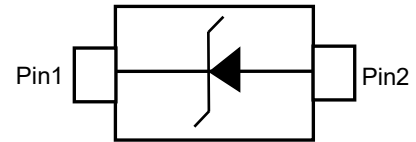


Description

The ESDA-1K is a single line Transil diode designed specifically for the protection of integrated circuits in portable equipment and miniaturized electronics devices subject to ESD and EOS transient overvoltages.



Features

- Breakdown voltage: 12 V, 18 V
- Unidirectional device
- High peak power dissipation: 450 W (8/20 μ s waveform)
- ESD protection level better than IEC 61000-4-2 level 4: 30 kV contact discharge.
- Low leakage current < 0.5 μ A at 5 V
- PCB area: 1.3 mm²

Applications

- Computers
- Printers
- Communication systems
- Cellular phone handsets and accessories
- Video equipment

Benefits

- High EOS and ESD protection level
- High integration
- Suitable for high density board
- Small package

Characteristics

Absolute maximum ratings ($T_{amb} = 25\text{ }^{\circ}\text{C}$)

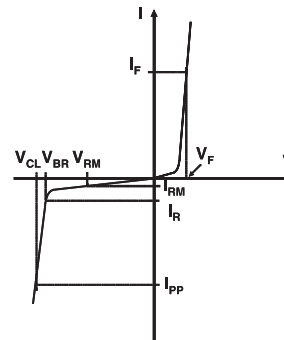
| Symbol | Parameter | | Value | Unit |
|-----------|--|---------------------------------|-------------|--------------------|
| V_{PP} | Peak pulse voltage | IEC 61000-4-2 air discharge | 30 | kV |
| | | IEC 61000-4-2 contact discharge | 30 | |
| T_j | Operating Junction temperature rage | | -40 to +150 | $^{\circ}\text{C}$ |
| T_{stg} | Storage temperature range | | -65 to +150 | $^{\circ}\text{C}$ |
| T_L | Maximum lead temperature for soldering during 10 s | | 260 | $^{\circ}\text{C}$ |

Absolute maximum ratings ($t_{amb} = 25\text{ }^{\circ}\text{C}$) - product specific parameters

| Order code | I_{PP} (A) peak pulse current (8/20 μs) | P_{PP} (W) peak pulse power (8/20 μs) |
|------------|---|---|
| ESDA12-1K | 16 | 450 |
| ESDA18-1K | 12 | 400 |

Electrical characteristics (definitions)

| Symbol | Parameter |
|------------|------------------------------|
| V_{BR} | = Breakdown voltage |
| V_{CL} | = Clamping voltage |
| I_{RM} | = Leakage current @ V_{RM} |
| V_{RM} | = Stand-off voltage |
| I_F | = Forward current |
| I_{PP} | = Peak pulse current |
| I_R | = Breakdown current |
| V_F | = Forward voltage drop |
| R_d | = Dynamic impedance |
| αT | = Voltage temperature |



Electrical characteristics (values, $T_{amb} = 25\text{ }^{\circ}\text{C}$)

| Order code | $V_{BR} @ I_R$ | | | $I_{RM} @ V_{RM}$ | | $V_{CL} @ I_{PP} (8/20\ \mu\text{s})$ | | | | $C_{line}^{(1)}$ |
|------------|----------------|------|----|-------------------|----|---------------------------------------|---|------|----|------------------|
| | Min. | Typ. | | Max. | | Max. | | Max. | | Max. |
| | V | V | mA | μA | V | V | A | V | A | pF |
| ESDA12-1K | 12 | 13 | 1 | 0.5 | 10 | 16.5 | 1 | 28 | 16 | 150 |
| ESDA18-1K | 18 | 19 | 1 | 0.5 | 15 | 24 | 1 | 34 | 12 | 105 |

1. $V_R = 0\text{ V}$, $F_{osc} = 1\text{ MHz}$, $V_{osc} = 30\text{ mV}$

Figure 3. Peak pulse power dissipation versus exponential pulse duration (typical values)

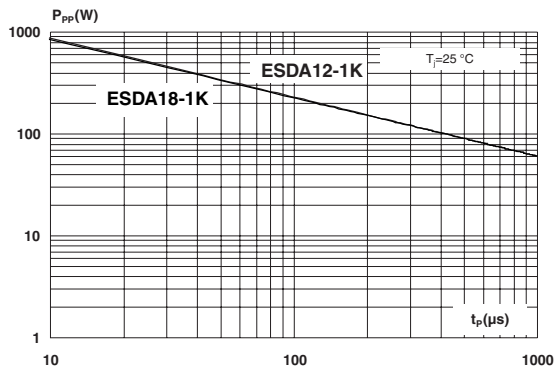


Figure 4. Peak pulse power dissipation versus initial junction temperature (typical values)

