LANSDALE Semiconductor, Inc.

ML12019
Dual Modulus Prescaler

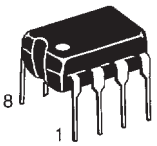
MECL PLL COMPONENTS ÷20/21 DUAL MODULUS
SEMICONDUCTOR TECHNICAL DATA

Legacy Device: *Motorola MC12019*

The ML12019 is a divide by 20 and 21 dual modulus prescaler. It will devide by 20 when the modulus control input is HIGH and divide by 21 when the modulus control input is LOW.

- 225 MHz Toggle Frequency
- Low–Power 7.5 mA Maximum at 5.5 V
- Control Input is Compatible with Standard Motorola or Lansdale CMOS Synthesizers
- Emitter Follower Output
- Operating Temperature Range T_A = –40 to 85°C

P DIP 8 = PP
PLASTIC PACKAGE
CASE 626-04



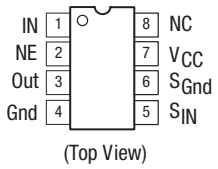
SO 8 = -5P
PLASTIC PACKAGE
CASE 751
(SO–8)

CROSS REFERENCE/ORDERING INFORMATION

PACKAGE	MOTOROLA	LANSDALE
P-DIP 8	MC12019P	ML12019PP
SO 8	MC12019D	ML12019-5P

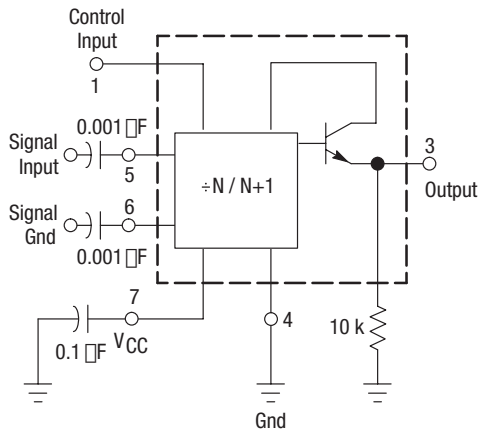
Note: Lansdale lead free (**Pb**) product, as it becomes available, will be identified by a part number prefix change from **ML** to **MLE**.

PIN CONNECTIONS



(Top View)

SIMPLIFIED BLOCK DIAGRAM



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Power Supply Voltage, Pin 7	V_{CC}	8.0	Vdc
Operating Temperature Range	T_A	–40 to +85	°C
Storage Temperature Range	T_{stg}	–65 to +175	°C

ELECTRICAL CHARACTERISTICS (V_{CC} = 4.5 to 5.5 V; T_A = –40 to 85°C), unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sine Wave Input)	f_{max} f_{min}	225 –	– –	– 20	MHz
Supply Current	I_{CC}	–	–	7.5	mA
Control Input HIGH (20)	V_{IH}	2.0	–	–	V
Control Input LOW (21)	V_{IL}	–	–	0.8	V
Output Swing Voltage (10 kΩ to ground)	V_{out}	600	–	1200	mVpp
Input Voltage Sensitivity 20 MHz to 225 MHz	V_{in}	200	–	800	mV_{PP}
PLL Response Time (Notes 1 and 2)	t_{PLL}	–	–	t_{out}–70	ns

NOTES: 1. t_{PLL} = the period of time the PLL has from the prescaler rising output tranistion (50%) to the modulus control input edge transition (50%) to ensure proper modulus selection.
2. t_{out} = period of output waveform.

