



Voltage Comparators/Buffers

LM161/LM261/LM361 high speed differential comparators

general description

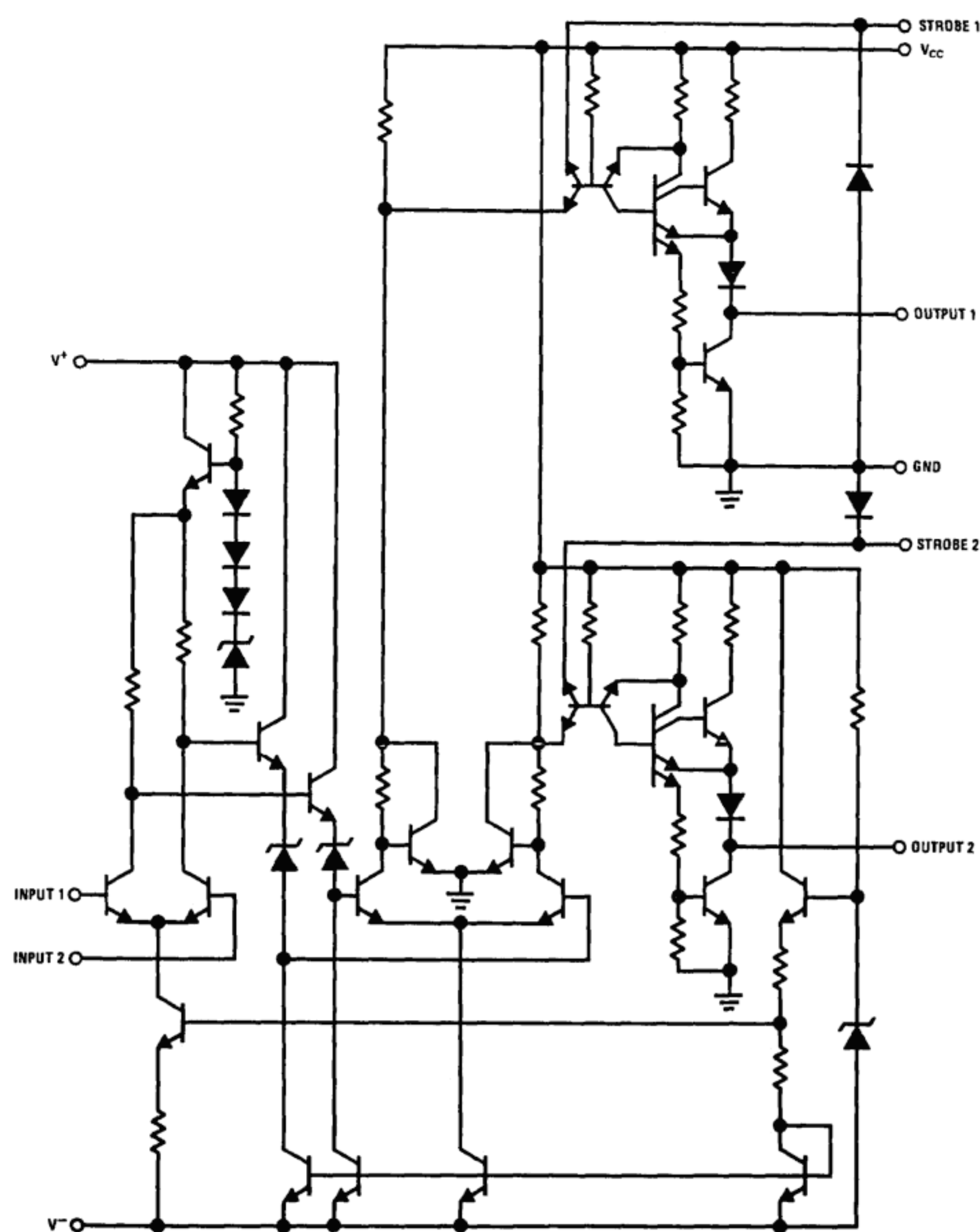
The LM161/LM261/LM361 is a very high speed differential input, complementary TTL output voltage comparator with improved characteristics over the SE529/NE529 for which it is a pin-for-pin replacement. The device has been optimized for greater speed performance and lower input offset voltage. Typically delay varies only 3 ns for over-drive variations of 5 mV to 500 mV. It may be operated from op amp supplies ($\pm 15V$).

