

NE5517, NE5517A, AU5517

Dual Operational Transconductance Amplifier

The AU5517 and NE5517 contain two current-controlled transconductance amplifiers, each with a differential input and push-pull output. The AU5517/NE5517 offers significant design and performance advantages over similar devices for all types of programmable gain applications. Circuit performance is enhanced through the use of linearizing diodes at the inputs which enable a 10 dB signal-to-noise improvement referenced to 0.5% THD. The AU5517/NE5517 is suited for a wide variety of industrial and consumer applications.

Constant impedance of the buffers on the chip allow general use of the AU5517/NE5517. These buffers are made of Darlington transistors and a biasing network that virtually eliminate the change of offset voltage due to a burst in the bias current I_{ABC} , hence eliminating the audible noise that could otherwise be heard in high quality audio applications.

Features

- Constant Impedance Buffers
- ΔV_{BE} of Buffer is Constant with Amplifier I_{BIAS} Change
- Excellent Matching Between Amplifiers
- Linearizing Diodes
- High Output Signal-to-Noise Ratio
- Pb-Free Packages are Available*

Applications

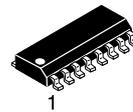
- Multiplexers
- Timers
- Electronic Music Synthesizers
- Dolby® HX Systems
- Current-Controlled Amplifiers, Filters
- Current-Controlled Oscillators, Impedances



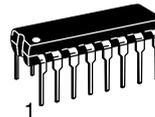
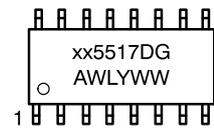
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MARKING DIAGRAMS



**SOIC-16
D SUFFIX
CASE 751B**

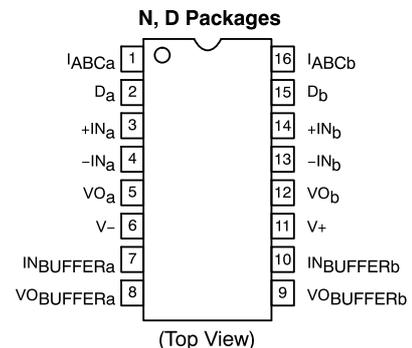


**PDIP-16
N SUFFIX
CASE 648**



xx = AU or NE
yy = AN or N
A = Assembly Location
WL = Wafer Lot
YY, Y = Year
WW = Work Week
G = Pb-Free Package

PIN CONNECTIONS



ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 13 of this data sheet.

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

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PIN DESCRIPTION

Pin No.	Symbol	Description
1	I_{ABCa}	Amplifier Bias Input A
2	D_a	Diode Bias A
3	$+IN_a$	Non-inverted Input A
4	$-IN_a$	Inverted Input A
5	VO_a	Output A
6	$V-$	Negative Supply
7	$IN_{BUFFERa}$	Buffer Input A
8	$VO_{BUFFERa}$	Buffer Output A
9	$VO_{BUFFERb}$	Buffer Output B
10	$IN_{BUFFERb}$	Buffer Input B
11	$V+$	Positive Supply
12	VO_b	Output B
13	$-IN_b$	Inverted Input B
14	$+IN_b$	Non-inverted Input B
15	D_b	Diode Bias B
16	I_{ABCb}	Amplifier Bias Input B

