

SuperESD - SET23A12L02-E18

1. Description

The SET23A12L02-E18 is a Transient Voltage Suppressor Arrays that designed to protect components which are connected to data and transmission lines against electrostatic discharge (ESD), electrical fast Transients (EFT), and lightning. All pins are rated to withstand 30kV ESD pulses using the IEC61000-4-2 air discharge method.

2. Features

- IEC 61000-4-2 Level 4 ESD Protection
 - $\pm 30\text{kV}$ Contact Discharge
 - $\pm 30\text{kV}$ Air Discharge
- 450W Peak pulse Power (8/20us)
- Low clamping voltage
- Working voltage: 12V
- Low leakage current
- ESD Protection > 15kV
- RoHS compliant
- Protecting one bidirectional or two unidirectional lines

3. Applications

- Portable electronics
- Control & monitoring systems
- Servers, notebooks, and desktop PCs
- Set-top box
- Communication systems

4. Ordering Information

| Part Number | Package | Marking | Material | Packing | Quantity per reel | Flammability Rating | Reel Size |
|-----------------|---------|---------|--------------|-------------|-------------------|---------------------|-----------|
| SET23A12L02-E18 | SOT-23 | M12 | Halogen free | Tape & Reel | 3,000 PCS | UL 94V-0 | 7 inches |

Table-1 Ordering information

5. Pin Configuration and Functions

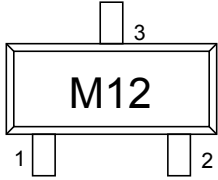
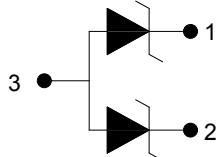
| Pin | Name | Description | Outline | Circuit Diagram |
|-----|------|----------------|--|---|
| 1 | IO | Connect to IO |  |  |
| 2 | IO | Connect to IO | | |
| 3 | GND | Connect to GND | | |

Table-2 Pin configuration

6. Specification

6.1. Absolute Maximum rating

Over operating free-air temperature range (unless otherwise noted)

| Parameters | Symbol | Min. | Max. | Unit |
|--|------------------|------|------|------|
| Peak pulse power (tp=8/20us)@25°C | P _{pk} | - | 500 | W |
| Peak pulse current (tp=8/20us)@25°C | I _{PP} | - | 15 | A |
| ESD (IEC61000-4-2 air discharge) @25°C | V _{ESD} | - | ±30 | kV |
| ESD (IEC61000-4-2 contact discharge) @25°C | V _{ESD} | - | ±30 | kV |
| Junction temperature | T _J | - | 150 | °C |
| Operating temperature | T _{OP} | -40 | 125 | °C |
| Storage temperature | T _{STG} | -55 | 150 | °C |
| Lead temperature | T _L | - | 260 | °C |

Table-3 Absolute Maximum rating

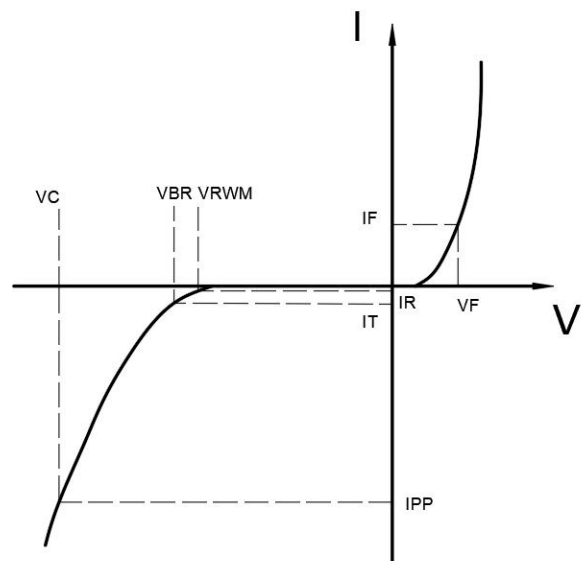
6.2. Electrical Characteristics

At TA = 25°C unless otherwise noted

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Units |
|---------------------------|-----------|--------------------------------|------|------|------|---------|
| Reverse Stand-off Voltage | V_{RWM} | | | | 12 | V |
| Reverse Breakdown Voltage | V_{BR} | $I_T=1mA$ | 13.5 | | | V |
| Reverse Leakage Current | I_R | $V_{RWM}=12V$ | | | 1 | μA |
| Clamping Voltage | V_C | $I_{PP}=15A$; $t_p=8/20\mu s$ | | 28 | | V |
| Junction Capacitance | C_J | $V_R=0V$; $f=1MHz$ | | 100 | | pF |

