

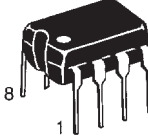
MECL PLL COMPONENTS
SEMICONDUCTOR TECHNICAL DATA

Legacy Device: Motorola MC12015, MC12016, MC12017


The ML12015, ML12016 and ML12017 are dual modulus prescalers which will drive divide by 32 and 33, 40 and 41, and 64 and 65, respectively. An internal regulator is provided to allow these devices to be used over a wide range of power-supply voltages. The devices may be operated by applying a supply voltage of 5.0 Vdc \pm 10% at Pin 7, or by applying an unregulated voltage source from 5.5 Vdc to 9.5 Vdc to Pin 8.

- 225 MHz Toggle Frequency
- Low-Power 7.5 mA Maximum at 6.8 V
- Control Input and Output Are Compatible With Standard CMOS
- Connecting Pins 2 and 3 Allows Driving One TTL Load
- Supply Voltage 4.5 V to 9.5 V
- Operating Temperature Range $T_A = -40$ to 85°C

P DIP 8 = PP
PLASTIC PACKAGE
CASE 626-04



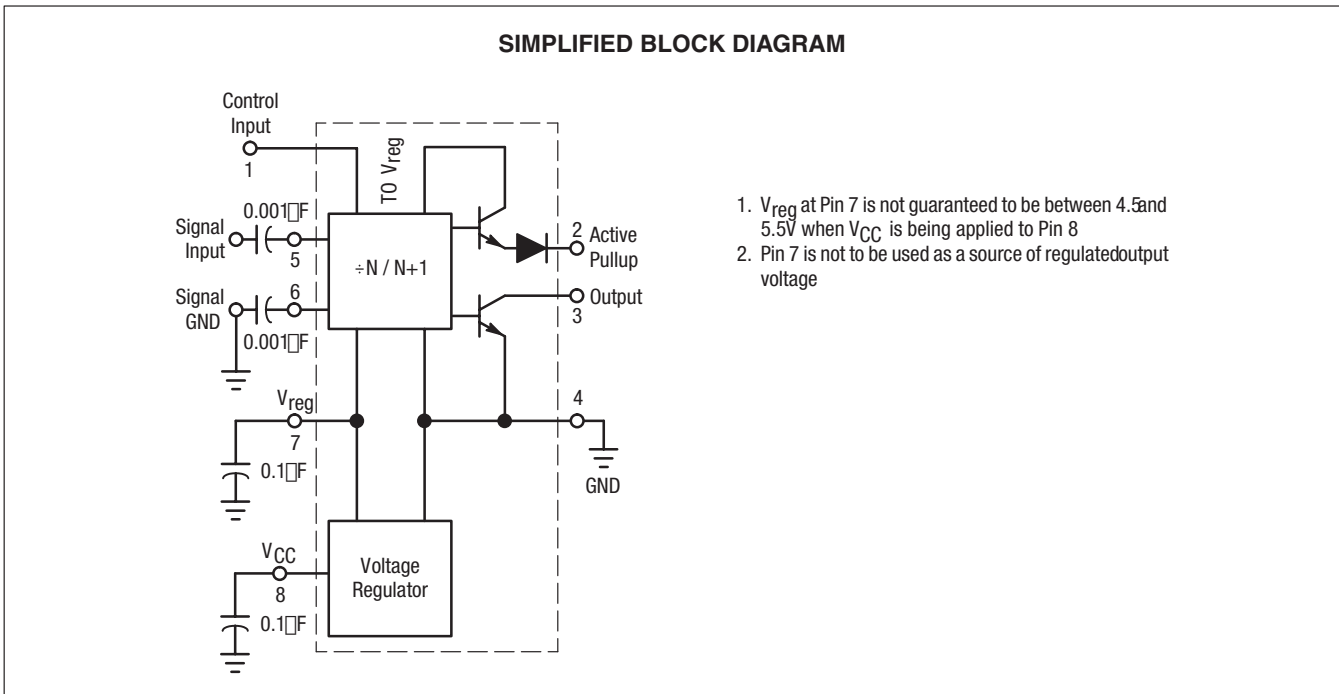
SO 8 = -5P
PLASTIC PACKAGE
CASE 751
(SO-8)



