

1.1 GHz Prescaler

The MC12080 is a single modulus divide by 10, 20, 40, 80 prescaler for low power frequency division of a 1.1 GHz high frequency input signal. Divide ratio control inputs SW1, SW2 and SW3 select the required divide ratio of \div 10, \div 20, \div 40, or \div 80.

An external load resistor is required to terminate the output. A 820 Ω resistor is recommended to achieve a 1.2 V_{pp} output swing, when dividing a 1.1 GHz input signal by the minimum divide by ratio of 10, assuming a 8.0 pF load. Output current can be minimized dependent on conditions such as output frequency, capacitive load being driven, and output voltage swing required. Typical values for load resistors are included in the V_{out} specification for various divide ratios at 1.1 GHz input frequency.

- 1.1 GHz Toggle Frequency
- Supply Voltage 4.5 to 5.5 V
- Low Power 3.7mA Typical at V_{CC} = 5.0 V
- Operating Temperature Range of −40 to 85°C

FUNCTIONAL TABLE

SW1	SW2	SW3	Divide Ratio
L	L	L	80
L	L	Н	40
L	Н	L	40
L	Н	Н	20
Н	L	L	40
Н	L	Н	20
Н	Н	L	20
Н	Н	Н	10

NOTE: SW1, SW2 and SW3: $H = V_{CC}$, L = Open.

MAXIMUM RATINGS

Characteristic	Symbol	Range	Unit
Power Supply Voltage, Pin 2	Vcc	-0.5 to 7.0	Vdc
Operating Temperature Range	TA	-40 to 85	°C
Storage Temperature Range	T _{stg}	-65 to 150	°C
Maximum Output Current, Pin 4	IO	10	mA

NOTE: ESD data available upon request.

MC12080

MECL PLL COMPONENTS ÷10/20/40/80 PRESCALER

SEMICONDUCTOR TECHNICAL DATA

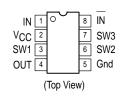


D SUFFIXPLASTIC PACKAGE
CASE 751
(SO-8)



P SUFFIX
PLASTIC PACKAGE
CASE 626

PIN CONNECTIONS



ORDERING INFORMATION

Device	Operating Temperature Range	Package
MC12080D	$T_{\Delta} = -40^{\circ} \text{ to } +85^{\circ}\text{C}$	SO-8
MC12080P	1A = -40 10 +65 C	Plastic

MC12080

ELECTRICAL CHARACTERISTICS ($V_{CC} = 4.5 \text{ to } 5.5 \text{ V}$; $T_A = -40 \text{ to } 85^{\circ}\text{C}$, unless otherwise noted.)

Parameter		Symbol	Min	Тур	Max	Unit
Toggle Frequency (Sine Wave)		ft	0.1	1.4	1.1	GHz
Supply Current Output (Pin 2)		Icc	_	3.7	5.0	mA
Input Voltage Sensitivity	100–250 MHz 250–1100 MHz	V _{in}	400 100		1000 1000	mVpp
Divide Ratio Control Input High (SW1, SW2, SW3)		VIH	V _{CC} – 0.5 V	VCC	V _{CC} + 0.5 V	V
Divide Ratio Control Input Low (SW1, SW2, SW3)		٧ _{IL}	Open	Open	Open	-
Output Voltage Swing ¹	$\begin{aligned} R_L &= 820 \ \Omega, \ I_O = 4.0 \ \text{mA for } \div 10 \\ R_L &= 1.6 \ \text{k}\Omega, \ I_O = 2.1 \ \text{mA for } \div 20 \\ R_L &= 3.3 \ \text{k}\Omega, \ I_O = 1.1 \ \text{mA for } \div 40 \\ R_L &= 6.2 \ \text{k}\Omega, \ I_O = 0.57 \ \text{mA for } \div 80 \end{aligned}$	Vout	0.8	1.2	-	V _{pp}

Figure 1. Logic Diagram (MC12080)

NOTE: 1. Assumes 8.0 pF load and 1.1 GHz input frequency (typical), I_O at $V_{CC} = 5.0$ V and $T_A = 25$ °C

