# ESDA6V1-5SC6

ASD™ TRANSIL™ ARRAY FOR ESD PROTECTION

## MAIN APPLICATIONS

Where transient overvoltage protection in ESD sensitive equipment is required, such as:

- Computers
- Printers
- Communication systems
- Cellular phone handsets and accessories
- Other telephone set
- Set top boxes

## FEATURES

- 5 Unidirectional Transil™ Functions
- Low leakage current: $I_R$ max. < 1µA
- Breakdown voltage: $V_{BR}$ = 6.1V min.

## DESCRIPTION

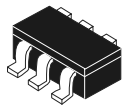
The ESDA6V1-5SC6 is a 5-bit wide monolithic suppressor which is designed to protect against ESD components connected to data and transmission lines.

## BENEFITS

- High integration
- Suitable for high density boards

## COMPLIES WITH THE FOLLOWING STANDARDS:

| | | Test kV | Max. current |
|---|---|---|---|
| IEC61000-4-2 level 4 | Air | 15 | - |
| | Contact | 8 | 30A |
| MIL STD 883C-Method 3015-7 class3 (Human Body Model) | Contact | > 4 | > 2.67A |



**SOT23-6L (SC-59)**

**Table 1: Order Code**

| Part Number | Marking |
|---|---|
| ESDA6V1-5SC6 | EC62 |

**Figure 1: Functional Diagram**

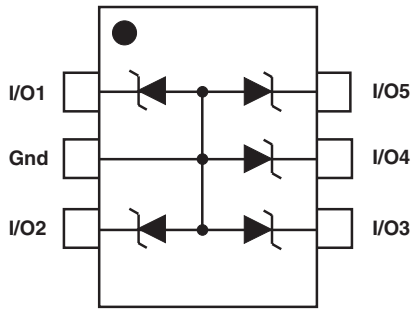
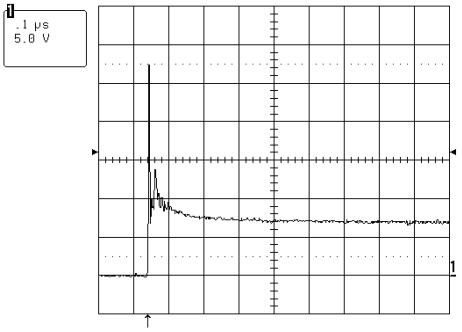



**Figure 2: ESD response to IEC61000-4-2 (air discharge 16kV, positive surge)**




**TM:** ASD is a trademark of STMicroelectronics.

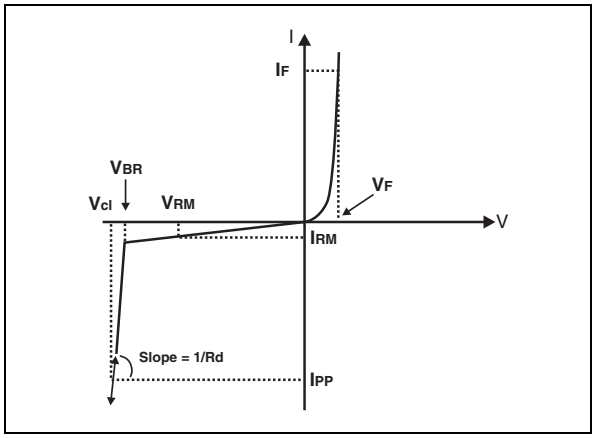
**Table 2: Absolute Maximum Ratings** ($T_{amb}$ = 25°C)

| Symbol | Parameter | | Value | Unit |
|---|---|---|---|---|
| $V_{PP}$ | ESD discharge | MIL STD 883E - Method 3015-7<br>IEC61000-4-2 air discharge<br>IEC61000-4-2 contact discharge | 25<br>20<br>15 | kV |
| $P_{PP}$ | Peak pulse power (8/20µs) | | 100 | W |
| $T_j$ | Junction temperature | | 150 | °C |
| $T_{stg}$ | Storage temperature range | | -55 to +150 | °C |
| $T_L$ | Maximum lead temperature for soldering during 10 s at 5mm for case | | 260 | °C |
| $T_{op}$ | Operating temperature range (note 1) | | -40 to +125 | °C |

