NE/SE529-F,K,N

DESCRIPTION

The SE/NE529 is a high speed analog voltage comparator which, for 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.

FEATURES

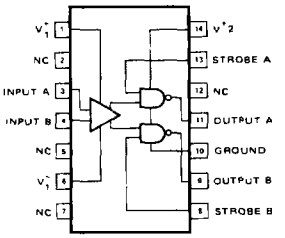
- **10ns propagation delay**
- **Complementary output gates**
- **TTL or ECL compatible outputs**
- **Wide common mode and differential voltage range**

APPLICATIONS

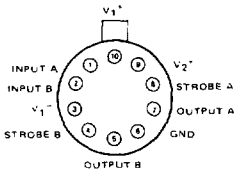
- **A/D conversion**
- **ECL to TTL interface**
- **TTL to ECL interface**
- **Memory sensing**
- **Optical data coupling**
- **Mil std 883A,B,C available**

PIN CONFIGURATION

F,N PACKAGE



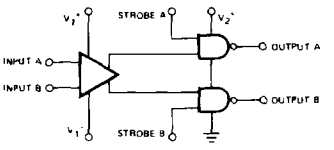
K PACKAGE



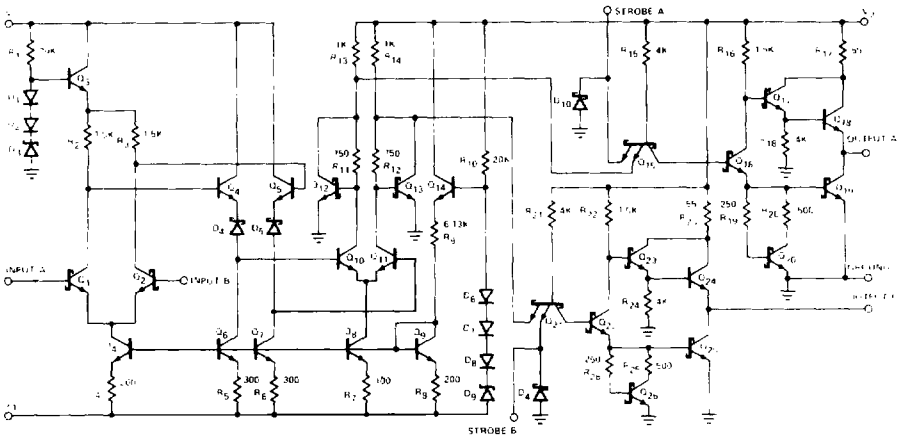
ABSOLUTE MAXIMUM RATINGS

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		
NE529	0 to +70	°C
SE529	-55 to +125	°C
Storage temperature range	-65 to +150	°C
Lead temperature		
(soldering, 60 sec)	+300	°C

BLOCK DIAGRAM



EQUIVALENT SCHEMATIC



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DC ELECTRICAL CHARACTERISTICS

$V_1+ = +10V$, $V_2+ = +5.0V$, $V_1- = -10V$, $V_{IN} = 0V$ unless otherwise specified.

PARAMETER	TEST CONDITIONS	SE529			NE529			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	$V_1+ = 10V$, $V_1- = -10V$		5	12		5	20	μA
Over temperature range	$V_{IN} = 0V$			36			50	μA
Input offset current @25°C	$V_1+ = 10V$, $V_1- = -10V$		2	3		2	5	μA
Over temperature range	$V_{IN} = 0V$			9			15	μA
Input impedance	$T_A = 25°C$, f = 1kHz		10			10		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

AC ELECTRICAL CHARACTERISTICS

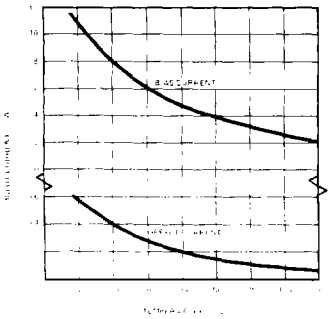
$T_A = 25°C$

PARAMETER	TEST CONDITIONS	LIMITS			UNIT
		Min	Typ	Max	
Transient response	$V_{IN} = \pm 100mV$ step				
Propagation delay time					
t_{PLH}			12	22	ns
t_{PHL}			10	20	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

