Abstracts

Microwave variable delay line using a membrane impregnated with liquid crystal

T. Kuki, H. Fujikake, H. Kamoda and T. Nomoto. "Microwave variable delay line using a membrane impregnated with liquid crystal." 2002 MTT-S International Microwave Symposium Digest 02.1 (2002 Vol. I [MWSYM]): 363-366 vol.1.

A microwave variable delay line using a membrane impregnated with liquid crystal was newly fabricated. By employing this device configuration, the phase-shift response becomes fast independently of the liquid crystal thickness. Experimental results show that the phase-shift response time of 33 ms is obtained, which is two orders of magnitude faster than that of a conventional delay line. The new delay line also exhibits a 270-degree phase-shift and non-dispersive delay characteristics over a wide microwave-frequency range. Moreover, it is clarified that the phase-shift characteristics to a control voltage depend on the pore size of the membrane.

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