

# AZ100LVEL58

## ECL/PECL 2:1 Multiplexer

### FEATURES

- 440ps Propagation Delay
- Operating Range of 3.0V to 5.5V
- Internal Input Pulldown Resistors
- Q Output will Default LOW with Inputs Open or at  $V_{EE}$
- Transistor Count = 58 Devices
- Direct Replacement for ON Semiconductor MC100LVEL58

### PACKAGE AVAILABILITY

| PACKAGE     | PART NO.       | MARKING      |
|-------------|----------------|--------------|
| SOIC 8      | AZ100LVEL58D   | AZM100LVEL58 |
| SOIC 8 T&R  | AZ100LVEL58DR1 | AZM100LVEL58 |
| SOIC 8 T&R  | AZ100LVEL58DR2 | AZM100LVEL58 |
| TSSOP 8     | AZ100LVEL58T   | AZTLV58      |
| TSSOP 8 T&R | AZ100LVEL58TR1 | AZTLV58      |
| TSSOP 8 T&R | AZ100LVEL58TR2 | AZTLV58      |

### DESCRIPTION

The AZ100LVEL58 is a 2:1 multiplexer. The device is pin and functionally equivalent to the EL58. With AC performance similar to the EL58 device, the LVEL58 is ideal for the low voltage applications that require the ultimate in AC performance. If desired, the select input can be directly driven from a CMOS output.

NOTE: Specifications in the ECL/PECL tables are valid when thermal equilibrium is established.

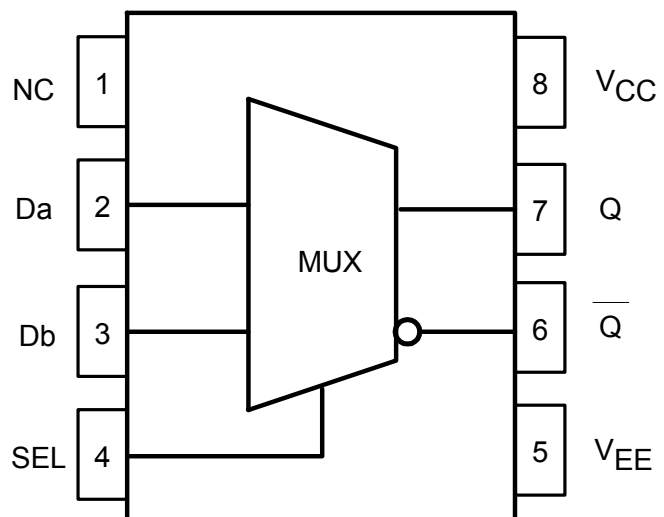
FUNCTION TABLE

| SEL | Q  |
|-----|----|
| H   | Da |
| L   | Db |

PIN DESCRIPTION

| PIN          | FUNCTION             |
|--------------|----------------------|
| Da, Db       | Data Inputs          |
| Q, $\bar{Q}$ | Differential Outputs |
| SEL          | Select Input         |
| $V_{CC}$     | Positive Supply      |
| $V_{EE}$     | Negative Supply      |
| NC           | No Connect           |

LOGIC DIAGRAM AND PINOUT ASSIGNMENT



## AZ100LVEL58

**Absolute Maximum Ratings** are those values beyond which device life may be impaired.

| Symbol    | Characteristic                                | Rating      | Unit |
|-----------|-----------------------------------------------|-------------|------|
| $V_{CC}$  | PECL Power Supply ( $V_{EE} = 0V$ )           | 0 to +8.0   | Vdc  |
| $V_I$     | PECL Input Voltage ( $V_{EE} = 0V$ )          | 0 to +6.0   | Vdc  |
| $V_{EE}$  | ECL Power Supply ( $V_{CC} = 0V$ )            | -8.0 to 0   | Vdc  |
| $V_I$     | ECL Input Voltage ( $V_{CC} = 0V$ )           | -6.0 to 0   | Vdc  |
| $I_{OUT}$ | Output Current<br>--- Continuous<br>--- Surge | 50<br>100   | mA   |
| $T_A$     | Operating Temperature Range                   | -40 to +85  | °C   |
| $T_{STG}$ | Storage Temperature Range                     | -65 to +150 | °C   |

