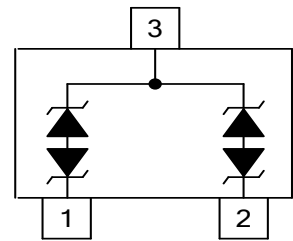


Description

They feature large cross-sectional area junctions for conduction high transient currents. They offer desirable characteristics for board level protection including fast response time, low and clamping voltage, and no device degradation. The devices may be used to meet the immunity requirements of IEC61000-4-2, level 4. The size SOT-23 package makes them ideal for use in portable electronics such as RS-422 I/Os, RS-232 I/Os, notebook computers, and servers.



Pin Configuration

Features

- IEC61000-4-2 ESD 30KV Air, 30KV contact compliance
- SOT-23 surface mount package
- Protects bidirectional two I/O lines
- Peak power dissipation of 350W under 8/20µs waveform
- Working voltage: 5V, 12V ,15V,24V
- Low leakage current
- Low operating and clamping voltages
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- AEC-Q101 qualified

Applications

- RS-232 and RS-422 data lines
- Microprocessor based equipment
- LAN/WAN equipment
- Desktops PC and servers
- Notebook, Laptop and Palmtop computers
- Set Top Box
- Peripherals
- Serial and Parallel ports

Electrical Characteristics (T_J=25°C)

| Rating | Symbol | Value | Unit |
|---------------------------------------|-----------------------------------|----------|------|
| Peak pulse power (tp=8/20µs waveform) | P _{PP} | 350 | W |
| ESD voltage (Contact discharge) | V _{ESD} | ±30 | kV |
| ESD voltage (Air discharge) | | ±30 | |
| Storage & operating temperature range | T _{STG} , T _J | -55~+150 | °C |

SDT23C05L02

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------------------|-----------|--|------|------|------|---------|
| Reverse stand-off voltage | V_{RWM} | | | | 5 | V |
| Reverse breakdown voltage | V_{BR} | $I_{BR}=1mA$ | 6 | | | V |
| Reverse leakage current | I_R | $V_R=5V$ Each I/O pin | | | 5 | μA |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=1A$ | | | 9.8 | V |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=10A$ | | | 18 | V |
| Off state junction capacitance | C_J | 0Vdc, f=1MHz Between I/O pins and GND | | 150 | | pF |

SDT23C12L02

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------------------|-----------|--|------|------|------|---------|
| Reverse stand-off voltage | V_{RWM} | | | | 12 | V |
| Reverse breakdown voltage | V_{BR} | $I_{BR}=1mA$ | 13.3 | | | V |
| Reverse leakage current | I_R | $V_R=5V$ Each I/O pin | | | 1 | μA |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=1A$ | | | 19 | V |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=10A$ | | | 32 | V |
| Off state junction capacitance | C_J | 0Vdc, f=1MHz Between I/O pins and GND | | 65 | | pF |

SDT23C15L02

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------------------|-----------|--|------|------|------|---------|
| Reverse stand-off voltage | V_{RWM} | | | | 15 | V |
| Reverse breakdown voltage | V_{BR} | $I_{BR}=1mA$ | 16.7 | | | V |
| Reverse leakage current | I_R | $V_R=5V$ Each I/O pin | | | 1 | μA |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=1A$ | | | 24 | V |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=10A$ | | | 38 | V |
| Off state junction capacitance | C_J | 0Vdc, f=1MHz Between I/O pins and GND | | 60 | | pF |

SDT23C24L02

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|-------------------------------------|-----------|--|------|------|------|---------|
| Reverse stand-off voltage | V_{RWM} | | | | 24 | V |
| Reverse breakdown voltage | V_{BR} | $I_{BR}=1mA$ | 26.7 | | | V |
| Reverse leakage current | I_R | $V_R=5V$ Each I/O pin | | | 1 | μA |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=1A$ | | | 43 | V |
| Clamping voltage (tp=8/20 μs) | V_C | $I_{PP}=5A$ | | | 52 | V |
| Off state junction capacitance | C_J | 0Vdc, f=1MHz Between I/O pins and GND | | 40 | | pF |

