

PCS1P2860A

Product Preview

Multi-Output Clock Synthesizer

Description

The PCS1P2860A is a Precision multi-PLL based frequency synthesizer. Six Clock outputs are generated using an inexpensive 25 MHz Crystal or external reference clock. The outputs consist of 25 MHz Refout, 127 MHz and four 125 MHz clocks. SHUTDOWN signal tri-states all the clocks when enabled. The device operates from a Supply Voltage of $3.3\text{ V} \pm 5\%$ V. The device is available in a 16-pin TSSOP JEDEC package for an Industrial temperature range.

Application

PCS1P2860A is targeted for use in high-end multimedia, communications and consumer applications.

Features

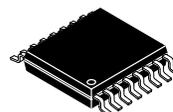
- Generates Multiple Clock Outputs from an Inexpensive 25 MHz Crystal or External Reference Clock
- Frequency Outputs:
 - ◆ 25 MHz Reference Clock
 - ◆ 125 MHz
 - ◆ 127 MHz
- Zero ppm Frequency Synthesis Error for All CLK Outputs
- $3.3\text{ V} \pm 5\%$ V Supply Voltage
- Low Jitter Design
- Packaged in 16-pin TSSOP
- Industrial Temperature Range
- Compatible with CY22393XC-MZ2
- Advanced Low-power CMOS Process
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

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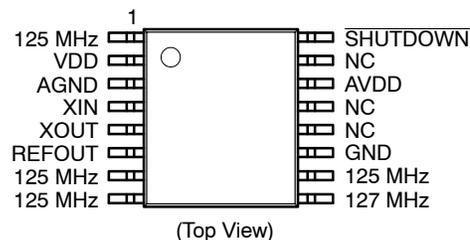
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TSSOP-16
T SUFFIX
CASE 948AN

PIN CONFIGURATION



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

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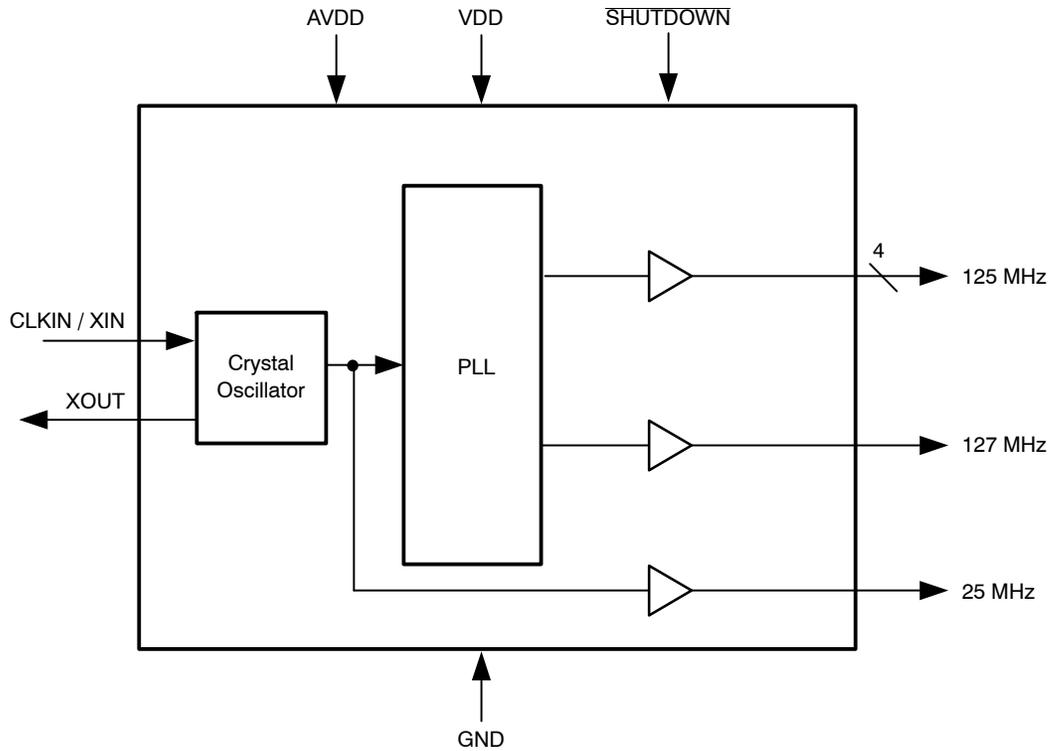


