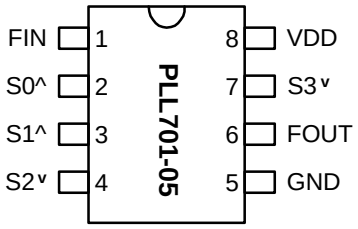
Low EMI Spread Spectrum Multiplier Clock

FEATURES

- Spread Spectrum Clock Generator with selectable multiplier from 1x to 6x outputs.
- Output frequency ranges: 30MHz to 180MHz.
- Modulates external clocks including crystals, crystal oscillators and ceramic resonators.
- Selectable Center or Down Spread Modulation.
- TTL/CMOS compatible outputs.
- 3.3V Operating Voltage.
- Low short term jitter.
- Available in 8-Pin 150mil SOIC.

PIN CONFIGURATION



FIN = 30 ~ 120 Mhz

Note: . v: 120KΩ Internal Pull down. ^: 120KΩ Internal Pull up.

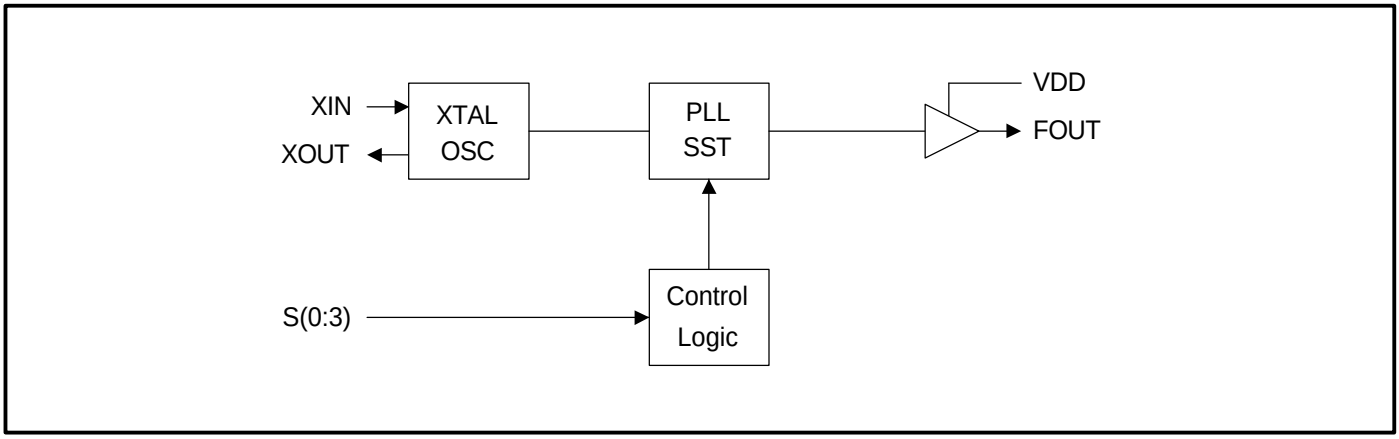
DESCRIPTIONS

The PLL701-05 is a Spread Spectrum Clock Generator designed for the purpose of reducing EMI in high-speed digital systems. Any output frequency can be selected by programming 4 multiplier modes. The device is designed to operate over a very wide range of input frequencies and provides 1x to 4x modulated clock outputs.

OUTPUT CLOCK (FOUT) SELECTION

S0	S1	S2	S3	FIN Range (MHz)	FOUT	Spread Spectrum modulation frequency	Spread Spectrum
0	0	0	0	30 - 60	X1	Fin / 512	±0.75%
0	0	0	1	30 - 60	X1		±1.00%
0	0	1	0	30 - 60	X1		-2.50%
0	0	1	1	30 - 60	X1		0.5-1.5%
0	1	0	0	30 - 60	X2		±0.25%
0	1	0	1	30 - 60	X2		±0.5%
0	1	1	0	30 - 60	X2		±0.75%
0	1	1	1	30 - 60	X2		±1.00%
1	0	0	0	30 - 60	X2		-2.50%
1	0	0	1	30 - 60	X2		0.5-1.5%
1	0	1	0	30 - 45	X4		0.25-1.25%
1	0	1	1	30 - 45	X4		0.5-1.5%
1	1	0	0	60 - 120	X1		±0.25%
1	1	0	1	60 - 120	X1		±0.50%
1	1	1	0	60 - 120	X1		0.25-1.25%
1	1	1	1	60 - 120	X1		0.5-1.5%

