



**SM802230**

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**Flexible Ultra Low Jitter Clock Synthesizer**

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**ClockWorks™ FLEX**

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## General Description

The SM802230 is a member of the ClockWorks™ FLEX family of devices from Micrel and provides an extremely low-noise timing solution. It is based upon a unique patented architecture that provides very-low phase noise. The device operates from a 2.5V or 3.3V power supply.

## Applications

- 10/40/400 Gigabit Ethernet
- Fibre Channel 10G/12G SERDES

## Features

- Generates 8 output clocks
- Frequency and output logic:
  - 156.25MHz LVPECL x 7
  - 156.25MHz HCSL x 1
- 25MHz Crystal Input
- Typical phase jitter:
  - 115fs (Integration range: 1.875MHz-20MHz)
  - 245fs (Integration range: 12kHz-20MHz)
- On-chip power supply regulation for excellent power supply noise immunity
- No external crystal oscillator capacitors required
- 2.5V or 3.3V operating voltage range
- Industrial temperature range
- 44-Pin 7mm x 7mm QFN package

ClockWorks is a trademark of Micrel, Inc

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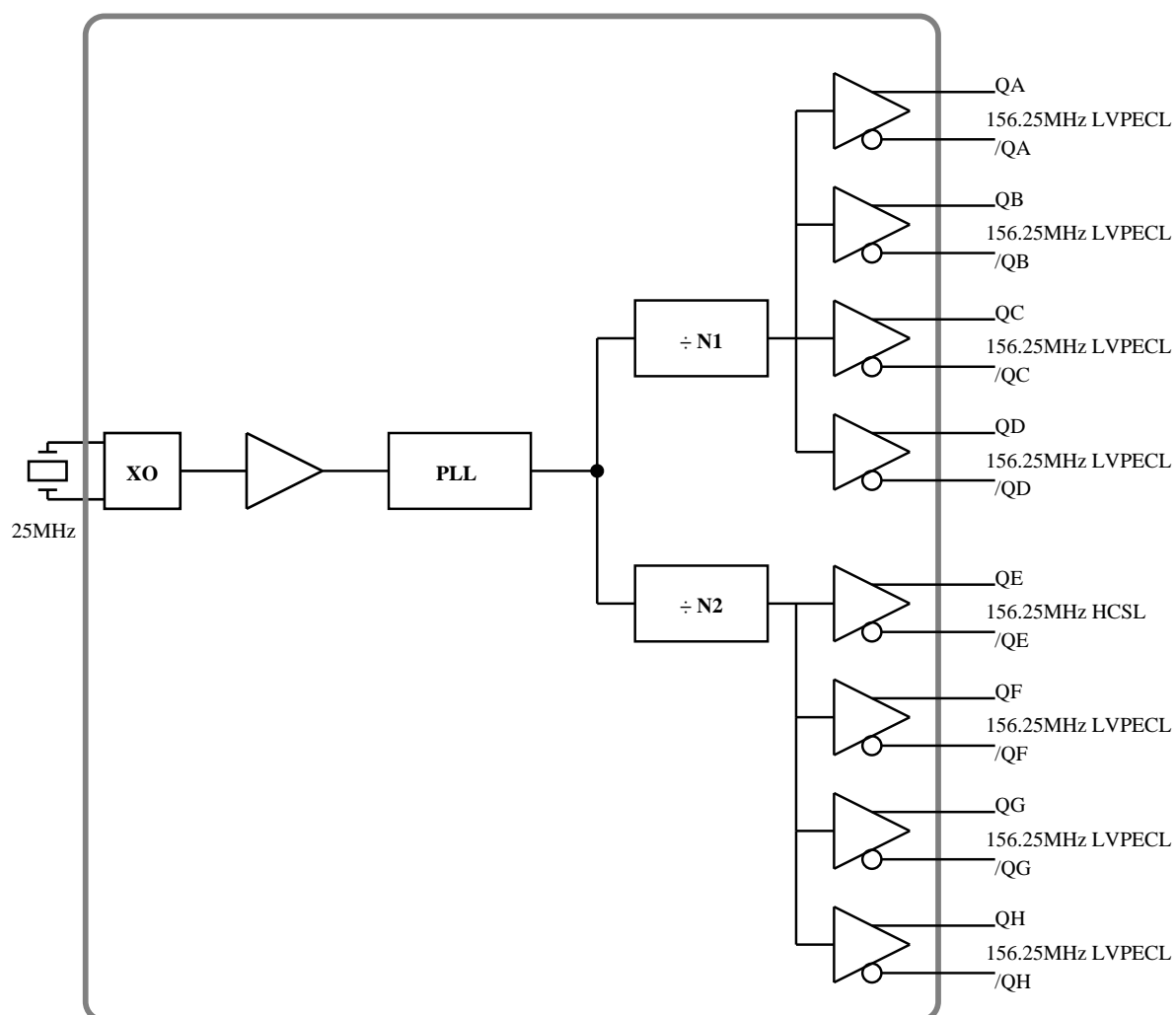
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SM802001-1472

