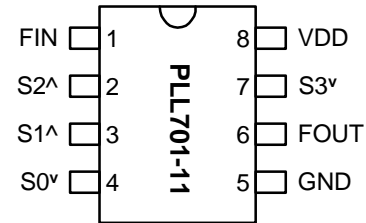


Low EMI Spread Spectrum Multiplier Clock

FEATURES

- Spread Spectrum Clock Generator with selectable multiplier from 1x to 4x outputs.
- Output frequency ranges: 24MHz to 240MHz.
- Selectable Center Spread Modulation.
- TTL/CMOS compatible outputs.
- 3.3V Operating Voltage.
- Low short term jitter.
- Available in 8-Pin 150mil SOIC.

PIN CONFIGURATION



FIN = 24 ~ 120 Mhz

Note: v: 30kΩ Internal Pull down. ^: 30kΩ Internal Pull up.

DESCRIPTIONS

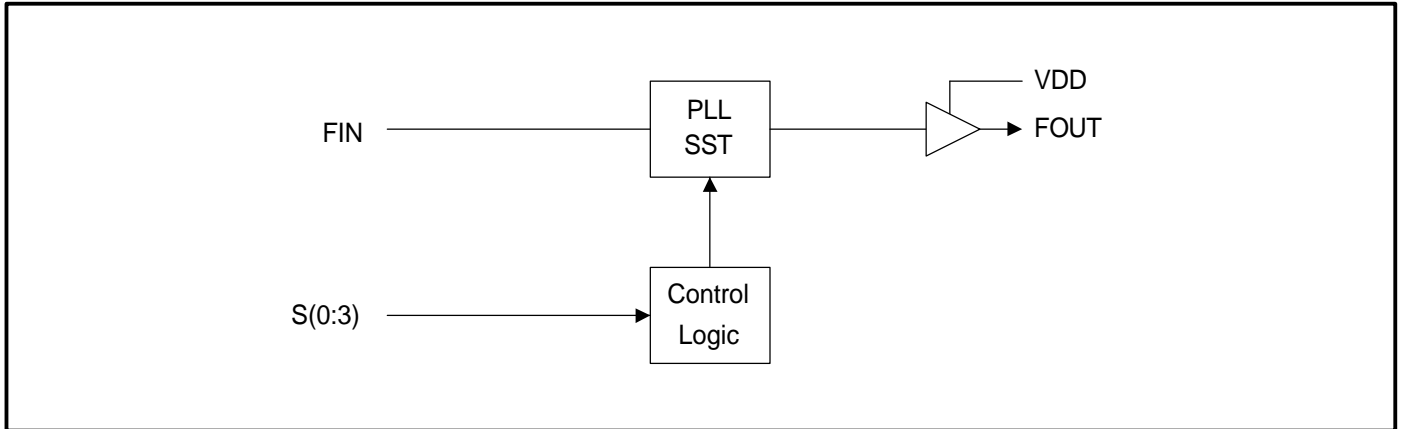
The PLL701-11 is a Spread Spectrum Clock Generator designed for the purpose of reducing EMI in high-speed digital systems, with the selectable Center Spread modulation amplitude (see table below). Any output frequency can be selected by programming 4 multiplier modes. The device operates over a very wide range of input frequencies and provides 1x to 4x modulated clock outputs.

OUTPUT CLOCK (FOUT) SELECTION

S3	S2	S1	S0	FIN Range (MHz)	FOUT	Spread Spectrum Modulation	
						Frequency	Magnitude
0	0	0	0	24 - 60	X1	Fin / 256	±0.75%
0	0	0	1	24 - 60	X1		±1.00%
0	0	1	0	24 - 60	X1		±1.25%
0	0	1	1	24 - 60	X1		±1.5%
0	1	0	0	24 - 60	X2		±0.25%
0	1	0	1	24 - 60	X2		±0.5%
0	1	1	0	24 - 60	X2		±0.75%
0	1	1	1	24 - 60	X2		±1.00%
1	0	0	0	24 - 60	X2		±1.25%
1	0	0	1	24 - 60	X2		±1.5%
1	0	1	0	24 - 60	X4		±0.25%
1	0	1	1	24 - 60	X4		±0.5%
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		±0.75%
1	1	1	1	60 - 120	X1		±1.00%