BLOCK DIAGRAM



PIN DESCRIPTIONS

Name	Number	Type	Description
FIN	1	I	Input Clock Frequency.
S0	2	I	Digital control input to select output frequency. Has internal pull-up.
S1	3	I	Digital control input to select output frequency. Has internal pull-up.
S2	4	I	Digital control input to select output frequency. Has internal pull-down.
S3	7	I	Digital control input to select output frequency. Has internal pull-down.
VDD	8	P	3.3V Power Supply.
FOUT	6	O	Modulated Clock Frequency Output. The frequency before modulation is synthesized by multiplying the input frequency by 1X, 2X, or 4X, depending on S(0:3).
GND	5	P	Ground.

ELECTRICAL SPECIFICATIONS

1. Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage	V_{DD}	V_{SS}-0.5	6	V
Input Voltage Range	V_I	V_{SS}-0.5	V_{DD}+0.5	V
Output Voltage Range	V_O	V_{SS}-0.5	V_{DD}+0.5	V
Soldering Temperature			260	°C
Storage Temperature	T_S	-65	150	°C
Ambient Operating Temperature*	T_A	-40	85	°C

Exposure of the device under conditions beyond the limits specified by Maximum Ratings for extended periods may cause permanent damage to the device and affect product reliability. These conditions represent a stress rating only, and functional operations of the device at these or any other conditions above the operational limits noted in this specification is not implied.

* **Note**: Operating Temperature is guaranteed by design for all parts (COMMERCIAL and INDUSTRIAL), but tested for INDUSTRIAL grade only.

