

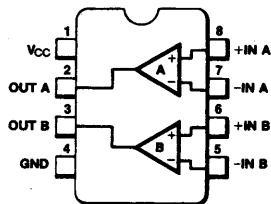
μ A9639A Dual Differential Line Receiver

Linear Division Interface Products

Description

The μ A9639A is a Schottky dual differential line receiver which has been specifically designed to satisfy the requirements of EIA Standards RS-422, RS-423, and RS-232C. In addition, the μ A9639A satisfies the requirements of MIL-STD 188-114 and is compatible with the International Standard CCITT recommendations. The μ A9639A is suitable for use as a line receiver in digital data systems, using either single ended or differential, unipolar or bipolar transmission. It requires a single 5.0 V power supply and has Schottky TTL compatible outputs. The μ A9639A has an operational input common mode range of ± 7.0 V either differentially or to ground.

Connection Diagram 8-Lead DIP (Top View)



CD0021F

- Dual Channels
- Single 5.0 V Supply
- Satisfies EIA Standards RS-422, RS-423, And RS-232C
- Built-In ± 35 mV Hysteresis
- High Common Mode Range
- High Input Impedance
- TTL Compatible Output
- Schottky Technology

Absolute Maximum Ratings

Storage Temperature Range	-65°C to +175°C
Operating Temperature Range	0°C to +70°C
Lead Temperature	
Molded DIP (soldering, 10 s)	265°C
Internal Power Dissipation ^{1, 2}	0.93 W
V _{CC} Lead Potential to Ground	-0.5 V to +7.0 V
Input Potential to Ground Lead	± 25 V
Differential Input Voltage	± 25 V
Output Differential to Ground Lead	-0.5 V to 5.5 V
Output Sink Current	50 mA

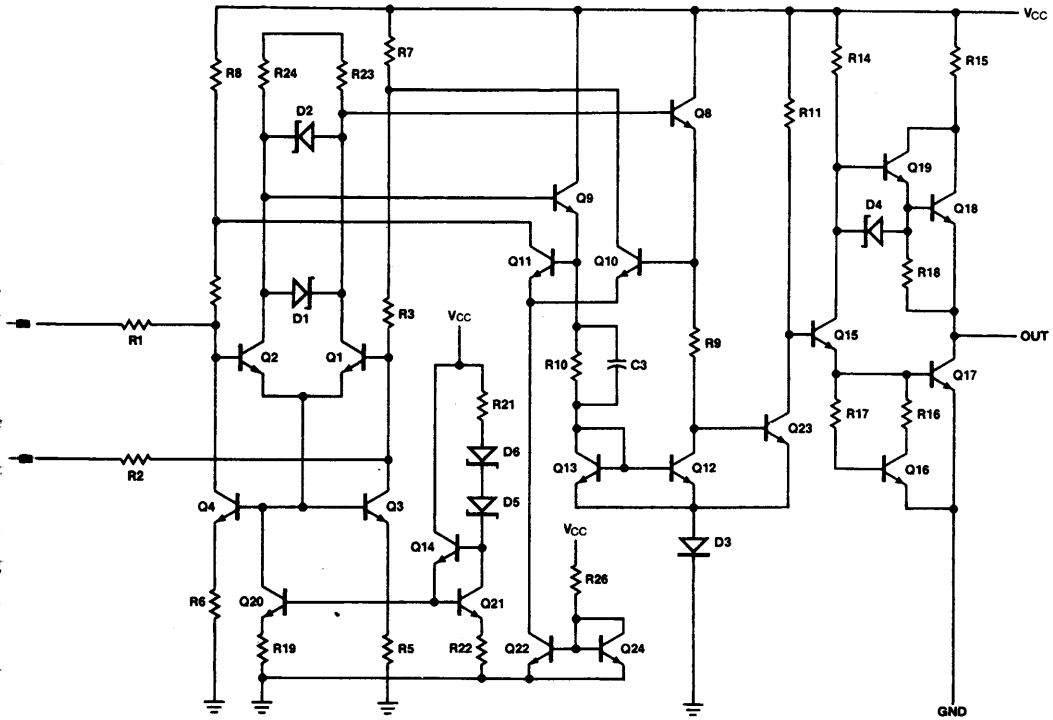
Note

1. T_J Max = 150°C.
2. Ratings apply to ambient temperature at 25°C. Above this temperature, derate at 7.5 mW/°C.

Order Information

Device Code	Package Code	Package Description
μ A9639ATC	9T	Molded DIP

Equivalent Circuit



8D00182F

Recommended Operating Conditions

Symbol	Characteristic	Min	Typ	Max	Unit
V _{CC}	Supply Voltage	4.75	5.0	5.25	V
T _A	Operating Temperature	0	25	70	°C

μA9639A

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Electrical Characteristics Over recommended operating temperature and supply voltage ranges, unless otherwise specified.

