

3-to-8-Line Decoder/Demultiplexer

The CD54HC238F3A and CD54HCT238F3A are high-speed silicon-gate CMOS decoders well suited to memory address decoding or data routing applications. Both circuits feature low power consumption usually associated with CMOS circuitry, yet have speeds comparable to low-power Schottky TTL logic. Both circuits have three binary select inputs (A0, A1, and A2). If the device is enabled, these inputs determine which one of the eight normally low outputs of the CD54HC/HCT228 series will go high.

Two active low and one active high enables ($\overline{E1}$, $\overline{E2}$, and E3) are provided to ease the cascading of decoders. The decoder's outputs can drive 10 low-power Schottky TTL equivalent loads.

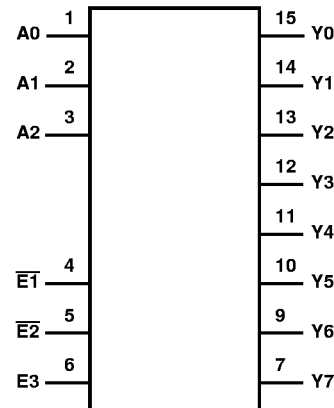
HCT INPUT LOAD TABLE

INPUT	UNIT LOAD (NOTE 1)
A0 - A2	1.5
$\overline{E1}$, $\overline{E2}$	1.25
E3	1

NOTE:

- Unit load is ΔI_{CC} limit specified in DC Electrical Specifications Table, e.g., 360 μ A Max at +25°C.

Functional Diagram



Absolute Maximum Ratings

DC Supply Voltage, V_{CC}
 Voltages Referenced to GND. -0.5V to +7.0V
 DC Input Voltage Range, All Inputs, V_{IN} -0.5V to $V_{CC} + 0.5V$
 DC Output Voltage Range, All Outputs, V_{OUT} . . -0.5V to $V_{CC} + 0.5V$
 DC Input Diode Current, I_{IK}
 For $V_I < -0.5V$ or $V_I > V_{CC} + 0.5V$ $\pm 20mA$
 DC Output Diode Current, I_{OK}
 For $V_O < -0.5V$ or $V_O > V_{CC} + 0.5V$ $\pm 20mA$
 DC Drain Current, Per Output, I_O , For $-0.5V < V_O < V_{CC} + 0.5V$
 Standard Output $\pm 25mA$
 Bus Driver Output $\pm 35mA$
 DC V_{CC} or GND Current, I_{CC}
 Standard Output $\pm 50mA$
 Bus Driver Output $\pm 70mA$

Power Dissipation Per Package, P_D
 $T_A = -55^\circ C$ to $+100^\circ C$ (Package F) 500mW
 $T_A = +100^\circ C$ to $+125^\circ C$ (Package F) Derate Linearly at
 8mW/ $^\circ C$ to 300mW
 Operating Temperature Range, T_A
 Package Type F $-55^\circ C$ to $+125^\circ C$
 Storage Temperature, T_{STG} $-65^\circ C$ to $+150^\circ C$
 Lead Temperature (During Soldering)
 At Distance 1/16in. \pm 1/32in. (1.59mm \pm 0.79mm)
 From Case For 10s Max. $+265^\circ C$
 Unit Inserted Into a PC Board (Min Thickness 1/16in., 1.59mm)
 With Solder Contacting Lead Tips Only $+300^\circ C$

CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress only rating and operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Recommended Operating Conditions

Supply Voltage Range, V_{CC}
 $T_A =$ Full Package Temperature Range
 CD54HC Types 2V to 6V
 CD54HCT Types 4.5V to 5.5V
 DC Input or Output Voltage, V_{IN} , V_{OUT} 0V to V_{CC}

Operating Temperature Range, T_A $-55^\circ C$ to $+125^\circ C$
 Input Rise and Fall Times, t_R , t_F
 at 2V 0ns to 1000ns
 at 4.5V 0ns to 500ns
 at 6V 0ns to 400ns