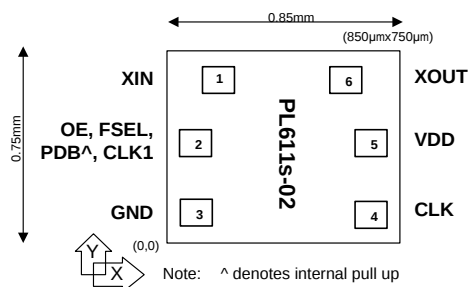


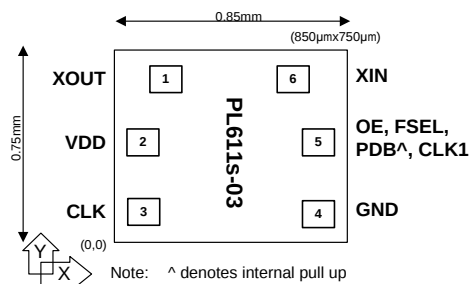
1.8V-3.3V PicoPLL™ Programmable Quick Turn Clock™
KEY PROGRAMMING PARAMETERS

Output Frequency	Output Drive Strength	Crystal Load	Programmable Input/Output	Charge-Pump Current
CLK0 PLL Mode : $CLK0 = F_{IN} * M / (R * P)$ Where: - M=11 bit - R= 8 bit - P= 5 bit P is an Odd/Even Divider Direct Oscillation Mode: $CLK0 = F_{IN}$ or $F_{IN} / (2 * P)$ CLK1 = F_{IN} , $F_{IN}/2$, CLK0 or CLK0/2	Three optional drives to choose from. They are: - Low: 4mA - Std: 8mA (default) - High: 16mA	Programmable CLoad Tuning 8pF to 12pF ±50ppm typical	One pad can be configured as: - OE – input - PDB – input - FSEL – input - CLK1 – output	Charge pump current 4 levels; programmable


PAD ASSIGNMENT AND DESCRIPTION (PL611s-02)

Name	Pad Assignment*			Type	Description			
	Pad #	X (μm)	Y (μm)					
XIN	1	125.00	665.21	I	Crystal input pad			
OE, PDB, FSEL, CLK1	2	85.00	375.00	B	This programmable I/O pin can be configured as an Output Enable (OE) input, Power Down input (PDB), Frequency Select (FSEL) input or CLK1 clock output.			
					State	OE	PDB	FSEL
					0	Tri-state CLK0	Power Down Mode Tri-state CLK0	Bank 0
					1 (default)	Operating mode	Operating mode	Bank 1
GND	3	85.00	115.45	P	GND connection			
CLK	4	765.00	115.45	O	Programmable Clock Output			
VDD	5	765.00	375.00	P	VDD connection			
XOUT	6	725.00	665.21	O	Crystal Output pad			

* Note: The X/Y coordinates indicate pad centers.

1.8V-3.3V PicoPLL™ Programmable Quick Turn Clock™

PAD ASSIGNMENT AND DESCRIPTION (PL611s-03)

Name	Pad Assignment*			Type	Description			
	Pad #	X (μm)	Y (μm)					
XOUT	1	125.00	665.21	O	Crystal Output pad			
VDD	2	85.00	375.00	P	VDD connection			
CLK	3	85.00	115.45	O	Programmable Clock Output			
GND	4	765.00	115.45	P	GND connection			
OE, PDB, FSEL, CLK1	5	765.00	375.00	B	This programmable I/O pin can be configured as an Output Enable (OE) input, Power Down input (PDB), Frequency Select (FSEL) input or CLK1 clock output.			
					State	OE	PDB	FSEL
					0	Tri-state CLK0	Power Down Mode Tri-state CLK0	Bank 0
					1 (default)	Operating mode	Operating mode	Bank 1
XIN	6	725.00	665.21	I	Crystal input pad			

* Note: The X/Y coordinates indicate pad centers.

