NE521

High-Speed Dual-Differential Comparator/Sense Amp

ON Semiconductor®

http://onsemi.com

Features

- TTL-Compatible Strobes and Outputs
- Large Common-Mode Input Voltage Range
- Operates from Standard Supply Voltages
- Pb−Free Packages are Available

Applications

- MOS Memory Sense Amp
- A-to-D Conversion
- High-Speed Line Receiver

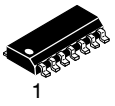
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply Voltage Positive Negative	 V+ V−	 +7.0 −7.0	V
Differential Input Voltage	V_{IDR}	±6.0	V
Input Voltage Common Mode Strobe/Gate	V_{IN}	 ±5.0 +5.25	V
Maximum Power Dissipation (Note 1) T_A = 25°C (Still−Air) N Package D Package	P_D	 1420 1040	mW
Thermal Resistance, Junction−to−Ambient N Package D Package	$R_{\theta JA}$	 100 145	°C/W
Operating Temperature Range	T_A	0 to 70	°C
Storage Temperature Range	T_{stg}	−65 to +150	°C
Operating Junction Temperature	T_J	150	°C
Lead Soldering Temperature (10 sec max)	T_{sld}	+230	°C

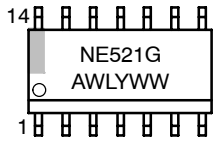
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

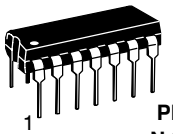
1. Derate above 25°C at the following rates:
   N package at 10 mW/°C
   D package at 6.9 mW/°C.

MARKING DIAGRAMS

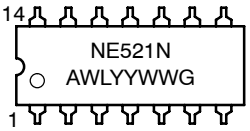


SOIC−14
D SUFFIX
CASE 751A





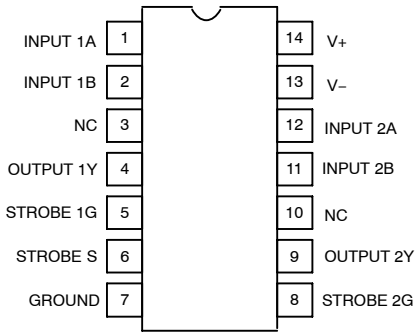
PDIP−14
N SUFFIX
CASE 646



A = Assembly Location
WL = Wafer Lot
Y, YY = Year
WW = Work Week
G = Pb−Free Package

PIN CONNECTIONS

D, N Packages



(Top View)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

LOGIC FUNCTION TABLE

V_{ID} (A^+, B)	Strobe S	Strobe G	Output (Y)
$V_{ID} \leq -V_{OS}$	H	H	L
$-V_{OS} < V_{ID} < V_{OS}$	H	H	Undefined
$V_{ID} \geq V_{OS}$	H	H	H
X	L	X	H
X	X	L	H