### 100K ECL DC Characteristics ( $V_{EE} = -3.3V$ , $V_{CC} = GND$ )

| Symbol   | Characteristic                   | -40°C |       |       | 0°C   |       |       | 25°C  |       |       | 85°C  |       |       | Unit |
|----------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|
|          |                                  | Min   | Typ   | Max   | Min   | Typ   | Max   | Min   | Typ   | Max   | Min   | Typ   | Max   |      |
| $V_{OH}$ | Output HIGH Voltage <sup>1</sup> | -1085 | -1005 | -880  | -1025 | -955  | -880  | -1025 | -955  | -880  | -1025 | -955  | -880  | mV   |
| $V_{OL}$ | Output LOW Voltage <sup>1</sup>  | -1830 | -1695 | -1555 | -1810 | -1705 | -1620 | -1810 | -1705 | -1620 | -1810 | -1705 | -1620 | mV   |
| $V_{IH}$ | Input HIGH Voltage               | -1165 |       | -880  | -1165 |       | -880  | -1165 |       | -880  | -1165 |       | -880  | mV   |
| $V_{IL}$ | Input LOW Voltage                | -1810 |       | -1475 | -1810 |       | -1475 | -1810 |       | -1475 | -1810 |       | -1475 | mV   |
| $I_{IH}$ | Input HIGH Current               |       |       | 150   |       |       | 150   |       |       | 150   |       |       | 150   | μA   |
| $I_{IL}$ | Input LOW Current                | -150  |       |       | -150  |       |       | -150  |       |       | -150  |       |       | μA   |
| $I_{EE}$ | Power Supply Current             |       | 21    | 28    |       | 21    | 28    |       | 21    | 28    |       | 23    | 30    | mA   |

- Each output is terminated through a 50Ω resistor to  $V_{CC} - 2V$ .

### 100K LVPECL DC Characteristics ( $V_{EE} = GND$ , $V_{CC} = +3.3V$ )

| Symbol   | Characteristic                     | -40°C |      |      | 0°C  |      |      | 25°C |      |      | 85°C |      |      | Unit |
|----------|------------------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
|          |                                    | Min   | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  |      |
| $V_{OH}$ | Output HIGH Voltage <sup>1,2</sup> | 2215  | 2295 | 2420 | 2275 | 2345 | 2420 | 2275 | 2345 | 2420 | 2275 | 2345 | 2420 | mV   |
| $V_{OL}$ | Output LOW Voltage <sup>1,2</sup>  | 1470  | 1605 | 1745 | 1490 | 1595 | 1680 | 1490 | 1595 | 1680 | 1490 | 1595 | 1680 | mV   |
| $V_{IH}$ | Input HIGH Voltage <sup>1</sup>    | 2135  |      | 2420 | 2135 |      | 2420 | 2135 |      | 2420 | 2135 |      | 2420 | mV   |
| $V_{IL}$ | Input LOW Voltage <sup>1</sup>     | 1490  |      | 1825 | 1490 |      | 1825 | 1490 |      | 1825 | 1490 |      | 1825 | mV   |
| $I_{IH}$ | Input HIGH Current                 |       |      | 150  |      |      | 150  |      |      | 150  |      |      | 150  | μA   |
| $I_{IL}$ | Input LOW Current                  | -150  |      |      | -150 |      |      | -150 |      |      | -150 |      |      | μA   |
| $I_{EE}$ | Power Supply Current               |       | 21   | 28   |      | 21   | 28   |      | 21   | 28   |      | 23   | 30   | mA   |

- These values are for  $V_{CC} = 3.3V$ . For supply voltages other than 3.3V, use the ECL table values and ADD supply voltage value.
- Each output is terminated through a 50Ω resistor to  $V_{CC} - 2V$ .