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## Block Diagram

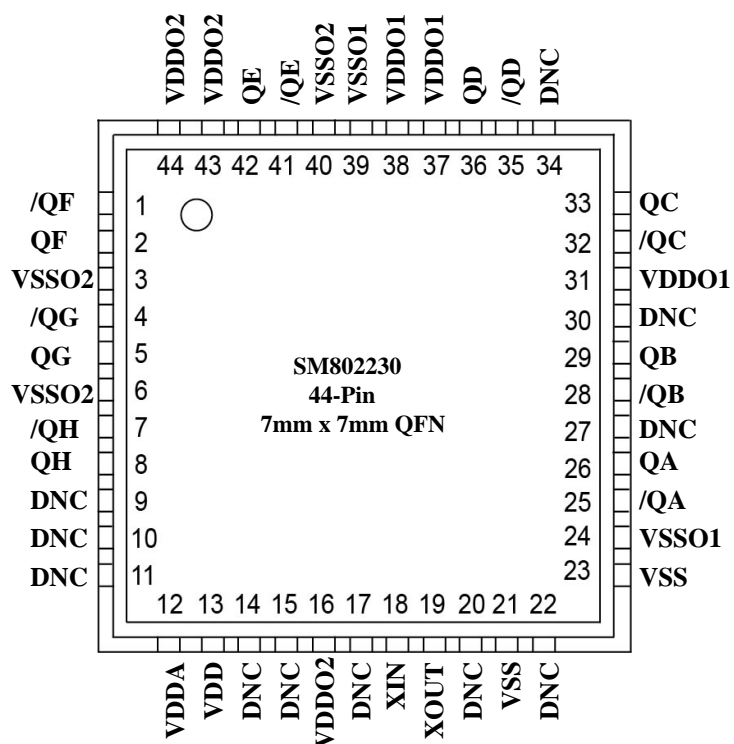


## Ordering Information

Ordering Part Number	Marking	Shipping	Ambient Temperature Range	Package
SM802230UMG	802230	Tray	-40°C to +85°C	44-Pin QFN (7x7 mm)
SM802230UMG TR	802230	Tape and Reel	-40°C to +85°C	44-Pin QFN (7x7 mm)

Devices are Green and RoHS compliant.

## Pin Configuration



## Pin Description

Pin Number	Pin Name	Pin Type	Pin Level	Pin Function
1, 2	/QF, QF	O, Diff	LVPECL	Bank 2 Clock Output Frequency = 156.25MHz
3, 6, 40	VSS02	PWR		Power Supply Ground for the Outputs on Bank 2
4, 5	/QG, QG	O, Diff	LVPECL	Bank 2 Clock Output Frequency = 156.25MHz
7, 8	/QH, QH	O, Diff	LVPECL	Bank 2 Clock Output Frequency = 156.25MHz
9	DNC			Do not connect
10	DNC			Do not connect
11, 20, 27, 30, 34	DNC			Do not connect anything to these pins.
12, 13	VDD	PWR		Core Power Supply
14	DNC			Do not connect
15	DNC			Do not connect
16, 43, 44	VDD02	PWR		Power Supply for the Outputs on Bank 2
17	DNC			Do not connect
18, 19	XIN, XOUT	I/O, SE		Crystal Reference Input/Output = 25MHz
21, 23	VSS	PWR		Core Power Supply Ground
22	DNC			Do not connect
24, 39	VSS01	PWR		Power Supply Ground for the Outputs on Bank 1
25, 26	/QA, QA	O, Diff	LVPECL	Bank 1 Clock Output Frequency = 156.25MHz
28, 29	/QB, QB	O, Diff	LVPECL	Bank 1 Clock Output Frequency = 156.25MHz
31, 37, 38	VDD01	PWR		Power Supply for the Outputs on Bank 1
32, 33	/QC, QC	O, Diff	LVPECL	Bank 1 Clock Output Frequency = 156.25MHz
35, 36	/QD, QD	O, Diff	LVPECL	Bank 1 Clock Output Frequency = 156.25MHz
41, 42	/QE, QE	O, Diff	HCSL	Bank 2 Clock Output Frequency = 156.25MHz
-	EXPOSED PAD	-		The exposed pad must be connected to the VSS ground plane.