Display Drivers

DM5445/DM7445
DM54145/DM74145
BCD-to-decimal decoder/drivers

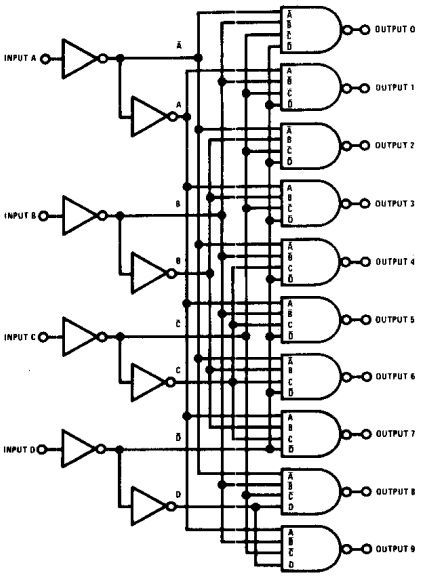
general description

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).

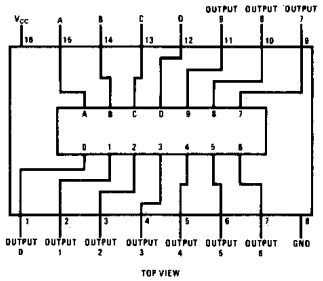
features

- 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	0	1	1	1	1	1	1	1	1	1
0	0	0	1	1	0	1	1	1	1	1	1	1	1
0	0	1	0	1	1	0	1	1	1	1	1	1	1
0	0	1	1	1	1	1	0	1	1	1	1	1	1
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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

absolute maximum ratings (Note 1)

Supply Voltage		7V
Input Voltage		5.5V
Output Voltage	DM5445/DM7445	30V
	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

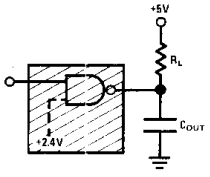
electrical characteristics (Note 2)

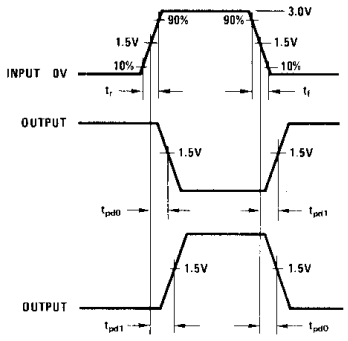
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Logic "1" Input Voltage		2			V
Logic "0" Input Voltage				0.8	
Output Breakdown Voltage	V_{CC} = Max, I_{OFF} = 250 μA	30			V
	V_{CC} = Max, I_{OFF} = 250 μA	15			V
Logical "0" Output Voltage	V_{CC} = Min, I_{OUT} = 80 mA		0.5	0.9	V
	V_{CC} = Min, I_{OUT} = 20 mA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

ac test circuit and switching time waveforms





FREQUENCY = 1 MHz
DUTY CYCLE = 50%
$t_r = t_f$ = 10 ns