

## Features

- Lead free
- RoHS compliant\*
- Supports 15 KV IEC 61000-4-2 ESD equipment specification\*
- Single device protects as many as 20 lines on exposed pins, communications ports
- Incorporates 40 bi-directional PN junction diodes
- Small form factor replaces 20 SOT23 packages

## Thin Film on Silicon 2DEA Integrated ESD Protection Diode Array

### General Information

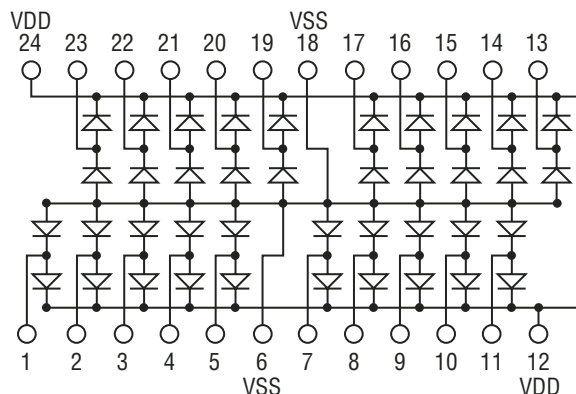
The Model 2DEA Series is well-suited for space constrained designs where the requirements of international ESD standard specification IEC 61000-4-2 must be met.

These highly integrated PN junction diode arrays are especially effective for use in PC notebooks and motherboards, engineering workstations and portable battery-powered devices such as PDAs and cellular phones.

Space savings, as compared to popular BA V99 SOT23 based implementations, can yield a 75 % reduction in utilized board area. In addition, significant assembly cost reductions and manufacturing integrity improvements can be realized.

Two package options are available. Model 2DEA consists of 20 bi-directional diode pairs in a miniature 24-pin JEDEC QSOP package. The 2DEB consists of 17 bi-directional diode pairs in a traditional wide-body SOIC JEDEC package.

### Package Schematic



### Electrical & Environmental Characteristics

| Electrical Characteristics                            | Symbol            | Minimum  | Nominal  | Maximum        | Unit         |
|---|-------------------|----------|----------|----------------|--------------|
| Supply Voltage  | $V_{DD} - V_{SS}$ | -0.3     |          | 12             | V            |
| Voltage @ any Channel                                 | $V_{in}$          | -0.3     |          | $V_{DD} + 0.5$ | V            |
| Channel Clamp Current (continuous)                    | $I_C$             |          |          | $\pm 15$       | mA           |
| Forward Voltage:<br>@ $I_f = 1$ mA<br>@ $I_f = 12$ mA | $V_f$             |          | 0.8      | 0.9<br>1.5     | V<br>V       |
| Leakage Current @ $V_{SS} < V_{in} < V_{DD} = 12$ V   |                   |          | 0.1      | 10             | $\mu$ A      |
| Diode Capacitance                                     |                   |          |          | 5              | pF           |
| <b>Environmental Characteristics</b>                  |                   |          |          |                |              |
| Operating Temperature                                 | $T_J$             | -55      |          | +125           | $^{\circ}$ C |
| Storage Temperature                                   | $T_{stg}$         | -65      |          | +150           | $^{\circ}$ C |
| Diode Power Rating                                    |                   |          | 20       |                | mW/diode     |
| ESD Performance Withstand*:                           |                   |          |          |                |              |
| Contact Discharge                                     |                   | $\pm 8$  | $\pm 9$  |                | kV           |
| Air Discharge   |                   | $\pm 15$ | $\pm 16$ |                | kV           |

\* Note: IEC 61000-4-2 ESD test performance is measured at the systems level and system designs, enclosure shielding and other conventional ESD control measures usually influence the results of these tests. Testing on the component level serves as an indicator that the system passes a specific compliance step, but does not ensure that the system passes at that level. The Model 2DEA/DEB device, therefore, can support successful implementation of the IEC 61000-4-2 system level ESD standard.

## Applications

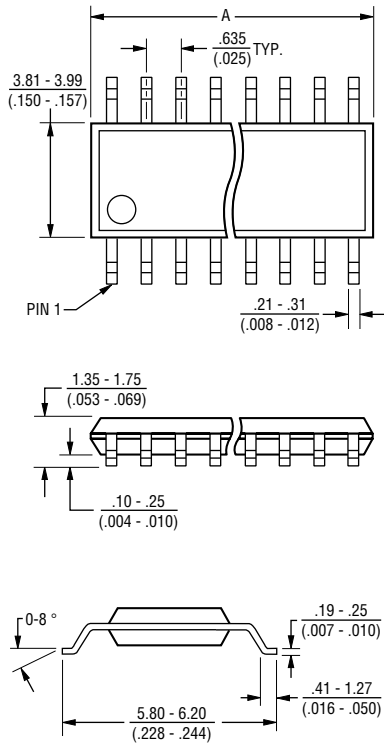
- Parallel printer ports, communication ports
- Hot-swappable designs
- IC protection

# Thin Film on Silicon 2DEA Integrated ESD Protection Diode Array

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## Mechanical Characteristics

