



# 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      |

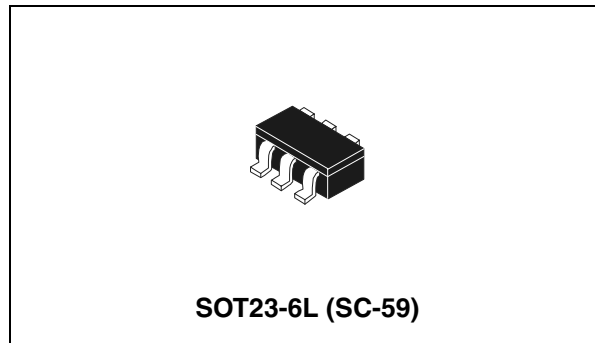


Table 1: Order Code

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

Figure 1: Functional Diagram

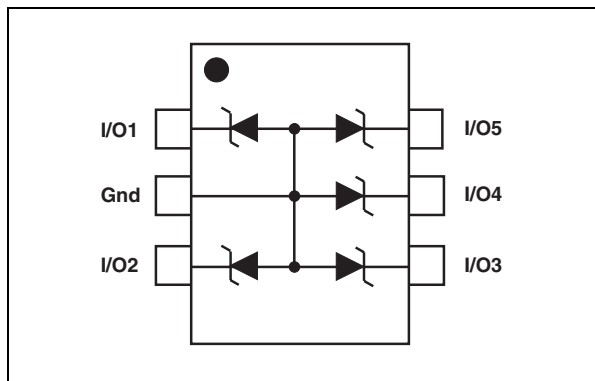
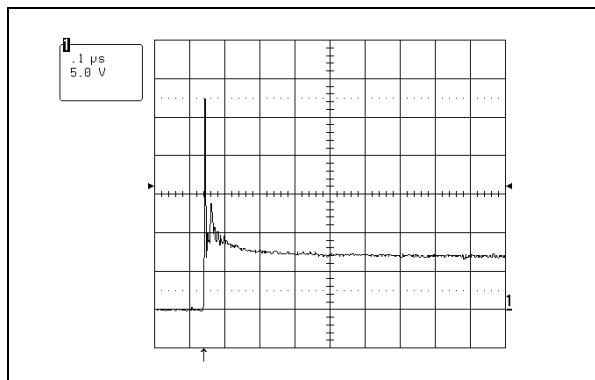


Figure 2: ESD response to IEC61000-4-2 (air discharge 16kV, positive surge)



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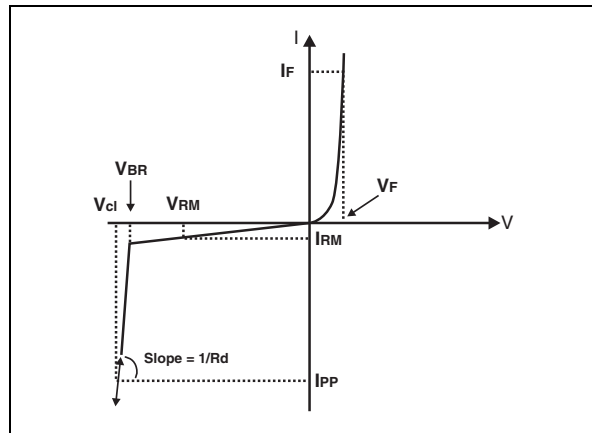
**Table 2: Absolute Maximum Ratings** ( $T_{amb} = 25^{\circ}C$ )

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

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

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

| 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              |

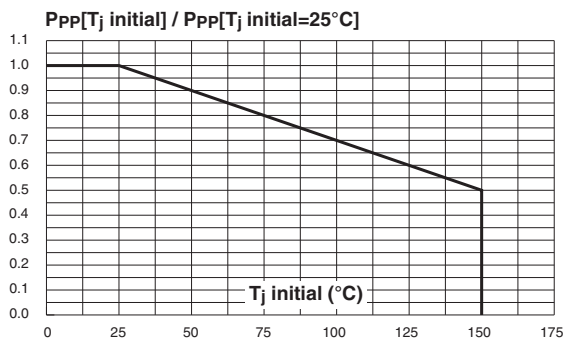


| Type         | $V_{BR}$ @ |      | $I_R$ | $I_{RM}$ @ $V_{RM}$ |   | $R_d$      | $\alpha T$          | $C$ | $V_F$ @ $I_F$ |     |
|--------------|------------|------|-------|---------------------|---|------------|---------------------|-----|---------------|-----|
|              | min.       | max. |       | max.                |   |            |                     |     | max.          |     |
|              | V          | V    | mA    | $\mu A$             | V | m $\Omega$ | $10^{-4}/^{\circ}C$ | pF  | V             | mA  |
| ESDA6V1-5SC6 | 6.1        | 7.2  | 1     | 1                   | 3 | 590        | 6                   | 50  | 1.25          | 200 |

