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M02099

Burst Mode Laser Driver/Limiting Amplifier + DDMI Controller and APD DC-DC Controller

The M02099/M02100 is a low power, highly integrated, programmable burst mode laser driver and continuous mode limiting amplifier intended for ONU/ONT applications to 3.1 Gbps. An internal state machine and EEPROM perform all functions necessary for standalone operation (EEPROM is internal in the M02100 and an external EEPROM may be used with the M02099 but is not required). The internal state machine will acquire and scale all the necessary monitoring parameters in real time and makes them available to the MAC or an external host controller. EEPROM allows the M02099/M02100 to be re-calibrated multiple times and operate without external control or under the control of an external microcontroller or MAC. All optical component calibration information is stored internally in EEPROM and no external microcontroller is needed on a module. Use of the M02099/M02100 will minimize power consumption, parts count, provide design flexibility and simplify manufacturing processes. The laser driver can be configured to control the laser with either open loop look-up tables or one of three different closed loop methods using monitor photodiode feedback (including MACOM proprietary Dual Closed Loop and Single Closed Loop (modulation) modes).

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Features

- 100 Mbps to 3.1 Gbps operation
- Internal non-volatile memory for storing calibration constants
- Limiting Amplifier 5 mV input sensitivity at 3.1 Gbps, selectable gain and bandwidth, DAC programmable signal detect threshold
- Integrated Tx_SD and Burst TxPwrMon
- Laser driver bias and modulation current up to 100 mA. Typical rise/fall times < 60 ps. Burst on/off < 5 ns
- 3 Sleep modes and 2 burst-off current reduction modes
- Low power operation, < 75 mA typical (excluding laser current)

- Pulse width modulator for external DC-DC converter with control from an 8 bit DAC with temperature based look-up table stored in EEPROM
- 4 selectable modes of laser control: Dual Closed Loop, Single Closed Loop (bias), Single Closed Loop (modulation) or Open Loop
- Laser shutdown switch
- Isolated Rx and Tx power pins with independent shutdown
- Operating temperature -40 °C to +95 °C, 4x4 mm QFN package

Specifications

- Max Data Rate: 3.1 Gbps
- Max Output Mod Current: 100 mA

Datasheet

- [M02099-15 M02100-15.pdf](#)

Application Notes

- [M02099/M02100/M02076/ M02077/M02150/M02151 Test Summary of DC-DC Controller Products Affected: M02099, M02100, M02076, M02077, M02150, M02151 - M02099/M02100/M02076/ M02077/M02150/M02151 Test Summary of DC-DC Controller Products Affected: M02099, M02100, M02076, M02077, M02150, M02151](#)

EVM/Reference Design Guides

- [M02099 M02100 M02150 M02151 EUG 1.pdf](#)

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Part Number	Package	MACOM	Richardson RFPD
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M02099EVM

1.25G ONU combo chip

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M02099G-12

M02099 3G LD/LA

4X4MM QFN-28LD

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M02099G-15

Laser Driver, Limiting Amp

4MM PQFN-28LD

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Technical Resources

Datasheet

- [M02099-15 M02100-15.pdf](#)

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