

4x Low Phase Noise Multiplier PECL XO

Universal Low Phase Noise IC

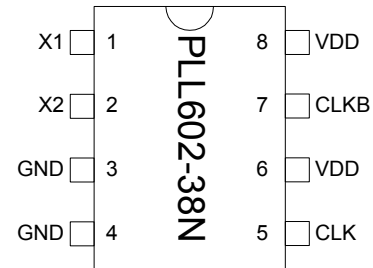
FEATURES

- Low phase noise output (-127dBc @ 10kHz frequency offset).
- 12MHz to 25MHz crystal input.
- 48MHz to 100MHz PECL output.
- 3.3V operation.
- Available in Green (RoHS Compliant) 8-Pin SOIC package.

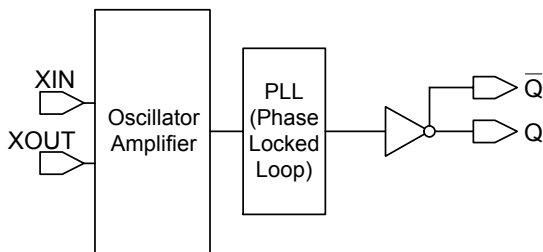
DESCRIPTION

The PLL602-38N is a high performance and low phase noise PECL XO IC chip. It provides phase noise performance as low as -127dBc at 10kHz offset and a typical RMS jitter of 4.5pS RMS (at 100MHz). It accepts a fundamental parallel resonant mode crystal input from 12MHz to 25MHz.

PIN CONFIGURATION
(Top View)



BLOCK DIAGRAM



PLL602-38N

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PIN DESCRIPTIONS

Name	TSSOP Pin number	Type	Description
X1	1	I	Crystal input. See Crystal Specifications on page 2.
X2	2	I	Crystal output. See Crystal Specifications on page 2.
GND	3,4	P	Ground.
CLK	5	O	True output PECL.
VDD	6,8	P	Power Supply.
CLKC	7	O	Complementary output PECL.

ELECTRICAL SPECIFICATIONS

1. Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage	V_{DD}		4.6	V
Input Voltage, dc	V_I	-0.5	$V_{DD}+0.5$	V
Output Voltage, dc	V_O	-0.5	$V_{DD}+0.5$	V
Storage Temperature	T_S	-65	150	°C
Ambient Operating Temperature*	T_A	-40	85	°C
Junction Temperature	T_J		125	°C
Lead Temperature (soldering, 10s)			260	°C
ESD Protection, Human Body Model			2	kV

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 COMMERCIAL grade only.

2. General Electrical Specifications

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic (with Loaded Outputs)	I_{DD}	48MHz < F_{out} < 100MHz			65	mA
Operating Voltage	V_{DD}		2.97		3.63	V
Short Circuit Current				±50		mA

3. Crystal Specifications

PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Crystal Resonator Frequency	F_{XIN}	Parallel Fundamental Mode	12		25	MHz
Crystal Loading Rating	$C_L (xtal)$			20		pF
Recommended ESR	R_E	AT cut			30	Ω

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4. Jitter Specifications

PARAMETERS	CONDITIONS	FREQUENCY	MIN.	TYP.	MAX.	UNITS
Period jitter RMS	With capacitive decoupling between VDD and GND. Over 10,000 cycles.	100.00MHz		4.3		ps
Period jitter Peak-to-Peak	With capacitive decoupling between VDD and GND. Over 10,000 cycles.	100.00MHz		27		ps
Integrated jitter RMS	Integrated 12 kHz to 20 MHz	100.00MHz		2.6	4	ps