### QSOP Package Dimensions

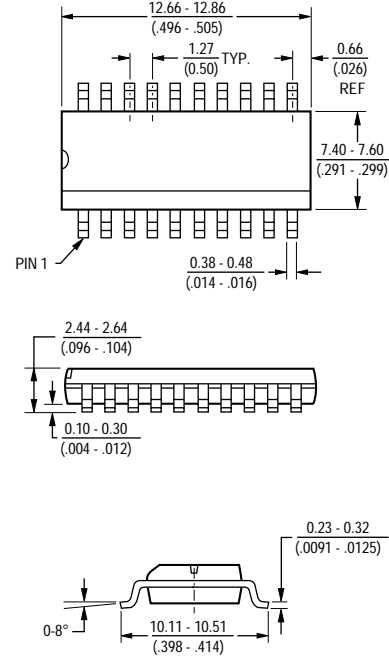


| Model  | A                         |
|--------|---------------------------|
| 2QSP24 | 8.56 - 8.74 (.337 - .344) |

Governing dimensions are in mm. Dimensions in parentheses are in inches and are approximate.

JEDEC Reference Number MO-137.

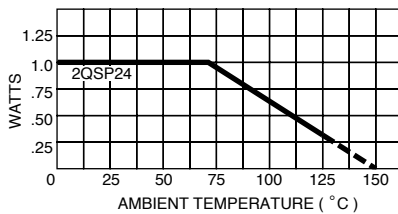
### Wide-Body SOIC Package Dimensions



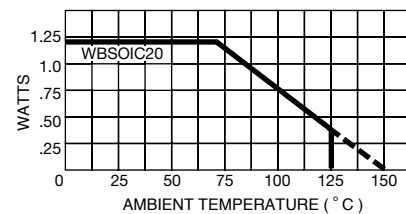
Governing dimensions are in mm. Dimensions in parentheses are in inches and are approximate.

JEDEC Reference Number MS-013.

### QSOP Package Power Temperature Derating Curve



### Wide-Body SOIC Package Power Temperature Derating Curve



## Standard Part Numbers

| Part Number (Tape & Reel) | Part Number (Tubes) |
|---------------------------|---------------------|
| 2DEA-2-Q24R               | 2DEA-2-Q24T         |
| 2DEB-2-W20R               | 2DEB-2-W20T         |

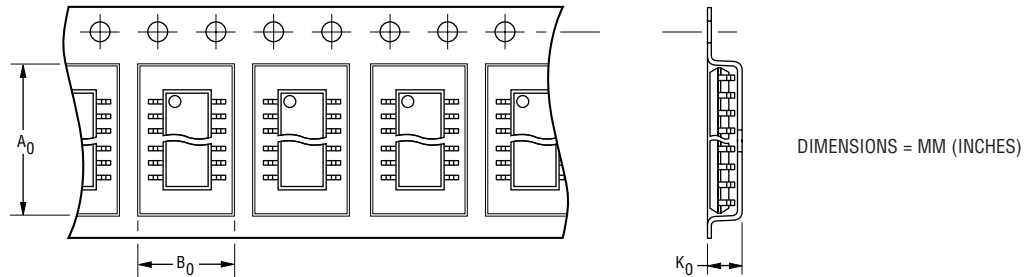
Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

# Thin Film on Silicon 2DEA Integrated ESD Protection Diode Array



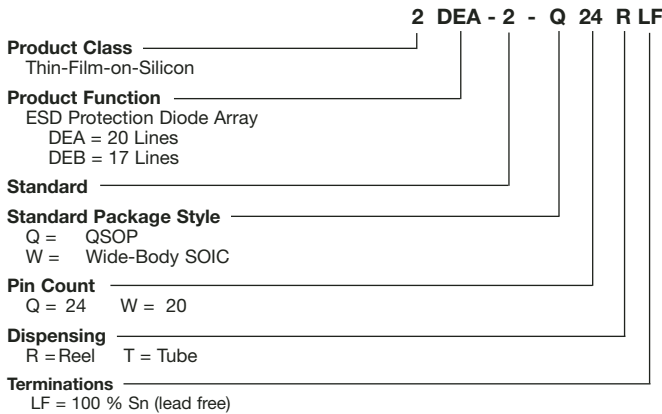
## Dispensing

For large quantities, the product will be dispensed in Tape and Reel (see diagram below).



| Package                 | A <sub>0</sub> | B <sub>0</sub> | K <sub>0</sub> | Width      | Pitch     | No. of Pieces per 13 reel | No. of Pieces per tube |
|-------------------------|----------------|----------------|----------------|------------|-----------|---------------------------|------------------------|
| <u>QSOP</u><br>24 Pin   | 6.5 (0.256)    | 9.0 (0.354)    | 2.1 (0.083)    | 16 (0.630) | 8 (0.315) | 3,500                     | 56                     |
| <u>WBSOIC</u><br>20 Pin | 13 (0.519)     | 10.8 (0.425)   | 2.8 (0.110)    | 24 (0.945) | 8 (0.315) | 3,500                     | 37                     |

## How To Order



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## Typical Part Marking

Represents total content. Layout may vary.

