

LINEAR INTEGRATED CIRCUITS

DESCRIPTION

The Signetics 518 is a medium-gain, high frequency differential amplifier fabricated within a monolithic silicon substrate by planar and epitaxial techniques. It is designed for voltage comparator, sense amplifier and general broadband amplifier applications. Its superior current sinking and current sourcing capabilities make it ideal for driving digital circuitry.

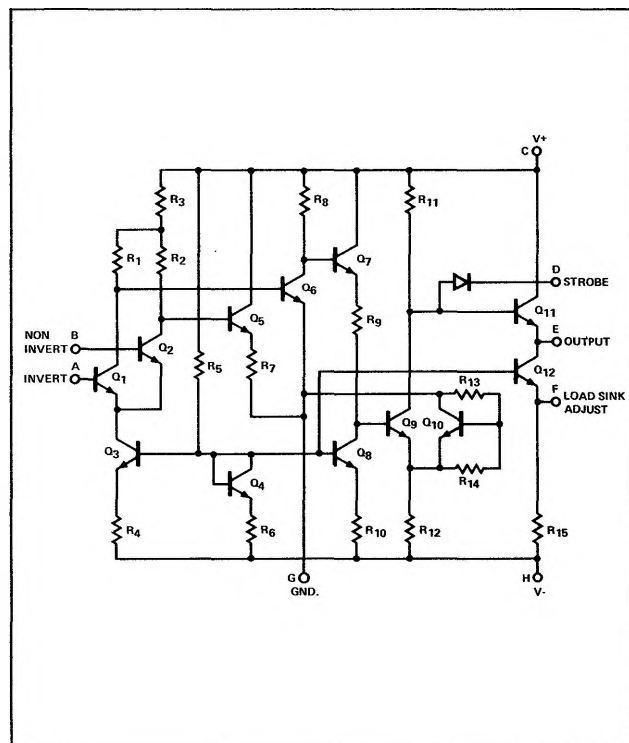
FEATURES

- STROBE CONTROL
- ADJUSTABLE CURRENT SINK
- RESPONSE TIME = NE 60ns
SE 55ns
- INPUT OFFSET VOLTAGE = 1.0mV
- OPEN LOOP GAIN = NE 1800
SE 2100
- OUTPUT IMPEDANCE = 50Ω
- BANDWIDTH = 5.0MHz

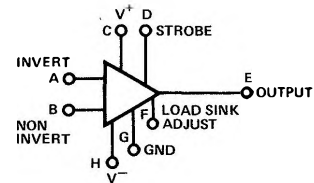
ABSOLUTE MAXIMUM RATINGS

Voltage Applied (Positive)	+8.0V
Voltage Applied (Negative)	-4.0V
Voltage Applied (Input)	$\pm 5.0V$
Power Consumption	300mW
Power Supply Current Rating	-25mA
Output Source Current	20mA
Storage Temperature	-65°C to +150°C
Operating Temperature	NE 0°C to +70°C SE -55°C to +125°C

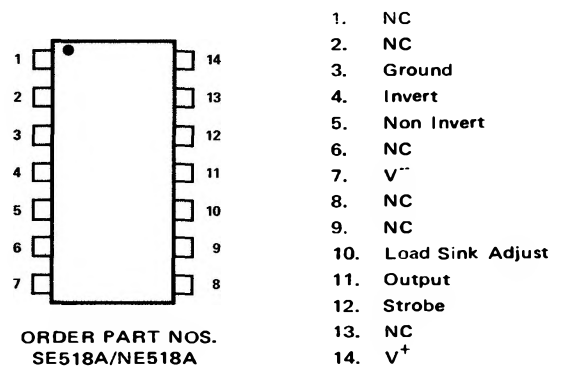
CIRCUIT SCHEMATIC



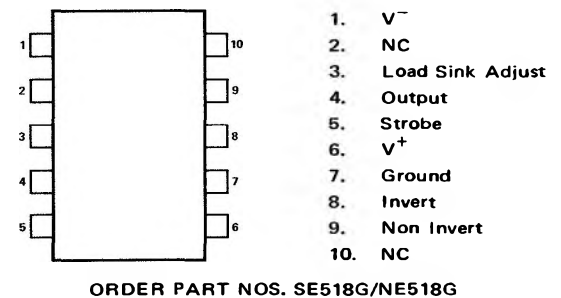
PIN CONFIGURATIONS



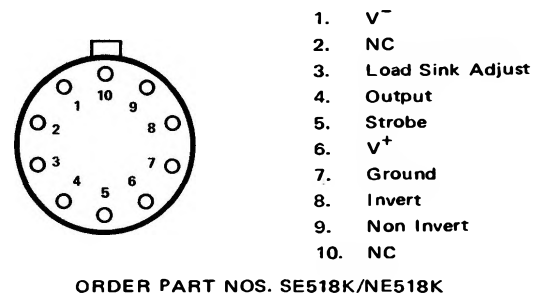
A PACKAGE (Top View)