Figure 1. Block Diagram

Table 1. PIN DESCRIPTION

Pin #	Pin Name	Pin Type	Pin Description
1	125 MHz	Output	125 MHz Clock Output.
2	VDD	Power	Connect to +3.3 V.
3	AGND	Power	Connect to ground.
4	XIN	Input	Crystal connection or external reference frequency input. It can be connected to a 25 MHz Fundamental mode crystal.
5	XOUT	Output	Connection to crystal. If using an external reference clock, this pin must be left unconnected.
6	REFOUT	Output	25 MHz Reference Clock output.
7	125 MHz	Output	125 MHz Clock Output.
8	125 MHz	Output	125 MHz Clock Output.
9	127 MHz	Output	127 MHz Clock Output.
10	125 MHz	Output	125 MHz Clock Output.
11	GND	Power	Connect to ground.
12	NC		No connection.
13	NC		No connection.
14	AVDD	Power	Connect to +3.3 V.
15	NC		No connection.
16	SHUTDOWN	Input	Output Enable bit. When this pin is made HIGH, all clocks are enabled. Tri-states all clocks when this pin is LOW.

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Table 2. ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Rating	Unit
VDD	Power Supply Voltage relative to Ground	-0.5 to +4.6	V
V _{IN}	Input Voltage relative to Ground (Input Pins)	-0.5 to VDD+0.3	
T _{STG}	Storage temperature	-65 to +150	°C
T _s	Max. Soldering Temperature (10 sec)	260	°C
T _J	Junction Temperature	125	°C
T _{DV}	Static Discharge Voltage (As per JEDEC STD22- A114-B)	2	KV

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 3. OPERATING CONDITIONS

Parameter	Description	Min	Typ	Max	Unit
VDD / AVDD	Operating Voltage	3.135	3.3	3.465	V
T _A	Operating Temperature (Ambient Temperature)	-40		+85	°C
C _L	Load Capacitance			15	pF
C _{IN}	Input Capacitance		5		pF

Table 4. DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Min	Typ	Max	Units
VDD / AVDD	Operating Voltage		3.135	3.3	3.465	V
V _{IH}	Input High Voltage		2.2		VDD+0.3	V
V _{IL}	Input Low Voltage		GND-0.3		1.0	V
I _{IH}	Input HIGH current	V _{IN} = VDD			30	μA
I _{IL}	Input LOW current	V _{IN} = GND			50	μA
V _{OH}	Output High Voltage	VDD = 3.135, I _{OH} = -12 mA	2.4			V
V _{OL}	Output Low Voltage	VDD = 3.135, I _{OL} = 12 mA			0.4	V
I _{OZ}	Output Leakage Current	Three-state outputs			10	μA
I _{CC}	Static Current	CLKIN and SHUTDOWN Pins pulled low			5.5	mA
I _{DD}	Dynamic Current	No Load, All Clocks on		35		mA
Z _{OUT}	Nominal output impedance			30		Ω

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Table 5. AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Min	Typ	Max	Unit
CLKIN / XIN	Input Frequency		25		MHz
CLK OUT	Output Frequency	Pin 6	25		MHz
		Pin 1,7,8,10		125	
		Pin 9		127	
t_{LH} (Note 1)	Rising edge slew rate (Measured from 20% to 80%)	1.1	1.7		V/nS
t_{HL} (Note 1)	Falling edge slew rate (Measured from 80% to 20%)	1.3	2		V/nS
T_{PJ} (Note 1)	Peak-to-peak Period Jitter @ VDD/2		300		pS
	Synthesis Error (Output Frequency)		0		ppm
t_D (Note 1)	Output Duty Cycle @ VDD/2	45	50	55	%
t_{LOCK}	PLL Lock Time from Power-Up			3	mS

