

VOLTAGE COMPARATOR

SE/NE527

DESCRIPTION

The SE/NE527 is a high speed analog voltage comparator which, in the first time mates state-of-the-art Schottky diode technology with the conventional linear process. This allows simultaneous fabrication of high speed T2L gates with a precision linear amplifier on a single monolithic chip. The SE/NE527 is similar in design to the Signetics SE/NE529 voltage comparator except that it incorporates a "Emitter Follower" input stage for extremely low input currents. This opens the door to a whole new range of applications for analog voltage comparators.

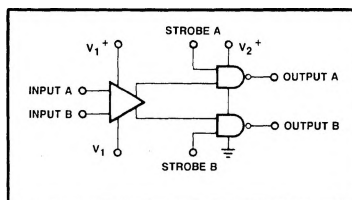
FEATURES

- 15ns propagation delay
- Complementary output gates
- TTL or ECL compatible outputs
- Wide common mode and differential voltage range
- Mil std 883A,B,C available
- Typical Gain of 5000

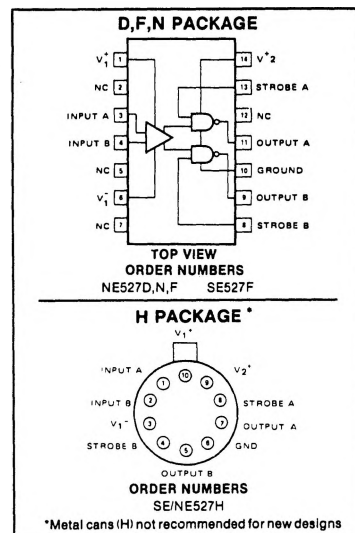
APPLICATIONS

- A/D conversion
- ECL to TTL interface
- TTL to ECL interface
- Memory sensing
- Optical data coupling

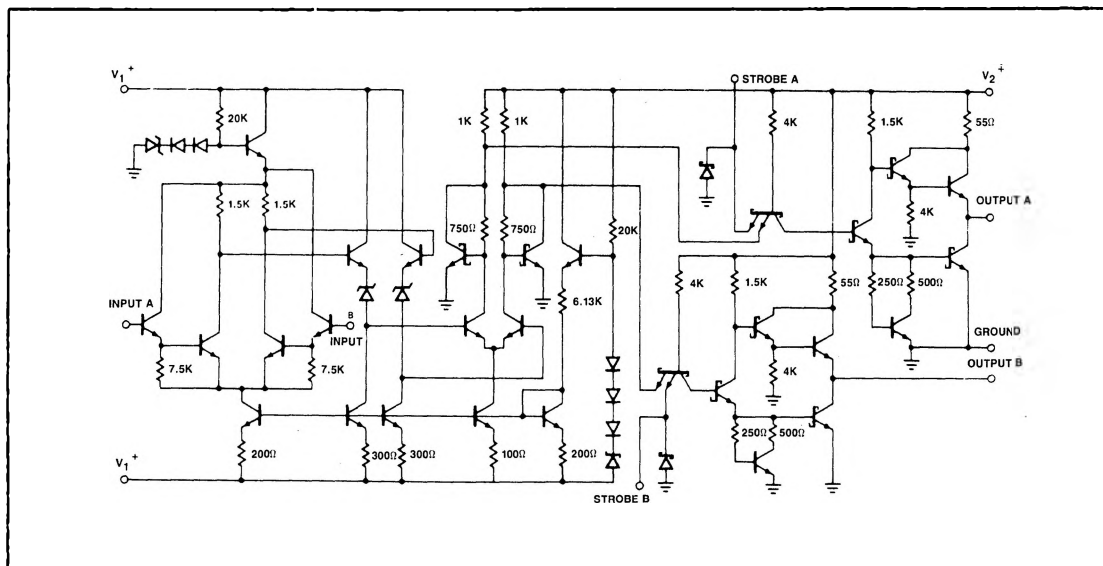
BLOCK DIAGRAM



PIN CONFIGURATIONS



EQUIVALENT SCHEMATIC



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ABSOLUTE MAXIMUM RATINGS

PARAMETER	RATING	UNIT
Positive supply voltage (V1+)	+15	V
Negative supply voltage (V1-)	-15	V
Gate supply voltage (V2+)	+7	V
Output voltage	+7	V
Differential input voltage	±5	V
Input common mode voltage	±6	V
Power dissipation	600	mW
Operating temperature range		
NE527	0 to +70	°C
SE527	-55 to +125	°C
Storage temperature range	-65 to +150	°C
Lead temperature (soldering, 60sec)	+300	°C

DC ELECTRICAL CHARACTERISTICS $V_{1+} = 10V$, $V_{1-} = -10V$, $V_{2+} = +5.0V$

PARAMETER	TEST CONDITIONS	SE527			NE527			UNIT
		Min	Typ	Max	Min	Typ	Max	
INPUT CHARACTERISTICS								
Input offset voltage @ 25°C				4			6	mV
Over temperature range				6			10	mV
Input bias current @ 25°C				2			2	μA
Over temperature range				4			4	μA
Input offset current @ 25°C	$V_{IN} = 0V$			0.5			0.75	μA
Over temperature range				1			1	μA
Common mode voltage range				±5				V
GATE CHARACTERISTICS								
Output voltage	$V_{2+} = 4.75V$, $I_{SOURCE} = -1mA$ $V_{2+} = 4.75V$, $I_{SINK} = 10mA$	2.5	3.3		2.7	3.3		
"1" State								V
"0" State				0.5			0.5	V
Strobe inputs	$V_{2+} = 5.25V$, $V_{STROBE} = 0.5V$ $V_{2+} = 5.25V$, $V_{STROBE} = 2.7V$ $V_{2+} = 5.25V$, $V_{STROBE} = 2.7V$ $V_{2+} = 4.75V$ $V_{2+} = 4.75V$	2.0			2.0			
"0" Input current ¹								mA
"1" Input current @ 25°C ¹				-2			-2	mA
Over temperature range				50			100	μA
"0" Input voltage				200			200	μA
"1" Input voltage				0.8			0.8	V
Short circuit								
Output current	$V_{2+} = 5.25V$, $V_{OUT} = 0V$	-18		-70	-18		-70	mA
POWER SUPPLY REQUIREMENTS								
Supply voltage								
V_{1+}		5		10	5		10	V
V_{1-}		-6		-10	-6		-10	V
V_{2+}		4.5	5	5.5	4.75	5	5.25	V
Supply current	$V_{1+} = 10V$, $V_{1-} = -10V$ $V_{2+} = 5.25V$							
I_{1+}	Over temp.			5			5	mA
I_{1-}	Over temp.			10			10	mA
I_{2+}	Over temp.			20			20	mA

NOTES

1. See logic function table.

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AC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	TEST CONDITIONS	LIMITS			UNIT
		Min	Typ	Max	
Transient response propagation delay time	$V_{IN} = \pm 100\text{mV}$ step				
t_{PLH}			16	26	ns
t_{PHL}			14	24	ns
Delay between output A and B			2	5	ns
Strobe delay time					
t_{on} Turn-on time			6		ns
t_{off} Turn-off time			6		ns

TYPICAL PERFORMANCE CHARACTERISTICS

