

## AND491GST <br> 2 lines x 16 Characters Intelligent Character Display

The AND491GST devices are compact, LCD modules that have an on-board LCD controller and driver circuit. These devices can display 160 characters (numerals, letters, symbols and Kana letters), as well as eight custom characters.

Absolute Maximum Ratings

| Item | Symbol | Rating | Unit |
| :--- | :---: | :---: | :---: |
| Supply Voltage | $\mathrm{V}_{\mathrm{DD}}$ | 7.0 | V |
| Input Voltage | $\mathrm{V}_{\text {IN }}$ | $0 \leq \mathrm{V}_{\mathbb{I N}} \leq \mathrm{V}_{\mathrm{DD}}$ | V |
| Operating Temperature | $\mathrm{T}_{\text {op }}$ | 0 to +50 | ${ }^{\circ} \mathrm{C}$ |
| Storage Temperature | $\mathrm{T}_{\text {stg }}$ | -20 to +60 | ${ }^{\circ} \mathrm{C}$ |

Electrical Characteristics (TA = $\mathbf{2 5}^{\circ} \mathrm{C}$ )

| Item | Symbol | Min. | Typ. | Max. | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: |
| LCD Operating Voltage $\left(\mathrm{T}=0^{\circ} \mathrm{C}\right)$ | $V_{D D}-V_{0}$ | - | 4.8 | - | V |
| LCD Operating Voltage $\left(\mathrm{T}=25^{\circ} \mathrm{C}\right)$ |  | - | 4.5 | - |  |
| LCD Operating Voltage $\left(\mathrm{T}=50^{\circ} \mathrm{C}\right)$ |  | - | 4.2 | - |  |
| Supply Voltage | $V_{D D}-V_{S S}$ | 4.7 | 5 | 5.3 | V |
| Supply Current | $I_{\text {DD }}$ | - | 2 | 4 | mA |
| Input Voltage High Level | $\mathrm{V}_{\mathrm{IH}}$ | 2.2 | - | $\mathrm{V}_{\mathrm{DD}}$ | V |
| Input Voltage Low Level | $V_{\text {IL }}$ | 0 | - | 0.6 |  |
| Output Voltage High Level | $\mathrm{V}_{\mathrm{OH}}$ | 2.4 | - | - | V |
| Output Voltage Low Level | $\mathrm{V}_{\text {OL }}$ | - | - | 0.4 |  |

Optical Characteristics (TA $5=25^{\circ} \mathrm{C}, \phi=\mathbf{0}^{\circ}, \theta=\mathbf{0}^{\circ}$ )

| Item | Symbol | Min. | Typ. | Max. | Unit |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Viewing Angle | $\phi$ | - | 50 | - | degree |
| Contrast | K | - | 6.0 | - | - |
| Turn On | $\mathrm{T}_{\text {on }}$ | - | 200 | 400 | ms |
| Turn Off | $\mathrm{T}_{\text {off }}$ | - | 250 | 400 | ms |

## Connector Pin Assignment

| Pin No. | Signal | Function |
| :---: | :---: | :--- |
| 1 | $\mathrm{~V}_{\text {SS }}$ | OV |
| 2 | $\mathrm{~V}_{\mathrm{DD}}$ | 5 V |
| 3 | $\mathrm{~V}_{\mathrm{O}}$ | Contrast Adj. |
| 4 | RS | Register Select |
| 5 | R/ $\bar{W}$ | Read/Write |
| 6 | E | Enable |
| 7 | DBO | Data Bit 0 |
| 8 | DB1 | Data Bit 1 |
| 9 | DB2 | Data Bit 2 |
| 10 | DB3 | Data Bit 3 |
| 11 | DB4 | Data Bit 4 |
| 12 | DB5 | Data Bit 5 |
| 13 | DB6 | Data Bit 6 |
| 14 | DB7 | Data Bit 7 |
| 15 | A | LED Power |
| 16 | K | Led Power |

## Block Diagram



## Dimensional Outline



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