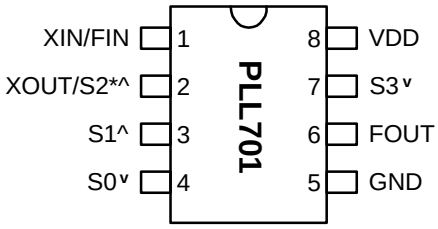
Preliminary **PLL701-01/02/03/04**

Low EMI Spread Spectrum Multiplier Clock

FEATURES

- Spread Spectrum Clock Generator with selectable multiplier from 1x to 6x outputs.
- Output frequency ranges: 10MHz to 180MHz.
- Modulates external clocks including crystals, crystal oscillators and ceramic resonators.
- Selectable Center Spread Modulation.
- TTL/CMOS compatible outputs.
- 3.3V Operating Voltage.
- Low short term jitter.
- Available in 8-Pin 150mil SOIC.

PIN CONFIGURATION



XIN/FIN = 10 ~ 30 Mhz

Note: . v: Internal Pull down. ^: Internal Pull up. *:The value of S2 is selected only at power-up. S2 is High by default, if a 27kOhm pull down is attached to this pin, S2 will have Low value. Internal pull up resistor is 90kohm for S2, 30kohm for S1. Internal pull down resistor is 30kohm for both S0 and S3.

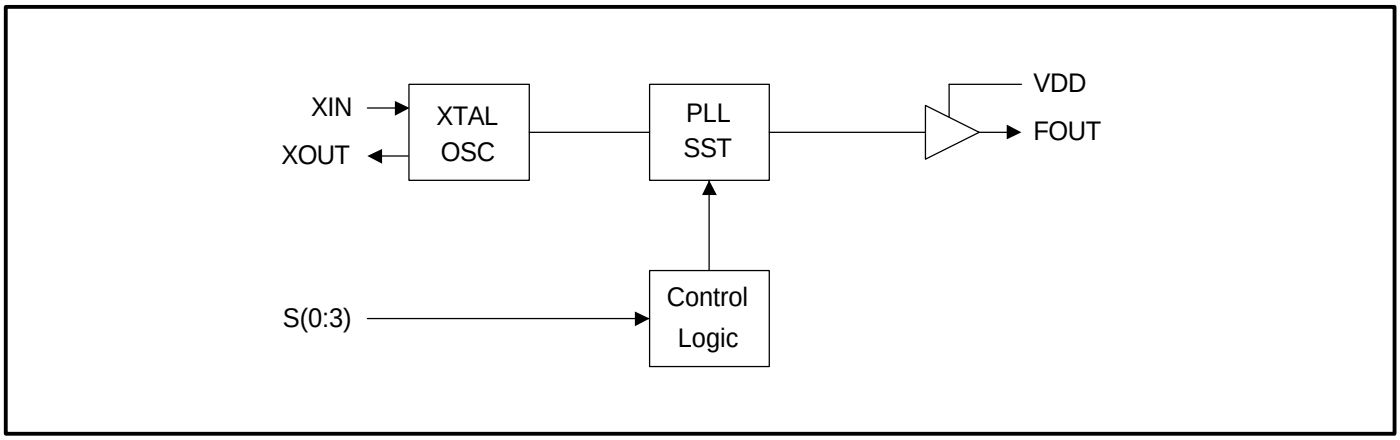
DESCRIPTIONS

The PLL701-01/02/03/04 is a Spread Spectrum Clock Generator designed for the purpose of reducing EMI in high-speed digital systems. Any output frequency from 10 to 180MHz can be selected by programming 6 multiplier modes. The device is designed to operate over a very wide range of input frequencies and provides 1x to 6x modulated clock outputs.