### 100K PECL DC Characteristics ( $V_{EE} = GND$ , $V_{CC} = +5.0V$ )

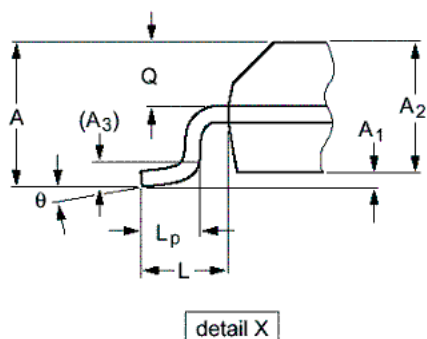
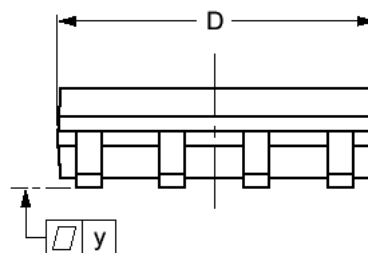
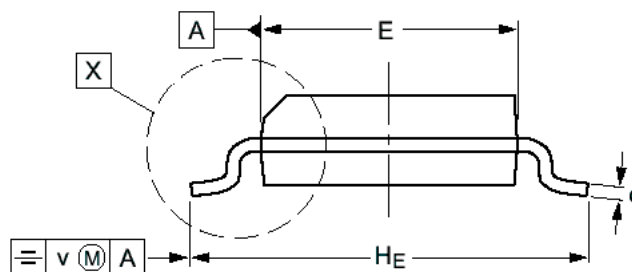
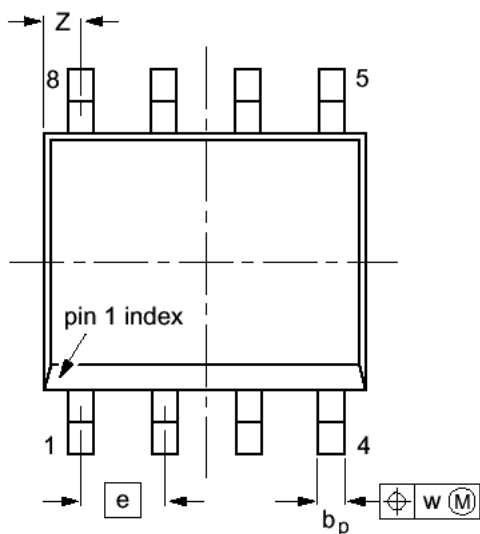
| Symbol   | Characteristic                     | -40°C |      |      | 0°C  |      |      | 25°C |      |      | 85°C |      |      | Unit |
|----------|------------------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
|          |                                    | Min   | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  | Min  | Typ  | Max  |      |
| $V_{OH}$ | Output HIGH Voltage <sup>1,2</sup> | 3915  | 3995 | 4120 | 3975 | 4045 | 4120 | 3975 | 4045 | 4120 | 3975 | 4045 | 4120 | mV   |
| $V_{OL}$ | Output LOW Voltage <sup>1,2</sup>  | 3170  | 3305 | 3445 | 3190 | 3295 | 3380 | 3190 | 3295 | 3380 | 3190 | 3295 | 3380 | mV   |
| $V_{IH}$ | Input HIGH Voltage <sup>1</sup>    | 3835  |      | 4120 | 3835 |      | 4120 | 3835 |      | 4120 | 3835 |      | 4120 | mV   |
| $V_{IL}$ | Input LOW Voltage <sup>1</sup>     | 3190  |      | 3525 | 3190 |      | 3525 | 3190 |      | 3525 | 3190 |      | 3525 | mV   |
| $V_{BB}$ | Reference Voltage <sup>1</sup>     | 3620  |      | 3740 | 3620 |      | 3740 | 3620 |      | 3740 | 3620 |      | 3740 | mV   |
| $I_{IH}$ | Input HIGH Current                 |       |      | 150  |      |      | 150  |      |      | 150  |      |      | 150  | μA   |
| $I_{IL}$ | Input LOW Current                  | -150  |      |      | -150 |      |      | -150 |      |      | -150 |      | 150  | μA   |
| $I_{EE}$ | Power Supply Current               |       | 27   | 33   |      | 27   | 33   |      | 27   | 33   |      | 31   | 37   | mA   |

- For supply voltages other than 5.0V, use the ECL table values and ADD supply voltage value.
- Each output is terminated through a 50Ω resistor to  $V_{CC} - 2V$ .

