

# BCD-TO-DECIMAL DECODER/DRIVER WITH OPEN COLLECTOR HIGH VOLTAGE OUTPUTS

**S5445**  
**S54145**  
**N7445**  
**N74145**

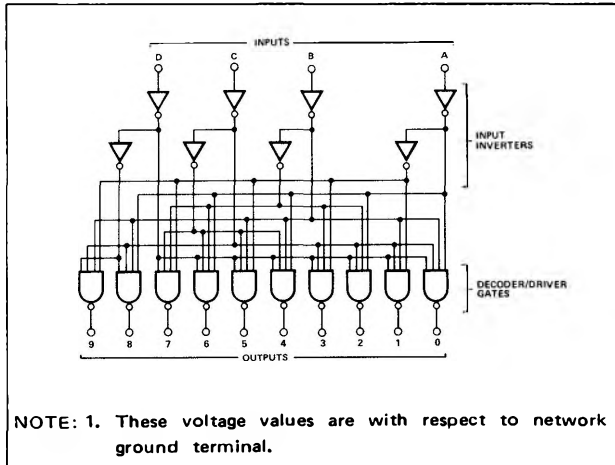
S5445-F,W • S54145-F,W • N7445-B • N74145-B

DIGITAL 54/74 TTL SERIES

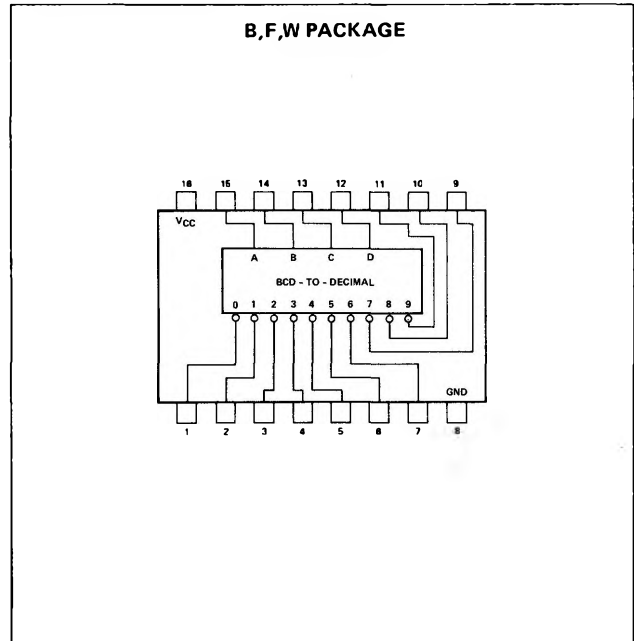
## DESCRIPTION

The 54/7445 and 54/74145 BCD-to-Decimal Decoder/Driver is a TTL MSI array. It features standard TTL inputs and high voltage, high current (80mA) outputs. The 54/7445 minimum output breakdown is 30 volts and the 54/74145 minimum output breakdown is 15 volts.

## LOGIC DIAGRAM



## PIN CONFIGURATIONS



## TRUTH TABLE

INPUTS				OUTPUTS									
D	C	B	A	0	1	2	3	4	5	6	7	8	9
0	0	0	0	1	1	1	1	1	1	1	1	1	1
0	0	0	1	1	1	1	1	1	1	1	1	1	1
0	0	1	0	1	1	1	1	1	1	1	1	1	1
0	0	1	1	1	1	1	1	1	1	1	1	1	1
0	1	0	0	1	1	1	1	1	1	1	1	1	1
0	1	0	1	1	1	1	1	1	1	1	1	1	1
0	1	1	0	1	1	1	1	1	1	1	1	1	1
0	1	1	1	1	1	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	1	1	1
1	0	0	1	1	1	1	1	1	1	1	1	1	1
1	0	1	0	1	1	1	1	1	1	1	1	1	1
1	0	1	1	1	1	1	1	1	1	1	1	1	1
1	1	0	0	1	1	1	1	1	1	1	1	1	1
1	1	0	1	1	1	1	1	1	1	1	1	1	1
1	1	1	0	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	1	1	0	1	1	1	1	1	1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1

## RECOMMENDED OPERATING CONDITIONS

	MIN	NOM	MAX	UNIT
Supply Voltage $V_{CC}$ (See Note 1): S5445, S54145 Circuits	4.5	5	5.5	V
N7445, N74145 Circuits	4.75	5	5.25	V
Voltage on any Output S5445, N7445 Circuits			30	V
S54145, N74145 Circuits			15	V

SIGNETICS DIGITAL 54/74 TTL SERIES - S5445 • S54145 • N7445 • N74145

ELECTRICAL CHARACTERISTICS (over recommended operating free-air temperature range unless otherwise noted)

PARAMETER		TEST CONDITIONS *	MIN	TYP**	MAX	UNIT
$V_{in(1)}$	Input voltage required to ensure logical 1 at any input terminal	$V_{CC} = \text{MIN}$	2			V
$V_{in(0)}$	Input voltage required to ensure logical 0 at any input terminal	$V_{CC} = \text{MIN}$			0.8	V
$V_{on}$	On-state output voltage	$V_{CC} = \text{MIN}, I_{\text{sink}} = 80\text{mA}$ $V_{CC} = \text{MIN}, I_{\text{sink}} = 20\text{mA}$		0.5	0.9	V
$V_{off}$	Off-state output voltage (S5445 or N7445)	$V_{CC} = \text{MAX}, I_{\text{off}} = 250\mu\text{A}$	30			V
$V_{off}$	Off-state output voltage (S54145 or N74145)	$V_{CC} = \text{MAX}, I_{\text{off}} = 250\mu\text{A}$	15			V
$I_{in(1)}$	Logical 1 level input current (each input)	$V_{CC} = \text{MAX}, V_{in} = 2.4\text{V}$ $V_{CC} = \text{MAX}, V_{in} = 5.5\text{V}$			40	$\mu\text{A}$
$I_{in(0)}$	Logical 0 level input current (each input)	$V_{CC} = \text{MAX}, V_{in} = 0.4\text{V}$			-1.6	mA
$I_{CC}$	Supply current	$V_{CC} = \text{MAX}$ S5445, S54145 N7445, N74145		43	62	mA
				43	70	mA

SWITCHING CHARACTERISTICS,  $V_{CC} = 5\text{V}, T_A = 25^\circ\text{C}$

PARAMETER		TEST CONDITIONS	MIN	TYP	MAX	UNIT
$t_{pd1}$	Propagation delay time logical 1 level	$C_L = 15\text{pF}, R_L = 100\ \Omega$			60	ns
$t_{pd0}$	Propagation delay time to logical 0 level	$C_L = 15\text{pF}, R_L = 100\ \Omega$			60	ns

\* For conditions shown as MIN or MAX, use the appropriate value specified under recommended operating conditions for the applicable circuit type.

\*\* All typical values are at  $V_{CC} = 5\text{V}, T_A = 25^\circ\text{C}$ .