ELECTRICAL SPECIFICATIONS
ABSOLUTE MAXIMUM RATINGS

PARAMETERS	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage Range	V_{DD}	-0.5	7	V
Input Voltage Range	V_I	-0.5	$V_{DD}+0.5$	V
Output Voltage Range	V_O	-0.5	$V_{DD}+0.5$	V
Data Retention @ 85°C		10		Year
Storage Temperature	T_S	-65	150	°C
Ambient Operating Temperature		-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.

1.8V-3.3V PicoPLL™ Programmable Quick Turn Clock™
AC SPECIFICATIONS

PARAMETERS	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Crystal Input Frequency (XIN)	Fundamental Crystal	10		50	MHz
Output Frequency*	@ $V_{DD} = 3.3V$			200	MHz
	@ $V_{DD} = 2.5V$			166	
	@ $V_{DD} = 1.8V$			110	
Settling Time	At power-up (after $V_{DD} \geq 1.62V$)			2	ms
Output Enable Time (See MTC-1)	OE Function; $T_a=25^\circ C$, 15pF Load. Add one clock period to this measurement for a usable clock output.			10	ns
	PDB Function; $T_a=25^\circ C$, 15pF Load			2	ms
Output Disable Time (See MTC-1)	$T_a=25^\circ C$, 15pF Load			100	ns
VDD Sensitivity	Frequency vs. $V_{DD} \pm 10\%$	-2		2	ppm
Output Rise Time (See MTC-1)	15pF Load, 10/90% V_{DD} , High Drive, 3.3V, $T_a=25^\circ C$		1	1.5	ns
Output Fall Time (See MTC-1)	15pF Load, 90/10% V_{DD} , High Drive, 3.3V, $T_a=25^\circ C$		1	1.5	ns
Duty Cycle (See MTC-1)	@2.5V and 3.3V over entire frequency range, $V_{DD}/2$	45	50	55	%
	@1.8V, $\leq 75MHz F_{OUT}$, $V_{DD}/2$	45	50	55	
	@1.8V, $75MHz < F_{OUT} \leq 110MHz$	40		60	
Period Jitter, Pk-to-Pk** (10,000 samples measured) (See MTC-3)	With capacitive decoupling between V_{DD} and GND.		70		ps

* Note: When programming a device for use at a certain power supply voltage, it is OK to use that device at higher power supply voltages also but not OK to use at lower power supply voltages.

