AV-LZ SERIES

FLEXIBLE MICROSTRIP TRANSMISSION LINES FOR LASER DIODE DRIVERS

In many high-current laser diode testing applications, it is not possible to use a 50 Ohm termination - typically the load is closer to 1 to 12 Ohms. For these applications, Avtech offers the unique AV-LZ and AV-CLZ series of transmission lines that have characteristic impedances (Z_0) in this range. When a transmission line with a characteristic impedance of Z_0 is used to drive a load impedance of R_L, and $Z_0 = R_L$, ideal matching will occur. Under these conditions, longer-than-normal cable lengths can be used without introducing significant ringing, speed degradation, or other distortions.

The newer AV-CLZ transmission lines are described in detail at http://www.domain.avtechpulse.com/transmission. These highly-rugged lines are recommended for most applications. However, for applications requiring a lighter, more flexible cable, the older AV-LZ series is still available.

AV-LZ transmission lines consist of a sandwich structure of three layers of polyimide Kapton film and two layers of copper foil, which results in a highly flexible flat transmission line with low characteristic impedance.

Connection to the output end of the line is normally via soldering, and the lines are normally supplied with one end soldered to a small piece of 1/16" glass epoxy circuit board (approximately 1 cm × line width) with accessible output and ground solder pad areas. The ground conductor and signal conductor on the other end of the line are exposed for convenient solder connection. Scissors or a sharp knife may be used to cut the line to shorter lengths as required.

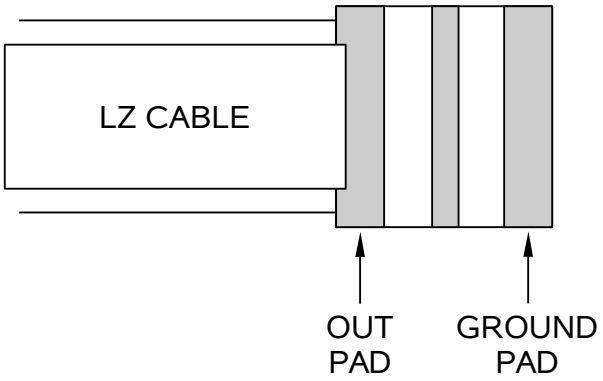
The input end of the line can be left unterminated (i.e., the line is snipped with scissors, and the film is peeled back slightly to provide soldering access to the copper foils). Alternatively, the input end can be supplied terminated with a male DB-37 connector, suitable for mating to a variety of Avtech pulsers (check the pulser datasheet to confirm that it has a DB-37 female output connector.) Pins 1-19 of each connector are connected to the signal line, and pins 20-37 are connected to the ground line.

Avtech can provide other connector arrangements, suitable for use with older equipment and other instruments. Contact the factory (info@avtechpulse.com) with your special requirement.

The AV-LZ is suitable for laboratory use, but is not recommended for production test environments due to its relatively fragile nature compared to the more rugged AV-CLZ series.

Model:	AV-LZ1	AV-LZ2	AV-LZ3	AV-LZ6	AV-LZ10	AV-LZ12
Characteristic impedance (Z_0, ±20%):	1 Ω	2 Ω	3 Ω	6 Ω	10 Ω	12 Ω
Maximum pulse current:	100 A	50 A	30 A	15 A	10 A	8A
Series resistance: (signal and ground lines)	0.05 Ω / m	0.1 Ω / m	0.15 Ω / m	0.3 Ω / m	0.5 Ω / m	0.6 Ω / m
Rise time:	< 5 ns					
Maximum width:	25.4 mm (1")			13 mm (0.52")		
Output end termination:	25.4 × 10 mm circuit board, suitable for soldering			13 × 10 mm circuit board, suitable for soldering		
Input end termination:	Standard: None Optional (-DB37M option): DB-37 male. Pins 1-19 = signal, pins 20-37 = ground. Optional (-BNC option): BNC male connector Optional (-EDAC option): EDAC connector, for certain obsolete Avtech pulsers					
Length:	1 meter standard, 2 meters optional (-2M option)					
Temperature range:	+5°C to +40°C[1]					
Bend radius:	1 cm					

1) Some users have reported successful use of the LZ series at liquid nitrogen temperatures, but Avtech does not recommend the LZ series for use at these temperatures. Damage at low temperatures is not covered by the warranty. Usage at cryogenic temperatures is "at your own risk".



Layout of output end termination PCB

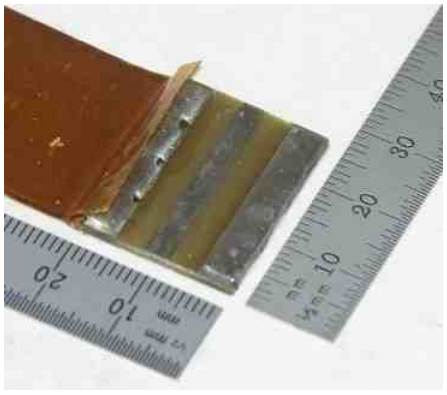


Photo of output end termination printed circuit board

See http://www.avtechpulse.com/appnote/techbrief10 for AV-LZ application information!