

[查询"MPC9108"供应商](#)

# Advance Information

## Multiple Output Clock Synthesizer

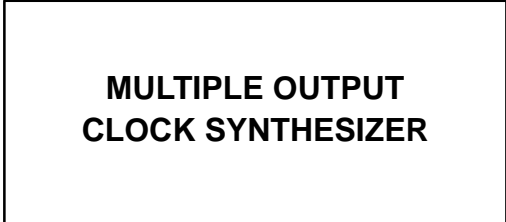
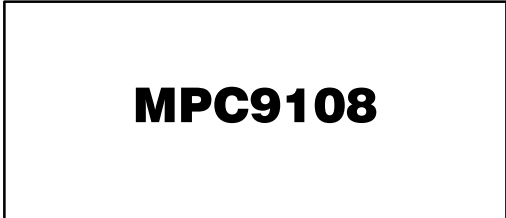
The MPC9108 is a multiple CMOS output clock synthesizer targeted for disk drive applications. The device interfaces to a 20MHz crystal as its frequency source. From this source the device provides a buffered copy of the 20MHz clock as well as synthesized 40MHz and 50MHz output clocks.

- Fully Integrated PLL
- Fully Integrated Crystal Oscillator
- Low cost, low jitter design
- Low cost 8-lead SOIC packaging

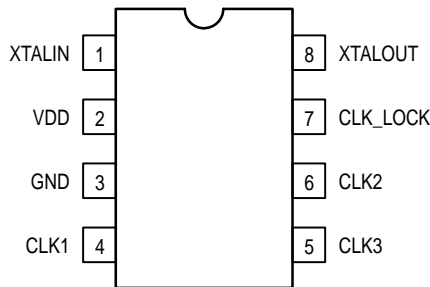
In addition to the output clock frequencies, the MPC9108 also offers a lock indicator output. When the internal PLL achieves phase and frequency lock the CLK\_LOCK signal will go HIGH. The pin will remain HIGH unless the PLL loses lock due to input clock or power supply disturbances.

The XTALIN pin (pin 1) can be over-driven with a standard 5V CMOS signal. When an externally generated reference is used the XTALOUT pin should be left open.

The MPC9108 operates from a 5.0V supply across the commercial temperature range of 0°C to 70°C. The 8-lead SOIC package is used to optimize board space efficiency as well as minimizing cost.



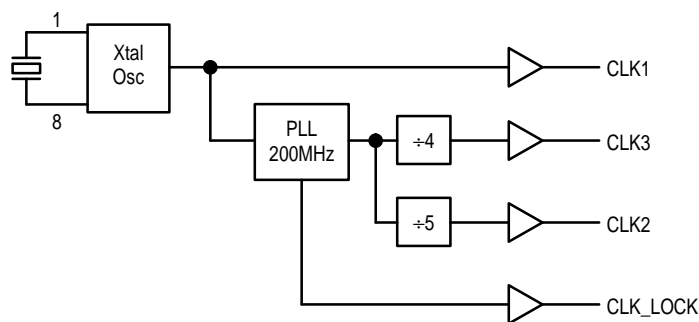
**Pinout: 8-Lead SOIC**  
(Top View)



**Pin Descriptions**

Pin Name	Pin Number	I/O	Function
XTALIN	1	I	20MHz Crystal Connection, External Reference Point
VDD	2	-	+5V Power Supply
GND	3	-	Ground
CLK1	4	O	20MHz Output, Buffer Xtal Output
CLK2	5	O	50MHz Output, PLL Controlled
CLK3	6	O	40MHz Output, PLL Controlled
CLK_LOCK	7	O	HIGH When PLL is Locked
XTALOUT	8	O	Crystal Oscillator Connection

This document contains information on a new product. Specifications and information herein are subject to change without notice.

[查询"MPC9108"供应商](#)**BLOCK DIAGRAM****MAXIMUM RATINGS\***

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	DC Supply Voltage (Referenced to GND)	-0.5 to +7.0	V
V <sub>IN</sub>	Input Voltage	-0.5 to +7.0	V
T <sub>A</sub>	Operating Temperature Range (In Free-Air)	0 to +70	°C
T <sub>A</sub>	Ambient Temperature Range (Under Bias)	-55 to +125	°C
T <sub>STG</sub>	Storage Temperature Range	-65 to +150	°C

\* Maximum Ratings are those values beyond which damage to the device may occur. Functional operation should be restricted to the Recommended Operating Conditions.