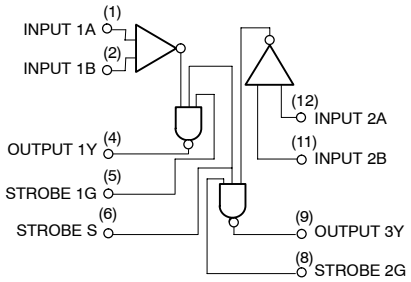


Figure 1. Block Diagram

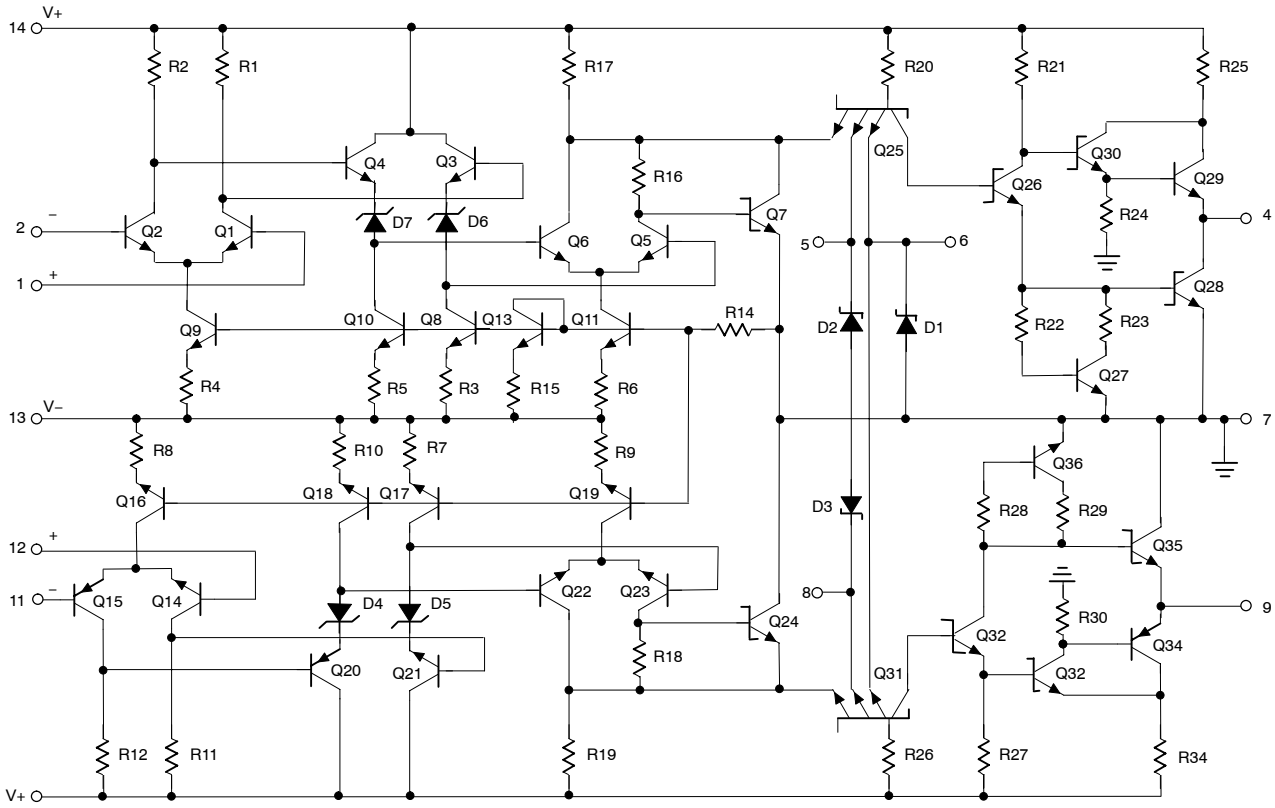


Figure 2. Equivalent Schematic

DC ELECTRICAL CHARACTERISTICS ($V+ = +5.0$ V; $V- = -5.0$ V, $T_A = 0°C$ to $+70°C$, unless otherwise noted.)

Characteristic	Test Conditions	Symbol	Limits			Unit
			Min	Typ	Max	
Input Offset Voltage	$V+ = +4.75$ V; $V- = -4.75$ V	V_{OS}				mV
At 25°C			–	6.0	7.5	
Overtemperature Range			–	–	10	
Input Bias Current	$V+ = +5.25$ V; $V- = -5.25$ V	I_{BIAS}				μA
At 25°C			–	7.5	20	
Overtemperature Range			–	–	40	
Input Offset Current	$V+ = +5.25$ V; $V- = -5.25$ V	I_{OS}				μA
At 25°C			–	1.0	5.0	
Overtemperature Range			–	–	12	
Common-Mode Voltage Range	$V+ = +4.75$ V; $V- = -4.75$ V	V_{CM}	−3.0	–	+3.0	V
Input Current	$V+ = +5.25$ V; $V- = -5.25$ V	I_{IH}				μA
High	$V_{IH} = 2.7$ V					
	1G or 2G Strobe		–	–	50	
	Common Strobe S		–	–	100	
Input Current	$V_{IL} = 0.5$ V	I_{IL}				mA
Low	1G or 2G Strobe		–	–	−2.0	
	Common Strobe S		–	–	−4.0	
Output Voltage	$V_{I(S)} = 2.0$ V					V
High	$V+ = +4.75$ V; $V- = -4.75$ V; $I_{LOAD} = -1.0$ mA	V_{OH}	2.7	3.4		
Low	$V+ = +5.25$ V; $V- = -5.25$ V; $I_{LOAD} = 20$ mA	V_{OL}			0.5	
Supply Voltage						V
Positive	–	$V+$	4.75	5.0	5.25	
Negative		$V-$	−4.75	−5.0	−5.25	
Supply Current	$V+ = +5.25$ V; $V- = -5.25$ V;					mA
Positive	$T_A = 25°C$	I_{CC+}	–	27	35	
Negative		I_{CC-}	–	−15	−28	
Short−Circuit Output Current	–	I_{SC}	−40	–	−100	mA

