

**Detecting Line Polarity Reversal
Associated with
BT Calling Line Identification Protocol**

The following circuit can be used to detect line polarity reversal per the British Telecommunications (BT) Standard CDS™ for Calling Line Identification Service.

Line Polarity Reversal indicates to the Customer Premise Equipment (CPE) that an incoming message is about to follow and the CPE should be ready to decode the calling line information. Referring to the timing diagram in Figure 1, the line reversal event indicates that an incoming call is imminent.

The circuit in Figure 2 should be connected across the Tip and Ring connections of the incoming telephone line. The circuit operates in a very similar manner to a standard ring detector circuit. D1 and D2 are 10V zener diodes that prevent false triggering for voltages approximately $< 12V$ ($10V$ zener + V_f diode + V_f LED) while also providing the required

15V sensitivity to the reversal event per the BT standard. C1 provides DC blocking and allows current flow during the initial charge of the circuit that occurs when DC voltage is first applied to the TIP/Ring lines or a polarity reversal occurs. This current flows through the U1 LED causing U1 phototransistor to saturate which causes the -REVB line to pulse low until C1 is charged. The back to back LED's in U1 enable the circuit to operate regardless of polarity. It's important to note that this circuit will also generate pulses for the incoming ring signal, therefore, the CPE microprocessor should have the ability to discriminate between the two events. This is easily accomplished since the line polarity is a one-time event and the ring signal generates many pulses at the ring signal frequency (16Hz-60Hz). The circuit can also be used as a ring detect circuit and reverse polarity detect for most countries including CTR countries, North America and in Asia.

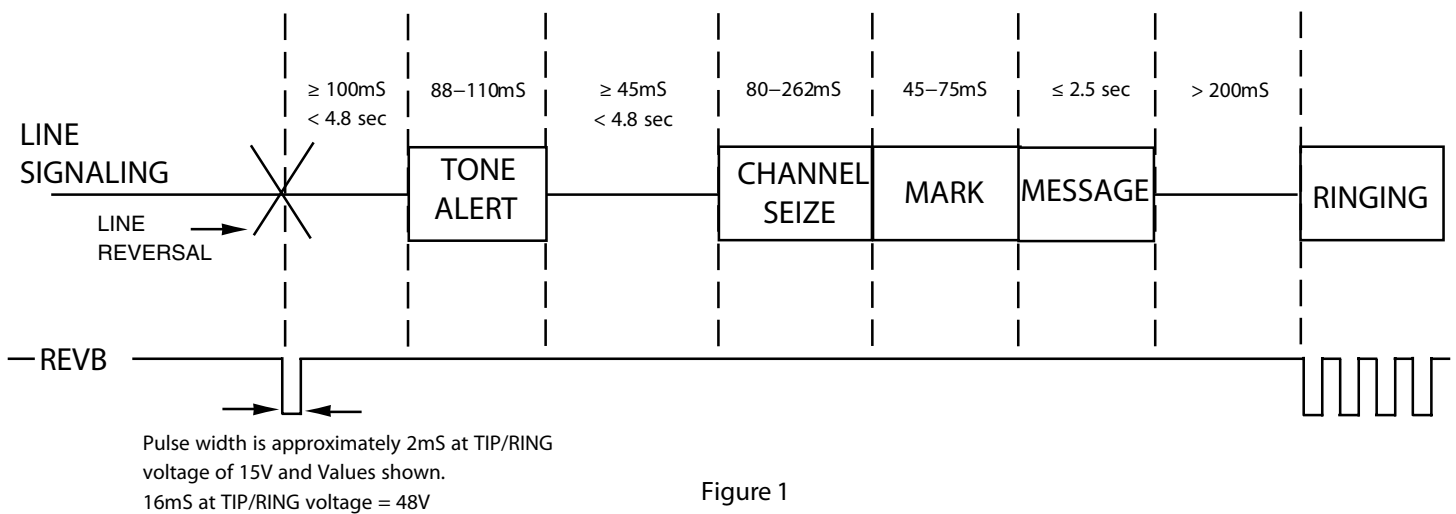


Figure 1

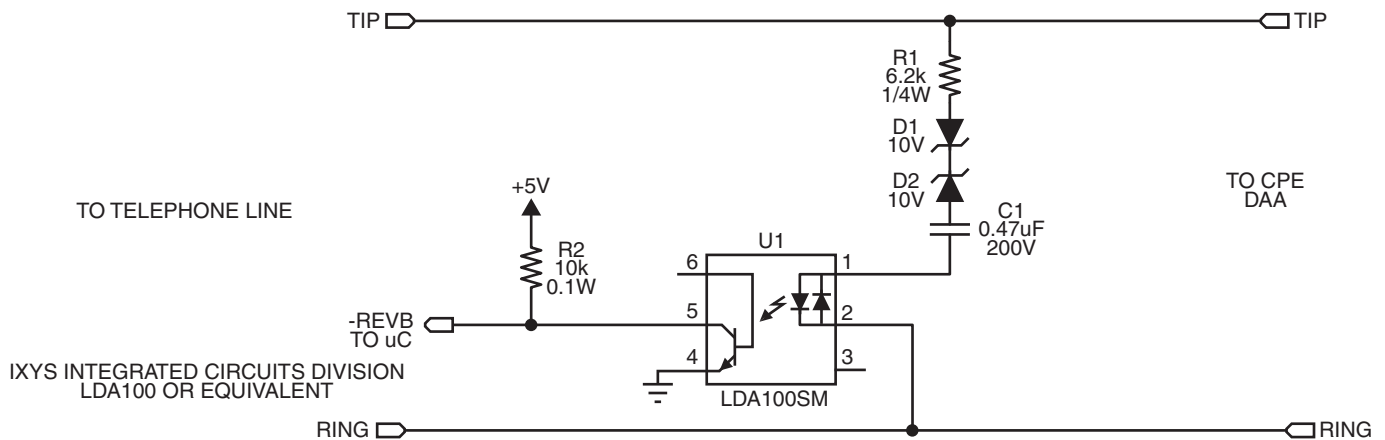


Figure 2

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