

## 3-to-8 Line Decoder

### MC74VHC138

The MC74VHC138 is an advanced high speed CMOS 3 to 8 decoder fabricated with silicon gate CMOS technology. It achieves high speed operation similar to equivalent Bipolar Schottky TTL while maintaining CMOS low power dissipation.

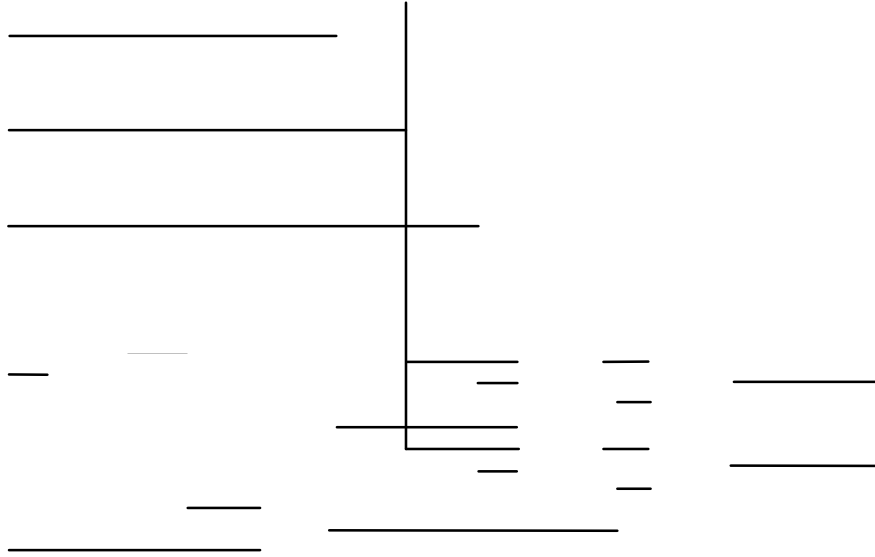
When the device is enabled, three Binary Select inputs (A0 – A2) determine which one of the outputs ( $\overline{Y}0$  –  $\overline{Y}7$ ) will go Low. When enable input E3 is held Low or either  $\overline{E}2$  or  $\overline{E}1$  is held High, decoding function is inhibited and all outputs go high. E3,  $\overline{E}2$ , and  $\overline{E}1$  inputs are provided to ease cascade connection and for use as an address decoder for memory systems.

The internal circuit is composed of three stages, including a buffer output which provides high noise immunity and stable output. The inputs tolerate voltages up to 7V, allowing the interface of 5V systems to 3V systems.

- High Speed:  $t_{PD} = 5.7\text{ns}$  (Typ) at  $V_{CC} = 5\text{ V}$
- Low Power Dissipation:  $I_{CC} = 4\ \mu\text{A}$  (Max) at  $T_A = 25^\circ\text{C}$
- High Noise Immunity:  $V_{NIH} = V_{NIL} = 28\% V_{CC}$
- Power Down Protection Provided on Inputs
- Balanced Propagation Delays
- Designed for 2 V to 5.5 V Operating Range
- Low Noise:  $V_{OLP} = 0.8\text{ V}$  (Max)
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## MAXIMUM RATINGS\*

Symbol	Parameter	Value	Unit
$V_{CC}$	DC Supply Voltage	- 0.5 to + 7.0	V
$V_{in}$	DC Input Voltage	- 0.5 to + 7.0	V
$V_{out}$	DC Output Voltage	- 0.5 to $V_{CC} + 0.5$	V
$I_{IK}$	Input Diode Current	- 20	

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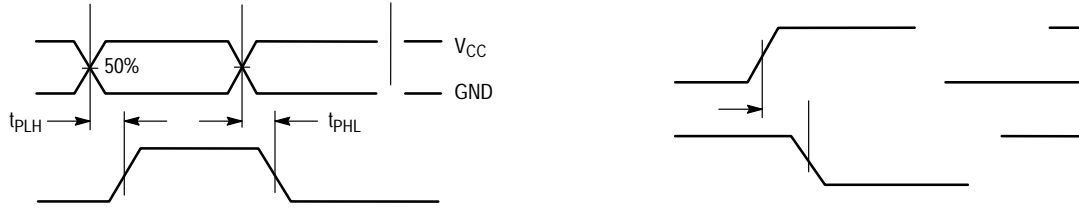


Figure 2.

