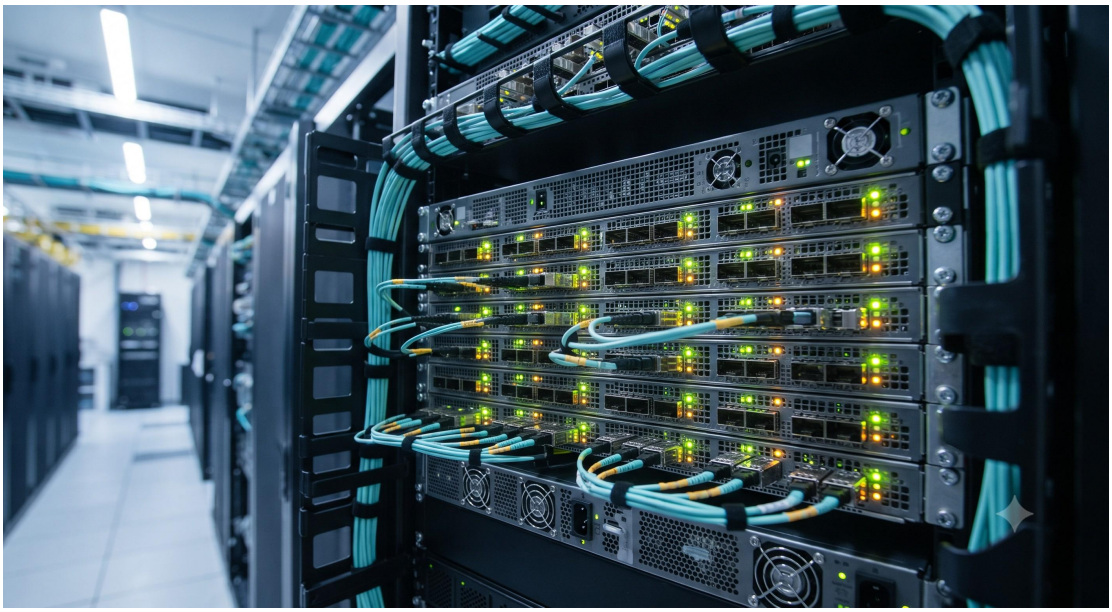
High-Performance Chinese OEM 100G QSFP28 Transceiver Diagnostic Register Codes - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the High-Performance Chinese OEM 100G QSFP28 Transceiver Diagnostic Register Codes. Designed for carrier-grade and enterprise datacenter environments, these optical transceivers are engineered to deliver unparalleled performance, reliability, and interoperability across a wide array of high-density networking equipment. This datasheet provides a comprehensive overview of the hardware architecture, diagnostic monitoring capabilities, and detailed register mapping specifications, ensuring seamless integration and proactive network management. The product adheres to the highest industry standards, offering a cost-effective solution without compromising on quality or functionality.



HARDWARE ARCHITECTURE & SILICON

The 100G QSFP28 transceiver is a high-performance, hot-pluggable optical module designed for 100 Gigabit Ethernet links. Its core architecture is built around a state-of-the-art DSP (Digital Signal Processor) engine and a high-sensitivity PIN photodetector or APD (Avalanche Photodiode) receiver, depending on the specific variant. The module integrates a 4-channel 25G optical transmitter and receiver, capable of operating over single-mode or multi-mode fiber. The internal PCB (Printed Circuit Board) is meticulously laid out to minimize signal integrity issues, ensuring robust performance across temperature and voltage variations. The Silicon Photonics or EML (Electro-absorption Modulated Laser) based transmitter provides superior optical output power and extinction ratio, enabling long-reach transmission up to 10km, 40km, or 80km over SMF (Single-Mode Fiber). Furthermore, the

transceiver incorporates a sophisticated Micro Controller Unit (MCU) that handles the I2C interface, memory management, and the generation of diagnostic registers, facilitating advanced network monitoring.

KEY FEATURES & ROUTING LOGIC

- Feature 1: High-Power Optical Engine: Supports a maximum transmission distance of up to 80km over standard single-mode fiber, leveraging advanced EML or Silicon Photonics technology to ensure robust signal integrity over long-haul links.
- Feature 2: Low Power Consumption: Optimized for high-density applications, the module consumes less than 3.5W of power, significantly reducing operational costs and thermal load within the chassis.
- Feature 3: Comprehensive Digital Diagnostic Monitoring (DDM): Provides real-time access to critical parameters including Tx/Rx optical power, laser bias current, temperature, and supply voltage via the I2C interface, enabling proactive link health management.
- Feature 4: Diagnostic Register Codes: A detailed set of vendor-specific and standardized register addresses are exposed, offering granular diagnostic data, fault isolation, and factory calibration information. These registers are key for network management systems to identify and resolve link issues rapidly.

COMPLIANCE & STANDARDS

This product is rigorously tested and certified to meet the most demanding industry standards. It ensures seamless interoperability with a wide range of networking equipment from major global vendors. The transceiver's robust design and adherence to these standards guarantee reliable operation in mission-critical environments.

- Compliant with IEEE 802.3ba and IEEE 802.3bm 100GBASE-LR4/ER4/SR4 specifications
- Compliant with QSFP28 MSA (Multi-Source Agreement) SFF-8665 and SFF-8636
- RoHS 10 Compliant (Restriction of Hazardous Substances Directive)
- REACH Compliant (Registration, Evaluation, Authorization and Restriction of Chemicals)
- UL/CSA Class 1 Laser Safety
- Class 1 FDA CDRH Laser Eye Safety

TECHNICAL SPECIFICATIONS

Parameter	**Specification**
Form Factor	QSFP28 MSA Compliant

Data Rate	103.125 Gbps (4x 25.78125 Gbps)
Transmitter Type	EML / Silicon Photonics (based on variant)
Receiver Type	PIN / APD (based on variant)
Max. Link Distance	Up to 80km (SMF, ER4/ER4L), 10km (LR4), 100m (SR4)
Operating Temperature	0 to 70°C (Commercial), -40 to 85°C (Industrial)
Power Supply Voltage	3.3V ± 5%
Power Consumption	≤ 3.5W (Typical)
Diagnostic Interface	I2C (SFF-8636 Management Interface)
Laser Safety	Class 1 Laser Product / FDA 21 CFR 1040.10 and 1040.11
Connector Type	LC Duplex (SMF) / MPO (MMF)

