



Application Specific Discretes
A.S.D.

ESDA6V1-5P6 TRANSIL™ ARRAY FOR ESD PROTECTION

MAIN APPLICATIONS

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

- Computers
- Printers
- Communication systems and cellular phones
- Video equipment

This device is particularly adapted to the protection of symmetrical signals.

FEATURES

- 5 UNIDIRECTIONAL TRANSIL™ FUNCTIONS.
- BREAKDOWN VOLTAGE $V_{BR} = 6.1V$ MIN
- LOW LEAKAGE CURRENT < 500 nA
- VERY SMALL PCB AREA < 2.6 mm²

DESCRIPTION

The ESDA6V1-5P6 is a monolithic array designed to protect up to 5 lines against ESD transients.

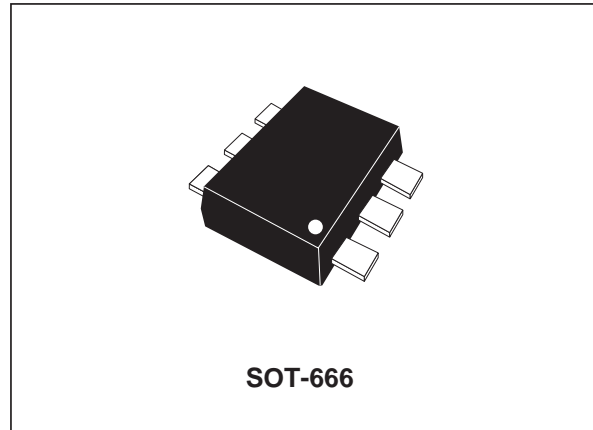
This device is ideal for applications where board space saving is required.

BENEFITS

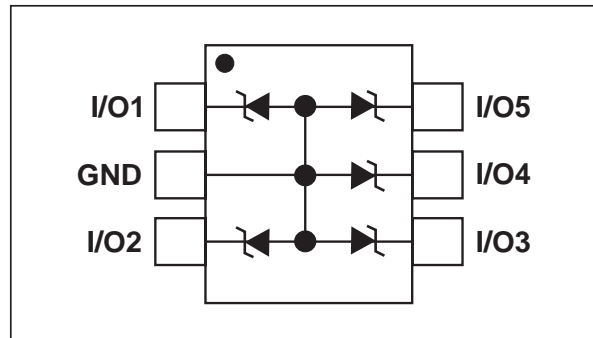
- High ESD protection level.
- High integration.
- Suitable for high density boards.

COMPLIES WITH THE FOLLOWING STANDARDS :

- IEC61000-4-2 level 4: 15 kV (air discharge)
8 kV (contact discharge)
- MIL STD 883E-Method 3015-7: class 3
25kV HBM (Human Body Model)



FUNCTIONAL DIAGRAM



ESDA6V1-5P6

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^{\circ}\text{C}$)

| Symbol | Parameter | Test conditions | Value | Unit |
|-----------|--|---------------------------------|---------------------|--------------------|
| V_{PP} | ESD discharge - IEC61000-4-2 air discharge IEC61000-4-2 contact discharge | | ± 15 ± 8 | kV |
| P_{PP} | Peak pulse power (8/20 μs) (see note 1) | $T_j \text{ initial} = T_{amb}$ | 150 | W |
| T_j | Junction temperature | | 125 | $^{\circ}\text{C}$ |
| T_{stg} | Storage temperature range | | - 55 to + 150 | $^{\circ}\text{C}$ |
| T_L | Maximum lead temperature for soldering during 10s at 5mm for case | | 260 | $^{\circ}\text{C}$ |
| T_{op} | Operating temperature range | | - 40 to + 150 | $^{\circ}\text{C}$ |

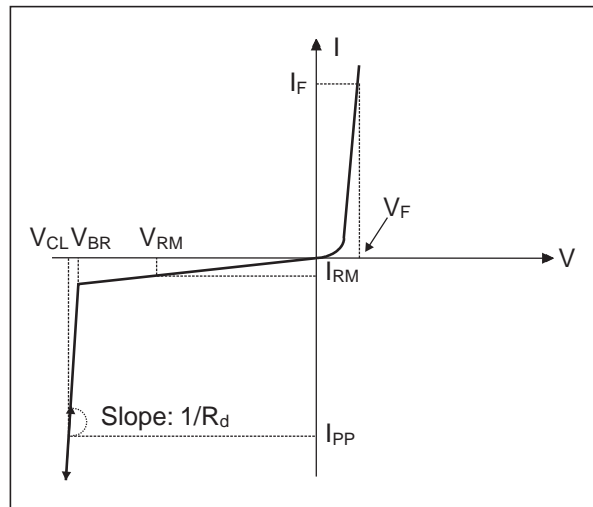
Note 1: for a surge greater than the maximum values, the diode will fail in short-circuit.