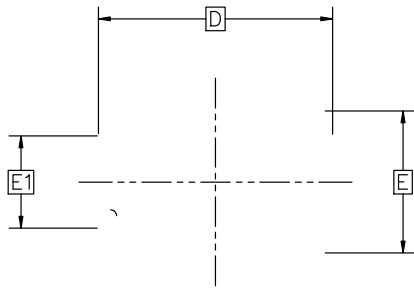


**SOIC-16 9.90x3.90x1.37 1.27P**  
CASE 751B  
ISSUE M

DATE 18 OCT 2024

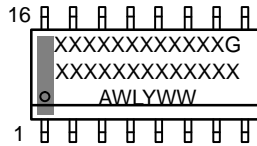
- 3. DIMENSIONS D AND E1 DO NOT INCLUDE MOLD PROTRUSION.
- 4. MAXIMUM MOLD PROTRUSION 0.17

b DIMENSION AT MAXIMUM MATE      nm TOTAL IN EXCESS OF THE



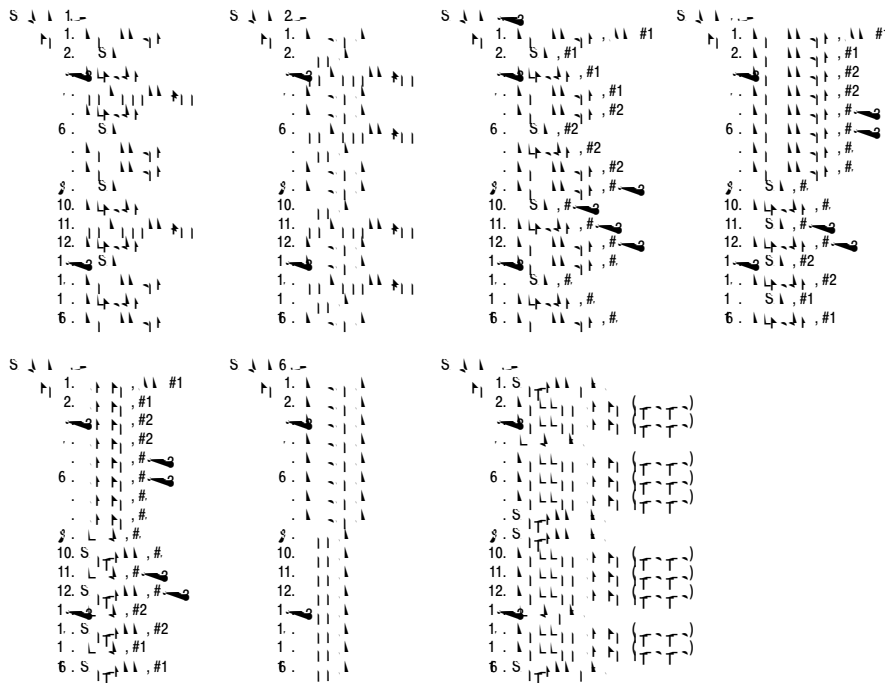
TOP VIEW

**GENERIC  
MARKING DIAGRAM\***



XXXXX = Specific Device Code  
A = Assembly Location  
WL = Wafer Lot  
Y = Year  
WW = Work Week  
G = Pb Free Package

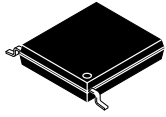
\*This information is generic. Please refer to device data sheet for actual part marking. Pb Free indicator, "G" or microdot "•", may or may not be present. Some products may not follow the Generic Marking.



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<b>DESCRIPTION:</b>	<b>SOIC-16 9.90X3.90X1.37 1.27P</b>	<b>PAGE 2 OF 2</b>

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**SCALE 2:1**

**TSSOP-16 WB**  
CASE 948F  
ISSUE B

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