Table-4 Electrical Characteristics

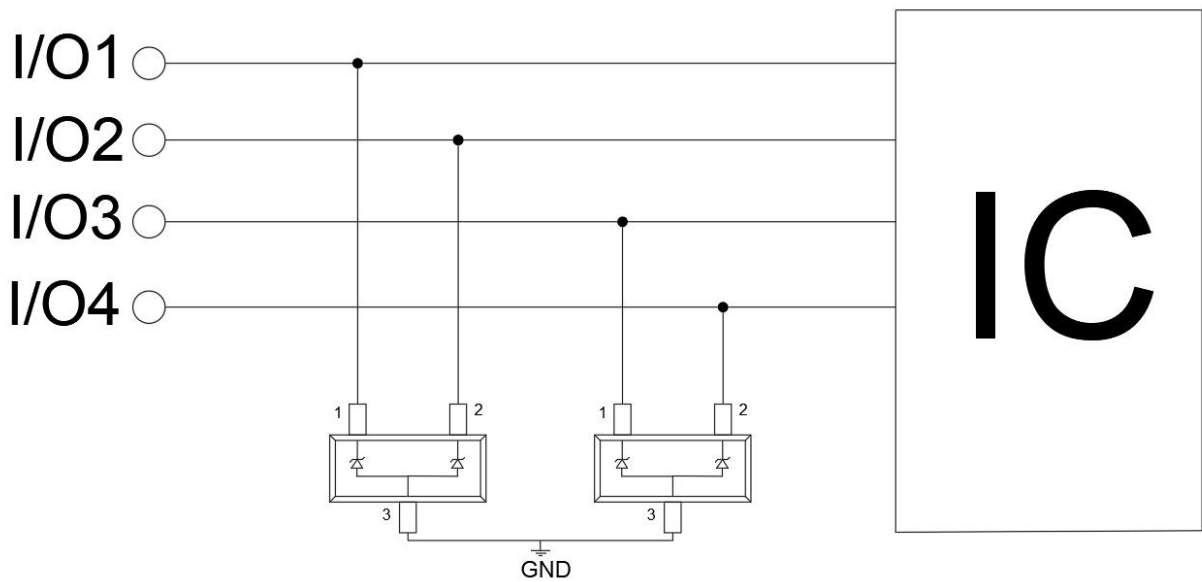
| Symbol | Parameters |
|-----------|-------------------------------------|
| V_{RWM} | Peak Reverse Working Voltage |
| I_R | Reverse Leakage Current @ V_{RWM} |
| V_{BR} | Breakdown Voltage @ I_T |
| I_T | Test Current |
| I_{PP} | Maximum Reverse Peak Pulse Current |
| V_C | Clamping Voltage @ I_{PP} |
| I_F | Forward Current |
| V_F | Forward Voltage @ I_F |