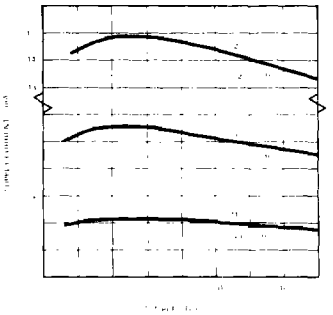
Parameters are guaranteed over the temperature range unless otherwise specified

TYPICAL PERFORMANCE CHARACTERISTICS

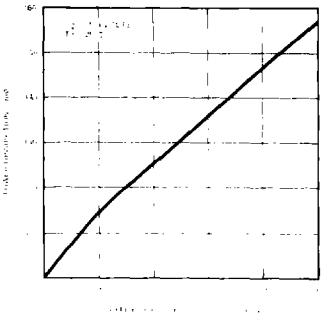
INPUT CURRENTS vs TEMPERATURE



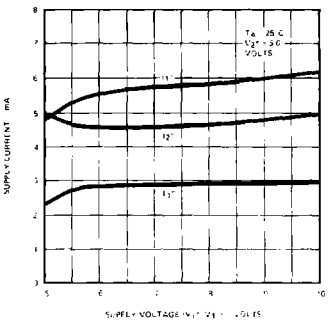
SUPPLY CURRENT vs TEMPERATURE



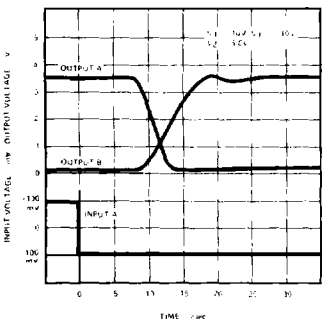
POWER DISSIPATION vs SUPPLY VOLTAGE



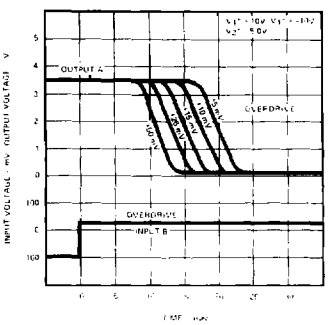
SUPPLY CURRENT vs SUPPLY VOLTAGE



OUTPUT PROPAGATION DELAYS



RESPONSE TIME FOR VARIOUS INPUT OVERDRIVES



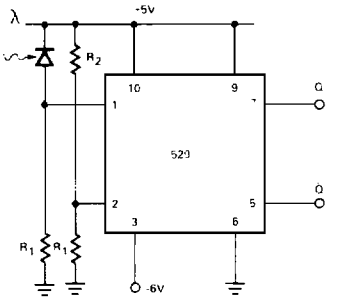
APPLICATIONS

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 at least five 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.

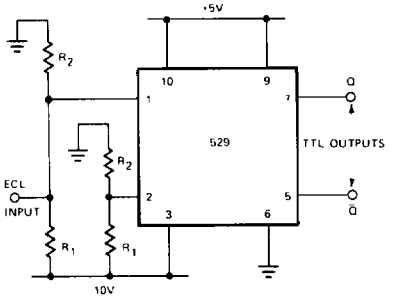
It is also important to note that Output A is in phase with Input A and Output B is in phase with Input B.

TYPICAL APPLICATIONS

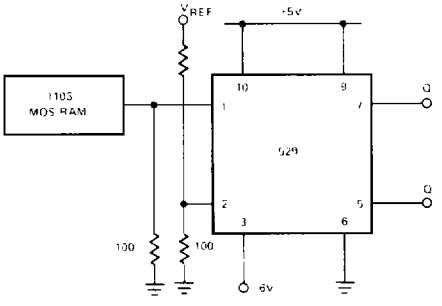
PHOTODIODE DETECTOR



ECL TO TTL INTERFACE



MOS MEMORY SENSE AMP



TTL TO ECL INTERFACE