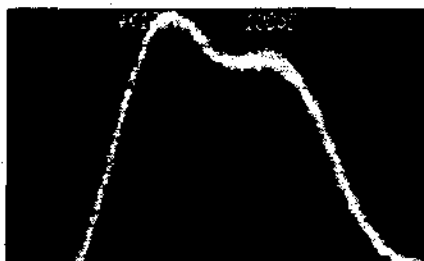


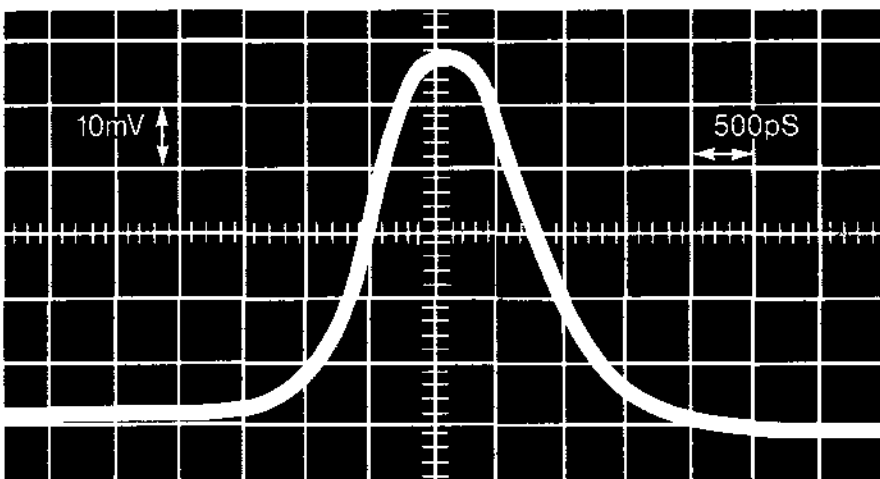
Communications

AT&T Unveils Versatile Diode Laser Package

At OFC '86 in Atlanta, AT&T introduced an all-ceramic, 12-pin diode laser package that can be used for transmission rates anywhere from 45 megabits per second to 1.7 gigabits per second. The Astrotec will be available in three versions



Above left shows a typical output pulse of the Astrotec diode laser operating at 1.7 Gbit/s. Above right is an eye-diagram showing low system jitter. Work done by Norman Dietrich and Fred Bosch of AT&T Bell Labs' Lightwave Subsystems Dept., Allentown PA.



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response times at 850 nm, with modest voltage applied. Responsivity values of 0.4 A/W are typical, with dark currents of 1 nA maximum at 10 volts.

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at operating ranges of 45 to 200 Mbit/s, 200 to 565 Mbit/s, and 565 to 1700 Mbit/s.

R.B. Eggers of AT&T Technology Systems, Reading PA, claims that using a single package design for all three ranges will make for a high volume, and therefore cheaper and more efficient, manufacturing process. Astrotec lasers will replace existing AT&T laser designs for both DDM-1000 (loop distribution/loop feeder) devices and FT series G (longhaul) devices as the older designs are phased out. The high speed version is scheduled to be available in sample quantities by the third quarter of 1986.

A patented "microstrip" feature in the high bit-rate version brings microwave frequencies directly into the package and up to the chip through a separate input. "The microstrip transmission line provides a constant input impedance to the package for frequencies up to and above 3 GHz," said Al Zacharias, of AT&T Bell Labs' Murray Hill facility, supervisor of the group that developed the package. "With this design, the input impedance is within about 5% to 10% of nominal impedance." The package specs give a nominal 25-ohm input impedance. Zacharias credits Norman Dietrich, Lightwave Subsystems Dept., with the microwave design.

Astrotec's all-ceramic design ensures a matched coefficient of expansion, making a very stable package that performs well over a temperature range of -40°C to 65°C. The internally-cooled InGaAsP 1300-nanometer singlemode injection laser was developed by Joe Geusic at AT&T's Murray Hill Lightwave Device Dept. The lasers have an internal InGaAs backface photodiode which can be used to monitor and control power launched into the fiber. For future systems, the group is also looking at longer wavelength Astrotec lasers that will operate as fast as the 1300-nm systems.

—Holly Bigelow