

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.

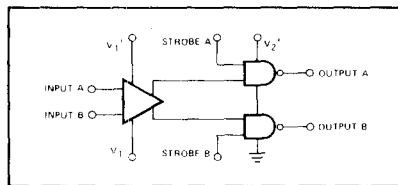
FEATURES

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

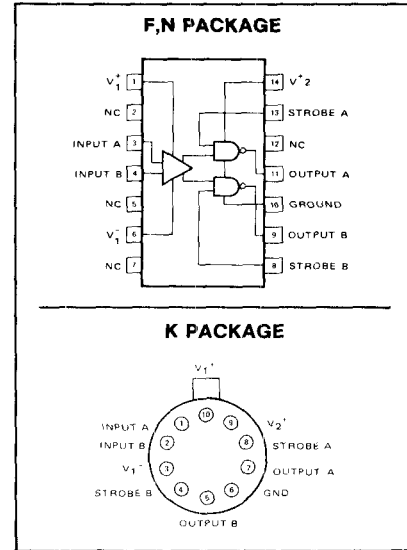
APPLICATIONS

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

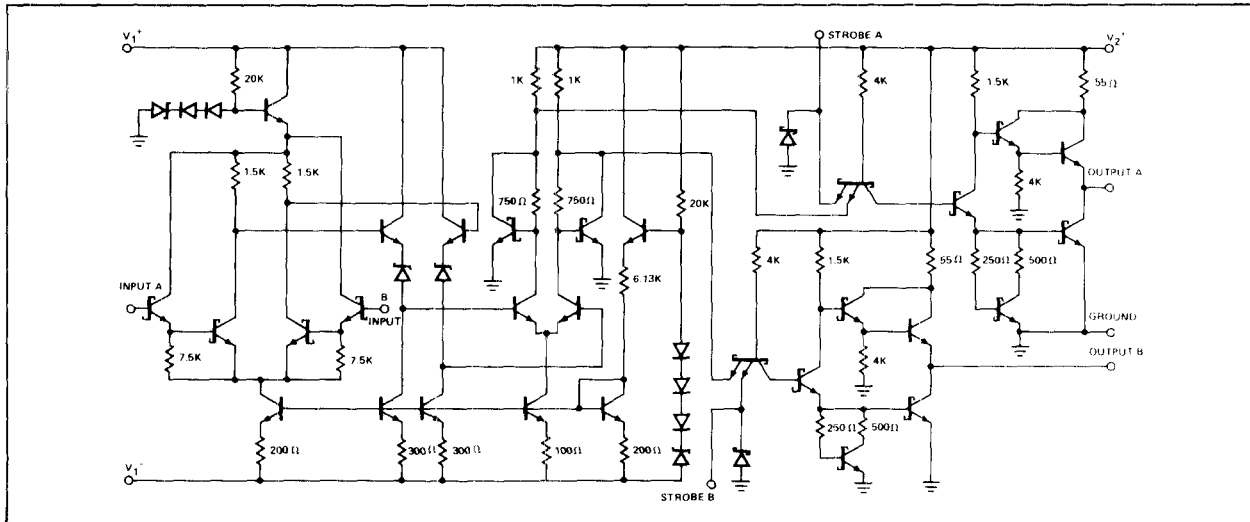
BLOCK DIAGRAM



PIN CONFIGURATIONS



EQUIVALENT SCHEMATIC



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	+15	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 V₁₊ = 10V, V₁₋ = -10V, V₂₊ = +5.0V, V_{IN} = 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	V ₁₊ = 10V, V ₁₋ = -10V			2		2		µA
Over temperature range	V _{IN} = 0V			4		4		µA
Input offset current @ 25°C	V ₁₊ = 10V, V ₁₋ = -10V			0.5		0.75		µA
Over temperature range	V _{IN} = 0V			1		1		µA
Input impedance	T _A = 25°C, f = 1kHz		500			500		kΩ
GATE CHARACTERISTICS								
Output voltage								
"1" State	V ₂₊ = 4.75V, I _{SOURCE} = -1mA	2.5	3.3		2.7	3.3		V
"0" State	V ₂₊ = 4.75V, I _{SINK} = 10mA			0.5			0.5	V
Strobe inputs								
"0" Input current	V ₂₊ = 5.25V, V _{STROBE} = 0.5V			-2		-2		mA
"1" Input current @ 25°C	V ₂₊ = 5.25V, V _{STROBE} = 2.7V			50		100		µA
Over temperature range	V ₂₊ = 5.25V, V _{STROBE} = 2.7V			200		200		µA
"0" Input voltage	V ₂₊ = 4.75V			0.8		0.8		V
"1" Input voltage	V ₂₊ = 4.75V	2.0			2.0			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