THERMAL RESISTANCES

| Symbol | Parameter | Value | Unit |
|---------------|--|-------|-----------------------------|
| $R_{th(j-a)}$ | Junction to ambient on printed circuit on recommended pad layout | 220 | $^{\circ}\text{C}/\text{W}$ |

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$)

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



| Types | V_{BR} @ | | I_R | I_{RM} @ V_{RM} | | R_d typ. | αT max. | C typ. @ 0V |
|-------------|------------|------|-------|---------------------|---|---------------|----------------------------|---------------------|
| | min. | max. | | max. | | | | |
| | V | V | mA | μA | V | Ω | $10^{-4}/^{\circ}\text{C}$ | pF |
| ESDA6V1-5P6 | 6.1 | 7.2 | 1 | 0.5 | 3 | 1.5 | 4.5 | 70 |

Fig. 1: Relative variation of peak pulse power versus initial junction temperature.

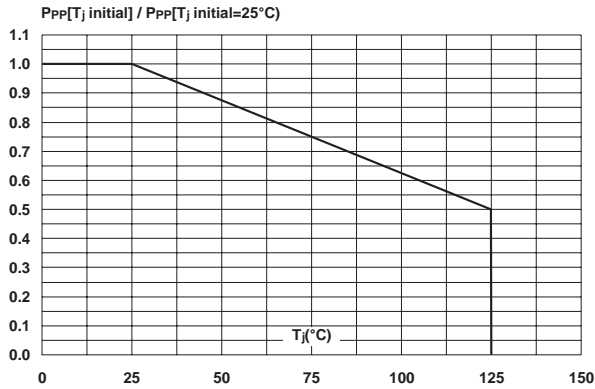


Fig. 2: Peak pulse power versus exponential pulse duration.

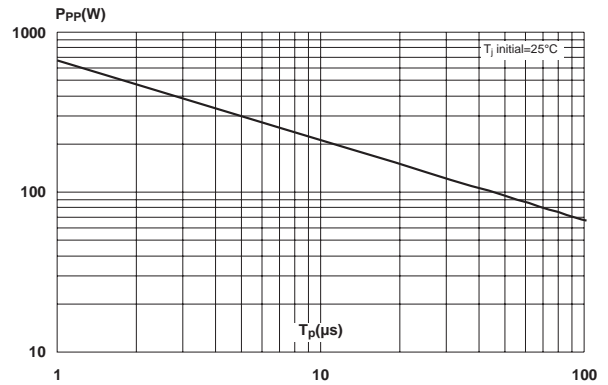


Fig. 3: Clamping voltage versus peak pulse current (typical values, rectangular waveform).

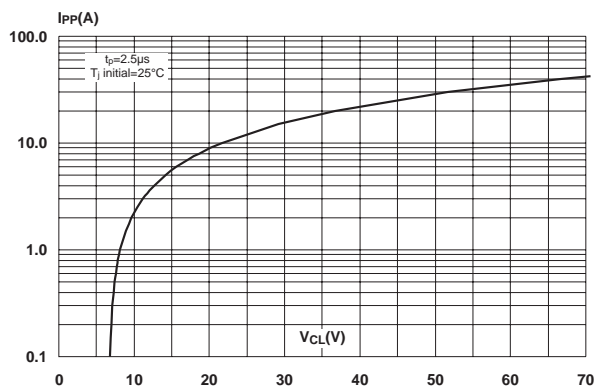


Fig. 4: Forward voltage drop versus peak forward current (typical values).

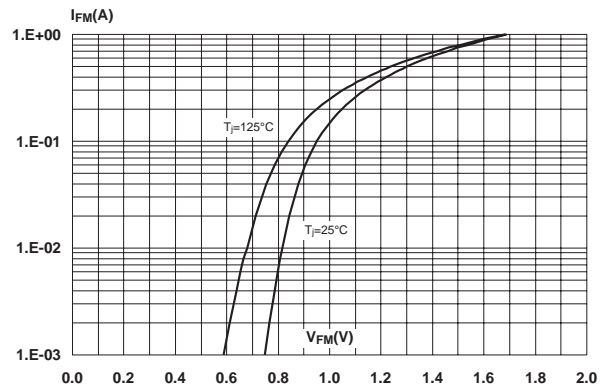


Fig. 5: Junction capacitance versus reverse voltage applied (typical values).