** Note: Jitter performance depends on the programming parameters.

1.8V-3.3V PicoPLL™ Programmable Quick Turn Clock™
DC SPECIFICATIONS

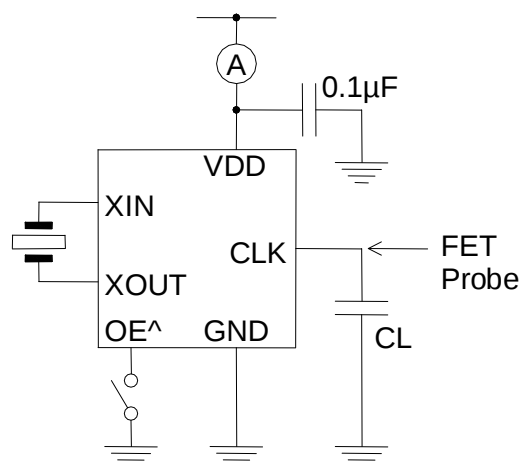
PARAMETERS	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Supply Current, Dynamic, Loaded Output	I_{DD}	@ $V_{DD} = 3.3V$, 30MHz, load=15pF		6.0		mA
Supply Current, Dynamic, Loaded Output	I_{DD}	@ $V_{DD} = 2.5V$, 30MHz, load=15pF		3.9		mA
Supply Current, Dynamic, Loaded Output	I_{DD}	@ $V_{DD} = 1.8V$, 30MHz, load=5pF		2.1		mA
PLL Off: Supply Current, Dynamic, Loaded Output	I_{DD}	@ $V_{DD} = 3.3V$, 30MHz, load=15pF		2.0		mA
PLL Off: Supply Current, Dynamic, Loaded Output	I_{DD}	@ $V_{DD} = 2.5V$, 30MHz, load=15pF		1.6		mA
PLL Off: Supply Current, Dynamic, Loaded Output	I_{DD}	@ $V_{DD} = 1.8V$, 30MHz, load=5pF		0.8		mA
Stand By Current, Loaded Outputs (See MTC-1)	I_{DD}	When PDB=0			<10	μA
Operating Voltage	V_{DD}		1.62		3.63	V
Output Low Voltage	V_{OL}	$I_{OL} = +4mA$ Standard Drive			0.4	V
Output High Voltage	V_{OH}	$I_{OH} = -4mA$ Standard Drive	$V_{DD} - 0.4$			V
Output Current, Low Drive (See MCT-2)	I_{OSD}	$V_{OL} = 0.4V$, $V_{OH} = 2.4V$, 3.3V Operation	4			mA
Output Current, Standard Drive (See MCT-2)	I_{OSD}	$V_{OL} = 0.4V$, $V_{OH} = 2.4V$, 3.3V Operation	8			mA
Output Current, High Drive (See MCT-2)	I_{OHD}	$V_{OL} = 0.4V$, $V_{OH} = 2.4V$, 3.3V Operation	16			mA

CRYSTAL SPECIFICATIONS

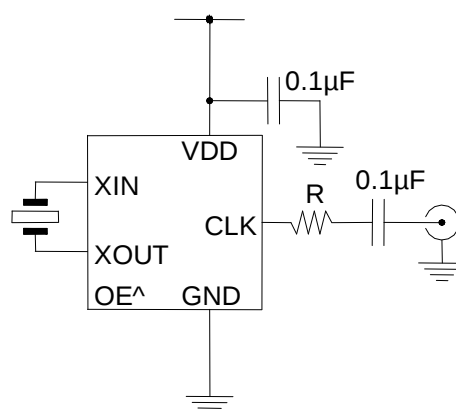
PARAMETERS	SYMBOL	MIN.	TYP.	MAX.	UNITS
Fundamental Crystal Resonator Frequency	F_{XIN}	10		50	MHz
Crystal Loading Rating (The IC can be programmed for any value in this range.)	$C_{L(xtal)}$	8		12	pF
Maximum Sustainable Drive Level				100	μW
Operating Drive Level			30		μW
Crystal Shunt Capacitance	C_0			4	pF
Effective Series Resistance, Fundamental, 10 - 50MHz (See MCT-4)	ESR			30	Ω

MEASUREMENT TEST CIRCUITS (MTC)

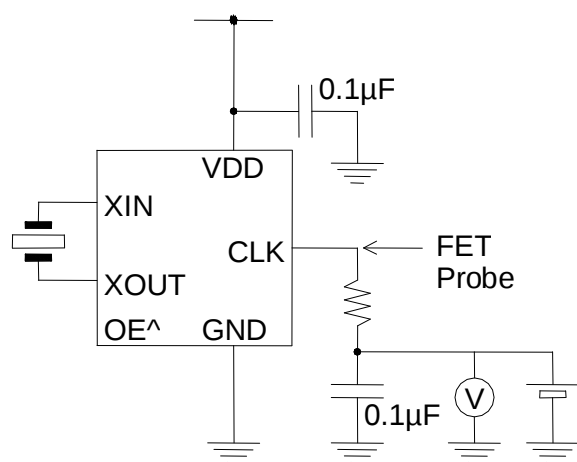
MTC-1: Rise Time, Fall Time, Duty Cycle, VOL, VOH, I_{dd} , Power Down Current, Output Enable/Disable