CROSS REFERENCE/ORDERING INFORMATION

PACKAGE	MOTOROLA	LANSDALE
P-DIP 8	MC12015P	ML12015PP
SO 8	MC12015D	ML12015-5P
P-DIP 8	MC12016P	ML12016PP
SO 8	MC12016D	ML12016-5P
P-DIP 8	MC12017P	ML12017PP
SO 8	MC12017D	ML12017-5P

Note: Lansdale lead free (**Pb**) product, as it becomes available, will be identified by a part number prefix change from **ML** to **MLE**.



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Regulated Voltage, Pin 7	V_{reg}	8.0	Vdc
Power Supply Voltage, Pin 8	V_{CC}	10	Vdc
Operating Temperature Range	T_A	-40 to +85	$^{\circ}C$
Storage Temperature Range	T_{stg}	-65 to +175	$^{\circ}C$

ELECTRICAL CHARACTERISTICS ($V_{CC} = 5.5$ to 9.5 V; $V_{reg} = 4.5$ to 5.5 V; $T_A = -40$ to $85^{\circ}C$, unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sine Wave Input)	f_{max}	225	–	–	MHz
	f_{min}	–	–	35	
Supply Current	I_{CC}	–	6.0	7.8	mA
Control Input HIGH ($\square 32, 40$ or 64)	V_{IH}	2.0	–	–	V
Control Input LOW ($\square 33, 41$ or 65)	V_{IL}	–	–	0.8	V
Output Voltage HIGH ($I_{source} = 50\mu A$) [Note 1]	V_{OH}	2.5	–	–	V
Output Voltage LOW ($I_{sink} = 2mA$) [Note 1]	V_{OL}	–	–	0.5	V
Input Voltage Sensitivity	V_{in}	400	–	800	mVpp
		200	–	800	
PLL Response Time [Notes 2 and 3]	t_{PLL}	–	–	t_{out} to 70	ns

NOTES: 1. Pin 2 connected to Pin 3.

2. t_{PLL} = the period of time the PLL has from the prescaler rising output transition (50%) to the modulus control input edge transition (50%) to ensure proper modulus selection.

3. t_{out} = period of output waveform.