**Note 1:** The evolution of the operating parameters versus temperature is given by curves and $\alpha T$ parameter.

**Table 3: Electrical Characteristics** ($T_{amb}$ = 25°C)

| Symbol | Parameter |
|---|---|
| $V_{RM}$ | Stand-off voltage |
| $V_{BR}$ | Breakdown voltage |
| $V_{CL}$ | Clamping voltage |
| $I_{RM}$ | Leakage current |
| $I_{PP}$ | Peak pulse current |
| $\alpha T$ | Voltage temperature coefficient |
| $V_F$ | Forward voltage drop |
| C | Capacitance |
| $R_d$ | Dynamic resistance |




| Type | $V_{BR}$ @ $I_R$ | | | $I_{RM}$ @ $V_{RM}$ | | $R_d$ | $\alpha T$ | C | $V_F$ @ $I_F$ | |
|---|---|---|---|---|---|---|---|---|---|---|
| | min. | max. | | max. | | typ. note 2 | max. note 3 | typ. 0V bias | max. | |
| | V | V | mA | µA | V | mΩ | $10^{-4}$/°C | pF | V | mA |
| ESDA6V1-5SC6 | 6.1 | 7.2 | 1 | 1 | 3 | 590 | 6 | 50 | 1.25 | 200 |

**Note 2:** Square pulse, $I_{PP}$ = 15A, $t_p$=2.5µs.

**Note 3:** $\Delta V_{BR} = \alpha T^* (T_{amb} - 25°C) * V_{BR}$ (25°C).

**Figure 3: Peak power dissipation versus initial junction temperature**

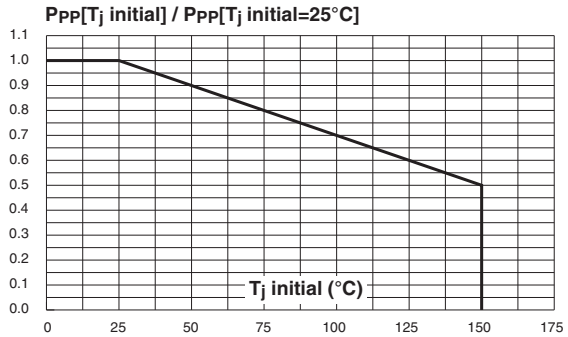



**Figure 4: Peak pulse power versus exponential pulse duration ($T_j$ initial = 25 °C)**

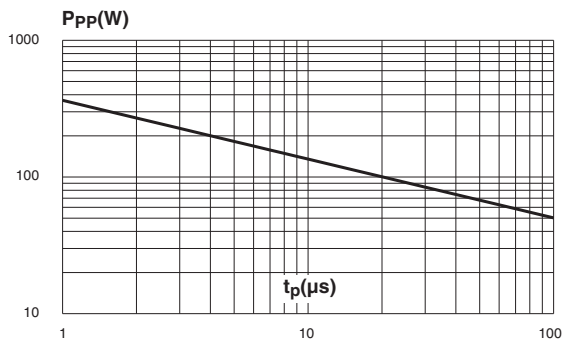


**Figure 5: Clamping voltage versus peak pulse current ($T_j$ initial = 25 °C). Rectangular waveform ($t_p$ = 2.5 µs)**

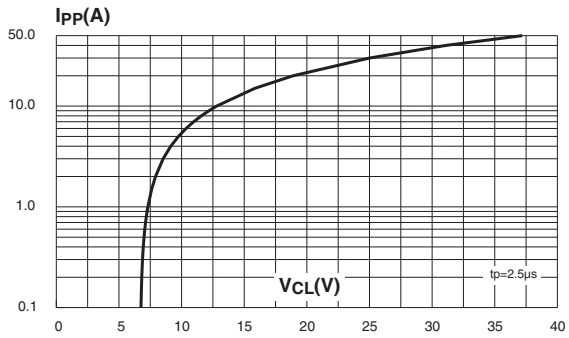



**Figure 6: Capacitance versus reverse applied voltage (typical values)**

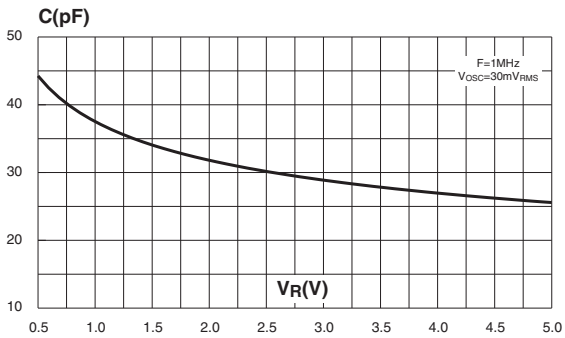



