Total System Solution for DIGI OTN Processors

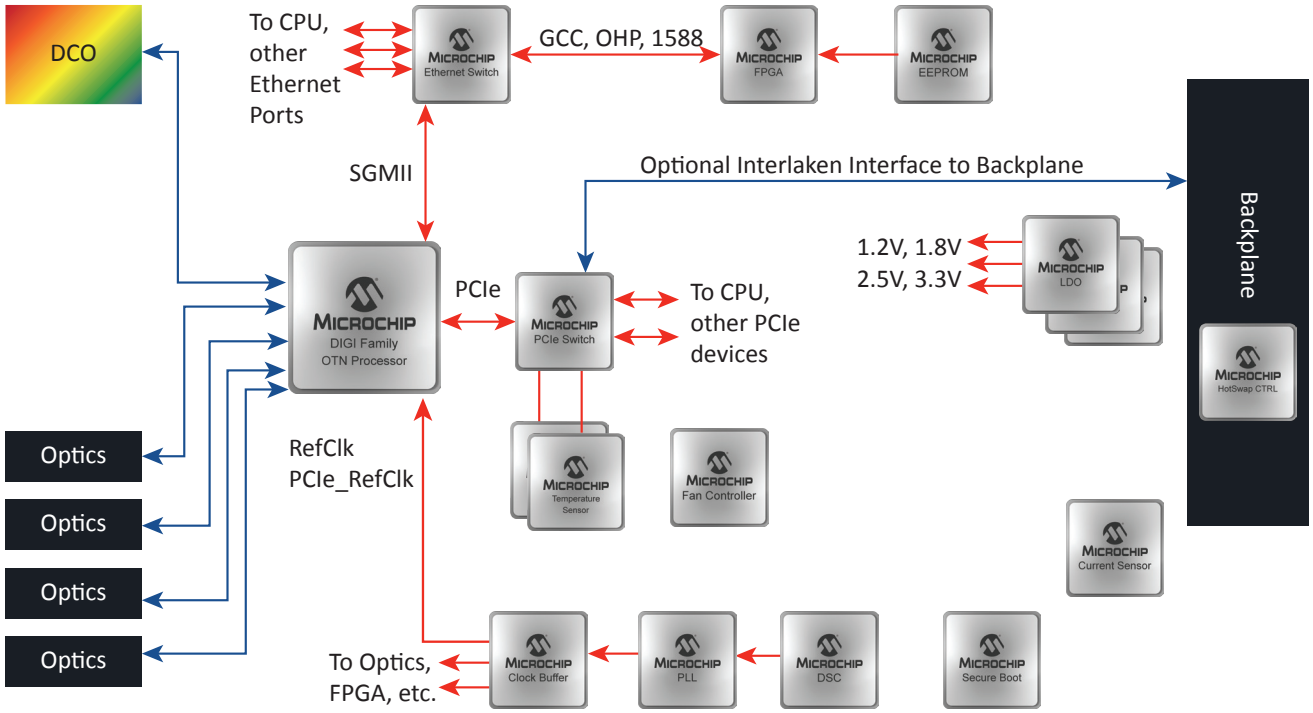
Accelerate Your Development and Time to Revenue

Summary

Microchip's DIGI family of OTN processors are market leading 100G+ solutions enabling packet optical transport systems for metro and core networks. They enable a wide range of applications from transponders, muxponders and add-drop multiplexers to line cards on OTN switching platforms. DIGI devices support up to terabits of data bandwidth, operating at hundreds of mega-hertz clock frequencies, in systems that require carrier-grade performance and reliability. As a result, these requirements drive highly complex hardware and software designs.

To simplify your design, Microchip offers a pre-engineered Total System Solution (TSS) for the DIGI family. The TSS delivers on the needed performance required to support all aspects of your design, from power management and timing to control plane processing and temperature monitoring. This differentiated offering allows you to immediately focus on delivering your design.