Figure 1. Generic block diagram showing prescaler connection to PLL device

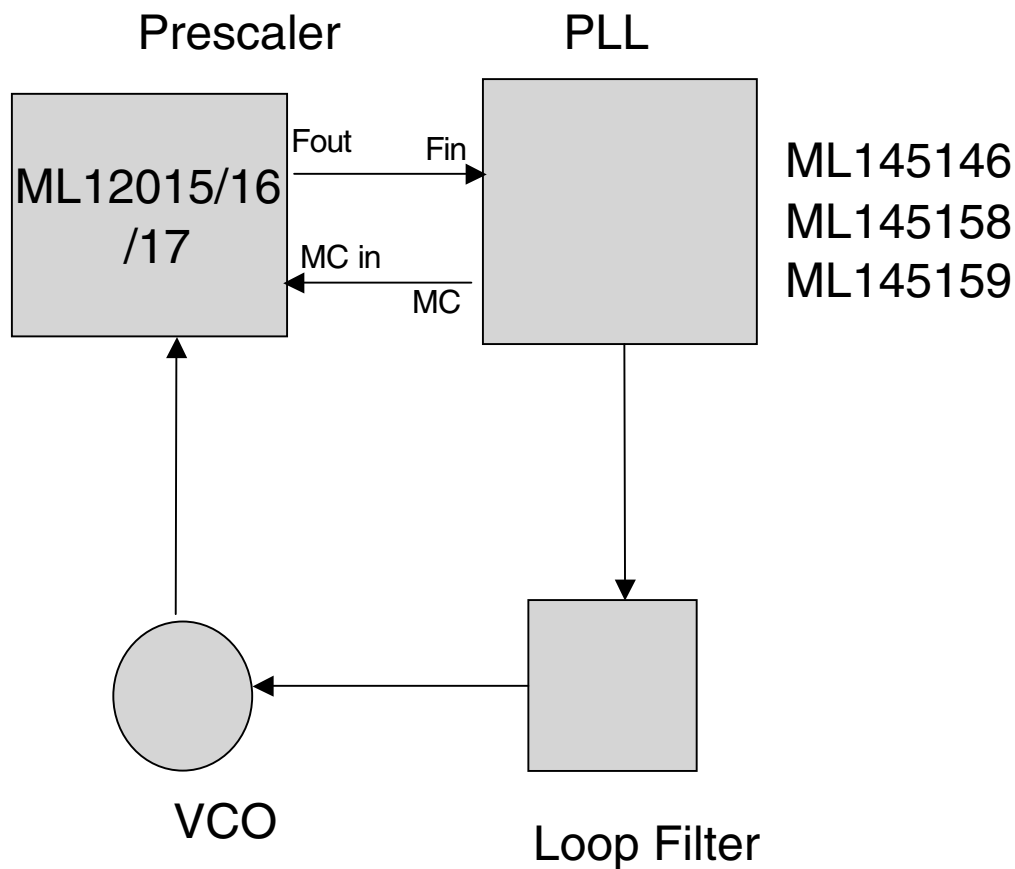
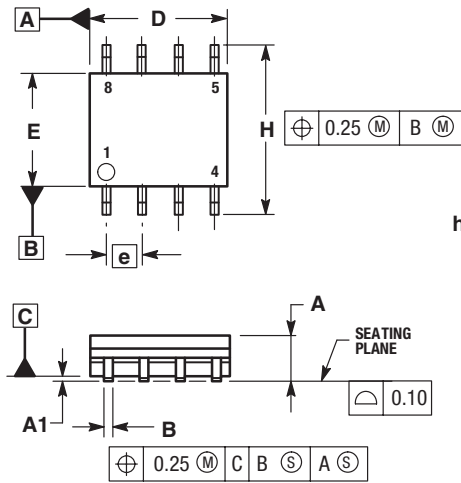


Figure 1. shows a generic block diagram for connecting a prescaler to a PLL device that supports dual modulus control. Application note AN535 describes using a two-modulus prescaler technique. By using prescaler higher frequencies can be achieved than by a single CMOS PLL device.

OUTLINE DIMENSIONS

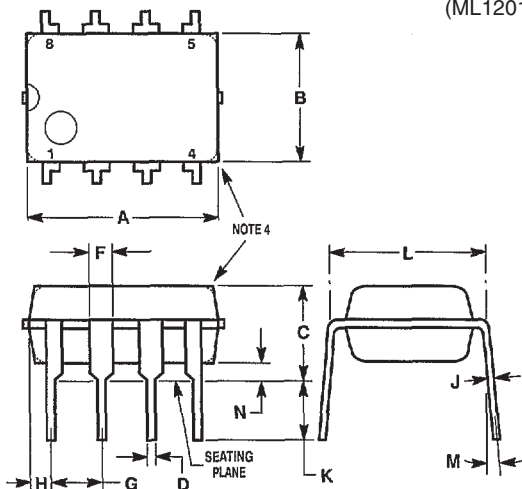
SO 8 = -5P
 PLASTIC PACKAGE
 (ML12015-5P, ML12016-5P, ML12017-5P)
 CASE 751-06
 (SO-8)
 ISSUE T



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. DIMENSIONS ARE IN MILLIMETER.
 3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
 4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
 5. 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.

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

P DIP 8 = PP
 PLASTIC PACKAGE
 (ML12015PP, ML12016PP, ML12017PP)
 CASE 626-04



- NOTES:
1. LEAD POSITIONAL TOLERANCE:
 2. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
 3. PACKAGE CONTOUR OPTIONAL (ROUND OR SQUARE CORNERS).
 4. DIMENSIONS A AND B ARE DATUMS.
 5. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	9.40	10.16	0.370	0.400
B	6.10	6.60	0.240	0.260
C	3.94	4.45	0.155	0.175
D	0.38	0.51	0.015	0.020
F	1.02	1.52	0.040	0.060
G	2.54 BSC		0.100 BSC	
H	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	0.51	0.76	0.020	0.030

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