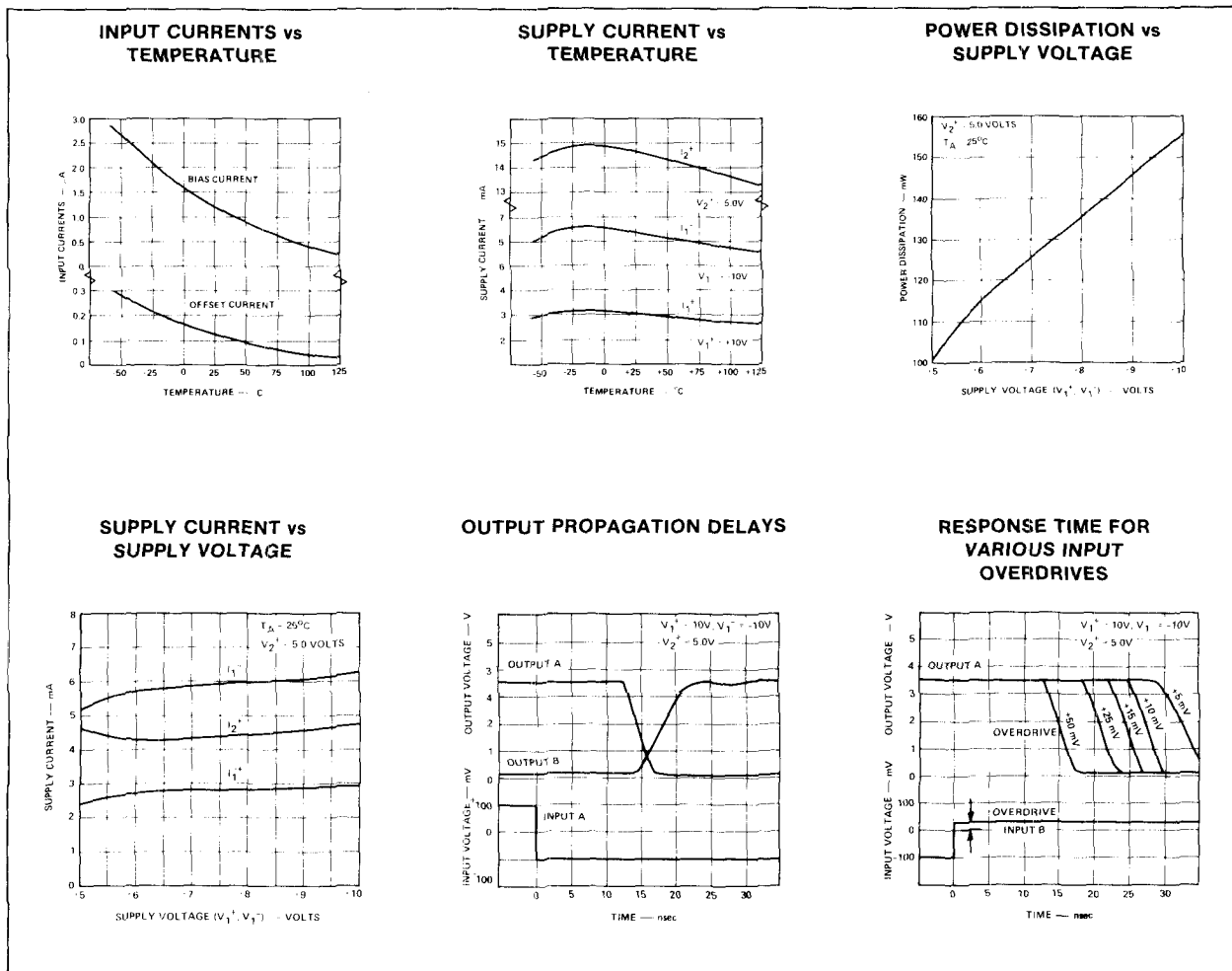
*NOTE

Parameters are guaranteed over the temperature range unless otherwise specified.

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 t_{PLH} t_{PHL}	$V_{IN} = \pm 100\text{mV}$ step $T_A = 25^\circ\text{C}$		16	26	ns
			14	24	ns
Delay between output A and B			2	5	ns
Strobe delay time t_{on} Turn-on time t_{off} Turn-off time			6		ns
			6		ns

TYPICAL PERFORMANCE CHARACTERISTICS



APPLICATIONS

One of the main features of the device is that supply voltages (V1+, V1-) need not be balanced, as indicated in the following diagrams. For proper operation, however, negative supply (V1-) should always be be at least six volts more negative than the ground terminal (pin 6). Input Common Mode range should be limited to values of two volts less than the supply voltages (V1+ and V1-) up to a maximum of ± 6 volts as supply voltages are increased.

It is also important to note that Output A is in phase with Input A and Output B is in phase with Input B.

TYPICAL APPLICATIONS