5. Phase Noise Specifications

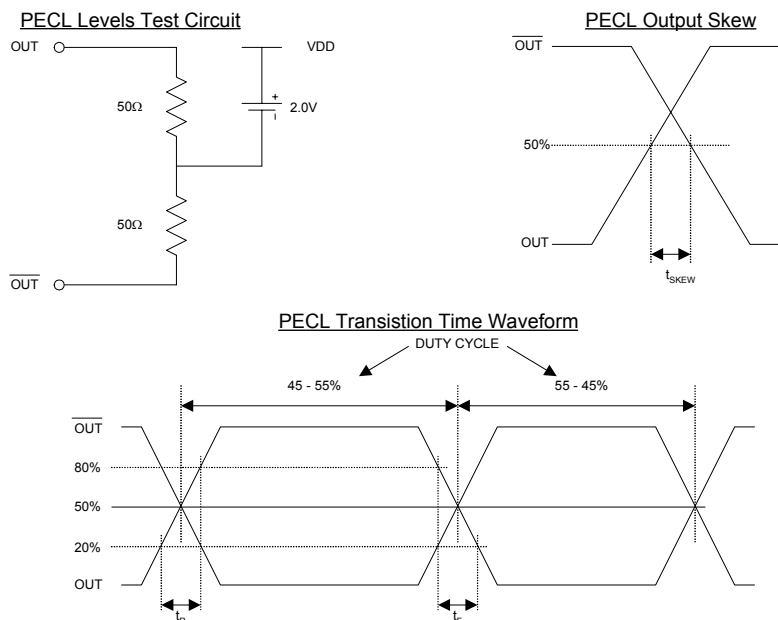
PARAMETERS	FREQUENCY	@10Hz	@100Hz	@1kHz	@10kHz	@100kHz	UNITS
Phase Noise relative to carrier (typical)	100.00MHz	-65	-95	-120	-125	-121	dBc/Hz

6. PECL Electrical Characteristics

PARAMETERS	SYMBOL	CONDITIONS	MIN.	MAX.	UNITS
Output High Voltage	V_{OH}	$R_L = 50 \Omega$ to $(V_{DD} - 2V)$ (see figure)	$V_{DD} - 1.025$		V
Output Low Voltage	V_{OL}			$V_{DD} - 1.620$	V

7. PECL Switching Characteristics

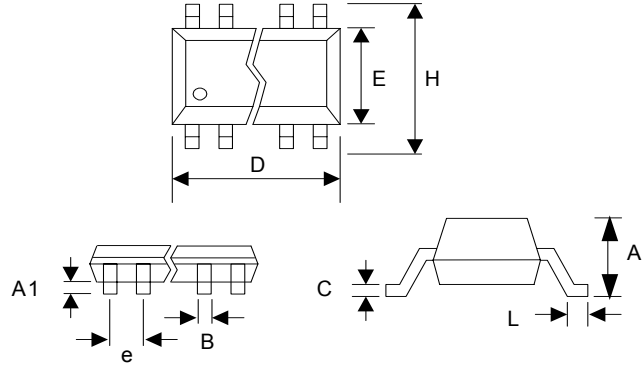
PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Clock Rise Time	t_r	20% to 80% of signal	300		600	ps
Clock Fall Time	t_f	80% to 20% of signal	300		600	ps
Duty Cycle		Measured @ 50% of signal	45	50	55	%



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PACKAGE INFORMATION

8 PIN SOIC (in mm)			
Symbol	Min.	Nom	Max.
A	1.35	1.55	1.75
A1	0.10	.175	0.25
B	0.33	0.43	0.53
C	0.19	0.23	0.27
D	4.80	4.90	5.00
E	3.80	3.90	4.00
H	5.80	6.00	6.20
L	0.40	0.645	0.89
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

PLL602-38N X C X - R

PART NUMBER

PACKAGE TYPE
S=SOIC

TEMPERATURE
C=COMMERCIAL

NONE= TUBE
R=TAPE and REEL

NONE=NORMAL PACKAGE
L=GREEN PACKAGE
(RoHS Compliant)

Order Number	Marking	Package Option
PLL602-38NSCL-R	P602-38NSC	SOIC 8 - Tape and Reel
PLL602-38NSCL	P602-38NSC	SOIC 8 - Tube

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