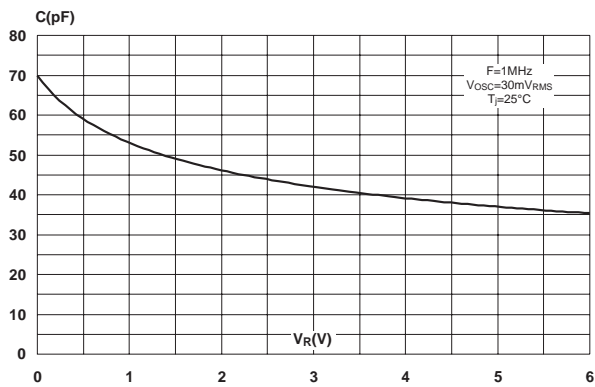
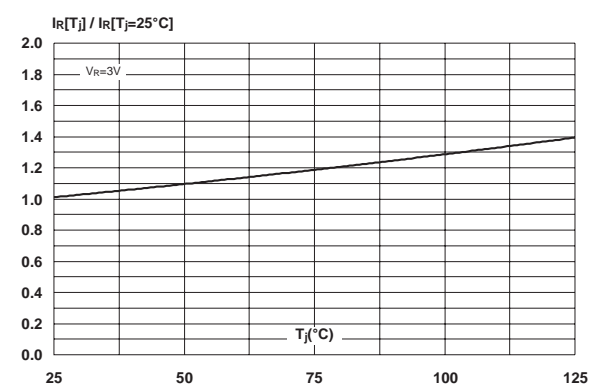


Fig. 6: Relative variation of leakage current versus junction temperature (typical values).



ESDA6V1-5P6

Fig. 7: ESD response @ $V_{PP}=8kV$ contact.

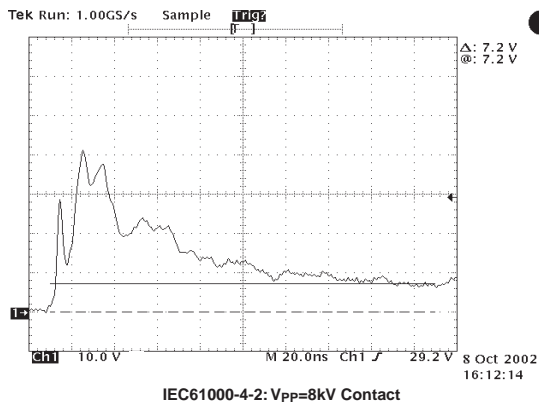
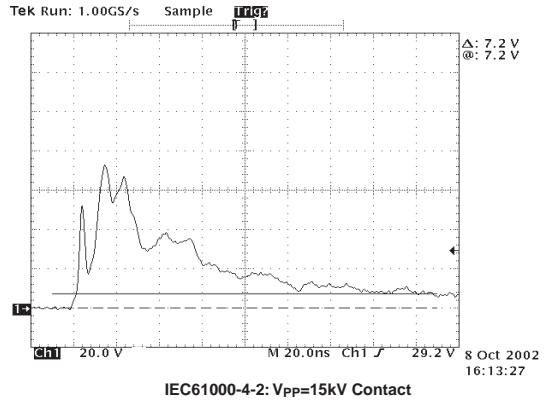
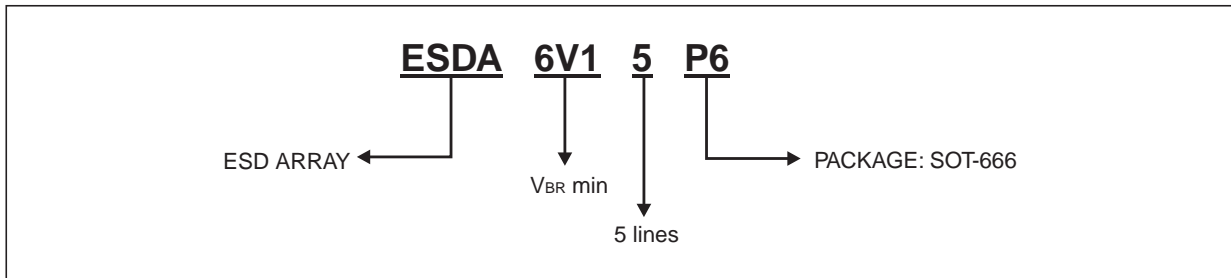


