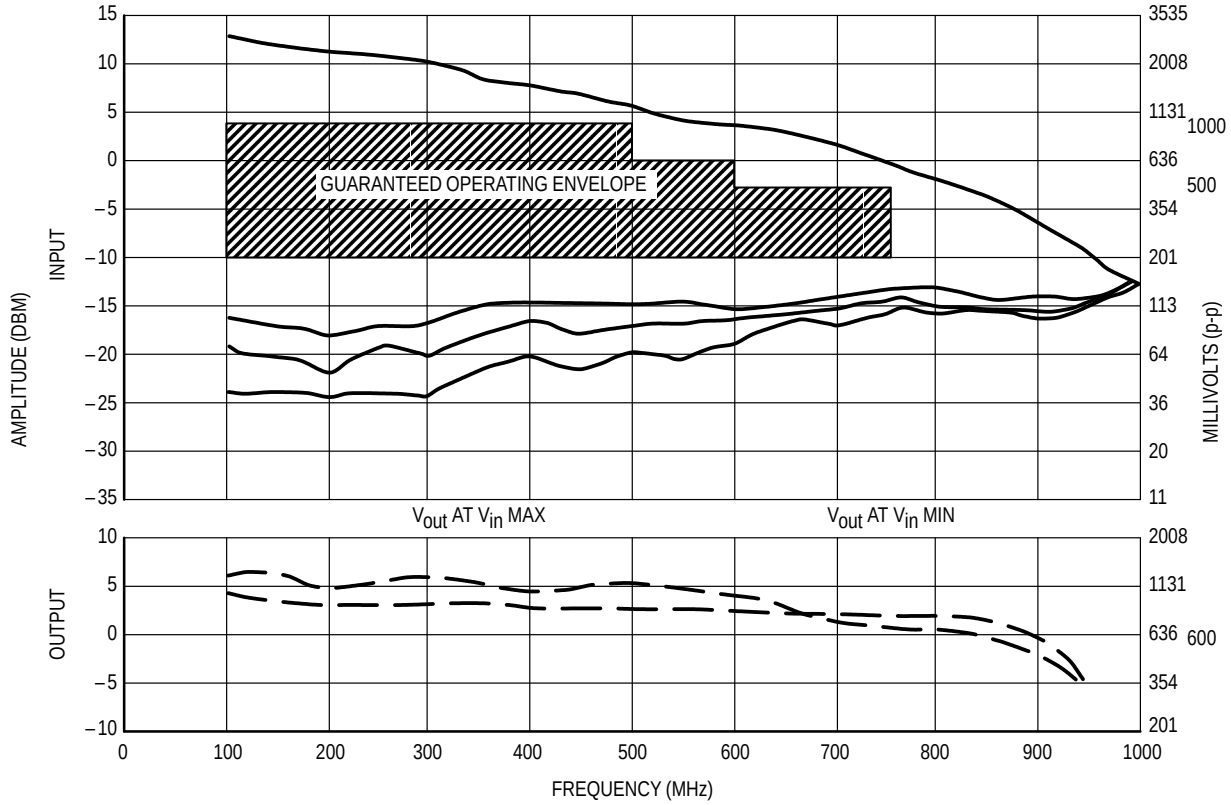
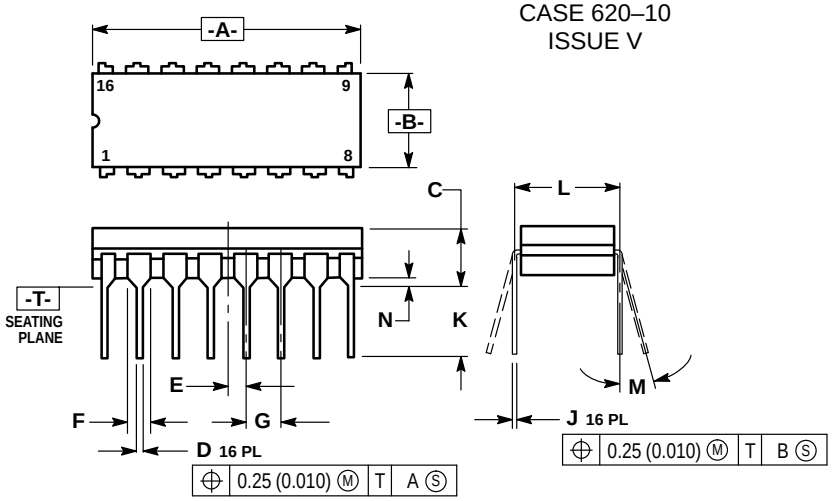


Figure 2. Guaranteed Range of Operation
(Temp = 25°C, 5 Devices, V_{CC} = 2.0V, V_{EE} = –3.2V, V_{Bias} = 0.710V)

OUTLINE DIMENSIONS

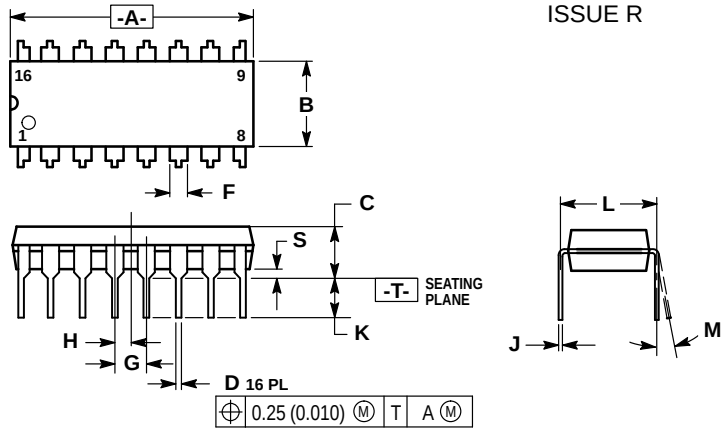
L SUFFIX
CERAMIC PACKAGE
CASE 620–10
ISSUE V



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.

	INCHES		MILLIMETERS	
DIM	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.

	INCHES		MILLIMETERS	
DIM	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

How to reach us:
USA / EUROPE / Locations Not Listed: Motorola Literature Distribution;
P.O. Box 5405; Denver, Colorado 80217. 303–675–2140 or 1–800–441–2447

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 602–244–6609
INTERNET: http://Design–NET.com

JAPAN: Nippon Motorola Ltd.; Tatsumi–SPD–JLDC, 6F Seibu–Butsuryu–Center, 3–14–2 Tatsumi Koto–Ku, Tokyo 135, Japan. 81–3–3521–8315

ASIA / PACIFIC: Motorola Semiconductors H.K. Ltd.; 8B Tai Ping Industrial Park, 51 Ting Kok Road, Tai Po, N.T., Hong Kong. 852–26629298