



Display Drivers

DM5445/DM7445

DM54145/DM74145

BCD-to-decimal decoder/drivers

general description

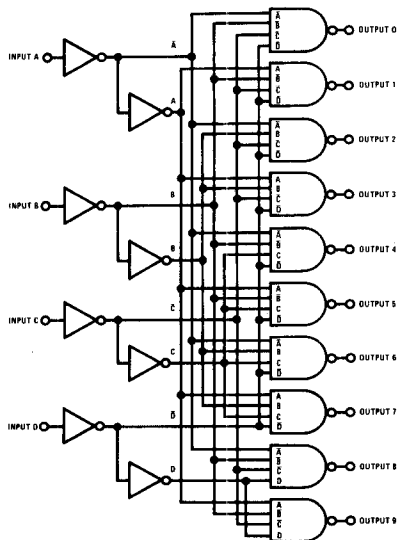
The DM5442/DM7442 and DM54145/DM74145 BCD-to-decimal decoder/drivers are fully compatible for use with TTL or DTL logic circuits. Each circuit features full decoding of all valid BCD input conditions (0 to 9) ensuring that all outputs will be off for any invalid input condition. Each output transistor is capable of sinking 80 mA. In the off condition each transistor can withstand

high breakdown voltages (DM5445/DM7445 = 30V and DM54145/DM74145 = 15V).

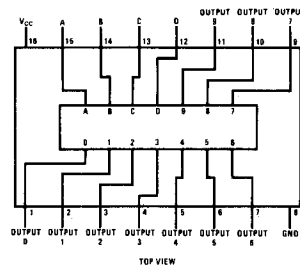
features

- 210 mW typical power dissipation
- 30 ns maximum propagation delay
- Series 54/74 compatible

logic and connection diagrams



Dual-In-Line and Flat Package



Order Number DM5445J, DM7445J, DM54145J or DM74145J
See Package 17

Order Number DM7445N or DM74145N
See Package 23

Order Number DM5445W, DM7445W, DM54145W
or DM74145W
See Package 28

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

DM5445/DM7445, DM54145/DM74145

6

absolute maximum ratings (Note 1)

Supply Voltage	7V
Input Voltage	5.5V
Output Voltage	30V
DM5445/DM7445	15V
DM54145/DM74145	15V
Operating Temperature Range	
DM5445, DM54145	-55°C to +125°C
DM7445, DM74145	0°C to +70°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10 sec)	300°C

operating conditions

	MIN	MAX	UNITS
Supply Voltage (V_{CC})			
DM5445, DM54145	4.5	5.5	V
DM7445, DM74145	4.75	5.25	V

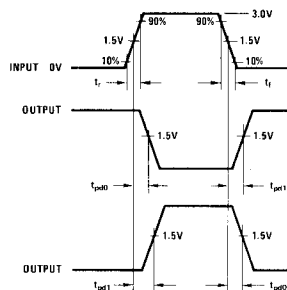
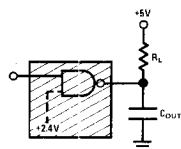
electrical characteristics (Note 2)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Logic "1" Input Voltage		2			V
Logic "0" Input Voltage				0.8	V
Output Breakdown Voltage	$V_{CC} = \text{Max}, I_{OFF} = 250 \mu\text{A}$	30			V
	$V_{CC} = \text{Max}, I_{OFF} = 250 \mu\text{A}$	15			V
Logical "0" Output Voltage	$V_{CC} = \text{Min}, I_{OUT} = 80 \text{ mA}$		0.5	0.9	V
	$V_{CC} = \text{Min}, I_{OUT} = 20 \text{ mA}$		0.2	0.4	V
Logical "1" Input Current	$V_{CC} = \text{Max}, V_{IN} = 2.4 \text{ V}$			40	μA
	$V_{CC} = \text{Max}, V_{IN} = 5.5 \text{ V}$			1	mA
Logical "0" Input Current	$V_{CC} = \text{Max}, V_{IN} = 0.4 \text{ V}$			-1.6	mA
Supply Current	$V_{CC} = \text{Max}$ DM5445/DM54145		42	62	mA
	$V_{CC} = \text{Max}$ DM7445/DM74145		42	70	mA
Input Clamp Voltage	$V_{CC} = 5.0$ $T_A = 25^\circ\text{C}$ $I_{IN} = -12 \text{ mA}$			-1.5	V
Propagation Delay to a Logical "0", t_{pd0}	$V_{CC} = 5.0$ $T_A = 25^\circ\text{C}$ $C_L = 15 \text{ pF}$ $R_L = 100\Omega$		17	30	ns
Propagation Delay to a Logical "1", t_{pd1}	$V_{CC} = 5.0$ $T_A = 25^\circ\text{C}$ $C_L = 15 \text{ pF}$ $R_L = 100\Omega$		18	30	ns

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the devices should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Note 2: Unless otherwise specified min/max limits apply across the -55°C to +125°C temperature range for the DM5445, DM54145 and across the 0°C to 70°C range for the DM7445, DM74145. All typicals are given for $V_{CC} = 5.0 \text{ V}$ and $T_A = 25^\circ\text{C}$.

ac test circuit and switching time waveforms



FREQUENCY = 1 MHz
DUTY CYCLE = 50%
 $t_r = t_f = 10 \text{ ns}$