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BLOCK DIAGRAM



PIN DESCRIPTIONS

Name	Number	Type	Description
FIN	1	I	Input Clock Frequency.
S2	2	I	Digital control input to select output frequency and SST modulation amplitude. Has internal pull-up.
S1	3	I	Digital control input to select output frequency and SST modulation amplitude. Has internal pull-up.
S0	4	I	Digital control input to select output frequency and SST modulation amplitude. Has internal pull-down.
S3	7	I	Digital control input to select output frequency and SST modulation amplitude. Has internal pull-down.
VDD	8	P	3.3V Power Supply.
FOUT	6	O	SST 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.

Low EMI Spread Spectrum Multiplier Clock

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}		$0.7 \cdot V_{DD}$			V
Input Low Voltage	V_{IL}				$0.3 \cdot V_{DD}$	V
Input High Current	I_{IH}				100	μA
Input Low Current	I_{IL}				100	μA
Output High Voltage	V_{OH}	$I_{OH}=5mA, V_{DD}=3.3V$	2.4			
Output Low Voltage	V_{OL}	$I_{OL}=6mA, V_{DD}=3.3V$			0.4	
Input Frequency	F_{IN}		24		120	MHz
Maximum interruption of F_{IN}					none	μs
Input Capacitance	C_{in1}			4		pF
Pull-up Resistor	R_{pu}	PIN 2, 3		30		$k\Omega$
Pull-down Resistor	R_{pd}	PIN 4, 7		30		$k\Omega$
Short Circuit Current	I_{sc}			25		mA
3.3V Dynamic Supply Current	I_{CC}	No Load		20		mA

Low EMI Spread Spectrum Multiplier Clock

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	%
Input to Output Delay			2		4	ns
Cycle to Cycle Jitter	$T_{cyc-cyc}$	Over output frequency range @ 3.3V			100	ps

FUNCTIONAL DESCRIPTION

Selectable spread spectrum and modulation rates

The PLL701-11 provides selectable spread spectrum modulation, as well as selectable modulation rate. Selection is made by connecting specific pins to a logical "zero" or "one", according to the output clock selection table and modulation rate selection table on page 1.

Pins 2 (S2), 3 (S1), 4 (S0), and 7 (S3) are used as inputs to select the spread spectrum modulation as shown on the output clock selection table (page 1).

Default values for S(0:3) through internal pull-up and pull-down resistor

Selection pins S0 and S3 have an internal pull-down resistor of 30k Ω , pins 2 and 3 (S1 and S2) have an internal pull-up resistor of 30k Ω . This internal pull-up (or pull-down) resistor will pull the input value to a logical "one" (or "zero" respectively) by default, i.e. when no resistive load is connected between the pin and GND (VDD respectively). In order to override the internal pull-up (pull-down), the pin has to be connected to GND (VDD respectively).

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PACKAGE INFORMATION

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	

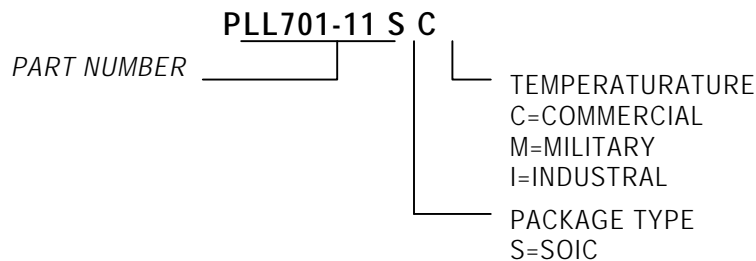
ORDERING INFORMATION

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



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