OUTPUT CLOCK (FOUT) SELECTION

S0	S1	S2	S3	FOUT(-01/-02)	Spread Spectrum Modulation		FOUT(-03/-04)	Spread Spectrum Modulation	
					PLL701-01	PLL701-02		PLL701-01	PLL701-02
0	0	0	0	X1	±0.5%	±0.375%	X4	OFF	OFF
0	0	0	1	X1	±0.75%	±0.625%	X4	±0.5%	±0.375%
0	0	1	0	X1	±1%	±0.875%	X4	±0.75%	±0.625%
0	0	1	1	X1	±1.25%	±1.125%	X4	±1%	±0.875%
0	1	0	0	X1	±1.5%	±1.375%	X4	±1.25%	±1.125%
0	1	0	1	X2	OFF	OFF	X5	OFF	OFF
0	1	1	0	X2	±0.5%	±0.375%	X5	±0.25%	±0.125%
0	1	1	1	X2	±0.75%	±0.625%	X5	±0.5%	±0.375%
1	0	0	0	X2	±1%	±0.875%	X5	±0.75%	±0.625%
1	0	0	1	X2	±1.25%	±1.125%	X5	±1%	±0.875%
1	0	1	0	X2	±1.5%	±1.375%	X5	±1.25%	±1.125%
1	0	1	1	X3	OFF	OFF	X6	OFF	OFF
1	1	0	0	X3	±0.5%	±0.375%	X6	±0.25%	±0.125%
1	1	0	1	X3	±0.75%	±0.625%	X6	±0.5%	±0.375%
1	1	1	0	X3	±1%	±0.875%	X6	±0.75%	±0.625%
1	1	1	1	X3	±1.25%	±1.125%	X6	±1%	±1.875%

BLOCK DIAGRAM



PIN DESCRIPTIONS

Name	Number	Type	Description
XIN/FIN	1	I	Crystal input to be connected to fundamental parallel mode crystal.(C_L=20pF) or clock input.
XOUT/S2	2	B	At power-up, this pin is an input pin to select output frequency. After input sampling, this pin is crystal output. Has internal pull up resistor.
S1	3	I	Digital control input to select output frequency. Has internal pull-up.
S0	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 center frequency is the same as the input reference frequency. The input frequency is multiplied by 2X, 3X, 4X, 6X.
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		0	70	°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.