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

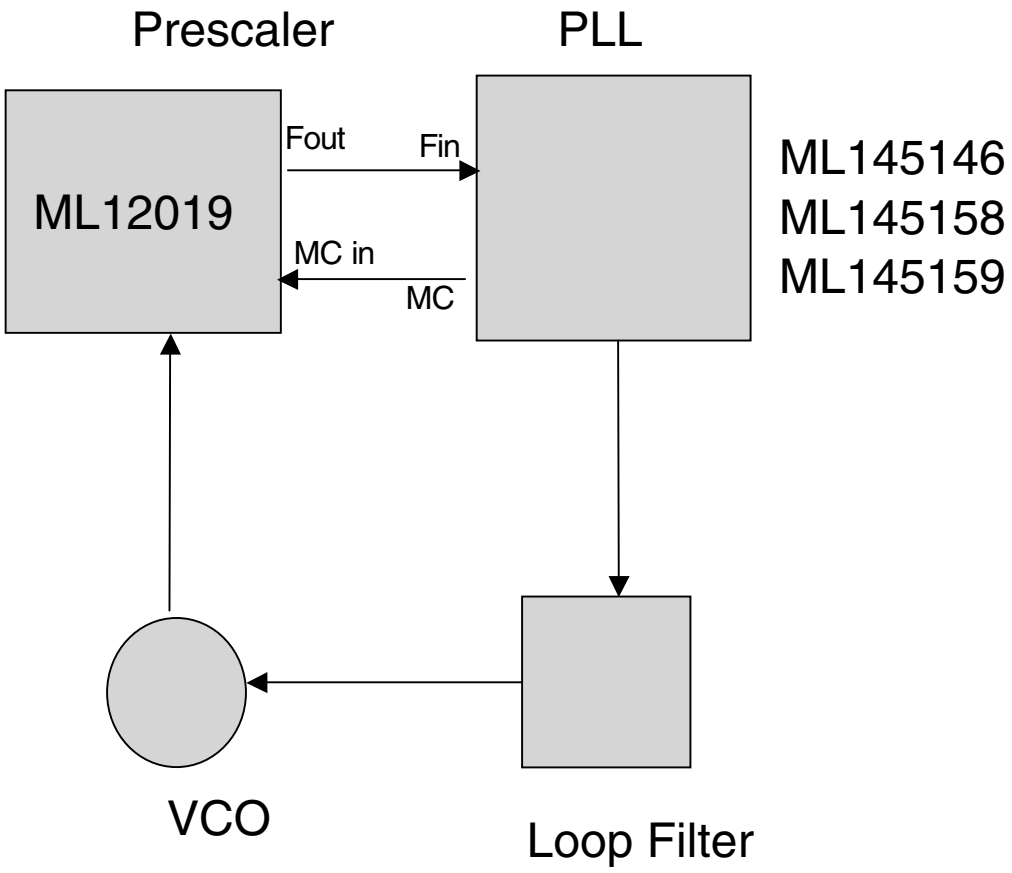
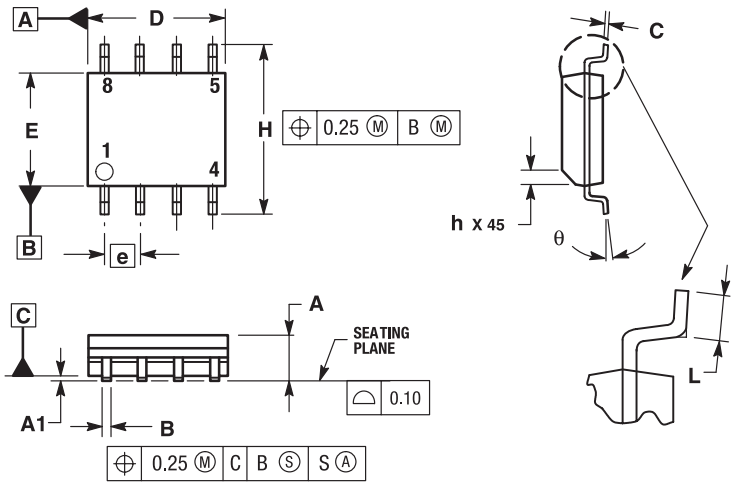


Figure 1 shows a generic block diagram for connecting a prescaler to a PLL device that supports dual modulus control. Application note AN535 decribes using a two-modulus prescaler technique.By using prescaler higher frequencies can be achieve than by a single CMOS PLL device.

OUTLINE DIMENSIONS

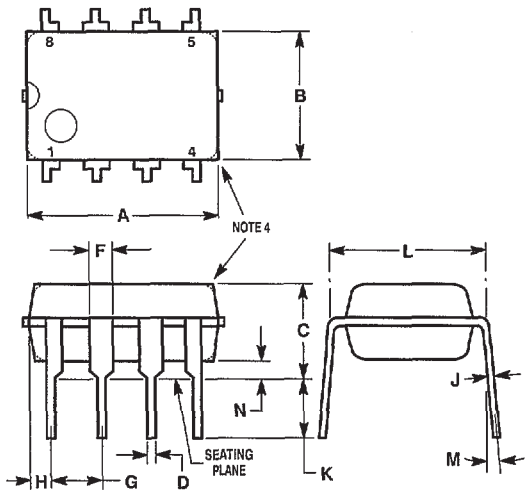
SO 8= -5P
PLASTIC PACKAGE
(ML12019-5P)
CASE 751–06
(SO–8)
ISSUE T



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. DIMENSIONS ARE IN MILLIMETER.
3. DIMENSION D AND 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.

	MILLIMETERS	
DIM	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
(ML12019PP)
CASE 626-04



NOTES:
1. LEAD POSITIONAL TOLERANCE:
   ϕ 0.13 (0.005) M T A M B M
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.

	MILLIMETERS		INCHES	
DIM	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