**Figure 7: Relative variation of leakage current versus junction temperature (typical values)**

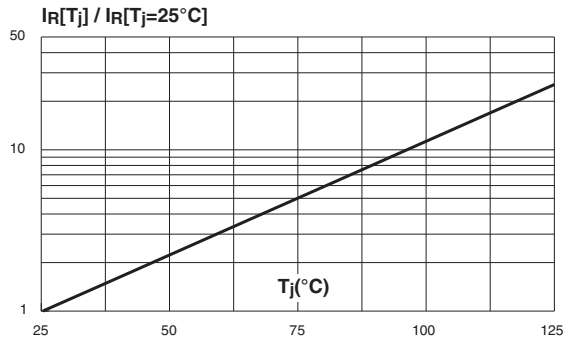



**Figure 8: Peak forward voltage drop versus peak forward current (typical values)**

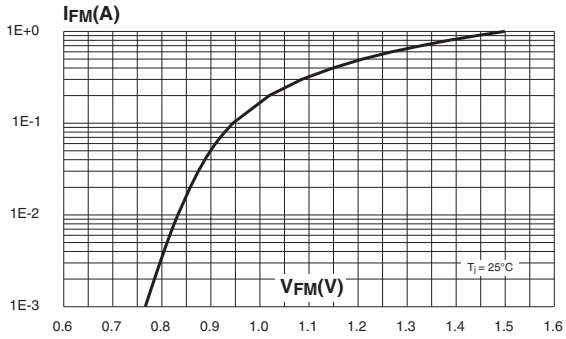



**Figure 9: Ordering information scheme**

**ESDA 6V1 - 5 SC6**

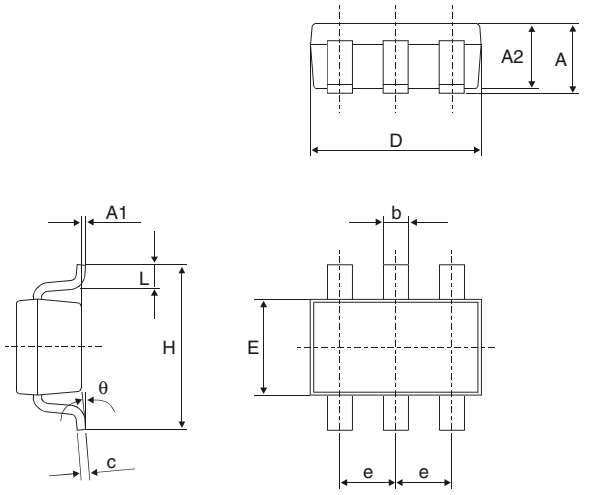
**ESD Array**

**Breakdown Voltage (min)**
6V1 = 6.1 Volt

**Number of lines protected**
5 = 5 lines

**Package**
SC6 = SOT23-6L

**Figure 10: SOT23-6L Package Mechanical Data**




| REF. | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 0.90 | | 1.45 | 0.035 | | 0.057 |
| A1 | 0 | | 0.10 | 0 | | 0.004 |
| A2 | 0.90 | | 1.30 | 0.035 | | 0.051 |
| b | 0.35 | | 0.50 | 0.014 | | 0.02 |
| C | 0.09 | | 0.20 | 0.004 | | 0.008 |
| D | 2.80 | | 3.05 | 0.110 | | 0.120 |
| E | 1.50 | | 1.75 | 0.059 | | 0.069 |
| e | | 0.95 | | | 0.037 | |
| H | 2.60 | | 3.00 | 0.102 | | 0.118 |
| L | 0.10 | | 0.60 | 0.004 | | 0.024 |
| θ | | | 10° | | | 10° |

**Figure 11: Foot Print Dimensions** (in millimeters)

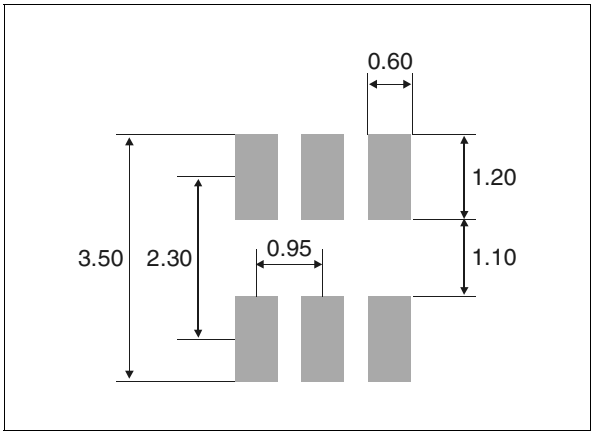



**Table 4: Ordering Information**

| Part Number | Marking | Package | Weight | Base qty | Delivery mode |
|---|---|---|---|---|---|
| ESDA6V1-5SC6 | EC62 | SOT23-6L | 16.7 mg | 3000 | Tape & reel |

**Table 5: Revision History**

| Date | Revision | Description of Changes |
|---|---|---|
| Feb-2002 | 2B | Last update. |
| 4-Nov-2004 | 3 | SOT23-6L package dimensions change for reference “D” from 3.0 millimeters (0.118 inches) to 3.05 millimeters (0.120 inches). |