2. DC/AC Specification

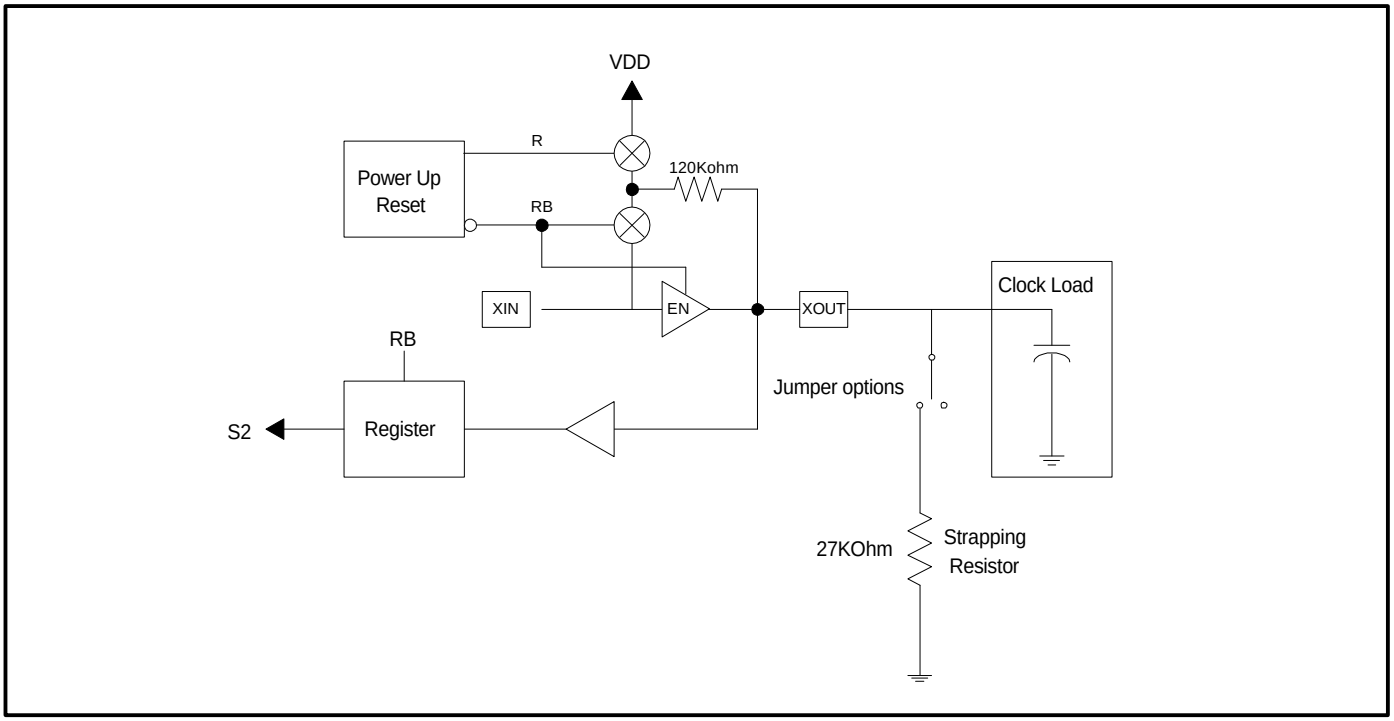
PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Voltage	V_{DD}		3.15		3.45	V
Input High Voltage	V_{IH}				0.3*VDD	V
Input Low Voltage	V_{IL}		0.7*VDD			V
Input High Current	I_{IH}				100	µA
Input Low Current	I_{IL}				100	µA
Output High Voltage	V_{OH}	I_{OH}=5mA, VDD=3.3V	2.4			
Output Low Voltage	V_{OL}	I_{OL}=6mA, VDD=3.3V			0.4	
Load Capacitance	C_L	Between Pin XIN and XOUT*		18		pF
Pull-up Resistor	R_{pu}	PIN 2		90		KΩ
Pull-up Resistor	R_{pu}	PIN 3		30		KΩ
Pull-down Resistor	R_{pd}	PIN 4, 7		30		KΩ
Short Circuit Current	I_{sc}			25		mA
3.3V Dynamic Supply Current	I_{CC}	No Load		20		mA

***Note:** Pin XIN and XOUT each has a 36pF capacitance. When used with a XTAL, the two capacitors combined load the crystal with 18pF. If driving XIN with a reference clock signal, the load capacitance will be 36pF (typical).

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			200	ps
Cycle to Cycle Jitter	$T_{cyc-cyc}$	FOUT=72MHz @ 3.3V			200	ps

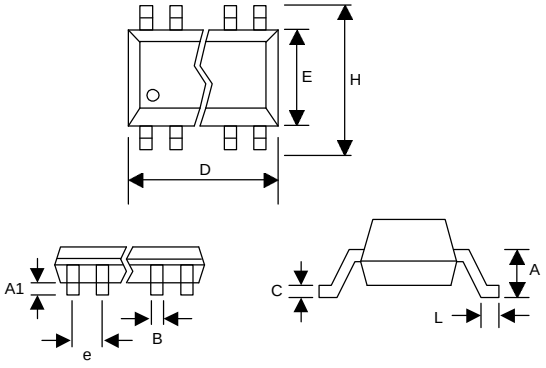
INPUT LOGIC SELECTION THROUGH RESISTOR LOAD OPTION



PACKAGE INFORMATION

8 PIN Narrow SOIC, TSSOP (mm)

	SOIC		TSSOP	
Symbol	Min.	Max.	Min.	Max.
A	1.55	1.73	-	1.20
A1	0.15	0.18	0.05	0.15
B	0.35	0.49	0.19	0.30
C	0.19	0.25	0.09	0.20
D	4.80	4.98	2.90	3.10
E	3.81	3.99	4.30	4.50
H	5.84	6.20	6.30	6.50
L	0.41	0.89	0.45	0.75
e	1.27 BSC		0.65 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

PLL701-01 S C

PART NUMBER

TEMPERATURATURE
C=COMMERCIAL
M=MILITARY
I=INDUSTRAL

PACKAGE TYPE
S=SOIC