Typical 100G+ OTN Line Card Design Diagram



DIGI TSS Reference Designs

- PM2691/2692-KIT: DIGI-G5 1RU Minibox Evaluation Platform
- PM2540-KIT: DIGI-G4 1RU Minibox Evaluation Platform
- Includes TSS BOM and schematics

TSS Component Recommendations

Function	Recommended Part #	Product Description	Highlights
OTN Processor	PM5990 DIGI-G4 PM5980 DIGI-100GX PM6010 DIGI-G5	Up to 1.2T OTN processors	ODUk multiplexing, mapping, and switching Support for clients including: 10GE to 400GE, FlexE, FlexO, OTUCn, OTU4, and Fiber Channel
Phase Lock Loop (PLL)	ZL30683 (DIGI-G4/100GX) ZL3063x - Azurite (DIGI-G5)	High-performance PLL to supply: 100 MHz PCIe reference clocks 125 MHz or 156.25 MHz system clock for DIGI FPGA & optical module SerDes reference clocks Optional FIC reference clock	RMS jitter <300fs Interoperability with timing card PLL Holdover capability Multiple channels
Clock Buffer	ZL40231/ ZL40241 ZL40234	10-ch differential/single-ended signal fanout buffer 4-ch differential signal fanout buffer	Low output skew – 50ps Low additive jitter – 50fs
Low-dropout Regulator (LDO)	MIC69502 MIC49500 MIC28513	3.3V to 1.8V 5A regulator for DIGI 1V8_VDDO supply 1.8V to 0.8V 5A regulator for DIGI 0V8_AVD supply 12V to 0.8~24Vout 4A switch regulator for 1.2V, 2.5V or 3.3V supplies	Low noise power supplies Fast transient response Stable with 2x10uF ceramic capacitors Adjustable switching frequency
FPGA	MPF300T (300K LE) MPF500T (500K LE)	Programmable device for on board glue logic, OTN overhead processing, GCC etc. various functions	Lowest power Cost optimized for mid-range densities
Ethernet Switch	VSC7513/ 7514 VSC7436	8/10-port L2 GE switch for control plane traffic 10-port L2 switch with GE and 10GE	Fully managed L2 switching Dual media copper/SGMII ports
PCIe Switch	PM8531B	24-lane 12-port PCIe Gen 3 fanout switch	Most flexible per port bifurcation in the industry 24 lanes, 12 ports and 12 NTBs 6 virtual switch partitions
EEPROM	AT24CM01	128Kx8 EEPROM for FPGA or MCU bootloader	Low power consumption Data retention >40 years I²C compatible
Temperature Sensor	EMC1413 EMC1422	High accuracy, low cost temperature sensor for PCB measurement	±1°C Accuracy (60°C < TDIODE < 100°C) 0.125°C resolution Resistance Error Correction
Fan Controller	EMC2301 EMC2305	One PWM fan driver Five PWM fan drivers	0.5% Tach accuracy Closed loop or direct I²C drive
Oscillators	VT-841 VC-840	10 MHz TCXO 19.44 MHz XO	Matches Microchip PLLs High stability
Current Sensor	PAC1710 PAC1720	High-side current-sense monitor with voltage measurement for dynamic power management	One or dual channels 0V to 40V 1% current accuracy
Real-Time Clock/Calendar (RTCC)	MCP7940M	Low-cost I²C RTCC to track hours, minutes, seconds, days, months, years, and day of week	64-byte SRAM Programmable alarms
Hot swap Controller	MCP18480	-48V hot swap controller for safe board removal and insertion from a live backplane	Accurate (<1.5%) internal voltage reference for fault detection and precision timing Programmable foldback current and circuit breaker current limiting
Secure Boot	CEC1702 CEC1712	Secure boot MCUs provide authentication of the embedded firmware prior to boot of the system	Seamless authentication and encryption capabilities Robust hardware cryptography cypher suite

For More Information

www.microchip.com/design-centers/optical-networking or contact your local Microchip sales representative.

Leading Total System Solutions provider for

- High-performance standard and specialized microcontrollers, digital signal controllers and microprocessors
- Mixed-signal, analog, interface and security solutions
- Clock and timing solutions
- Wireless and Wired Connectivity solutions
- FPGA solutions
- Non-volatile EEPROM and Flash Memory solutions
- Flash IP solutions

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