

# **Dual Line Driver**

# **GENERAL DESCRIPTION**

The XR-T5675 is a bipolar monolithic dual line driver designed to drive PCM lines up to a 10 MBPS rate. The device is powered from a single  $5V\pm5\%$  source. Its current consumption is 14mA (typical) and the output can be pulled up to 20VDC.

#### **FEATURES**

50mA Output Drive Current Capability Low Current Consumption (18mA Max.) High Speed Switching Dual Matched Driver Outputs High Output Voltage TTL or DTL Compatible Inputs

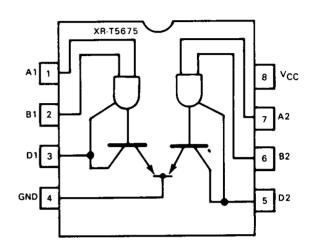
### **APPLICATIONS**

T1, T1C, T2, 2.048MBPS and 8.448MBPS PCM Line Driver LAN Line Driver Relay Driver LED/Lamp Driver

# **ABSOLUTE MAXIMUM RATINGS**

| Supply Voltage (V <sub>CC</sub> )<br>Input Voltage (Pin 1,2,6,7) | +7.0V<br>0.2V to +V <sub>CC</sub> |
|--|-----------------------------------|
| Output Pull-up Voltages (Pin 3,5)                                | +35.0V                            |
| Power Dissipation  |                                   |
| Ceramic  | 700mW                             |
| Plastic  | 600mW                             |
| Storage Temperature  | -65°C to 150°C                    |

# PIN ASSIGNMENT



## **ORDERING INFORMATION**

| Part Number | Package | Operating Temperature |
|-------------|---------|-----------------------|
| XR-T5675CP  | Plastic | 0°C to +70°C          |
| XR-T5675CN  | Ceramic | 0°C to +70°C          |
| XR-T5675 D  | SOIC    | 0°C to +70°C          |

# SYSTEM DESCRIPTION

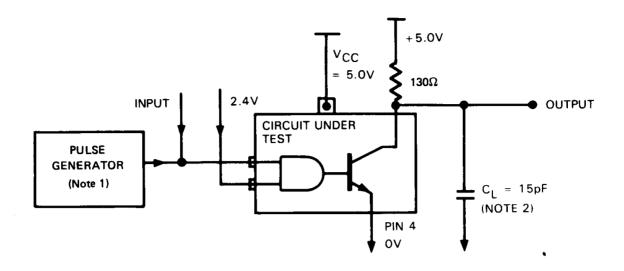
Figure 1 contains the Functional Block Diagram of the XR-T5675. The circuit consists of two AND logic gates with their outputs internally connected to the bases of the output transistors. The low level outputs are clamped at 1 VBE to ground to insure non-saturating operation for fast switching.

| Α | В | OUTPUT (D) |  |  |
|---|---|------------|--|--|
| L | L | H (OFF)    |  |  |
| L | Н | H (OFF)    |  |  |
| Н | L | H (OFF)    |  |  |
| Н | Н | L (ON)     |  |  |

Truth Table — XR-T5675 H = High Level, L = Low Level

ELECTRICAL CHARACTERISTICS 
Test Conditions:  $V_{CC} = 5.0V$ ,  $T_A = 0^{\circ}C$  to +70°C, unless specified otherwise,

