

Description

M88TB(S)2304H^{1,2,3,4} is a type of high-performance clock fanout buffers operating at up to 1GHz with 4 outputs. The buffer is designed for low-jitter, high-frequency clock/data distribution and level translation.

The buffer supports clock input selection from either two differential clock pairs or one crystal input, distributing the selected clock to two output banks, each with 2 differential outputs, along with a dedicated LVCMOS output. Both differential output banks can be configured as LP-HCSL or disabled (HiZ).

Operating with a core supply of 1.8V-3.3V and three independent output supplies of 1.8V-3.3V, the clock buffer provides flexible control via logic pins for input reference selection, and output enable/disable functions.

The buffer can be paired with Montage Technology's M88TG010xx clock generator to deliver a robust clock tree solution. With broad input and output frequency ranges, optimized power management, and reduced propagation delay, the buffer operates across a wide temperature range, making it an ideal choice for demanding applications.

Features

- 3 input reference clocks:
 - 2 differential clock pairs up to 1GHz, accepting single-ended clock source up to 350MHz
 - 1 crystal input, accepting 8MHz to 50MHz crystal or single-ended clock source
- 4 output clocks:
 - 2 power banks with 2 differential outputs each, supporting LP-HCSL only
 - 1 independent LVCMOS output clock

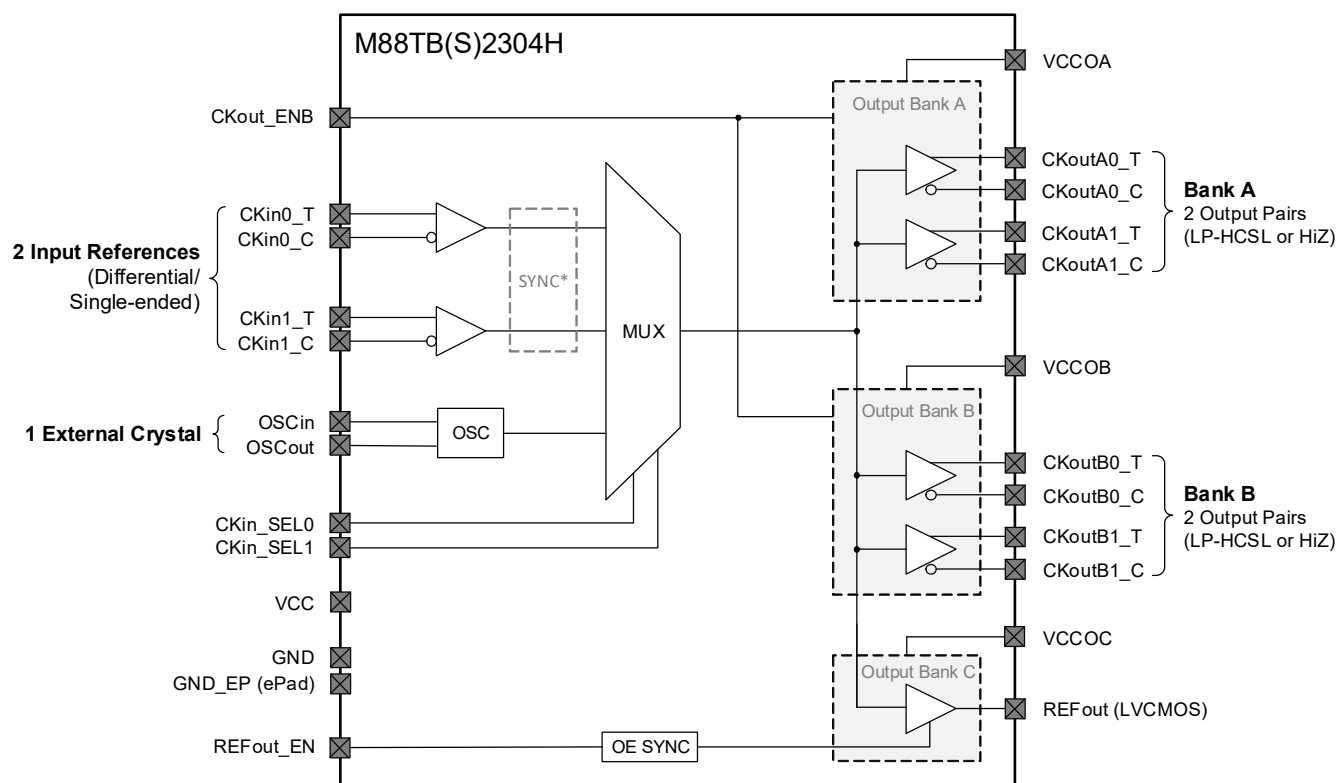
1. TB: No glitch-free switchover.
2. TBS: Includes glitch-free switchover.
3. H: Supports LP-HCSL differential clock output only.
4. Unless otherwise stated, the terms "clock buffer" and "buffer" refer to the entire series.

