Hittite has launched the first four products in the new Multiplexer (Mux) & Demultiplexer (Demux) product line. These devices support 28 Gbps and 45 Gbps data serialization and deserialization respectively, and are ideal for broadband test & measurement, SONET OC-192, OC-768, and high speed DAC, ADC and FPGA interfacing applications.

The HMC854LC5 and HMC847LC5 are 4:1 multiplexers designed for 28 Gbps and 45 Gbps data serialization respectively. The HMC854LC5 is a 28 Gbps, 4:1 multiplexer which latches the four differential inputs on a rising edge of the half-rate input clock, which is typically 14 GHz. The HMC854LC5 uses both the rising and falling edges of the half-rate clock to serialize the data, and a quarter-rate reference clock output up to 7 GHz is generated on chip and can be used to synchronize the data into the multiplexer. The HMC854LC5 also exhibits fast rise and fall times of only 16 ps, with less than 0.5 ps RMS jitter and 4 ps p-p of deterministic jitter.

The HMC847LC5 is a 45 Gbps, 4:1 multiplexer which operates in a similar manner to the HMC854LC5 by latching the four differential inputs on the rising edge of the half-rate input clock at 22.5 GHz, and then synchronizing the data into the multiplexer. The HMC847LC5 also features a control pin to adjust data output cross-point and duty cycle. The HMC854LC5 and the HMC847LC5 operate from single -3.3V and +3.3V supplies respectively.

The HMC855LC5 and HMC848LC5 are 1:4 demultiplexers designed for data deserialization at up to 28 Gbps and 45 Gbps respectively. The HMC855LC5 is a 1:4 Demultiplexer designed for 28 Gbps data deserialization. The device uses both the rising and falling edges of the half-rate input clock, typically 14 GHz, to sample the input data in sequence, and latch the data onto the differential outputs. A quarter-rate reference clock output generated on chip can be used to clock the data into other devices. The HMC855LC5 Demultiplexer is DC coupled, supports broadband operation, and exhibits fast rise and fall times of only 22 ps.

The HMC848LC5 is a 45 Gbps 1:4 Demultiplexer which operates in an identical manner to the HMC855LC5 by utilizing a half-rate input clock operating at 22.5 GHz, to sample and latch the data in sequence. The HMC848LC5 exhibits fast rise and fall times of only 25 and 21 ps, respectively. Both the HMC855LC5 and HMC848LC5 demultiplexers are DC coupled, support broadband operation and operate from single -3.3V and +3.3V supplies respectively.

All clock and data inputs to the HMC854LC5 and the HMC855LC5 are CML and terminated on-chip with 50 Ohms to the positive supply, GND, and may be DC or AC coupled. The differential outputs are source terminated with 50 Ohms to the ground terminated system, or drive devices with CML logic input. Similarly, all clock and data inputs and outputs of the HMC847LC5 can operate differential or single-ended. All four devices feature a pin to control differential output voltage swing, which allows for signal loss compensation or signal level optimization.

The HMC847LC5, HMC848LC5, HMC854LC5 and HMC855LC5 complement many of Hittite’s previously released Fiber Optic and High Speed Logic products. Housed in ceramic 5 x 5 mm SMT packages (RoHS compliant), these devices are specified for operation from -40 °C to +85 °C. Released data sheets may be found at www.hittite.com. Samples and evaluation PC boards are available from stock and can be ordered via the company’s e-commerce site or via direct purchase order.