G PACKAGE



K PACKAGE



ELECTRICAL CHARACTERISTICS (Standard Conditions: $V_+ = +6.0V$, $V_- = -3.0V$; Note 1)

CHARACTERISTICS	TEST CONDITIONS	NE518				SE518				UNITS
		MIN.	TYP.	MAX.	TEMP.	MIN.	TYP.	MAX.	TEMP.	
INPUT OFFSET VOLTAGE	$V_E = 1.0V$, $V_B = 0V$, Note 5		1.0	4.0 3.5 4.0	0°C +25°C +70°C		1.0	4.0 3.0 4.0	-55°C +25°C +125°C	mV mV mV
VARIATION OF INPUT OFFSET	Note 7			1.0	0°C			1.5	-55°C	mV
VOLTAGE WITH TEMPERATURE				1.0	+70°C			1.5	+125°C	mV
INPUT BIAS CURRENT	$V_A = V_B = 0V$		35	70 50	0°C +25°C		28	70 35	-55°C +25°C	μA μA
INPUT OFFSET CURRENT	$V_A = V_B = 0V$		3	12 9	0°C +25°C		2.0	12 6.0	-55°C +25°C	μA μA
TURN ON DELAY TIME	Notes 3, 4		45	60	+25°C		40	50	+25°C	ns
RISE TIME	Notes 3, 4		15	25	+25°C		12	20	+25°C	ns
TURN OFF DELAY TIME	Notes 3, 4		45	60	+25°C		40	50	+25°C	ns
FALL TIME	Notes 3, 4		30	40	+25°C		25	35	+25°C	ns
OPEN LOOP BANDWIDTH (-3dB)			5.0		+25°C		5.0		+25°C	mHz
OPEN LOOP VOLTAGE GAIN		1200 1375 1375	1800		0°C +25°C +70°C	1200 1600 1600	2100		-55°C +25°C +125°C	V/V V/V V/V
OUTPUT VOLTAGE SWING (Positive)	$V_A = -0.1V$, $V_B = 0V$	4.6 4.8	5.0		0°C +25°C	4.6 4.9	5.1		-55°C +25°C	V V
OUTPUT VOLTAGE SWING (Negative)	$V_A = +0.1V$, $V_B = 0V$	-1.5 -1.2 -0.8	-1.4		0°C +25°C +70°C	-1.5 -1.2 -0.8	-1.4		-55°C +25°C +125°C	V V V
OUTPUT IMPEDANCE	$f \leq 10kHz$		50		+25°C		50		+25°C	Ω
OUTPUT SINK CURRENT	$V_A = +0.1V$, $V_B = 0V$ Note 2 $R_L = 150\Omega$	2.2	2.8		+25°C	2.2	2.8		+25°C	mA
OUTPUT SOURCE CURRENT	$V_A = -0.1V$, $V_B = 0V$ Note 2 $R_L = 150\Omega$	-15	-18		+25°C	-18	-20		+25°C	mA
STROBE ON CURRENT	$V_D = V_B = 0V$, $V_A = -0.1V$		-4.0	-4.75	+25°C		-3.8	-4.6	+25°C	mA
STROBE LEAKAGE CURRENT	$V_D = 6.0V$, $V_A = +0.1V$, $V_B = 0V$		1.0	10	+70°C		1.0	10	+125°C	μA
DIFFERENTIAL INPUT IMPEDANCE	$f \leq 10kHz$		1400		+25°C		2000		+25°C	Ω
COMMON MODE REJECTION RATIO	Note 6		80		+25°C		80		+25°C	dB
POWER SUPPLY CURRENT	$V_A = V_B = 0V$		19	27	+25°C		19	25	+25°C	mA

NOTES

Letter subscripts refer to pins on circuit schematic.

- All voltages are referenced to Pin G.
- R_L must be connected between Pins E and G. Output sink current capability may be increased up to 10mA by connecting an external resistor between Pins H and F.
- Differential Overdrive Voltage = 10mV.
- t_{d1} and t_{d2} are measured from 80% point of input pulse to 20% point of output pulse. t_r and t_f are measured from 20% to 80% of output pulse.
- Input offset voltage may be (+) or (-), Pin A with respect to Pin B.
- Measured at a common mode voltage of +1.0VDC.
- Variation from room temperature value.
- See Signetics Bulletin No. 5001 for details of acceptance tests under Signetics SURE Program.
- Positive current flow is defined as into the terminal referenced.
- Precautionary measures should be taken to ensure current limiting in accordance with maximum ratings should the isolation diodes become forward biased.

