



# ***LXT30x and LXT318 Interchangeability Adapting Short-Haul E1 Boards to Long- Haul Applications***

**Application Note**

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## 1.0 General Description

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While the LXT30x (300Z, 301Z, 304A, 305A and 307) are designed for short-haul T1/E1 applications (up to 14 dB) and the LXT318 is designed for long-haul E1 applications (up to 43 dB), these transceivers are quite similar in function. There are only minor differences in line interfaces and pin configurations. Therefore, E1 equipment designed for short-haul applications (using LXT30x series transceivers) can easily be adapted to provide long-haul capability (using the LXT318). This application note describes the steps necessary to adapt a short-haul design so that it can be used for both long-haul and short-haul applications. (The LXT318 can support both E1 long-haul and E1 short-haul applications).

### 1.1 Functional Differences

The LXT30x uses three Equalizer inputs in the Hardware Mode. These pins are not used by the 318 and should be tied to ground. These pins are identical in the Software mode, but the bit register is defined differently.

The LXT30x uses two inputs and an output for the Driver Performance Monitor (DPM) function. On the LXT318, these pins are replaced by an input for Jitter Attenuation Select (JASEL) and an output for Line Attenuation (LATN).

The LXT30x uses a 1:2 transformer for both the Tx and Rx line interfaces. The LXT318 uses a 1:2 transformer with two  $15\ \Omega$  series resistors for the Tx line interface, and a 1:1 transformer for the Rx line interface.

### 1.2 Circuit Modifications

To adapt an LXT30x board to accommodate the LXT318, modify the circuit as follows:

1. Cut the DPM output trace from LXT30x pin 11 and tie the LXT318 pin 11 (JASEL) to VCC (to select receive jitter attenuation), or to GND (to select transmit jitter attenuation).
2. Cut the MTIP and MRING inputs to LXT30x pins 17 and 18. Connect the LXT318 input at pin 17 to ground. Connect the LXT318 output from pin 18 to a LATN decoding circuit.
3. For Hardware Mode, cut the EC inputs to LXT30x (pins 23, 24 and 25), and connect these LXT318 pins to ground.

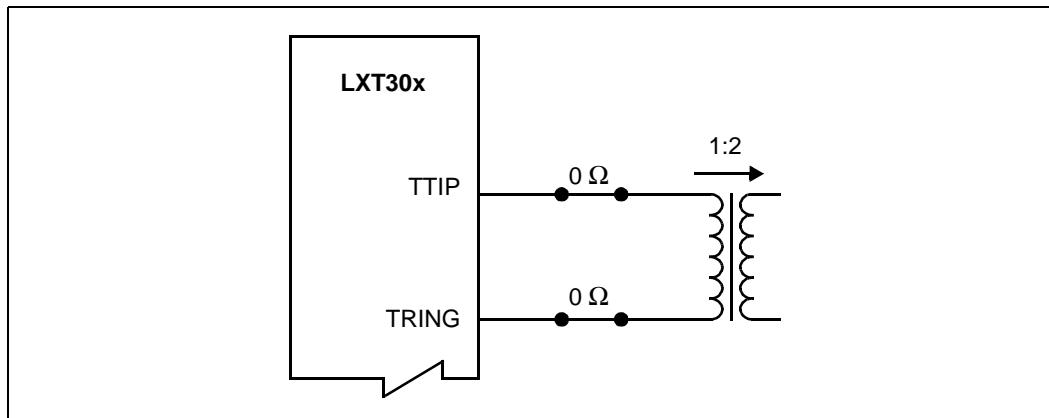
### 1.3 Line Interface Modifications

On the transmit side, both the LXT30x and LXT318 use a 1:2 transformer. The LXT30x transformer connects directly to the chip as shown in [Figure 1](#). The LXT318 requires two  $15\ \Omega$  series resistors in line with the transformer, as shown in [Figure 2](#).

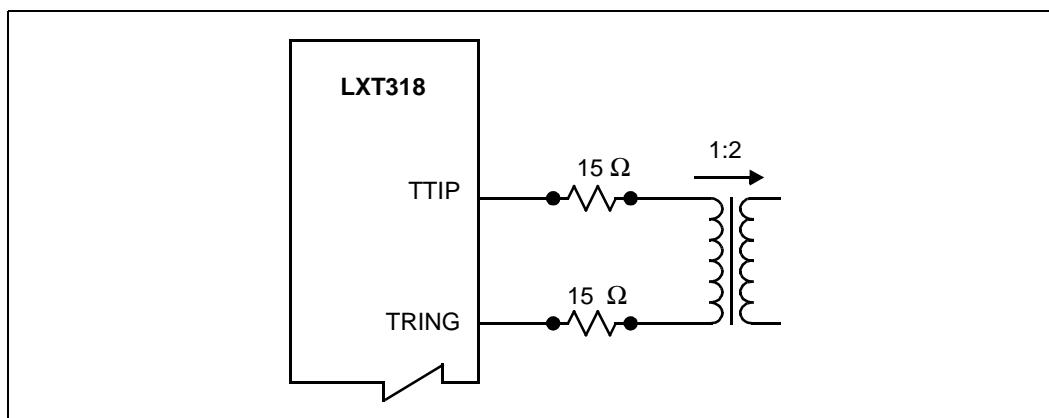
On the receive side, the LXT30x uses a 1:2 transformer with  $480\ \Omega$  termination, as shown in [Figure 3](#). The LXT318 uses a 1:1 transformer with  $120\ \Omega$  termination for TWP applications, as shown in [Figure 4](#).

A 1:2 CT transformer can be used for both devices. For LXT318 boards, connect only one of the secondary windings, an effective 1:1 ratio.

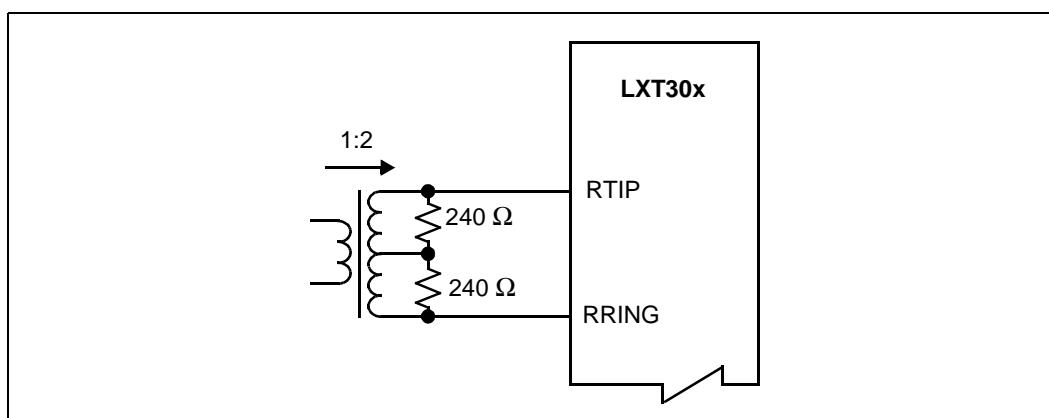
**Figure 1. LXT30x Transmit Line Interface**



**Figure 2. LXT318 Transmit Line Interface**



**Figure 3. LXT30x Receive Line Interface**



**Figure 4. LXT318 Receive Line Interface**