1. CL = 15 pF for outputs < 100 MHz; CL = 10 pF for outputs > 100 MHz;

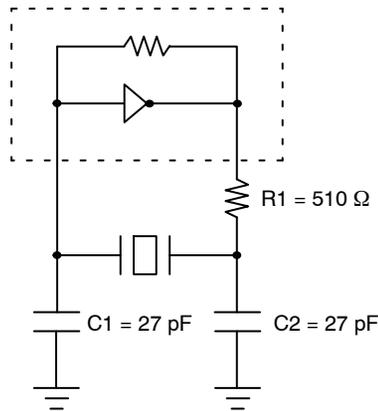


Figure 2. Typical Crystal Oscillator Circuit

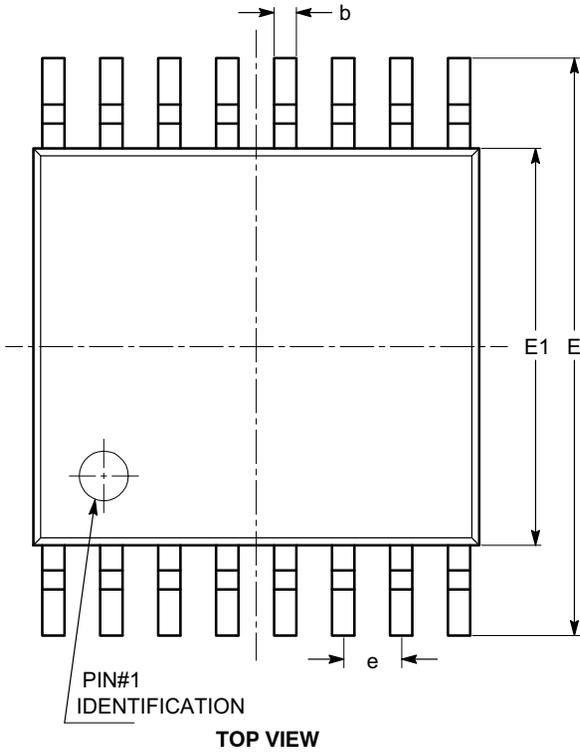
Table 6. TYPICAL CRYSTAL SPECIFICATIONS

Fundamental AT Cut Parallel Resonant Crystal	
Nominal frequency	25 MHz
Frequency tolerance	±50 ppm or better at 25°C
Operating temperature range	-25°C to +85°C
Storage temperature	-40°C to +85°C
Load capacitance	18 pF
Shunt capacitance	7 pF maximum
ESR	25 Ω

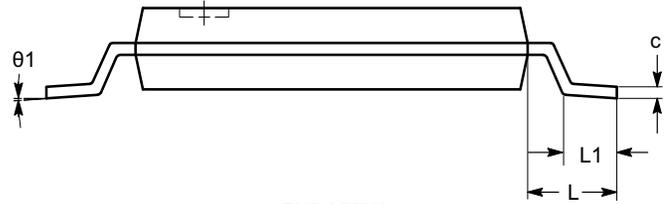
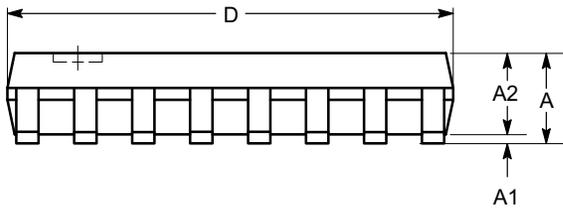
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PACKAGE DIMENSIONS

TSSOP16, 4.4x5
CASE 948AN-01
ISSUE O



SYMBOL	MIN	NOM	MAX
A			1.10
A1	0.05		0.15
A2	0.85		0.95
b	0.19		0.30
c	0.13		0.20
D	4.90		5.10
E	6.30		6.50
E1	4.30		4.50
e	0.65 BSC		
L	1.00 REF		
L1	0.45		0.75
θ	0°		8°



Notes:

- (1) All dimensions are in millimeters. Angles in degrees.
- (2) Complies with JEDEC MO-153.

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Table 7. ORDERING INFORMATION

Part Number	Marking	Package Type	Temperature
PCS1P2860AG-16TR	1P2860AG	16-Pin TSSOP, TAPE & REEL, Green	Commercial
PCS1P2860AG-16TT	1P2860AG	16-Pin TSSOP, TUBE, Green	Commercial
PCS1I2860AG-16TR	1I2860AG	16-Pin TSSOP, TAPE & REEL, Green	Industrial
PCS1I2860AG-16TT	1I2860AG	16-Pin TSSOP, TUBE, Green	Industrial

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