Complementary outputs having minimum skew are provided. Applications involve high speed analog to digital converters and zero-crossing detectors in disc file systems.

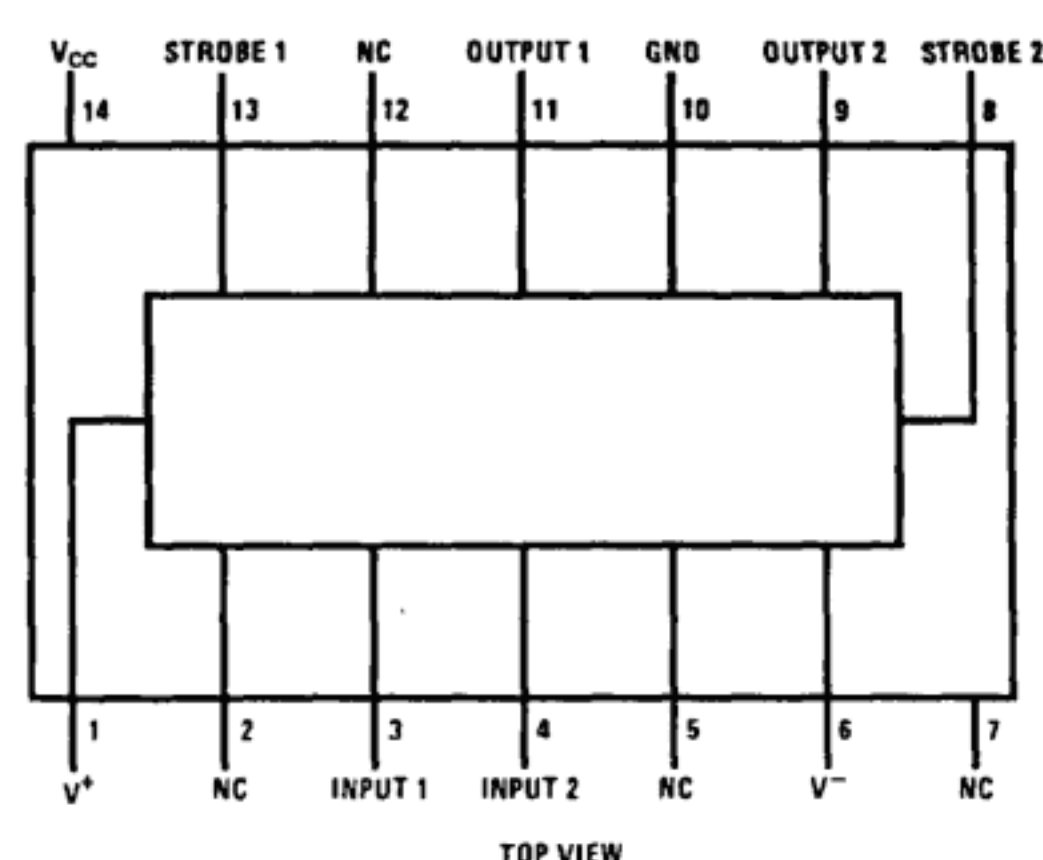
features

- Independent strobes
- Guaranteed high speed 20 ns max
- Tight delay matching on both outputs
- Complementary TTL outputs
- Operates from op amp supplies $\pm 15V$
- Low speed variation with overdrive variation
- Low input offset voltage
- Versatile supply voltage range