| SYMBOL            | PARAMETERS                         | PINS                     | MIN  | TYP  | MAX         | UNIT  | CONDITIONS                                      |
|-------------------|------------------------------------|--------------------------|------|------|-------------|-------|---|
| V <sub>CC</sub>   | Supply Voltage                     | 8                        | 4.75 | 5.0  | 5.25        | ٧     |   |
| V <sub>iH</sub>   | High Level Input Voltage           | 1,2,6,7                  | 2.2  |      |             | V     | I <sub>OL</sub> = 50mA, V <sub>OL</sub> = 0.95V |
| V <sub>IL</sub>   | Low Level Input Voltage            | 1,2,6,7                  |      |      | 0.8         | ٧     |   |
| I <sub>IH</sub>   | High Level Input Current           | 1,2,6,7                  |      |      | 40          | μА    | V <sub>IH</sub> = 2.7V,<br>Pins 3 & 5 Open      |
| I <sub>IL</sub>   | Low Level Input Current            | 1,2,6,7                  |      |      | -1.2        | mA    | V <sub>IL</sub> = 0.4V,<br>Pins 3 & 5 Open      |
| VoL               | Low Level Output Voltage           | 3,5                      | 0.6  |      | 0.95        | V     | V <sub>IH</sub> = 2.2V, I <sub>OL</sub> = 50mA  |
| loL               | Low Level Output Current           | 3,5                      | ·=·  |      | 50          | mA    | $V_{IH} = 2.2V, V_{OL} = 0.95V$                 |
| l <sub>OH</sub>   | High Level Leakage Current         | 3,5                      |      |      | 100         | μА    | Pins 3 & 5,<br>Pull-up to +20V                  |
| Іссн              | Supply Current Output High         | 8                        |      |      | 3.0         | mA    | Pins 3 & 5 Open                                 |
| lcaL              | Supply Current Output Low          | 8                        |      | 14.0 | 18.0        | mA    | Pins 3 & 5 Open                                 |
| SWITCHIN          | G CHARACTERISTICS, $V_{CC} = 5.0V$ | ± 5%, T <sub>A</sub> = + | 25°C |      | <del></del> | ***** |   |
| ҍ҉р∟н             | Propagation Delay, Low to High     | 3,5                      |      | 15   |             | ns    | See Figure 2                                    |
| t <sub>pHL</sub>  | Propagation Delay, High to Low     | 3,5                      |      | 15   |             | ns    | See Figure 2                                    |
| t <sub>rise</sub> | Rise Time                          | 3,5                      |      | 15   | 24          | ns    | See Figure 2                                    |
| t <sub>fall</sub> | Fall Time                          | 3,5                      |      | 10   | 24          | ns    | See Figure 2                                    |
|                   | Output Pulse Imbalance             |                          |      | 2.5  |             | ns    | At 50% Output Level                             |



Note 1. Pulse Generator Frequency = 2.0MHz,  $Z_{OUT}$  = 50 $\Omega$ . Note 2.  $C_L$  Included — Probe and Jig Capacitance

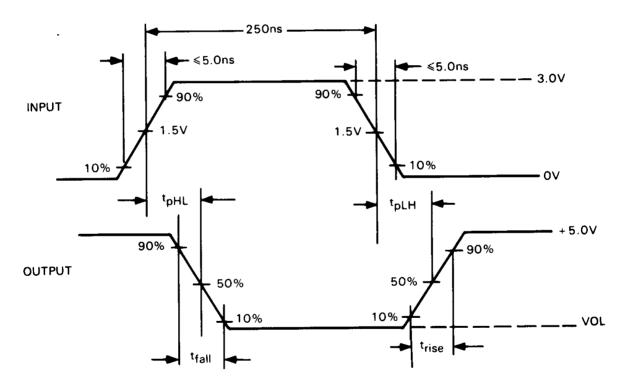
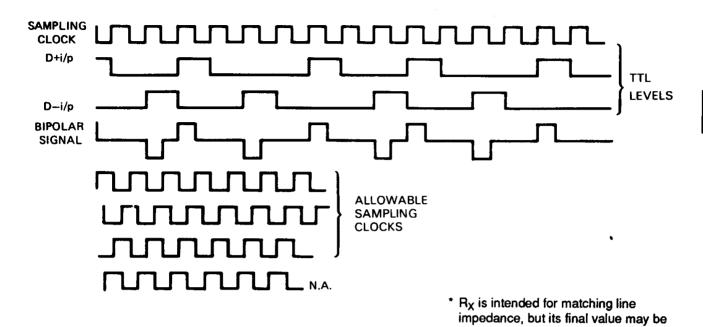


Figure 2. AC Test Circuit and Switching Waveforms

determined by the output signal

amplitude required.



D - i/PRX\* Vcc **SAMPLING** CLOCK i/P 6 5 +Vcc **BIPOLAR** SIGNAL TO LINE XR-T5675 .1µF **SAMPLING** CLOCK i/P D + i/PR<sub>X</sub>\*

In the case where D+ and D- are half width signals, Pin 1 and Pin 7 should be tied together and returned to +5.0V via a 1K resistor

Figure 3. XR-T5675 PCM Line Driver Application Circuit