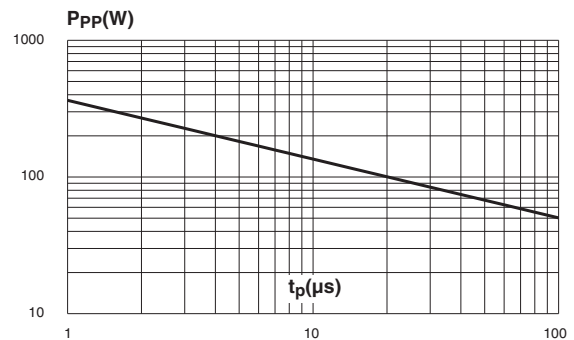
**Note 2:** Square pulse,  $I_{PP} = 15A$ ,  $t_p = 2.5\mu s$ .

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

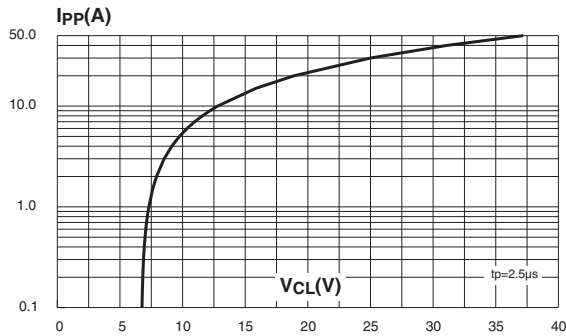
**Figure 3: Peak power dissipation versus initial junction temperature**



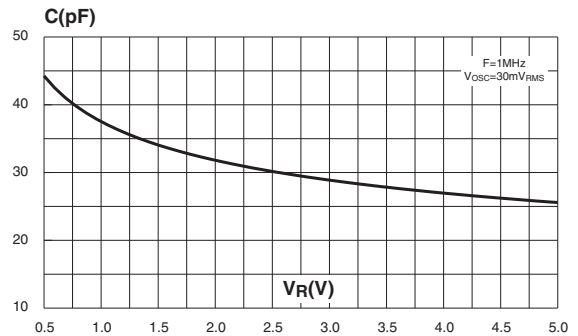
**Figure 4: Peak power dissipation versus exponential pulse duration ( $T_j$  initial = 25 °C)**



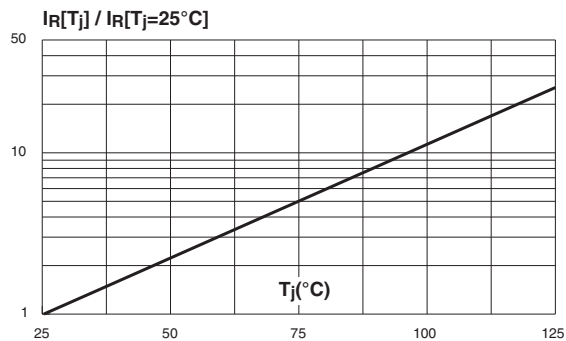
**Figure 5: Clamping voltage versus peak pulse current ( $T_j$  initial = 25 °C).  
Rectangular waveform ( $t_p = 2.5 \mu s$ )**



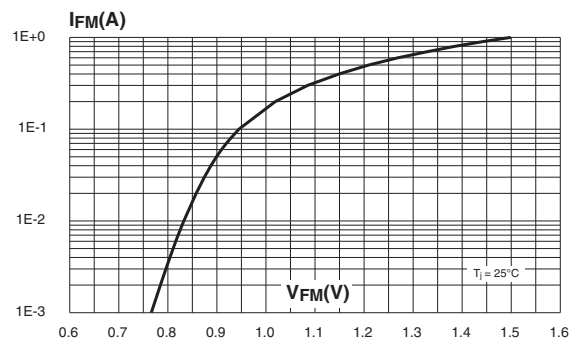
**Figure 6: Capacitance versus reverse applied voltage (typical values)**