7. Typical Characteristic

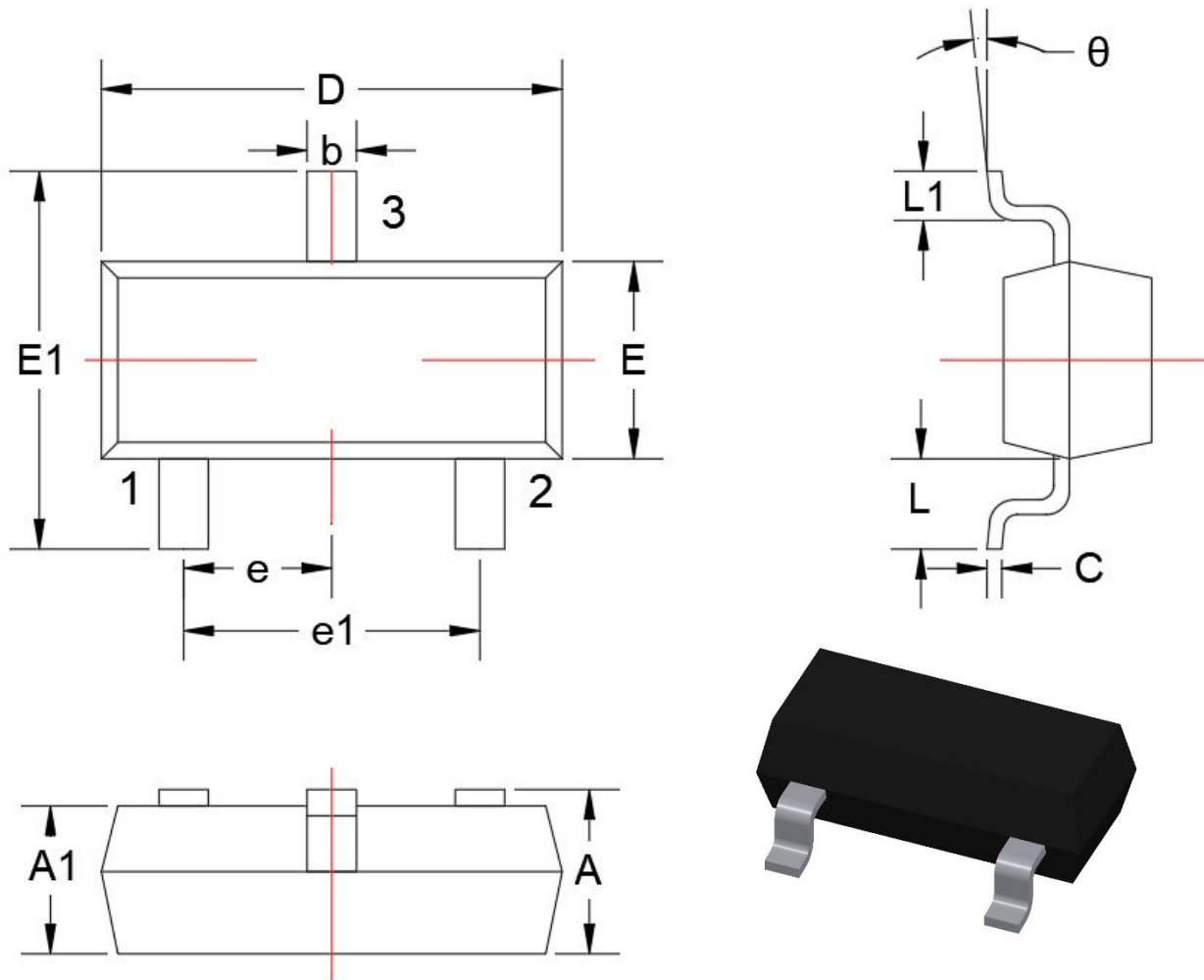


8. Typical Application



Typical Interface Application

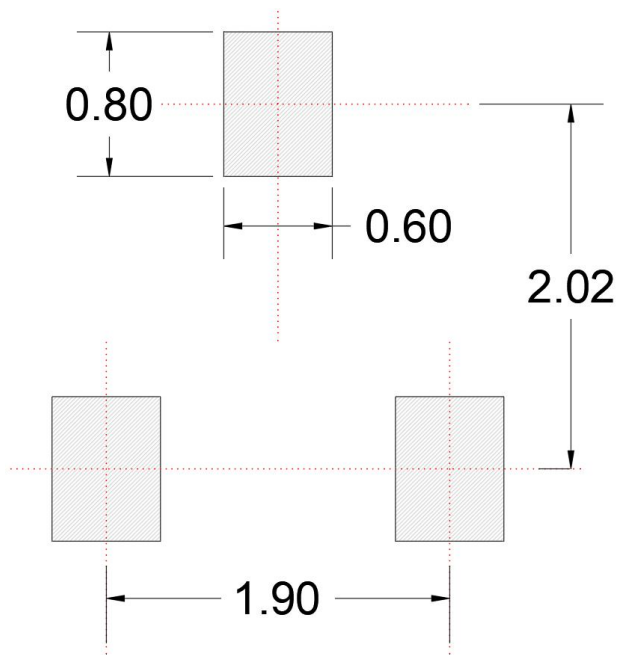
9. Dimension



| Dimensions in Millimeters | | | | | |
|---------------------------|---------|------|--------|---------|------|
| Symbol | Min. | Max. | Symbol | Min. | Max. |
| A | 0.9 | 1.15 | e1 | 1.80 | 2.00 |
| A1 | 0.00 | 0.10 | L | 0.55REF | |
| b | 0.30 | 0.50 | L1 | 0.30 | 0.50 |
| C | 0.08 | 0.15 | θ | 0° | 8° |
| D | 2.80 | 3.00 | | | |
| E | 1.20 | 1.40 | | | |
| E1 | 2.25 | 2.55 | | | |
| e | 0.95TYP | | | | |

Table-5 Product dimensions

10. Recommended Land Pattern

**Note:**

1. Controlling dimension: in millimeters
2. General tolerance: $\pm 0.05\text{mm}$
3. The pad layout is for reference only

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