schematic and connection diagrams



Dual-In-Line and Flat Package



Order Number LM361N

See Package 22

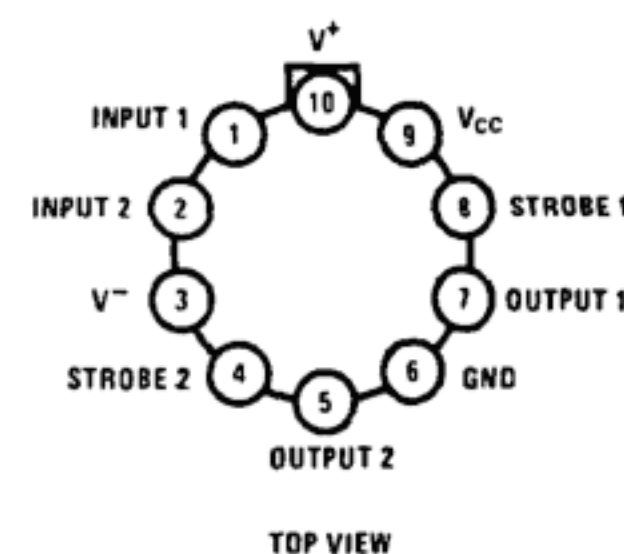
Order Number LM161D, LM261D
or LM361D

See Package 1

Order Number LM161F

See Package 4

Metal Can Package

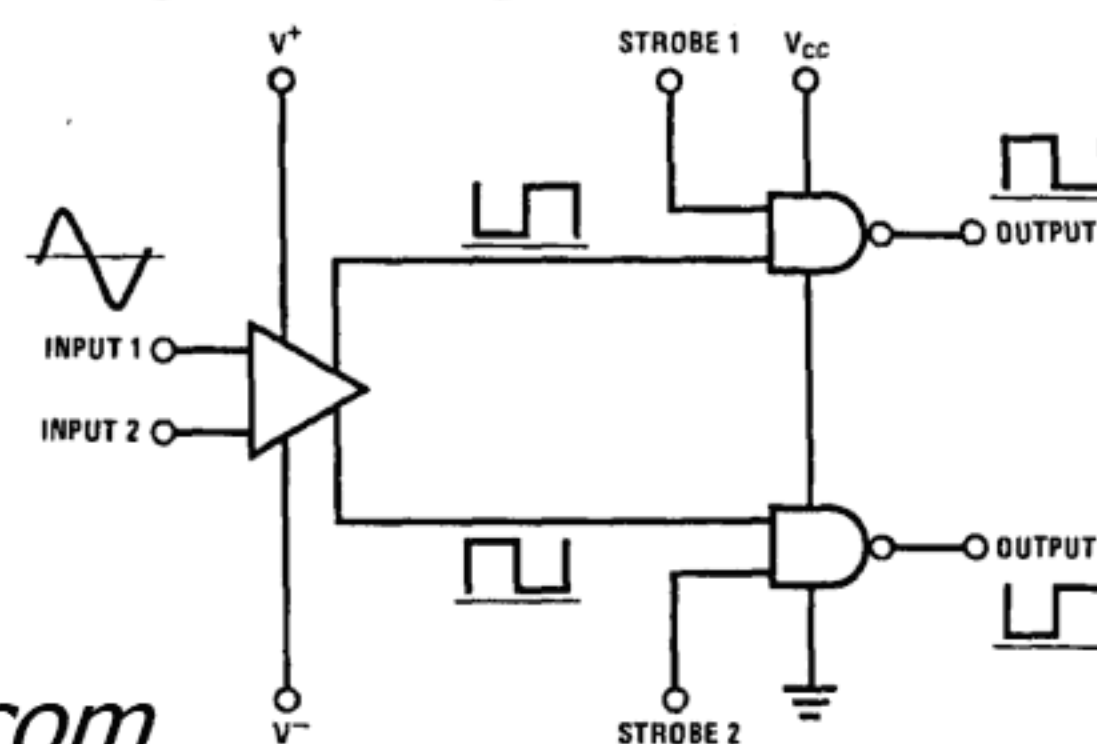


Order Number LM161H, LM261H

or LM361H

See Package 12

logic diagram



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absolute maximum ratings

Positive Supply Voltage, V^+	+16V
Negative Supply Voltage, V^-	-16V
Gate Supply Voltage, V_{CC}	+7V
Output Voltage	+7V
Differential Input Voltage	$\pm 5V$
Input Common Mode Voltage	$\pm 6V$
Power Dissipation	600 mW
Storage Temperature Range	-65°C to +150°C
Operating Temperature Range	
LM161	-55°C to +125°C
LM261	-25°C to +85°C
LM361	0°C to +70°C
Lead Temperature (Soldering, 10 sec)	300°C