### AC Characteristics ( $V_{EE} = -3.0V$ to $-5.5V$ , $V_{CC} = GND$ or $V_{EE} = GND$ , $V_{CC} = +3.0V$ to $+5.5V$ )

| Symbol              | Characteristic                        | -40°C |     |     | 0°C |     |     | 25°C |     |     | 85°C |     |     | Unit |
|---------------------|---------------------------------------|-------|-----|-----|-----|-----|-----|------|-----|-----|------|-----|-----|------|
|                     |                                       | Min   | Typ | Max | Min | Typ | Max | Min  | Typ | Max | Min  | Typ | Max |      |
| $t_{PLH} / t_{PHL}$ | Propagation Delay to Output<br>D to Q | 340   | 435 | 560 |     |     |     | 350  | 440 | 570 | 370  | 450 | 590 | ps   |
|                     | SEL to Q                              | 540   | 455 | 570 |     |     |     | 360  | 460 | 580 | 380  | 470 | 600 |      |
| $f_{max}$           | Maximum Toggle Frequency              |       |     |     |     |     |     |      | 1.5 |     |      |     |     | GHz  |
| $t_r / t_f$         | Rise/Fall Time<br>20 – 80%            | 100   |     | 260 | 100 |     | 260 | 100  |     | 260 | 100  |     | 260 | ps   |