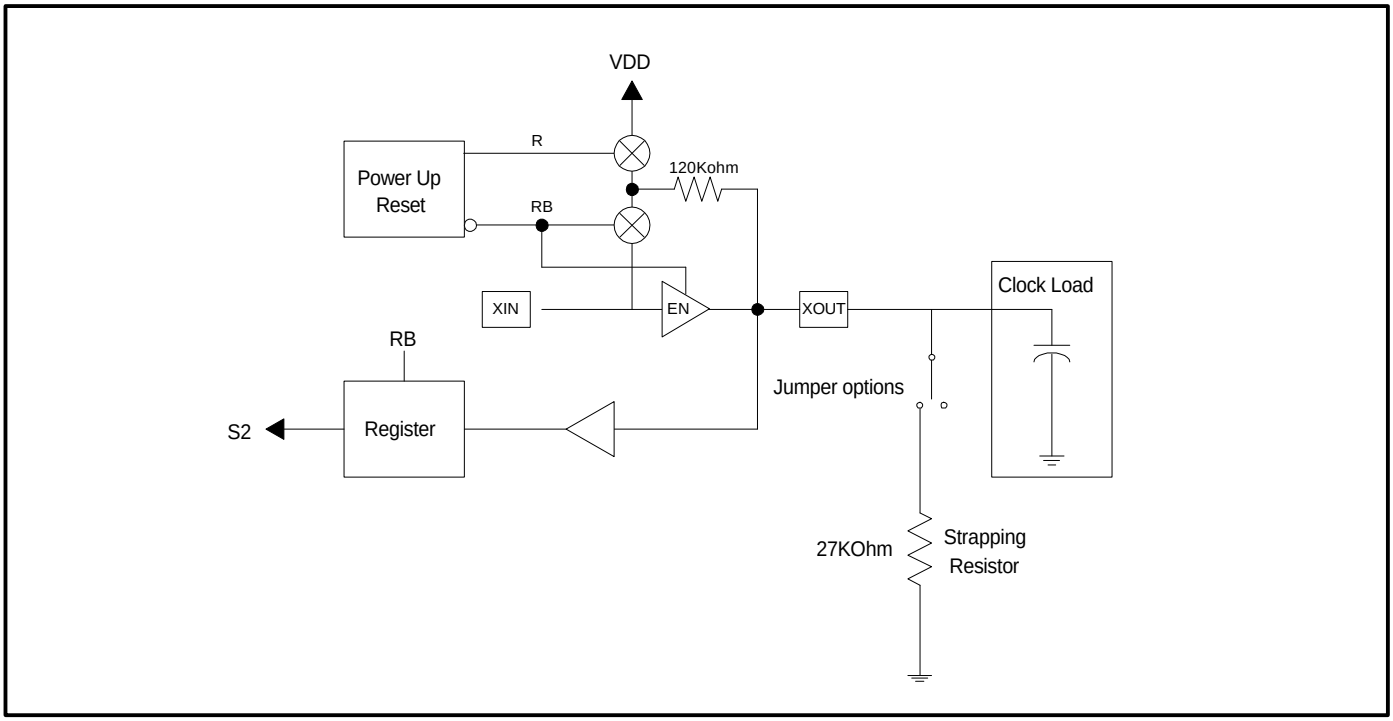
2. DC/AC Specification

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Voltage	V_{DD}		3.15		3.45	V
Input High Voltage	V_{IH}		0.7*VDD			V
Input Low Voltage	V_{IL}				0.3*VDD	V
Input High Current	I_{IH}				100	µA
Input Low Current	I_{IL}				100	µA
Output High Voltage	V_{OH}	I_{OH}=5mA, VDD=3.3V	2.4			
Output Low Voltage	V_{OL}	I_{OL}=6mA, VDD=3.3V			0.4	
Input Frequency	F_{IN}		30		120	MHz
Maximum interruption of F_{IN}					100	µs
Input Capacitance	C_{in1}			4		pF
Pull-up Resistor	R_{pu}	PIN 2, 3	60	125	200	KΩ
Pull-down Resistor	R_{pd}	PIN 4, 7	60	125	200	KΩ
Short Circuit Current	I_{sc}			25		mA
3.3V Dynamic Supply Current	I_{CC}	No Load		20		mA

3. TIMING CHARACTERISTICS

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Rise Time	T_r	Measured at 0.8V ~ 2.0V @ 3.3V	0.8	0.95	1.1	ns
Fall Time	T_f	Measured at 2.0V ~ 0.8V @ 3.3V	0.78	0.85	0.9	ns
Output Duty Cycle	D_T		45	50	55	%
Cycle to Cycle Jitter	$T_{cyc-cyc}$	FOUT=48MHz @ 3.3V			100	ps
Cycle to Cycle Jitter	$T_{cyc-cyc}$	FOUT=72MHz @ 3.3V			100	ps

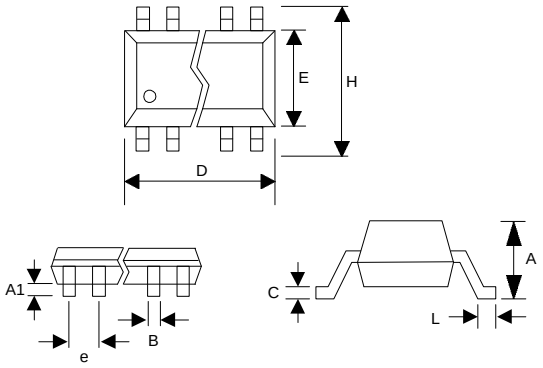
INPUT LOGIC SELECTION THROUGH RESISTOR LOAD OPTION



PACKAGE INFORMATION

8 PIN Narrow SOIC (mm)

	SOIC	
Symbol	Min.	Max.
A	1.47	1.73
A1	0.10	0.25
B	0.33	0.51
C	0.19	0.25
D	4.80	4.95
E	3.80	4.00
H	5.80	6.20
L	0.38	1.27
e	1.27 BSC	



ORDERING INFORMATION

For part ordering, please contact our Sales Department:

47745 Fremont Blvd., Fremont, CA 94538, USA

Tel: (510) 492-0990 Fax: (510) 492-0991

PART NUMBER

The order number for this device is a combination of the following:

Device number, Package type and Operating temperature range

PLL701-05 S C

PART NUMBER

TEMPERATURATURE
C=COMMERCIAL
M=MILITARY
I=INDUSTRAL

PACKAGE TYPE
S=SOIC