AC ELECTRICAL CHARACTERISTICS ($T_A = 25°C$; $R_L = 280\ \Omega$; $C_L = 15$ pF, $V+ = 5.0$ V; $V- = 5.0$ V, guaranteed by characterization)

Characteristic	From Input	To Output	Symbol	Limits			Unit
				Min	Typ	Max	
Large−Signal Switching Speed							
Propagation Delay							ns
Low to High (Note 2)	Amp	Output	$t_{PLH(D)}$	–	9.6	12	
High to Low (Note 2)	Amp	Output	$t_{PHL(D)}$	–	8.2	9.0	
Low to High (Note 3)	Strobe	Output	$t_{PLH(S)}$	–	4.8	10	
High to Low (Note 3)	Strobe	Output	$t_{PHL(S)}$	–	3.9	6.0	
Max. Operating Frequency	–	–	f_{MAX}	40	55	–	MHz

2. Response time measured from 0 V point of ± 100 mV_{P-P} 10 MHz square wave to the 1.5 V point of the output.
3. Response time measured from 1.5 V point of input to 1.5 V point of the output.

TYPICAL PERFORMANCE CHARACTERISTICS

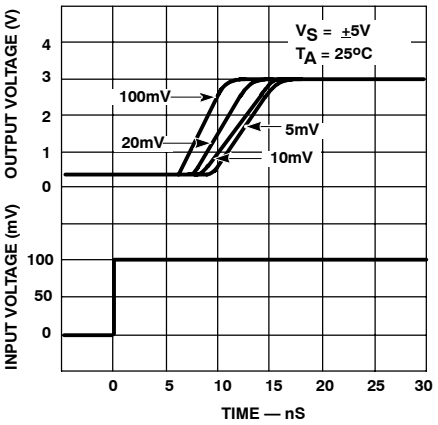


Figure 3. Response Time for Various Input Overdrives

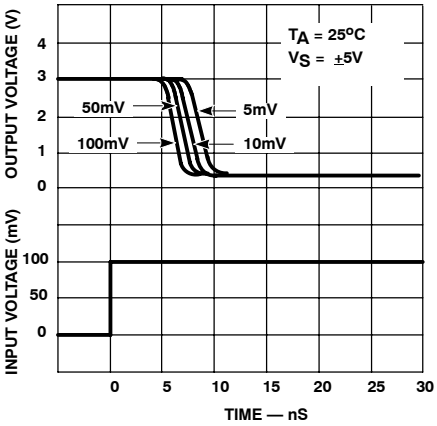


