

AFSI-SD4Q4L

DC Controller for Quad EAM

Key Features

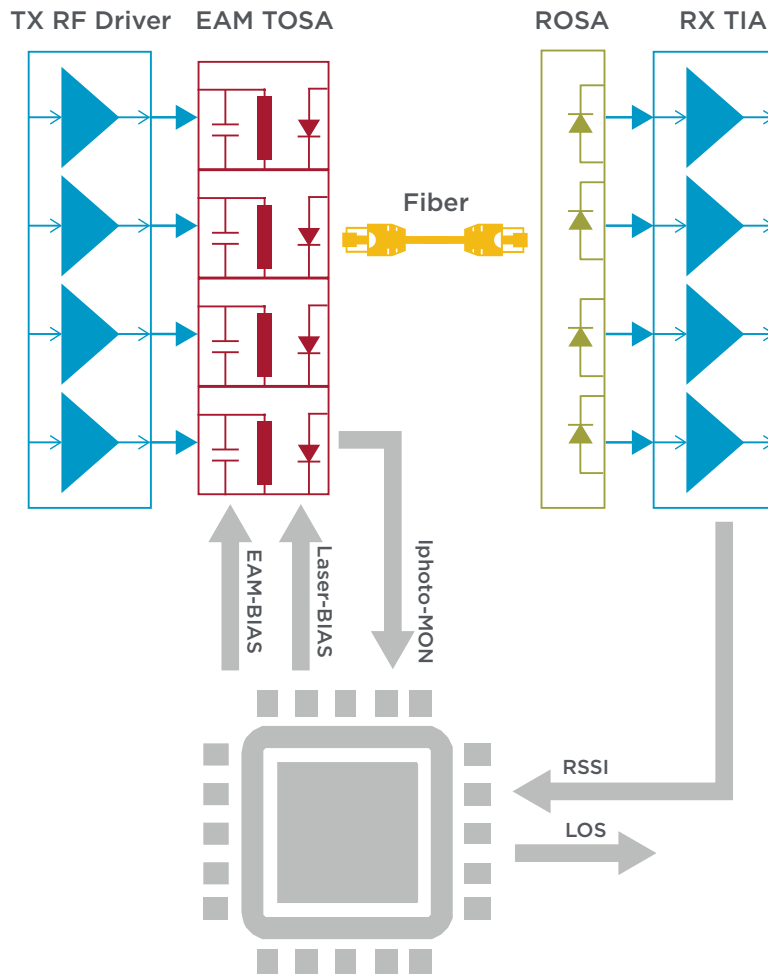
- 4 independent current sources for DFB bias (0 to 140 mA) with DAC control (10 bits)
- 4 independent voltage sources for EAM (0 to -3V) with DAC control (10 bits)
- 4 independent channels for EAM current monitoring (0 to 40 mA, 10-bit ADC)
- 4 independent channels of RSSI input monitoring (0 to 2.3 mA, 10-bit ADC)
- Laser Junction Voltage monitoring (Vf)
- Temperature monitoring (-10°C to 120°C, 10-bit ADC)
- Vcc33 monitoring (3.3V ±10%, 10-bit ADC)
- Vcc18 monitoring (1.8V ±10%, 10-bit ADC)
- VEE monitoring (-3.3V, ±10% range, 10-bit ADC)
- Chip hardware reset
- Global BIAS_disable control functions to disable all channel of DFB bias outputs
- Global RX_LOS output generated from RSSI inputs, with programmable LOS level
- Supports microcontroller and host TWS interfaces
- -40°C to 125°C junction operating temperature

Overview

The Broadcom® AFSI-SD4Q4L IC provides a DC control for optical transceivers based on a Quad Electro-Absorption Modulator (EAM). The IC generates four current bias outputs and four negative voltage bias outputs for both the DFB laser and the Electro-Absorption Modulator (EAM). The controller IC monitors the receiver photocurrent generated by each EAM, and also interfaces with the ROSA to monitor the input optical signal (RSSI) and manage the LOS output signal.

The controller IC provides a sensor block to monitor the temperature and various voltage supplies.

Figure 1: Functional Diagram



Benefits

- PCB area savings
- Module yield improvement
- Module calibration simplification
- Module thermal performance improvement

Applications

- CFP4 LR4
- CWDM QSFP28
- DWDM QSFP28
- 200 Gb/s PAM-4 QSFP28
- 400G-PSM4 (4x 100 Gb/s)
- 400G-LR4 (1x 400 Gb/s)

Figure 2: Process Flow Diagram

