



**MOTOROLA**

ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005

**MC12015  
MC12016  
MC12017**

**Dual Modulus Prescaler**

The MC12015, MC12016 and MC12017 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 5.5Vdc 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

**MECL PLL COMPONENTS  
DUAL MODULUS PRESCALER**

**SEMICONDUCTOR  
TECHNICAL DATA**

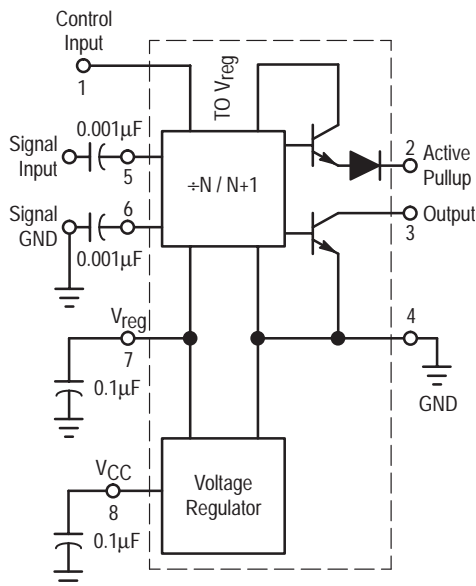


**D SUFFIX  
PLASTIC PACKAGE  
CASE 751  
(SO-8)**

**ORDERING INFORMATION**

Device	Operating Temperature Range	Package
MC12015D	$T_A = -40$ to $85^\circ\text{C}$	SO-8
MC12016D		
MC12017D		

**SIMPLIFIED BLOCK DIAGRAM**



1.  $V_{reg}$  at Pin 7 is not guaranteed to be between 4.5 and 5.5V when  $V_{CC}$  is being applied to Pin 8
2. Pin 7 is not to be used as a source of regulated output voltage

Freescale Semiconductor, Inc. ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005

ARCHIVE INFORMATION

**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	°C
Storage Temperature Range	$T_{stg}$	-65 to +175	°C

**NOTE:** ESD data available upon request.

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

Characteristic	Symbol	Min	Typ	Max	Unit
Toggle Frequency (Sine Wave Input)	$f_{max}$	225	-	-	MHz
	$f_{min}$	-	-	35	
Supply Current	$I_{CC}$	-	6.0	7.8	mA
Control Input HIGH (+32, 40 or 64)	$V_{IH}$	2.0	-	-	V
Control Input LOW (+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	$V_{in}$				mVpp
35 MHz		400	-	800	
50 to 225 MHz		200	-	800	
PLL Response Time [Notes 2 and 3]	$t_{PLL}$	-	-	$t_{out}$ to 70	ns

**NOTES:** 1. Pin 2 connected to Pin 3.

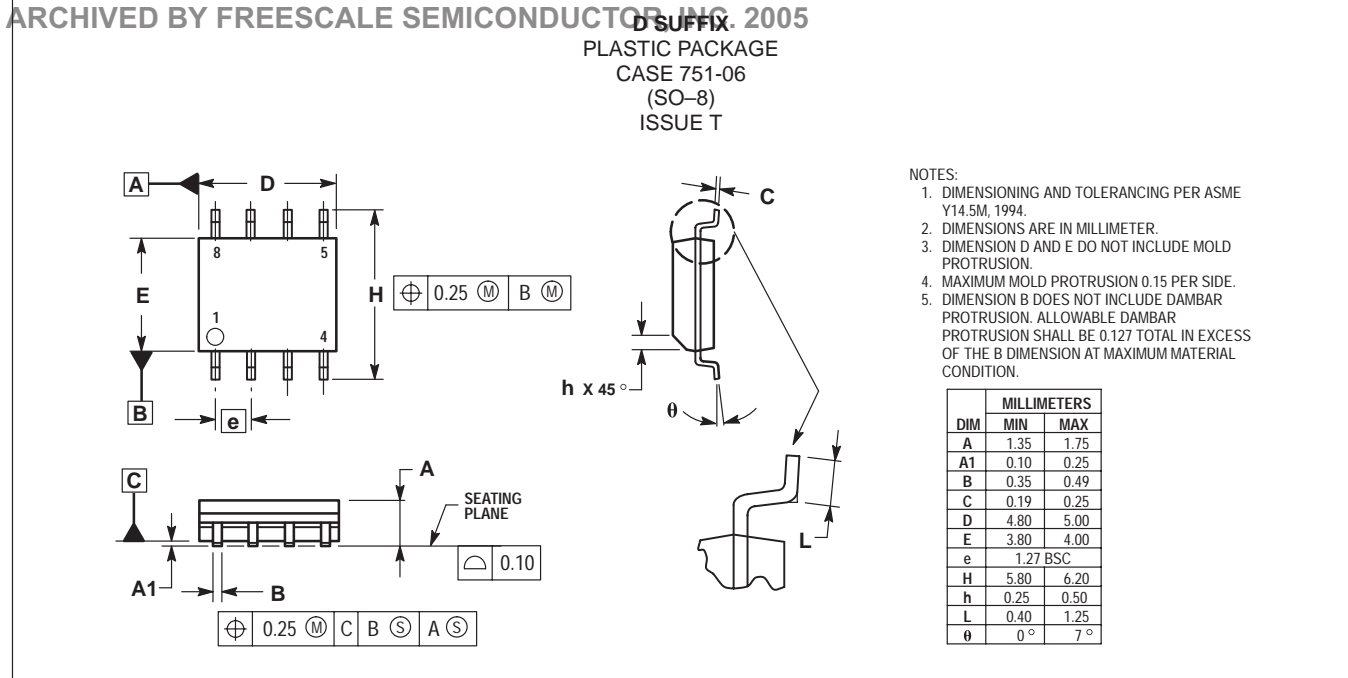
2.  $t_{PLL}$  = the period of time the PLL has from the prescaler rising output transition (50%) to the modulus control input edge transition (50%) to ensure proper modulus selection.

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

Freescale Semiconductor, Inc.  
ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005

ARCHIVE INFORMATION

OUTLINE DIMENSIONS



Motorola reserves the right to make changes without further notice to any products herein. Motorola makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does Motorola assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation consequential or incidental damages. "Typical" parameters which may be provided in Motorola data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. Motorola does not convey any license under its patent rights nor the rights of others. Motorola products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Motorola product could create a situation where personal injury or death may occur. Should Buyer purchase or use Motorola products for any such unintended or unauthorized application, Buyer shall indemnify and hold Motorola and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that Motorola was negligent regarding the design or manufacture of the part. Motorola and are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Opportunity/Affirmative Action Employer.

Mfax is a trademark of Motorola, Inc.

How to reach us:

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

JAPAN: Motorola Japan Ltd.; SPD, Strategic Planning Office, 141,  
4-32-1 Nishi-Gotanda, Shinagawa-ku, Tokyo, Japan. 81-3-5487-8488

Customer Focus Center: 1-800-521-6274

Mfax™: RMFAX0@email.sps.mot.com – TOUCHTONE 1-602-244-6609  
Motorola Fax Back System – US & Canada ONLY 1-800-774-1848  
– http://sps.motorola.com/mfax/

ASIA/PACIFIC: Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,  
2, Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong.  
852-26668334

HOME PAGE: <http://motorola.com/sps/>



For More Information On This Product,  
Go to: [www.freescale.com](http://www.freescale.com)

Freescale Semiconductor, Inc. ARCHIVED BY FREESCALE SEMICONDUCTOR, INC. 2005

ARCHIVE INFORMATION