Figure 4. Response Time for Various Input Overdrives

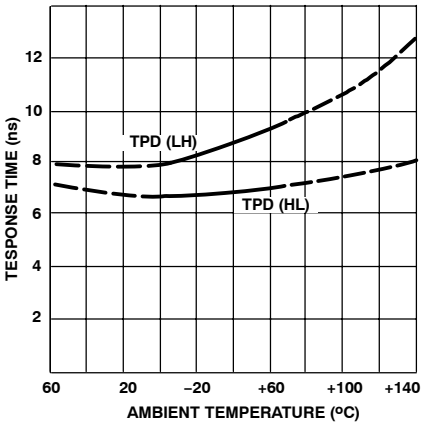


Figure 5. Response Time vs. Temperature

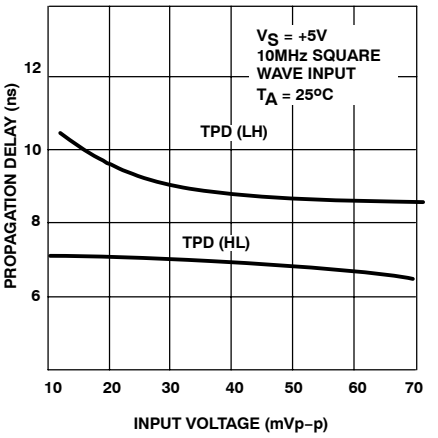


Figure 6. Propagation Delay for Various Input Voltages

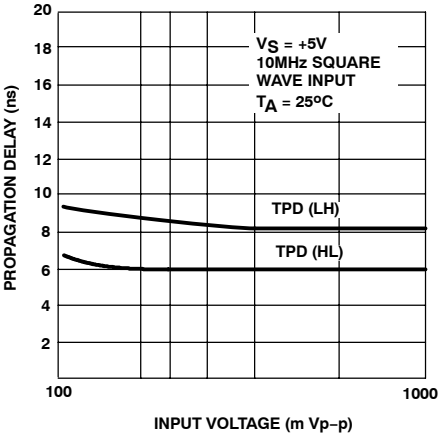


Figure 7. Propagation Delay for Various Input Voltages

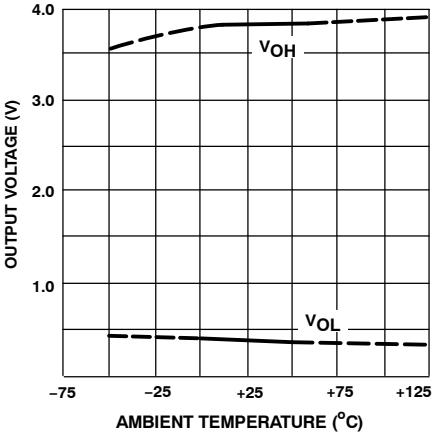


Figure 8. Output Voltage vs. Ambient Temperature

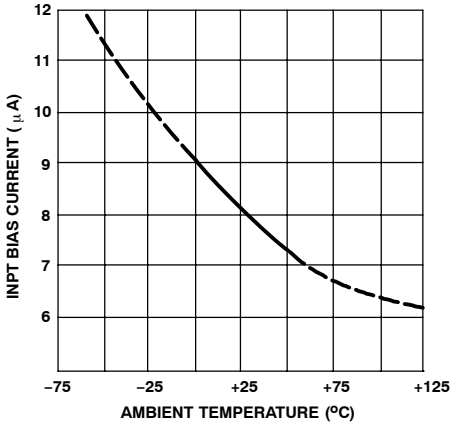


Figure 9. Input Bias Current vs. Ambient Temperature

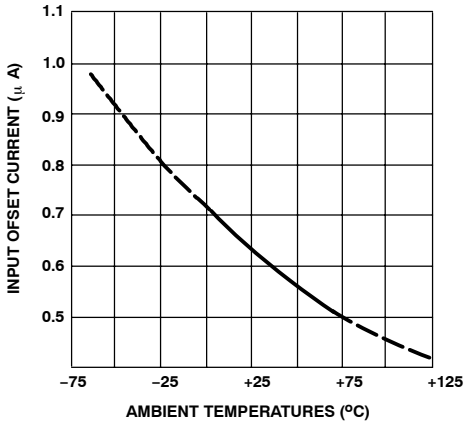


Figure 10. Input Offset Current vs. Ambient Temperature

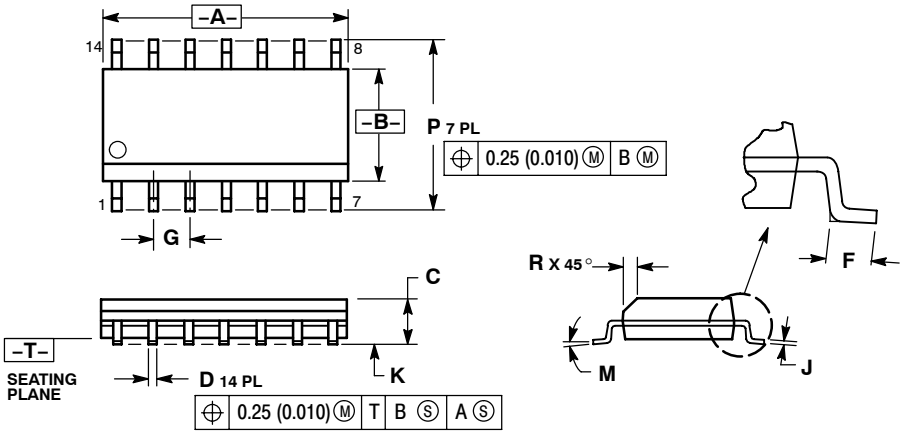
ORDERING INFORMATION

Device	Temperature Range	Package	Shipping†
NE521D	0 to +70°C	SOIC−14	55 Units/Rail
NE521DG		SOIC−14 (Pb−Free)	
NE521DR2		SOIC−14	2500/Tape & Reel
NE521DR2G		SOIC−14 (Pb−Free)	
NE521N		PDIP−14	25 Units/Rail
NE521NG		PDIP−14 (Pb−Free)	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

