CBTL04GP043

Dual 2 x 2 differential channel crossbar switch

Rev. 1 — 8 September 2014   **Product brief**

1. General description

The CBTL04GP043 is a high-performance 4-channel bidirectional crossbar switch supporting both high speed and large swing signals. The high-speed differential signals include PCIe-Gen3, USB3 and DisplayPort. The large swing signals include UART, USB 2.0 and HDMI 1.4 signals.

This chip can be configured as pair straight through or cross to the output ports through the CROSS signal. It can be placed under Low-power mode using the XSDN pin.

This crossbar switch supports wide common-mode voltage range from 0 V to V_{DD} on all input and output ports.

CBTL04GP043 is available in 2.00 mm $\times$ 4.00 mm $\times$ 0.5 mm XFBGA28 package with 0.5 mm pitch.

2. Features and benefits

- 4-channel, bidirectional crossbar switch
- The input of the CROSS pin
    - CROSS is LOW for connecting input and output ports straight through
    - CROSS is HIGH for crossbar connection between input and output ports
- When XSDN is LOW, the switch is in low-power sleep mode
- Low ON-state resistance: 11 Ω (typical)
- Bandwidth: 8.5 GHz (typical) for V_{IC} = 2.2 V
- Low insertion loss: -1.5 dB at 2.5 GHz; -1 dB at 100 MHz
- Low return loss: -20 dB at 2.5 GHz
- Low off-state isolation: -16 dB at 2.5 GHz; -40 dB at 100 MHz
- Low DDNEXT crosstalk: -20 dB at 2.5 GHz
- V_{IC} common-mode input voltage V_{IC}: 0 V to V_{DD}
- Differential input voltage V_{ID}: 1.4 V (maximum)
- Intra-pair skew: 5 ps (typical)
- Supports power supply voltage range from 2.7 V to 3.5 V
- Back current protection on all I/O pins of these switches
- All channels support rail-to-rail input voltage
- XFBGA28 2 mm $\times$ 4 mm $\times$ 0.5 mm package with 0.5 mm pitch
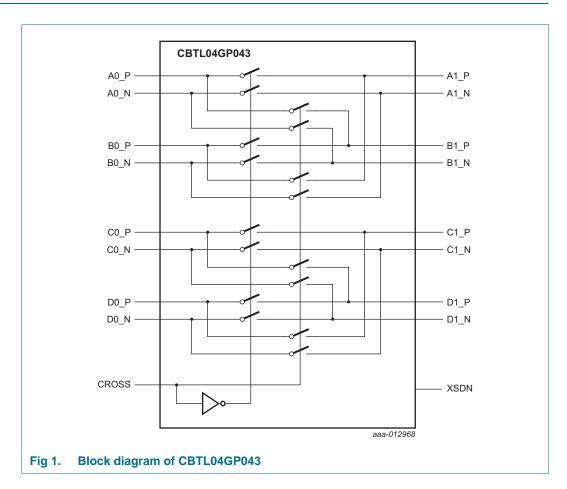- ESD: 2000 V HBM; 750 V CDM
- Operating temperature range: -20 °C to +85 °C

3. Ordering information

Table 1.   Ordering information

Type number	Topside marking	Package		Version
		Name	**Description**	
CBTL04GP043EX	GP43* [1]	XFBGA28	plastic, extremely thin fine-pitch ball grid array package; 28 balls; body 2.00 × 4.00 × 0.5 mm; 0.5 mm pitch	SOT1356-1

[1]   '*' changes based on date code.

4. Block diagram

Fig 1.   Block diagram of CBTL04GP043