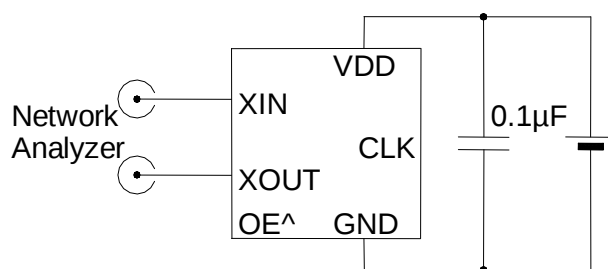
MTC-3: Jitter and Phase Noise



MTC-2: Output Drive Current and Output Impedance

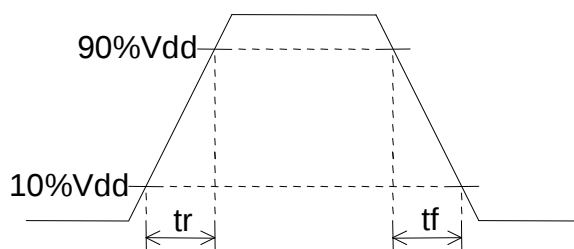


MTC-4: Negative Resistance

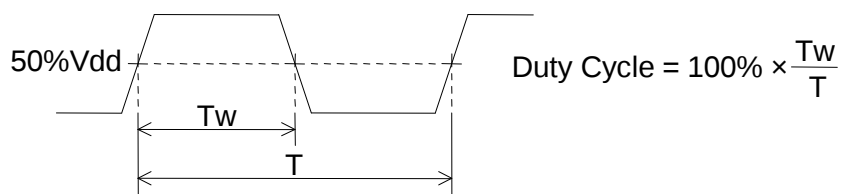


WAVEFORM SWITCHING CHARACTERISTICS

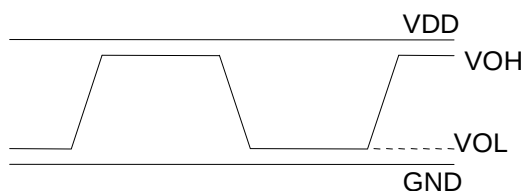
Rise and Fall times:



Duty Cycle:



VOH, VOL:



1.8V-3.3V PicoPLL™ Programmable Quick Turn Clock™
ORDERING INFORMATION

For part ordering, please contact our Sales Department:

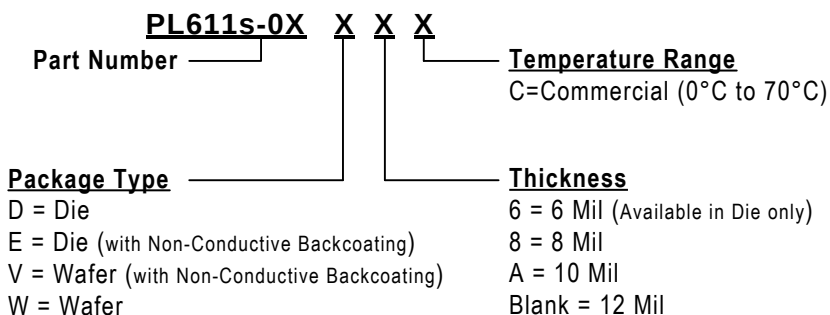
2180 Fortune Drive, San Jose, CA 95131 USA

Tel +1 (408) 944-1668 Fax +1 (408) 474-1000

PART NUMBER

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

Part number, Package type and Operating temperature range



Part / Order Number	Package Option	Temperature
PL611s-02DxC	Die (Waffle Pack)	0°C to +70°C
PL611s-02ExC	Die (Waffle Pack)	0°C to +70°C
PL611s-02VxC	Wafer	0°C to +70°C
PL611s-02WxC	Wafer	0°C to +70°C
PL611s-03DxC	Die (Waffle Pack)	0°C to +70°C
PL611s-03ExC	Die (Waffle Pack)	0°C to +70°C
PL611s-03VxC	Wafer	0°C to +70°C
PL611s-03WxC	Wafer	0°C to +70°C

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