PACKAGE DIMENSIONS

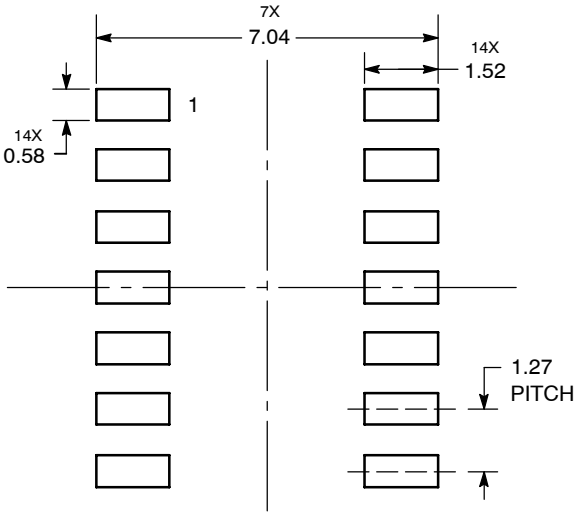
SOIC−14
CASE 751A−03
ISSUE H



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSIONS A AND B DO NOT INCLUDE MOLD PROTRUSION.
4. MAXIMUM MOLD PROTRUSION 0.15 (0.006) PER SIDE.
5. DIMENSION D DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE DAMBAR PROTRUSION SHALL BE 0.127 (0.005) TOTAL IN EXCESS OF THE D DIMENSION AT MAXIMUM MATERIAL CONDITION.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	8.55	8.75	0.337	0.344
B	3.80	4.00	0.150	0.157
C	1.35	1.75	0.054	0.068
D	0.35	0.49	0.014	0.019
F	0.40	1.25	0.016	0.049
G	1.27 BSC		0.050 BSC	
J	0.19	0.25	0.008	0.009
K	0.10	0.25	0.004	0.009
M	0 °	7 °	0 °	7 °
P	5.80	6.20	0.228	0.244
R	0.25	0.50	0.010	0.019

SOLDERING FOOTPRINT*



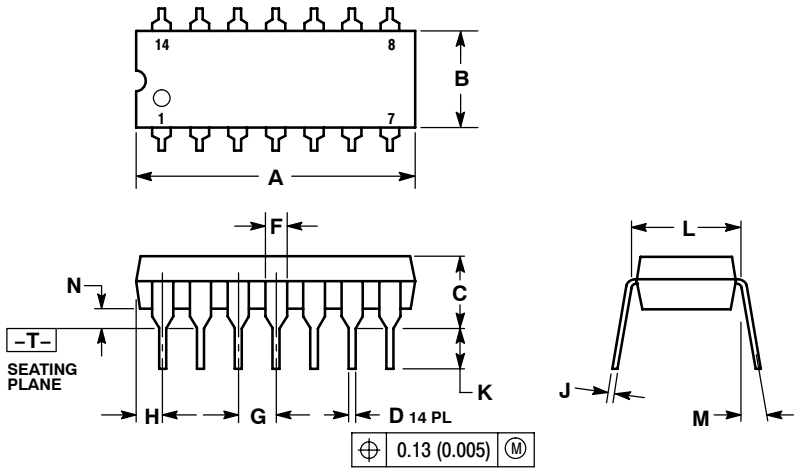
DIMENSIONS: MILLIMETERS

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NE521

PACKAGE DIMENSIONS

PDIP−14
CASE 646−06
ISSUE P



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION L TO CENTER OF LEADS WHEN FORMED PARALLEL.
4. DIMENSION B DOES NOT INCLUDE MOLD FLASH.
5. ROUNDED CORNERS OPTIONAL.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	0.715	0.770	18.16	19.56
B	0.240	0.260	6.10	6.60
C	0.145	0.185	3.69	4.69
D	0.015	0.021	0.38	0.53
F	0.040	0.070	1.02	1.78
G	0.100 BSC		2.54 BSC	
H	0.052	0.095	1.32	2.41
J	0.008	0.015	0.20	0.38
K	0.115	0.135	2.92	3.43
L	0.290	0.310	7.37	7.87
M	−−−	10 °	−−−	10 °
N	0.015	0.039	0.38	1.01

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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P.O. Box 5163, Denver, Colorado 80217 USA
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NE521/D

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Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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