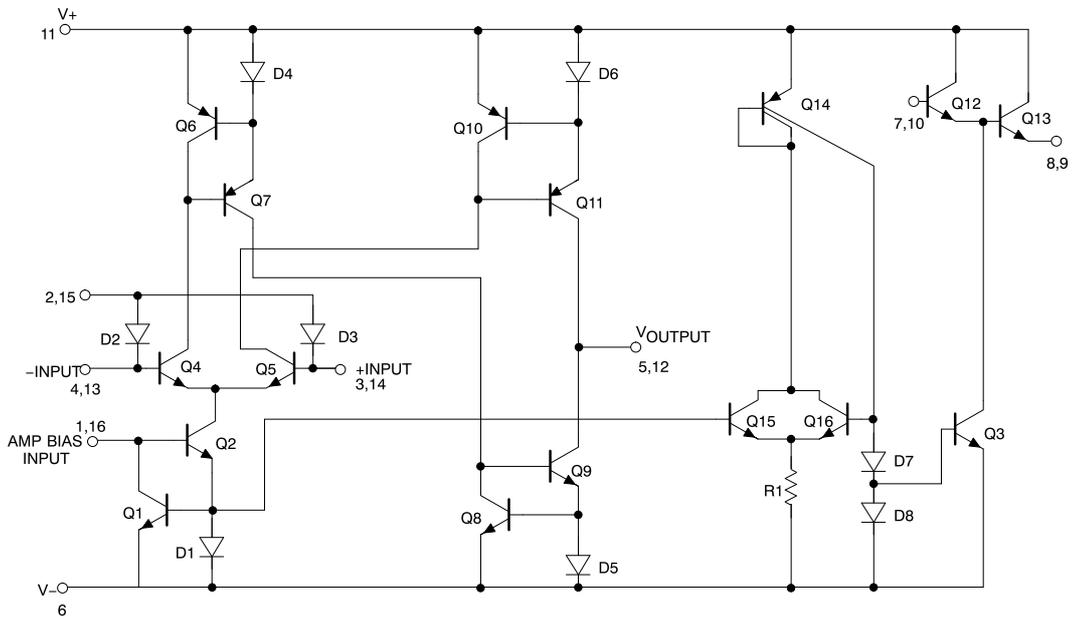
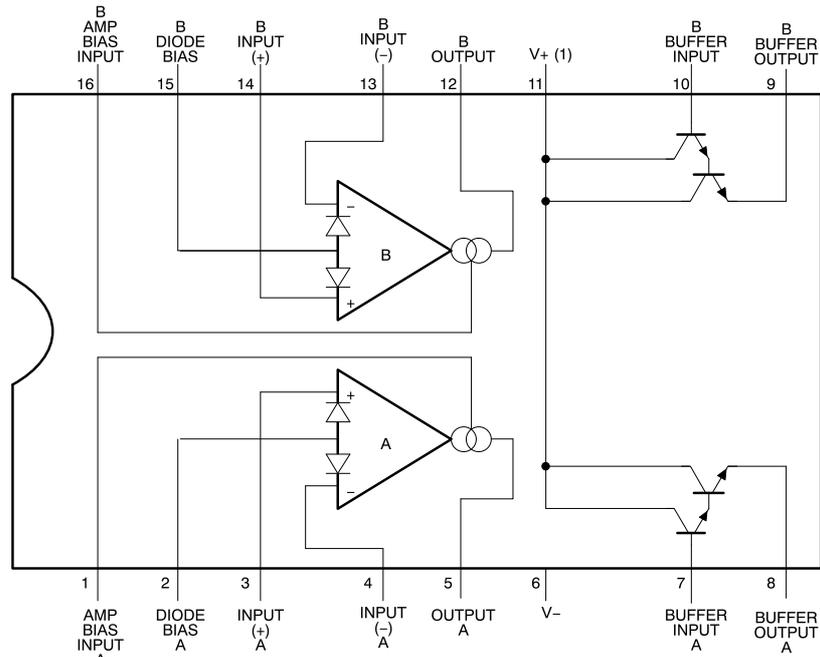


Figure 1. Circuit Schematic

NE5517, NE5517A, AU5517



NOTE: V+ of output buffers and amplifiers are internally connected.

Figure 2. Connection Diagram

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Supply Voltage (Note 1)	V_S	44 V _{DC} or ± 22	V
Power Dissipation, T _{amb} = 25 °C (Still Air) (Note 2) NE5517N, NE5517AN NE5517D, AU5517D	P_D	1500 1125	mW
Thermal Resistance, Junction-to-Ambient D Package N Package	$R_{\theta JA}$	140 94	°C/W
Differential Input Voltage	V_{IN}	± 5.0	V
Diode Bias Current	I_D	2.0	mA
Amplifier Bias Current	I_{ABC}	2.0	mA
Output Short-Circuit Duration	I_{SC}	Indefinite	
Buffer Output Current (Note 3)	I_{OUT}	20	mA
Operating Temperature Range NE5517N, NE5517AN AU5517T	T_{amb}	0 °C to +70 °C -40 °C to +125 °C	°C
Operating Junction Temperature	T_J	150	°C
DC Input Voltage	V_{DC}	+V _S to -V _S	
Storage Temperature Range	T_{stg}	-65 °C to +150 °C	°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. For selections to a supply voltage above ± 22 V, contact factory.
2. The following derating factors should be applied above 25 °C
N package at 10.6 mW/°C
D package at 7.1 mW/°C.
3. Buffer output current should be limited so as to not exceed package dissipation.