**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**

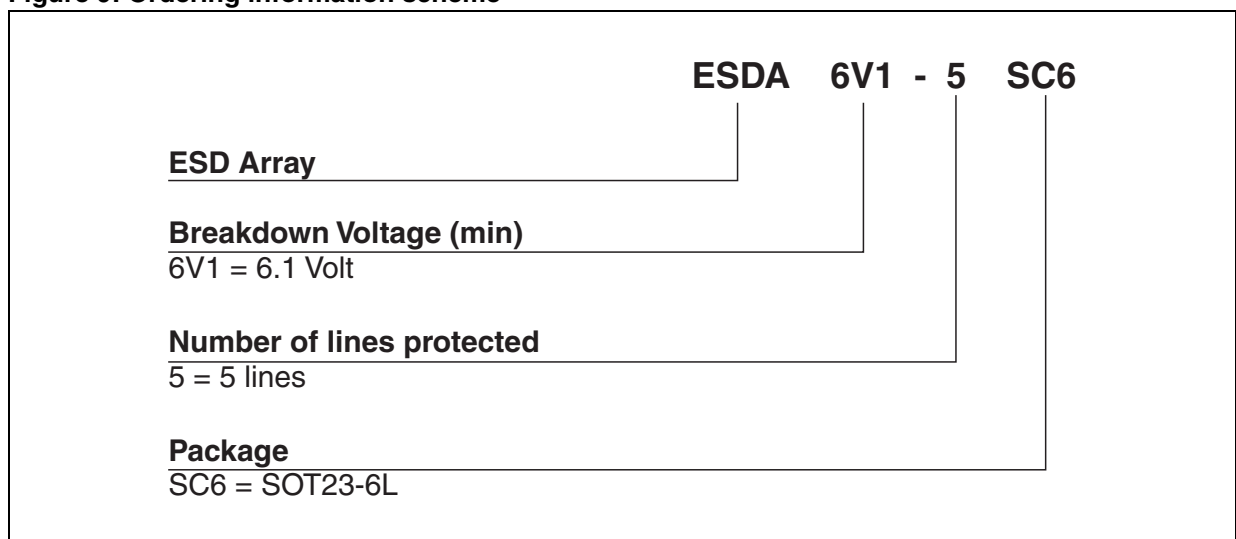


Figure 10: SOT23-6L Package Mechanical Data

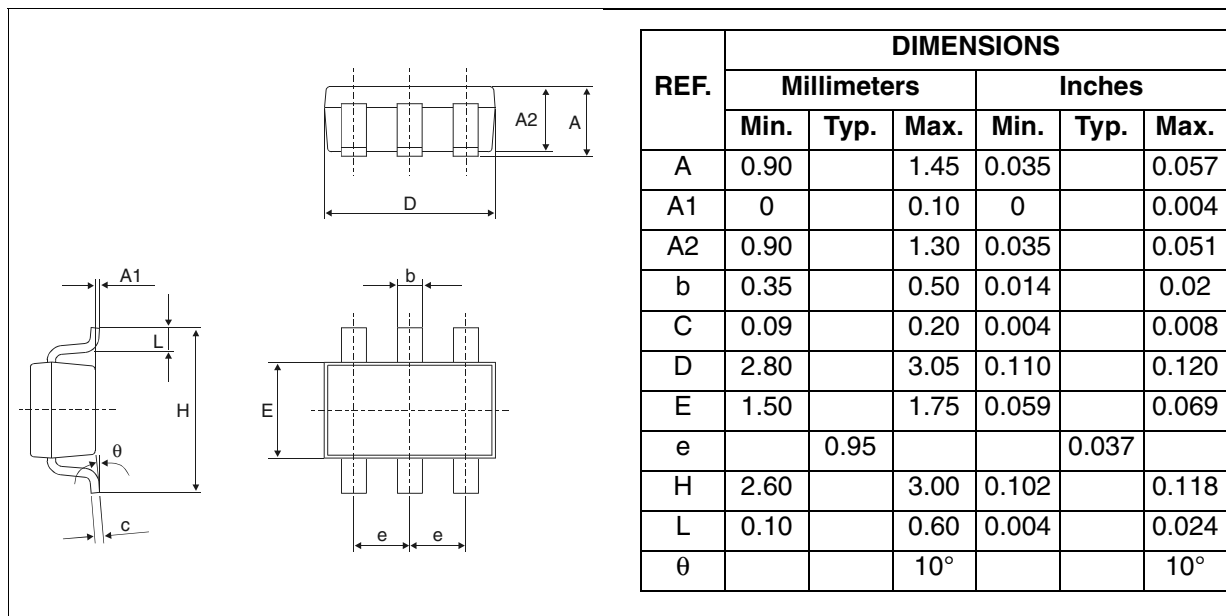


Figure 11: Foot Print Dimensions (in millimeters)

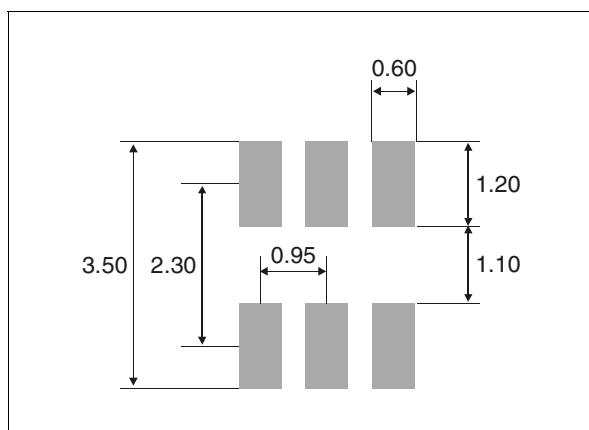


Table 4: Ordering Information

| 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). |

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