# **PACKAGE DIAGRAM** **SOIC 8**

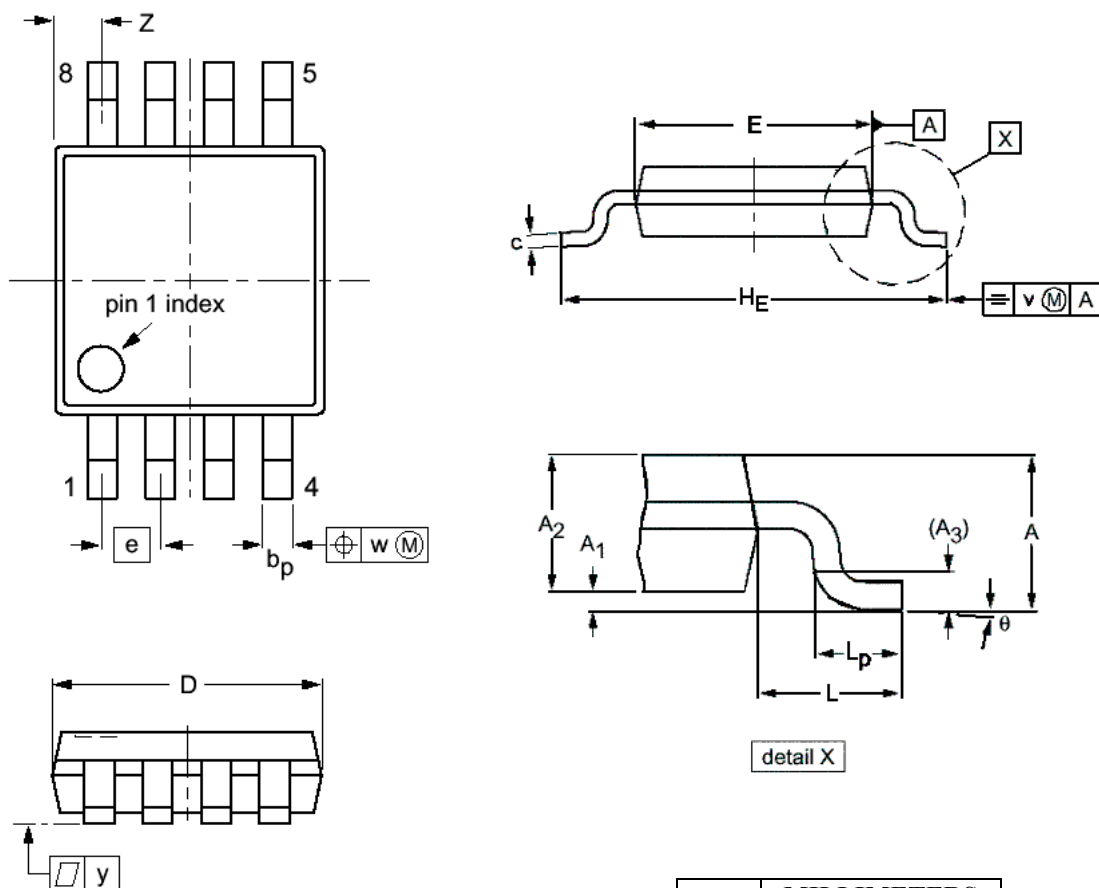


## **NOTES:**

1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

| DIM                  | MILLIMETERS |      | INCHES |        |
|----------------------|-------------|------|--------|--------|
|                      | MIN         | MAX  | MIN    | MAX    |
| <b>A</b>             |             | 1.75 |        | 0.069  |
| <b>A<sub>1</sub></b> | 0.10        | 0.25 | 0.004  | 0.010  |
| <b>A<sub>2</sub></b> | 1.25        | 1.45 | 0.049  | 0.057  |
| <b>A<sub>3</sub></b> | 0.25        |      | 0.01   |        |
| <b>b<sub>p</sub></b> | 0.36        | 0.49 | 0.014  | 0.019  |
| <b>c</b>             | 0.19        | 0.25 | 0.0075 | 0.0100 |
| <b>D</b>             | 4.8         | 5.0  | 0.19   | 0.20   |
| <b>E</b>             | 3.8         | 4.0  | 0.15   | 0.16   |
| <b>e</b>             | 1.27        |      | 0.050  |        |
| <b>H<sub>E</sub></b> | 5.80        | 6.20 | 0.228  | 0.244  |
| <b>L</b>             | 1.05        |      | 0.041  |        |
| <b>L<sub>p</sub></b> | 0.40        | 1.00 | 0.016  | 0.039  |
| <b>Q</b>             | 0.60        | 0.70 | 0.024  | 0.028  |
| <b>v</b>             | 0.25        |      | 0.01   |        |
| <b>w</b>             | 0.25        |      | 0.01   |        |
| <b>y</b>             | 0.10        |      | 0.004  |        |
| <b>Z</b>             | 0.30        | 0.70 | 0.012  | 0.028  |
| <b>θ</b>             | 0°          | 8°   | 0°     | 8°     |

# PACKAGE DIAGRAM TSSOP 8



## NOTES:

1. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSION.
2. MAXIMUM MOLD PROTRUSION FOR D IS 0.15mm.
3. MAXIMUM MOLD PROTRUSION FOR E IS 0.25mm.

| DIM                  | MILLIMETERS |      |
|----------------------|-------------|------|
|                      | MIN         | MAX  |
| <b>A</b>             |             | 1.10 |
| <b>A<sub>1</sub></b> | 0.05        | 0.15 |
| <b>A<sub>2</sub></b> | 0.80        | 0.95 |
| <b>A<sub>3</sub></b> | 0.25        |      |
| <b>b<sub>p</sub></b> | 0.25        | 0.45 |
| <b>c</b>             | 0.15        | 0.28 |
| <b>D</b>             | 2.90        | 3.10 |
| <b>E</b>             | 2.90        | 3.10 |
| <b>e</b>             | 0.65        |      |
| <b>H<sub>E</sub></b> | 4.70        | 5.10 |
| <b>L</b>             | 0.94        |      |
| <b>L<sub>p</sub></b> | 0.40        | 0.70 |
| <b>v</b>             | 0.10        |      |
| <b>w</b>             | 0.10        |      |
| <b>y</b>             | 0.10        |      |
| <b>Z</b>             | 0.35        | 0.70 |
| <b>θ</b>             | 0°          | 6°   |

## AZ100LVEL58

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