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NTE7142
Integrated Circuit
+5V–Powered, Multichannel RS–232 Driver/Receiver

Description:

The NTE7142 is a multichannel RS–232 driver/receiver in a 16–Lead DIP type package intended for all EIA/TIA–232E and V.28/V.24 communications interfaces, particularly applications where ±12V is not available.

Features:

- Operate From Single +5V Power Supply
- Meet All EIA/TIA–232E and V.28 Specifications
- Multiple Drivers and Receivers
- 3–State Driver and Receiver Outputs

Applications:

- Portable Computers
- Low–Power Modems
- Interface Translation
- Battery–Powered RS–232 Systems
- Multidrop RS–232 Networks

Absolute Maximum Ratings: (Note 1)

Supply Voltage, V_{CC} . . . . . –0.3V to +6V
Input Voltage, T_{IN} . . . . . –0.3V to (V_{CC}–0.3V)
Input Voltage, R_{IN} . . . . . ±30V
Output Voltage (Note 2), T_{OUT} . . . . . ±15V
Output Voltage, R_{OUT} . . . . . –0.3V to (V_{CC}+0.3V)
Driver/Receiver Output Short Circuited to GND . . . . . Continuous
Continuous Power Dissipation (T_A = +70°C), P_D 842mW
Dreate Above +70°C . . . . . 10.53mW/°C
Operating Temperature Range, T_{opr} . . . . . 0° to +70°C
Storage Temperature Range, T_{stg} . . . . . –65° to +160°C
Lead Temperature (During Soldering, 10sec), T_L . . . . . +300°C

Note 1. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational section of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Note 2. Input voltage measured with T_{OUT} in high–impedance state, V_{CC} = 0V.

Electrical Characteristics: (V_{CC} = +5V ±10%, T_A = 0° to +70°C, C1–C4 = 0.1µF unless otherwise specified)

Parameter	Test Conditions	Min	Typ	Max	Unit
RS–232 Transmitter					
Output Voltage Swing	All transmitter output loaded with 3kΩ to GND	±5	±8	–	V
Input Logic Threshold Low		–	1.4	0.85	V
Input Logic Threshold High		2.0	1.4	–	V
Logic Pull–Up/Input Current	Normal operation	–	5	40	µA
Output Leakage Current	V_{CC} = 0V, V_{OUT} = ±15V	–	±0.01	±10	µA
Data Rate	Normal operation	–	200	116	kb/s
Transmitter Output Resistance	V_{CC} = V+ = V– = 0V, V_{OUT} = ±2V	300	10M	–	Ω
Output Short–Circuit Current	V_{OUT} = 0V	±7	±22	–	mA
RS–232 Receiver					
RS–232 Input Voltage Operating Range		–	–	±30	V
RS–232 Input Threshold Low	V_{CC} = 5V, $R2_{IN}$	0.8	1.3	–	V
RS–232 Input Threshold High	V_{CC} = 5V, $R2_{IN}$	–	1.8	2.4	V
RS–232 Input Hysteresis	V_{CC} = 5V	0.2	0.5	1.0	V
RS–232 Input Resistance		3	5	7	kΩ
TTL/CMOS Output Voltage Low	I_{OUT} = 3.2mA	–	0.2	0.4	V
TTL/CMOS Output Voltage High	I_{OUT} = –1.0mA	3.5	V_{CC}–0.2	–	V
TTL/CMOS Output Short–Circuit Current	Sourcing, V_{OUT} = GND	–2	–10	–	mA
	Shrinking, V_{OUT} = V_{CC}	10	30	–	mA
TTL/CMOS Output Leakage Current	0V ≤ V_{OUT} ≤ V_{CC}	–	±0.05	±10	µA
Operating Supply Voltage		4.5	–	5.5	V
V_{CC} Supply Current	No load	–	4	10	mA
	3kΩ load, both inputs	–	15	–	mA
Transition Slew Rate	C_L = 50pF to 2500pF, R_L = 3kΩ to 7kΩ, V_{CC} = 5V, T_A = +25°C, measured from +3V to –3V or –3V to +3V	6	12	30	V/µs
Transmitter Propagation Delay TTL to RS–232 (normal operation)	t_{PHLT}	–	1.3	3.5	µs
	t_{PLHT}	–	1.5	3.5	µs
Receiver Propagation Delay RS–232 to TTL (normal operation)	t_{PHLR}	–	0.5	1.0	µs
	t_{PLHR}	–	0.6	1.0	µs
Transmitter + to – Propagation Delay Difference (normal operation)	$t_{PHLT} – t_{PLHT}$	–	300	–	ns
Receiver + to – Propagation Delay Difference (normal operation)	$t_{PHLR} – t_{PLHR}$	–	100	–	ns

Pin Connection Diagram