operating conditions

	MIN	TYP	MAX
Supply Voltage V^+			
LM161/LM261	5V		15V
LM361	5V		15V
Supply Voltage V^-			
LM161/LM261	-6V		-15V
LM361	-6V		-15V
Supply Voltage V_{CC}			
LM161/LM261	4.5V	5V	5.5V
LM361	4.75V	5V	5.25V

electrical characteristics

(V⁺ = +10V, V_{CC} = +5V, V⁻ = -10V, T_{MIN} ≤ T_A ≤ T_{MAX}, unless noted)

PARAMETER	CONDITIONS	LIMITS						UNITS
		LM161/LM261			LM361			
		MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage			1	3		1	5	mV
Input Bias Current	T _A = 25°C		5	20		10	30	μA
Input Offset Current	T _A = 25°C		2	3		2	5	μA
Voltage Gain	T _A = 25°C		3			3		V/mV
Input Resistance	T _A = 25°C, f = 1 kHz		20			20		kΩ
Logical "1" Output Voltage	V _{CC} = 4.75V, I _{SOURCE} = -5 mA	2.4	3.3		2.4	3.3		V
Logical "0" Output Voltage	V _{CC} = 4.75V, I _{SINK} = 6.4 mA			.4			.4	V
Strobe Input "1" Current	V _{CC} = 5.25V, V _{STROBE} = 2.4V			200			200	μA
Strobe Input "0" Current	V _{CC} = 5.25V, V _{STROBE} = .4V			-1.6			-1.6	mA
Strobe Input "0" Voltage	V _{CC} = 4.75V			.8			.8	V
Strobe Input "1" Voltage	V _{CC} = 4.75V	2			2			V
Output Short Circuit Current	V _{CC} = 5.25V, V _{OUT} = 0V	-18		-55	-18		-55	mA
Supply Current I ⁺	V ⁺ = 10V, V ⁻ = -10V, V _{CC} = 5.25V, -55°C ≤ T _A ≤ 125°C			4.5				mA
Supply Current I ⁺	V ⁺ = 10V, V ⁻ = -10V, V _{CC} = 5.25V, 0°C ≤ T _A ≤ 70°C					5		mA
Supply Current I ⁻	V ⁺ = 10V, V ⁻ = -10V, V _{CC} = 5.25V, -55°C ≤ T _A ≤ 125°C			10				mA
Supply Current I ⁻	V ⁺ = 10V, V ⁻ = -10V, V _{CC} = 5.25V, 0°C ≤ T _A ≤ 70°C					10		mA
Supply Current I _{CC}	V ⁺ = 10V, V ⁻ = -10V, V _{CC} = 5.25V, -55°C ≤ T _A ≤ 125°C			18				mA
Supply Current I _{CC}	V ⁺ = 10V, V ⁻ = -10V, V _{CC} = 5.25V, 0°C ≤ T _A ≤ 70°C					20		mA
TRANSIENT RESPONSE	V _{IN} = 50 mV Overdrive							
Propagation Delay Time (t _{pd(0)})	T _A = 25°C		14	20		14	20	ns
Propagation Delay Time (t _{pd(1)})	T _A = 25°C		14	20		14	20	ns
Delay Between Output A and B	T _A = 25°C		2	5		2	5	ns
Strobe Delay Time (t _{pd(0)})	T _A = 25°C		8			8		ns
Strobe Delay Time (t _{pd(1)})	T _A = 25°C		8			8		ns