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MAX3678

Low-Jitter Frequency Synthesizer with Intelligent Dynamic Switching

Industry's Best Jitter Performance Exceeds SerDes Reference Clock Specification

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Status

Active: In Production.

Description

The MAX3678 is a low-jitter frequency synthesizer with intelligent dynamic clock switching optimized for systems where redundant clock failover switching is needed. It contains a monolithic phase-locked loop (PLL) that accepts two reference clock inputs and generates nine phase-aligned outputs. The device continuously monitors the signal status for both reference clock inputs. In the event that the primary clock fails, the PLL automatically switches to the secondary clock input without generating a phase bump at the clock outputs, using a glitchless switchover mechanism. A manual switch mode is also provided for user-controlled switching. The device features ultra-low jitter generation of 0.3ps_{RMS} (integrated 12kHz to 20MHz) and excellent power-supply noise rejection.

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The MAX3678 operates from a single +3.3V supply and typically consumes 400mW. The operating temperature range is from 0°C to +85°C, and is available in a 8mm x 8mm, 56-pin TQFN package.

An evaluation kit is available: [MAX3678EVKIT](#)

Key Features

- Two Reference Clock Inputs: LVPECL
- Nine Phase-Aligned Clock Outputs: LVPECL
- Automatic or Manual Dynamic Switching Between Two Reference Clock Inputs
- Input Frequencies: 66.67MHz, 133.33MHz, 266.67MHz, 333.33MHz
- Output Frequencies: 66.67MHz, 133.33MHz, 266.67MHz, 333.33MHz
- Low-Jitter Generation: 0.3ps_{RMS} (12kHz to 20MHz)
- Clock Failure Indicator for Both Reference Clocks
- External Feedback Provides Zero-Delay Capability
- Low Output Skew: 20ps Typical
- Typical Power Dissipation: 400mW at +3.3V
- Operating Temperature: 0°C to +85°C

Key Specifications: Clock Generators

Part Number	Applications	f _{IN}	f _{IN}	f _{OUT}	f _{OUT}	Fixed or Continuous Frequency	Output Levels	Outputs	PLLs	Programmability	Spread Spectrum	Output Jitter (ps) RMS	V _{SUPPLY} (V)	Package/Pins	Price
		(MHz)	(MHz)	(MHz)	(MHz)										
MAX3678	General Purpose	66.67	333.33	66.67	333.33	Fixed	LVPECL	9	1	Pin	No	0.28	3.3	TQFN/56	\$14.66 @1k

[See All Clock Generators \(27\)](#)

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