- Frequency range:
 - LP-HCSL: DC to 1GHz
 - LVCMOS: DC to 350MHz
- Excellent PSRR: -76dBc (LP-HCSL) @ 156.25MHz
- Ultra-low latency and skew
- Additive jitter:
 - 34 fs RMS (12kHz to 20MHz) typical @ LP-HCSL 156.25MHz
 - 10 fs RMS typical @ PCIe[®] Gen 5 jitter (CC)
- Three independently configurable 1.8V-3.3V power supplies for:
 - Core
 - Differential outputs
 - Single-ended outputs
- Pin-based control for flexible input reference clock selection and output enable/disable
- Glitch-free switchover supported in TBS version
- Working temperature: -40°C to +85°C
- Package: 32-pin WQFN

Applications

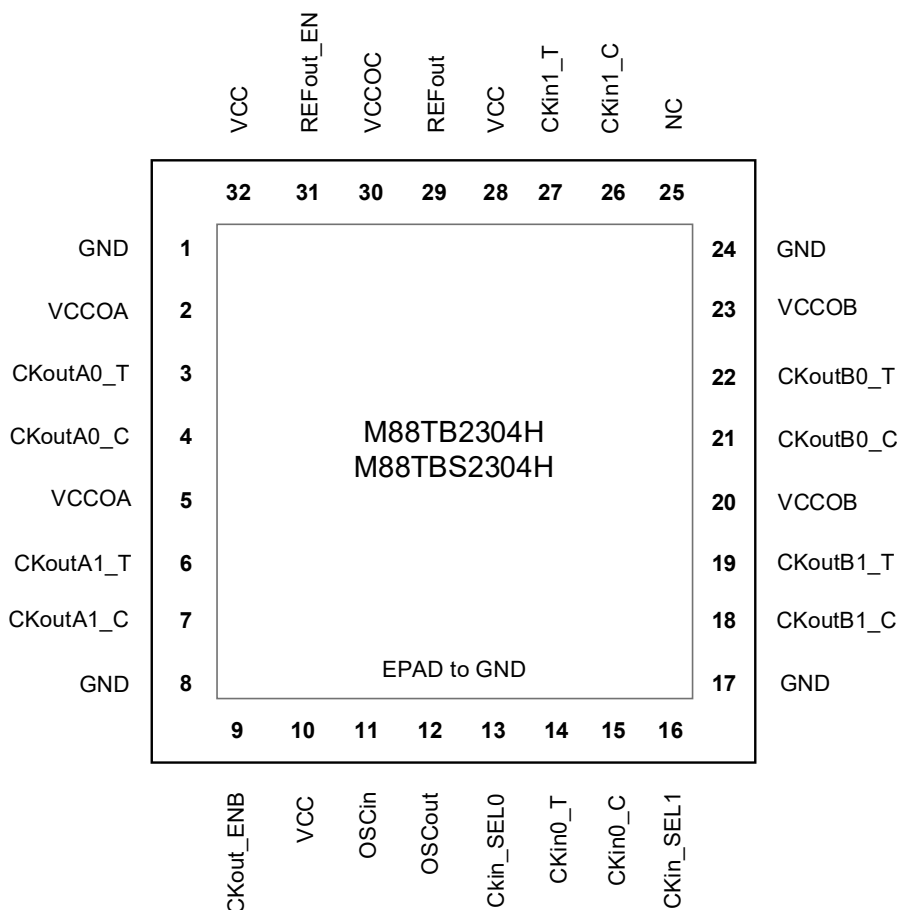
- Clock distribution and level translation for ADCs, DACs, SATA/SAS, SONET/SDH, multi-gigabit Ethernet, and Fibre Channel line cards
- Servers, storage systems, switches, routers, and display panels
- PCIe Gen 1 to Gen 6 and NVLink
- Reference clock distribution for BBU and RRU applications

Functional Block Diagram



Note: Only the TBS version (includes glitch-free switchover) supports the synchronization function.

Pin Assignment (32-pin WQFN, 5.0mm x 5.0mm x 0.75mm)



Ordering Information

Part Number	Package	Operating Temperature
M88TB2304H	32-pin WQFN, 5.0mm x 5.0mm x 0.75mm	-40°C to +85°C
M88TBS2304H		