**DC CHARACTERISTICS** (0°C < T<sub>A</sub> < 70°C; V<sub>DD</sub> = 5V ±10%; Unless Otherwise Stated)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
V <sub>IL</sub>	Input Low Voltage			0.8	V	V <sub>DD</sub> = 5V
V <sub>IH</sub>	Input High Voltage	2.0			V	V <sub>DD</sub> = 5V
I <sub>IL</sub>	Input Low Current			-5	μA	V <sub>IN</sub> = 0.5V
I <sub>IH</sub>	Input High Current			5	μA	V <sub>IN</sub> = V <sub>DD</sub>
V <sub>OL</sub>	Output Low Voltage			0.4	V	I <sub>OL</sub> = 4mA
V <sub>OL</sub>	Output Low Voltage			0.4	V	I <sub>OL</sub> = 10mA
V <sub>OH</sub>	Output High Voltage	0.8V <sub>DD</sub>			V	I <sub>OH</sub> = -30mA
I <sub>DD</sub>	Supply Current		25	40	mA	No Load; Note 1.
F <sub>D</sub>	Output Frequency Change Over Supply & Temp		0.002	0.01	%	With Respect to Typ Freq
I <sub>SC</sub>	Short Circuit Current	25	40		mA	Each Output Clock
C <sub>I</sub>	Input Capacitance			10	pF	Except X1, X2
C <sub>L</sub>	Xtal Load Capacitance		20		pF	Pins X1, X2

1. All clocks operating at highest frequencies.

[查询"MPC9108"供应商](#)

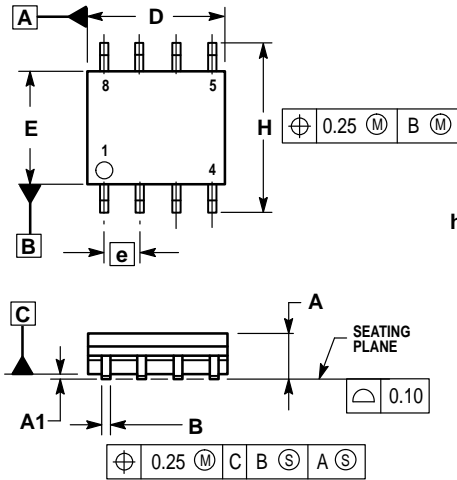
**AC CHARACTERISTICS** ( $0^{\circ}\text{C} < T_A < 70^{\circ}\text{C}$ ;  $V_{DD} = 5\text{V} \pm 10\%$ ; Unless Otherwise Stated)

Symbol	Characteristic	Min	Typ	Max	Unit	Condition
$t_{ICr}$	Input Clock Rise Time			20	ns	
$t_{ICf}$	Input Clock Fall Time			20	ns	
$t_r$	Output Rise Time 0.8 to 2.0V		1.0	2.0	ns	30pf Load
$t_r$	Rise Time 20% to 80% $V_{DD}$		2.0	4.0	ns	30pf Load
$t_f$	Output Fall Time 2.0 to 0.8V		1.0	2.0	ns	30pf Load
$t_f$	Fall Time 20% to 80% $V_{DD}$		2.0	4.0	ns	30pf Load
$d_t$	Duty Cycle Pins 4, 6, 5	45/55	48/52	55/45	%	30pf Load
$f_i$	Input Frequency		20		MHz	
$t_{jab}$	Jitter Absolute Pins 4, 6, 5	-500		500	ps	
$t_{lock}$	Output Lock Time	0.02	3.0	4.0	ms	

[查询"MPC9108"供应商](#)

**OUTLINE DIMENSIONS**

**D SUFFIX  
PLASTIC SOIC PACKAGE  
CASE 751-05  
ISSUE R**



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. DIMENSIONS ARE IN MILLIMETERS.
  3. DIMENSION D AND E DO NOT INCLUDE MOLD PROTRUSION.
  4. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.
  5. DIMENSION B DOES NOT INCLUDE MOLD 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	0.18	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°

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.

**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