



## Broadcom First to Deliver 400G Reverse Gearbox for Hyperscale Data Center & Cloud Infrastructure

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### Low Power, Compact Size 16:8 Gearbox Facilitates 100/400-GbE Deployments and Saves CAPEX Spending for Bandwidth Upgrade

SAN JOSE, Calif., March 06, 2018 (GLOBE NEWSWIRE) -- Broadcom Limited (NASDAQ:AVGO), a leading designer, developer and global supplier of a broad range of digital and analog semiconductor connectivity solutions, today announced immediate availability of its 400G gearbox device, the BCM81724, targeting hyperscale data center and cloud applications. The device is an 8x56-Gbps PAM-4 to 16x25-Gbps NRZ forward and reverse gearbox, designed to enable next generation high-performance switches with PAM-4 I/Os to connect to the large existing ecosystem of switches and plug-in modules with NRZ interface. The device can also be configured as an 8x56-Gbps PAM-4 retimer to extend high-speed copper and optical links in modern networks.

As data centers transition to higher speed server uplinks to support the increasing demand for data bandwidth, maintaining optical interconnects between servers and top-of-rack switches minimizes cabling costs and saves capital expenditures (CAPEX) spending for bandwidth upgrade by allowing continued use of 100G QSFP28 optical modules. With the availability of new switch ASICs and ASSPs such as the Tomahawk® 3 from Broadcom, the BCM81724 provides a bridge connecting the high-bandwidth 400G PAM-4 interface of the switch to the NRZ interface on existing 100G QSFP28 optical modules. Further, given the general availability of copper-based NRZ modules supporting 100 Gbps in existing systems, it is essential to have a reverse gearbox that enables next generation switches to connect to these modules. The BCM81724 is Broadcom's 4<sup>th</sup> generation gearbox that extends the capabilities of modern high-performance switches, optimized for high-density switching and routing in hyperscale data center and cloud networks.

#### BCM81724 Product Highlights

- 8x56-Gbps PAM-4 to 16x25-Gbps NRZ Reverse Gearbox
- Retimer Mode Supporting 8x56-Gbps to 8x56-Gbps PAM-4
- Key Functionalities
  - Forward/Reverse Gearbox
  - Forward/Reverse Gearbox with FEC
  - FEC Termination & Regeneration Modes
- Protocols Supported
  - 802.3bj/802.3bs/802.3cd/25G\_50G Consortium
  - 802.3ba/802.3cd
  - 50G/100G/200G Standard RS FECs
  - 40GE/50GE/100GE
- High-performance Receive Equalization: ~30dB channel loss
- PRBS Data Generator & Checker
- Eye Monitoring Support
- Low Power 16nm CMOS Design
- 19mm x 19mm FCBGA, 0.8 mm pitch

"With the introduction of switches such as the Tomahawk 3 with 56G I/Os that are critical to meeting the rapidly increasing bandwidth needs in today's cloud computing and hyper-scale data center environments, the BCM81724 is essential to interface these next generation high density switches to the existing 100G optical module ecosystem," said Lorenzo Longo, senior vice president and general manager of the Physical Layer Products Division at Broadcom. "Built with proven PAM-4 SerDes that are foundational to Broadcom's state-of-the-art switch processor chips, both merchant silicon and ASICs, our 16nm PAM-4 Reverse Gearbox provides the most robust and essential bridge for the end-to-end solutions driving faster time to market for our customers and expanding bandwidth capacity of next generation networks."

"50Gbps PAM-4 is quickly becoming the standard interface for hyperscale data center and cloud systems. As new switches such as Tomahawk 3 enable these higher bandwidth systems, data center operators and cloud service providers will require Broadcom's 400G reverse gearbox to continue the use of existing low-cost 100G QSFP28 modules, allowing fast migration to new high-density terabit switches and routers," said Bob Wheeler, principal analyst with The Linley Group.

#### Availability

Broadcom has begun shipping volume quantities of the BCM81724 and is currently accepting orders for this product. Please contact your local Broadcom sales representative for samples and pricing.

Further information on the BCM81724 is available online at

<https://www.broadcom.com/products/ethernet-connectivity/optical-phy/bcm81724>

#### About Broadcom Limited

Broadcom Limited is a leading designer, developer and global supplier of a broad range of digital and analog semiconductor connectivity solutions. Broadcom Limited's extensive product portfolio serves four primary end markets: wired infrastructure, wireless communications, enterprise storage and industrial & other. Applications for our products in these end markets include: data center networking, home connectivity, set-top box, broadband access, telecommunications equipment, smartphones and base stations, data center servers and storage, factory automation, power generation and

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