Display Drivers

DM75491 MOS-to-LED quad segment driver
DM75492 MOS-to-LED hex digit driver

general description

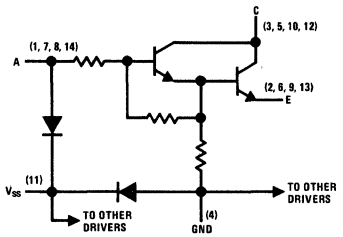
The DM75491 and DM75492 are interface circuits designed to be used in conjunction with MOS integrated circuits and common-cathode LED's in serially addressed multi-digit displays. The number of drivers required for this time-multiplexed system is minimized as a result of the segment-address-and-digit-scan method of LED drive.

features

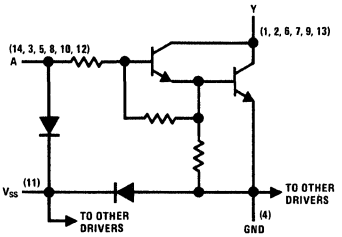
- Source or sink capability per driver (DM75491) 50 mA
- Sink capability per driver (DM75492) 250 mA
- MOS compatability (low input current)
- Low standby power
- High-gain Darlington circuits

schematic and connection diagrams

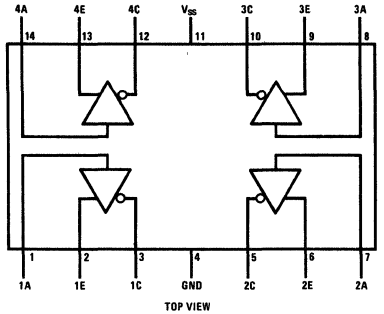
DM75491 (each driver)



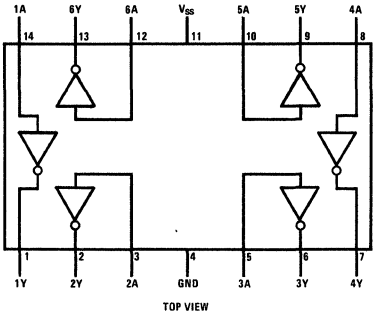
DM75492 (each driver)



DM75491 Dual-In-Line Package



DM75492 Dual-In-Line Package



Order Number DM75491J or DM75492J
See Package 16
Order Number DM75491N or DM75492N
See Package 22

absolute maximum ratings

	DM75491	DM75492
Input Voltage Range (Note 1)	−5V to V_{SS}	−5V to V_{SS}
Collector Output Voltage (Note 2)	10V	10V
Collector Output to Input Voltage	10V	10V
Emitter to Ground Voltage ($V_I \geq 5V$)	10V	
Emitter to Input Voltage	5V	
Voltage at V_{SS} Terminal With Respect to Any Other Device Terminal	10V	10V
Collector Output Current		
Each Collector Output	50 mA	250 mA
All Collector Outputs	200 mA	600 mA
Continuous Total Dissipation	800 mW	800 mW
Operating Temperature Range	0°C to +70°C	0°C to +70°C
Storage Temperature Range	−65°C to +150°C	−65°C to +150°C
Lead Temperature (Soldering, 10 sec)	300°C	300°C

dc electrical characteristics

DM75491 (V_{SS} = 10V, T_A = 0°C to +70°C unless otherwise noted)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
On State Collector Emitter Voltage ($V_{CE\ ON}$)	Input = 8 5V through 1 kΩ, V_E = 5V, I_C = 50 mA, T_A = 25°C		.9	1 2	V
On State Collector Emitter Voltage ($V_{CE\ ON}$)	Input = 8.5V through 1 kΩ, V_E = 5V, I_C = 50 mA			1.5	V
Off State Collector Current ($I_{C\ OFF}$)	V_C = 10V, V_E = 0, I_{IN} = 40μA			100	μA
Off State Collector Current ($I_{C\ OFF}$)	V_C = 10V, V_E = 0, V_{IN} = .7V			100	μA
Input Current at Maximum Input Voltage (I_I)	V_{IN} = 10V, V_E = 0, I_C = 20 mA		2.2	3.3	mA
Emitter Reverse Current (I_E)	V_{IN} = 0, V_E = 5V, I_C = 0			100	μA
Current Into V_{SS} Terminal (I_{SS})				1	mA

DM75492 (V_{SS} = 10V, T_A = 0°C to +70°C unless otherwise noted)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Low Level Output Voltage (V_{OL})	Input = 6 5V through 1 kΩ, I_{OUT} = 250 mA T_A = 25°C		.9	1.2	V
Low Level Output Voltage (V_{OL})	Input = 6 5V through 1 kΩ, I_{OUT} = 250 mA			1.5	V
High Level Output Current (I_{OH})	V_{OH} = 10V, I_{IN} = 40μA			200	μA
High Level Output Current (I_{OH})	V_{OH} = 10V, V_{IN} = .5V			200	μA
Input Current at Maximum Input Voltage (I_I)	V_{IN} = 10V, I_{OL} = 20 mA		2.2	3.3	mA
Current Into V_{SS} Terminal (I_{SS})				1	mA

ac switching characteristics

DM75491 (V_{SS} = 7.5V, T_A = 25°C)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Propagation Delay Time, Low to High Level Output (Collector) (t_{PLH})	V_{IH} = 4 5V, V_E = 0,		100		ns
Propagation Delay Time, High to Low Level Output (Collector) (t_{PHL})	R_L = 200Ω, C_L = 15 pF		20		ns

DM75492 (V_{SS} = 7.5V, T_A = 25°C)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Propagation Delay Time, Low to High Level Output (t_{PLH})	V_{IH} = 7.5V, R_L = 39Ω,		300		ns
Propagation Delay Time, High to Low Level Output (t_{PHL})	C_L = 15 pF		30		ns

Note 1: The input is the only device terminal which may be negative with respect to ground.
Note 2: Voltage values are with respect to network ground terminal unless otherwise noted.

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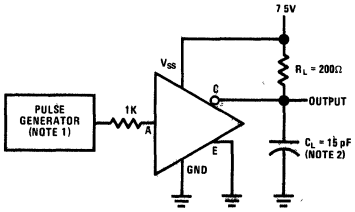
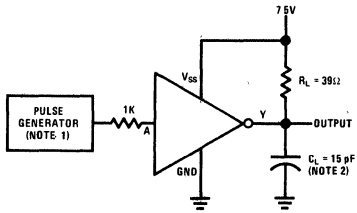
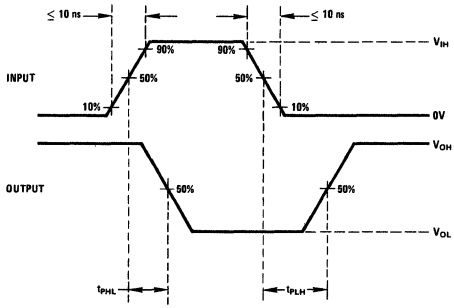
ac test circuits and switching time waveforms



DM75491



DM75492



NOTE 1 THE PULSE GENERATOR HAS THE FOLLOWING CHARACTERISTICS Z_{OUT} = 50Ω, PRR = 100 KHz, t_W = 1 μs.

NOTE 2: C_L INCLUDES PROBE AND JIG CAPACITANCE