D D QB QB QB

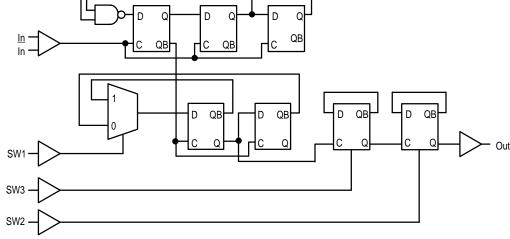
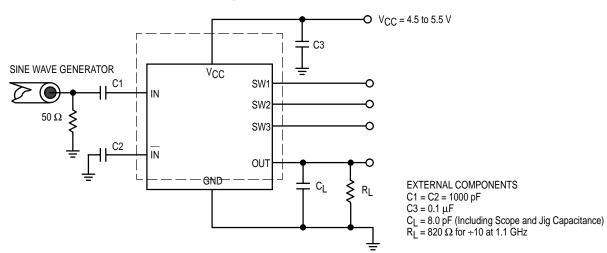
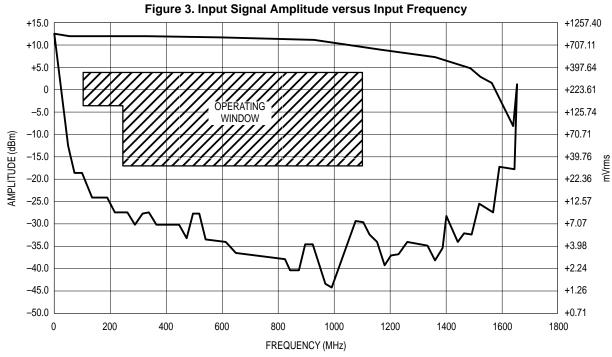


Figure 2. AC Test Circuit





Divide Ratio = 10; V_{CC} = 5.0 V; T_A = 25°C

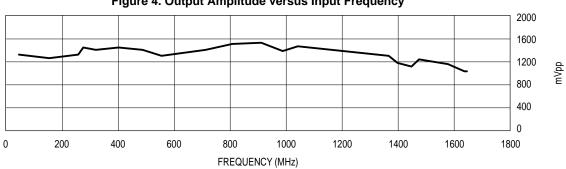


Figure 4. Output Amplitude versus Input Frequency

MC12080

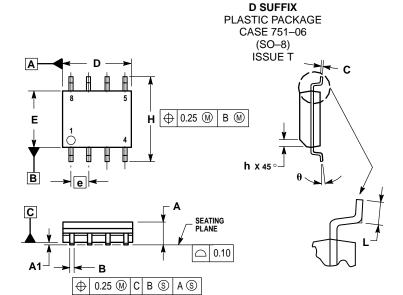
OUTLINE DIMENSIONS

P SUFFIX Д PLASTIC PACKAGE CASE 626-05 ISSUE K -B-NOTE 2 _T_ SEATING PLANE \oplus | Ø 0.13 (0.005) M | T | A M | B M

NOTES:

- DIMENSION L TO CENTER OF LEAD WHEN FORMED PARALLEL.
- PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
- 3. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

	MILLIMETERS		INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	9.40	10.16	0.370	0.400	
В	6.10	6.60	0.240	0.260	
С	3.94	4.45	0.155	0.175	
D	0.38	0.51	0.015	0.020	
F	1.02	1.78	0.040	0.070	
G	2.54	2.54 BSC		0.100 BSC	
Н	0.76	1.27	0.030	0.050	
J	0.20	0.30	0.008	0.012	
K	2.92	3.43	0.115	0.135	
L	7.62 BSC		0.300 BSC		
M		10°		10°	
N	0.76	1.01	0.030	0.040	



NOTES

- DIMENSIONING AND TOLERANCING PER ASME
- Y14.5M, 1994.
 2. DIMENSIONS ARE IN MILLIMETER.
- DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
- MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
 DIMENSION B DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 TOTAL IN EXCESS OF THE B DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS		
DIM	MIN	MAX	
Α	1.35	1.75	
A1	0.10	0.25	
В	0.35	0.49	
C	0.19	0.25	
D	4.80	5.00	
Е	3.80	4.00	
е	1.27 BSC		
H	5.80	6.20	
h	0.25	0.50	
L	0.40	1.25	
θ	0 °	7 °	

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