4561B
9's COMPLEMENTER

DESCRIPTION — The 4561B is a 9's Complementer to be used in conjunction with the 4560B, BCD Adder, to attain BCD subtraction. The device has four Data Inputs (A_0-A_3), two Mode Control Inputs (S_0 and $\overline{S_1}$), an active LOW Enable Input ($\overline{E}$) and four Data Outputs (Z_0-Z_3).

A HIGH on the Enable Input ($\overline{E}$) forces all Data Outputs (Z_0-Z_3) LOW regardless of all other input conditions. This allows a logic "zero" on the output. With the Enable Input ($\overline{E}$) LOW and Mode Control Input, S_0, LOW or Mode Control Input, $\overline{S_1}$, HIGH, information on the Data Inputs (A_0-A_3) is presented on the Data Outputs (Z_0-Z_3). With the Enable Input ($\overline{E}$) LOW, Mode Control Input, S_0, HIGH and Mode Control Input, $\overline{S_1}$, LOW information on the Data Outputs (Z_0-Z_3) is the 9's Complement of information on the Data Inputs (A_0-A_3).

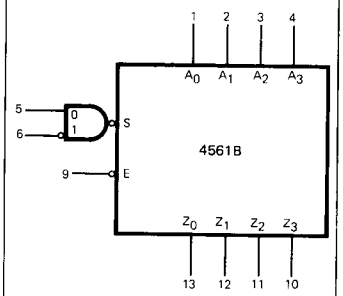
When used in conjunction with the 4560B, BCD Adder, the Mode Control Input, S_0, (or $\overline{S_1}$) of the 4561B is used as an active HIGH (or active LOW) Subtract Control Input while $\overline{S_1}$ is LOW (or S_0 is HIGH).

- **USED IN CONJUNCTION WITH THE 4560B, BCD ADDER**
- **TRUE OUTPUT FOR BCD ADDITION OR 9'S COMPLEMENT OUTPUT FOR BCD SUBTRACTION**
- **ACTIVE LOW ENABLE INPUT FOR "ZERO" OUTPUT FUNCTION**

PIN NAMES

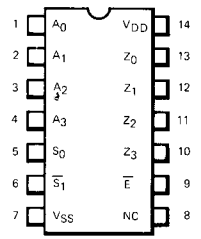
A_0-A_3	Data Inputs
S_0, $\overline{S_1}$	Mode Control Inputs (Active HIGH and LOW)
$\overline{E}$	Enable Input (Active LOW)
Z_0-Z_3	Data Outputs

LOGIC SYMBOL



V_{DD} = Pin 14
V_{SS} = Pin 7
NC = Pin 8

CONNECTION DIAGRAM
DIP (TOP VIEW)



NOTE:
The Flatpak version has the same pinouts (connection diagram) as the Dual In-Line package.

MODE SELECTION

INPUTS			OUTPUTS				
$\overline{E}$	S_0	$\overline{S_1}$	Z_0	Z_1	Z_2	Z_3	Mode
H	X	X	L	L	L	L	Zero Output
L	L	X	A_0	A_1	A_2	A_3	True Output
L	H	L	$\overline{A_0}$	A_1	$A_1 \cdot \overline{A_2} + \overline{A_1} \cdot A_2$	$\overline{A_1} \cdot \overline{A_2} \cdot \overline{A_3}$	9's Complement Output
L	X	H	A_0	A_1	A_2	A_3	True Output

L = LOW Level
H = HIGH Level
X = Don't Care