2795N Transformer Application Note

The 2795N transformer provides two transformation ratios to match both 120Ω and 75Ω line impedances with Lucent 5 V transceivers. The ratio of the two transformer impedance ratios is within 0.07% of the ratio of the two line impedances. This virtually perfect match allows the transformer to work with a single terminating network design for both line impedances. The transformer can also be used for 100Ω lines with a change in resistor values. For 2795N data sheet refer to document TM9918.

Suggested External Line Termination Network for Lucent 5 V Line Transceivers

A suggested line termination network consisting of the 2795N transformer, a capacitor, and resistors arranged to provide the proper voltage gain and impedance matching to the characteristic impedance of the transmission line is shown below. The diagram shows the appropriate external components for a receive line interface and a transmit line interface for one channel. The network is designed to operate with both E1 cable impedances (75Ω and 120Ω) with no change in components. For DS1 applications (100Ω), only the resistor values need to be changed. The same transformer can be used for all three cable impedances in both receive and transmit operation. Figure 1 below shows the proper connections for each cable impedance. The components and values are listed in Table 1 (see next page).

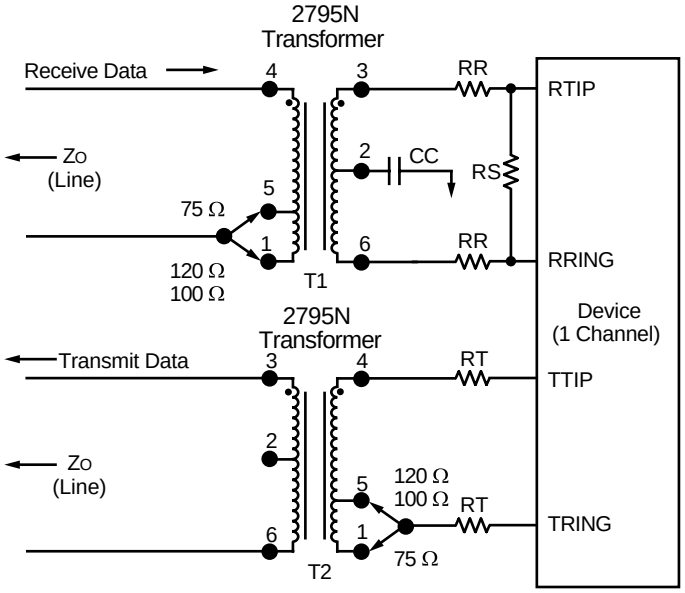


Figure 1. Connections for each cable impedance

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HIGH FREQUENCY MAGNETICS

Application Note for Miniature Pulse Transformer

2795N Transformer Application Note

Symbol	Name	Value		
Z_O	Characteristic impedance	75Ω (E1)	120Ω (E1)	100Ω (DS1)
CC	Center tap capacitor	0.1 µF	0.1 µF	0.1 µF
RR	Receive series resistor	36.5Ω	36.5Ω	30.1Ω
RS	Receive shunt resistor	64.9Ω	64.9Ω	53.6Ω
RT	Transmit series resistor	25.5Ω	25.5Ω	4.6Ω
T1, T2	Bel part number	2795N	2795N	2795N

Table 1. Line termination components and values

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