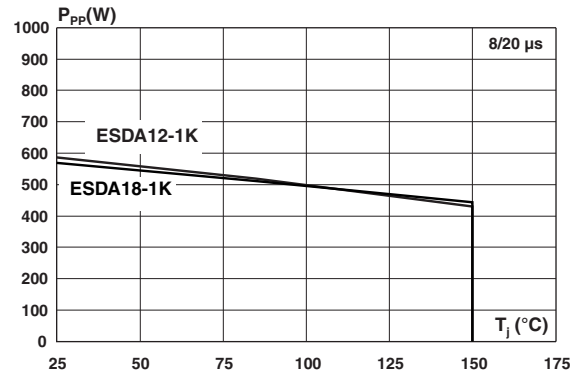


Figure 5. Clamping voltage versus peak pulse current (typical values)

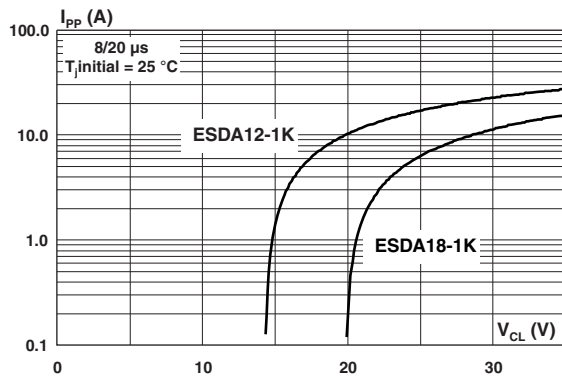


Figure 6. Leakage current versus junction temperature (typical values)

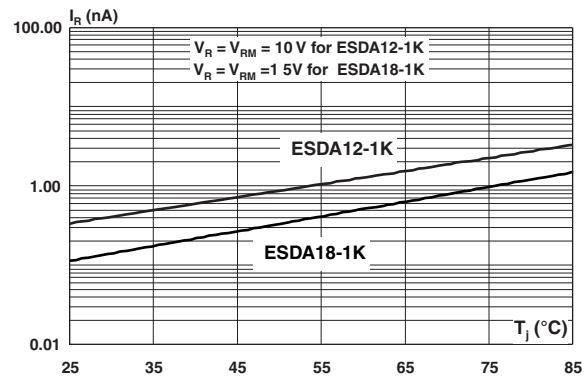


Figure 7. ESD response to IEC 61000-4-2 (+15 kV air discharge) ESDA12-1K

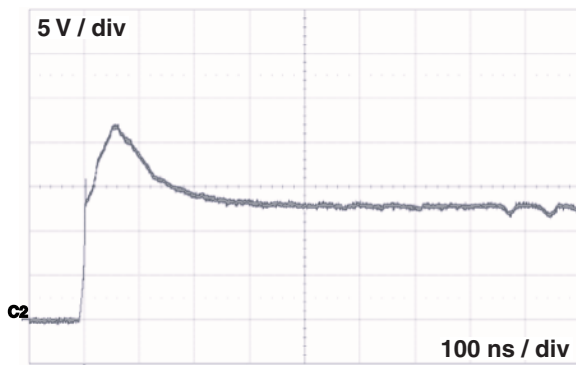
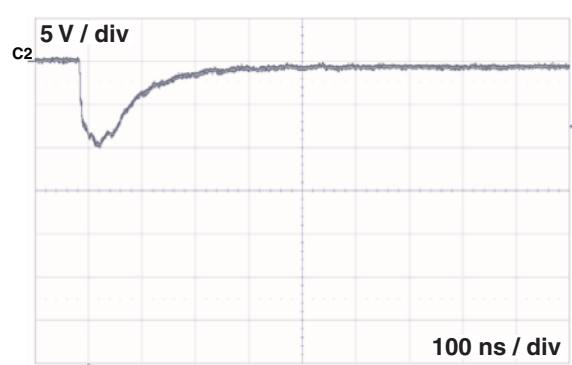


Figure 8. ESD response to IEC 61000-4-2 (-15 kV air discharge) ESDA12-1K



Marking

Ordering information

| Order code | Package | Base qty | Delivery mode | Marking |
|---------------|---------|----------|---------------|---------|
| UMW ESDA12-1K | SOD-523 | 3000 | Tape and reel | 12 UMW |
| UMW ESDA18-1K | SOD-523 | 3000 | Tape and reel | 18 UMW |

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[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)