DC Characteristics

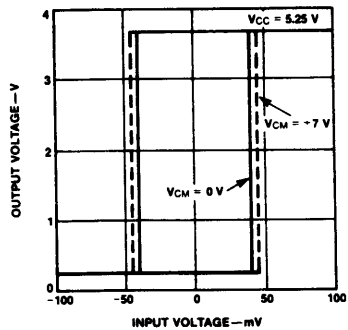
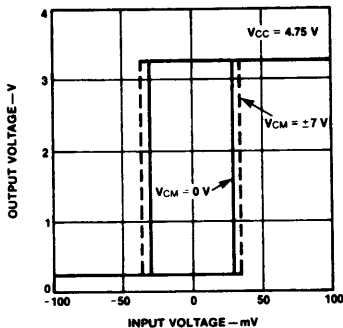
Symbol	Characteristic	Condition ¹	Min	Typ ²	Max	Unit
V _{TH}	Differential Input Threshold Voltage ³	$-7.0 \text{ V} \leq V_{CM} \leq +7.0 \text{ V}$	-0.2		+0.2	V
V _{TH(R)}	Differential Input Threshold Voltage ⁴	$-7.0 \text{ V} \leq V_{CM} \leq +7.0 \text{ V}$	-0.4		+0.4	V
I _I	Input Current ⁵	$V_I = 10 \text{ V}, 0 \text{ V} \leq V_{CC} \leq 5.5 \text{ V}$		1.1	3.25	mA
		$V_I = -10 \text{ V}, 0 \text{ V} \leq V_{CC} \leq 5.5 \text{ V}$	-3.25	-1.6		
V _{OL}	Output Voltage LOW	I _{OL} = 20 mA, V _{CC} = Min		0.35	0.5	V
V _{OH}	Output Voltage HIGH	I _{OH} = -1.0 mA, V _{CC} = Min	2.5	3.5		V
I _{OS}	Output Short Circuit Current ⁶	V _O = 0 V, V _{CC} = Max	-40	-75	-100	mA
I _{CC}	Supply Current	V _{CC} = Max, V _{I+} = 0.5 V, V _{I-} = GND		35	50	mA
V _{HYST}	Input Hysteresis	V _{CM} = ±7.0 V (See Curves)		70		mV

AC Characteristics V_{CC} = 5.0 V, T_A = 25°C

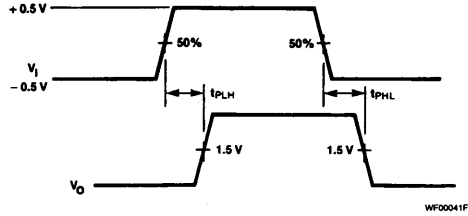
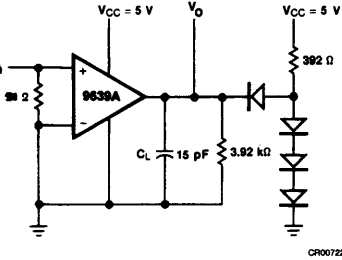
Symbol	Characteristic	Condition	Min	Typ	Max	Unit
t _{PLH}	Propagation Delay Time Low to High	See AC Test Circuit		55	85	ns
t _{PHL}	Propagation Delay Time High to Low	See AC Test Circuit		50	75	ns

1. Use Min/Max values specified in recommended operating conditions.
2. Typical limits are at V_{CC} = 5.0 V and T_A = 25°C.
3. V_{DIFF} (Differential Input Voltage) = (V_{I+}) - (V_{I-}).
4. V_{CM} (Common Mode Input Voltage) = V_{I+} or V_{I-}.
5. 500 Ω ± 1% in series with inputs.
6. The input not under test is tied to ground.

Typical Input/Output Transfer Characteristics



Test Circuit and Waveforms

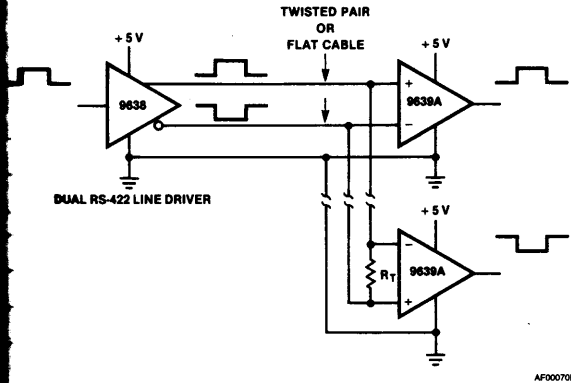


includes jig and probe capacitance.
 diodes are FD700 or equivalent.

V_I
 Amplitude: 1.0 V
 Offset: 0.5 V
 Pulse Width: 500 ns
 PRR: 1 MHz
 $t_r = t_f \leq 5.0$ ns

Typical Applications

RS-422 System Application (FIPS 1020) Differential Simplex Bus Transmission



50 Ω for RS-422 operation
 terminated with input impedance of receivers must be greater than 90 Ω .