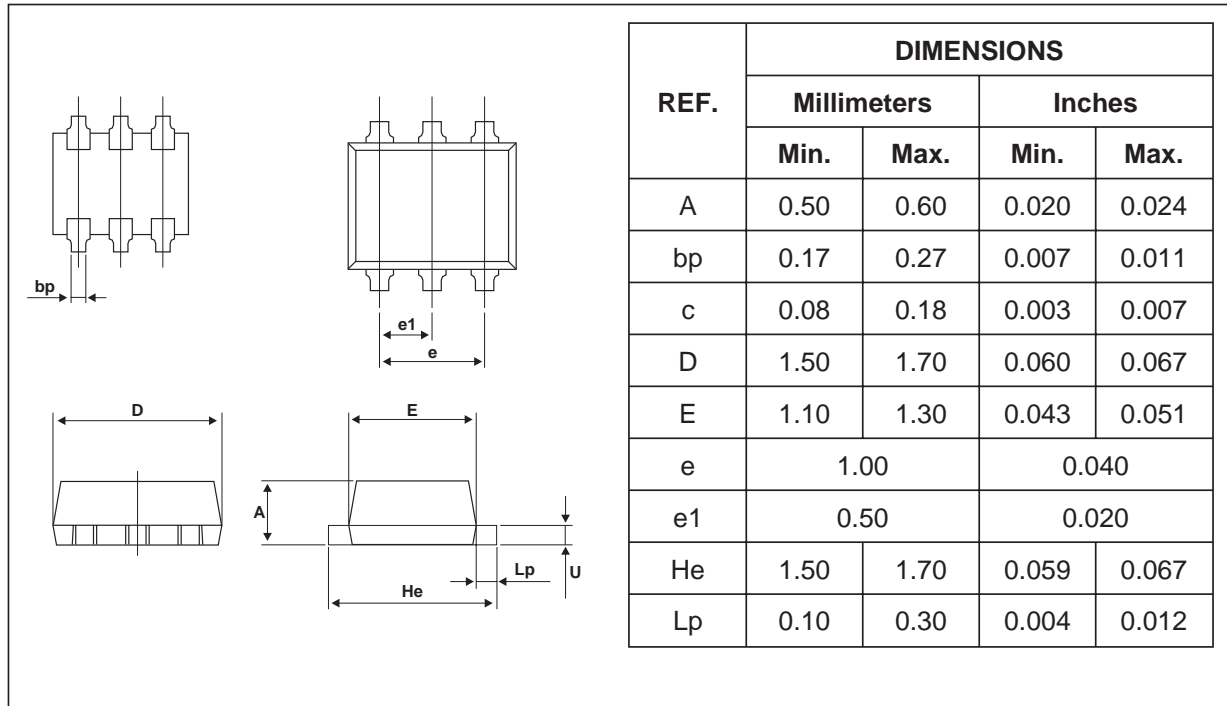
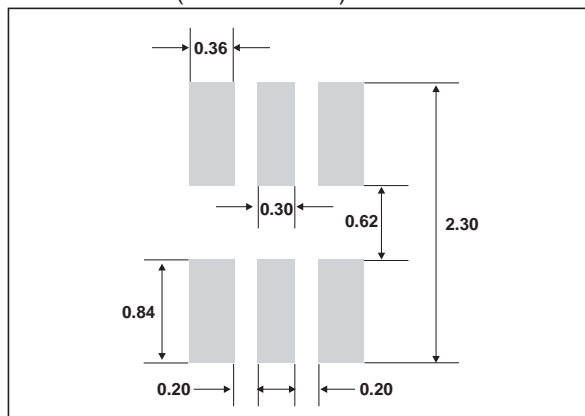
Fig. 8: ESD response @ $V_{PP}=15kV$ contact.



ORDER CODE



| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|---------|---------|---------|----------|---------------|
| ESDA6V1-5P6 | C | SOT-666 | 2.9 mg. | 3000 | Tape & reel |

PACKAGE MECHANICAL DATA
SOT-666

FOOT PRINT (in millimeters)


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