Typical Characteristics Curves

Figure 1. Power Derating Curve

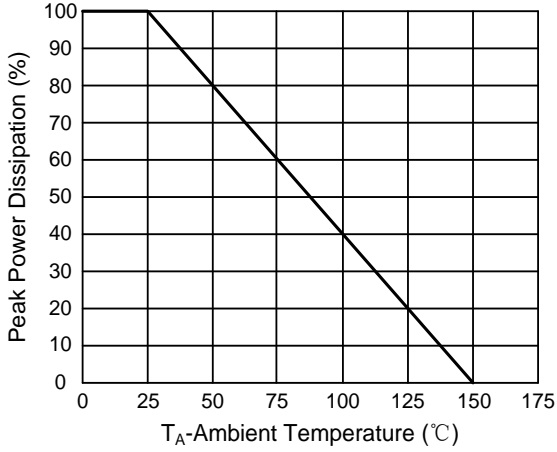


Figure 2. Pulse Waveforms

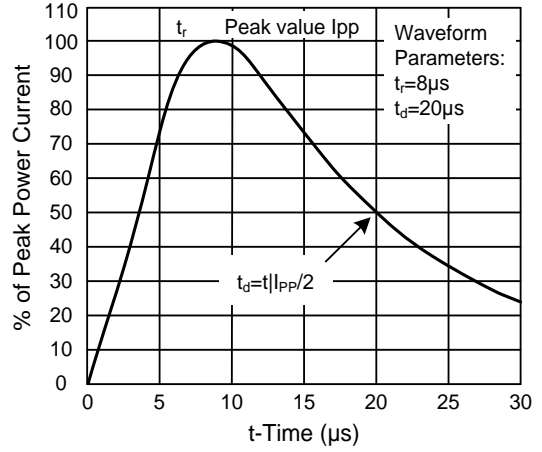


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

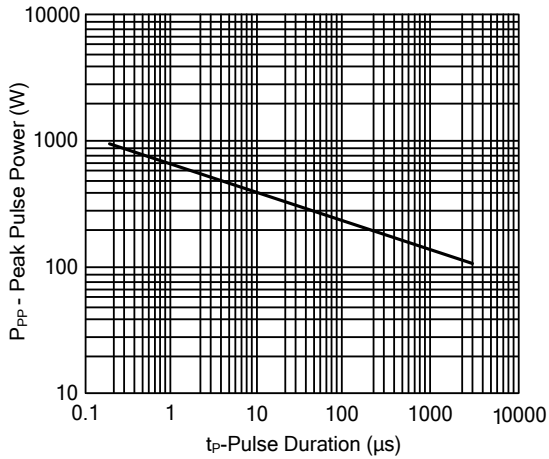


Figure 4. Normalized Capacitance vs. Reverse Voltage

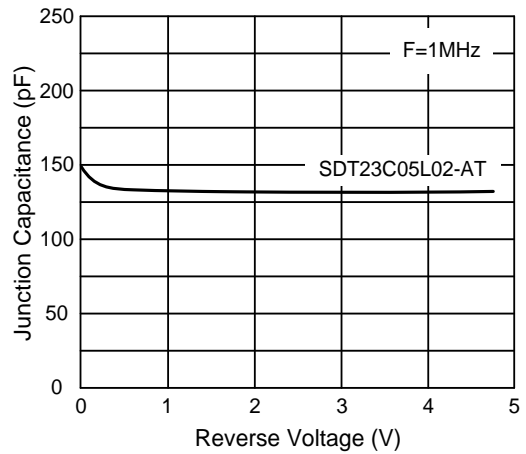


Figure 5. ESD Clamping (8kV Contact IEC61000-4-2)

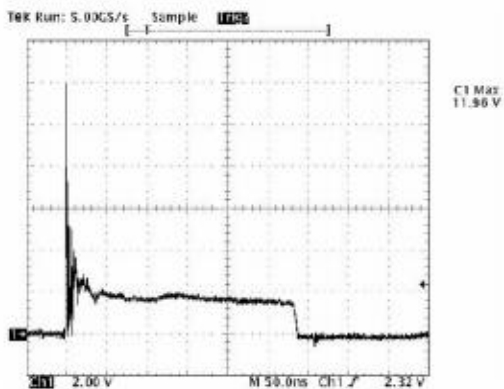
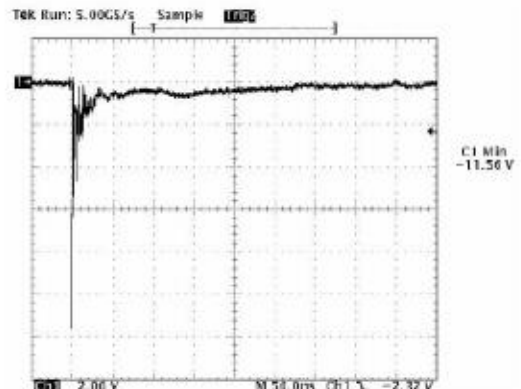
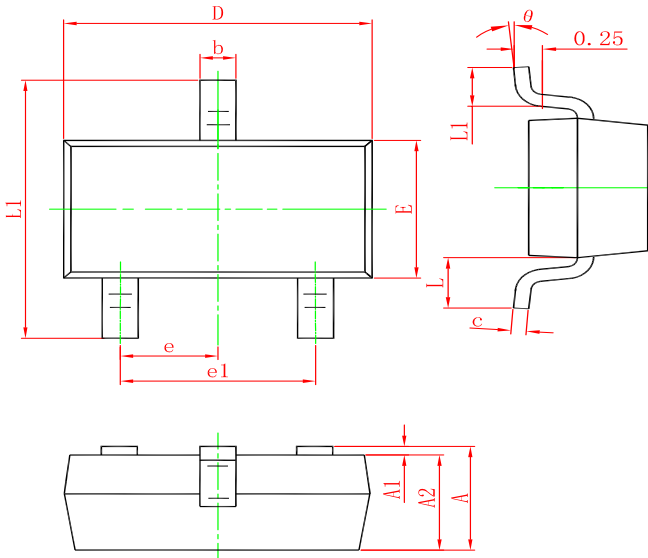


Figure 6. ESD Clamping (6kV Contact IEC61000-4-2)

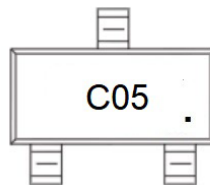


SOT-23 PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.900 | 1.150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0.035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950 TYP. | | 0.037 TYP. | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550 REF. | | 0.022 REF. | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |

Marking



Ordering information

| Order code | Package | Baseqty | Deliverymode | Marking |
|-----------------|---------|---------|---------------|---------|
| UMW SDT23C05L02 | SOT-23 | 3000 | Tape and reel | C05 |
| UMW SDT23C12L02 | SOT-23 | 3000 | Tape and reel | C12 |
| UMW SDT23C15L02 | SOT-23 | 3000 | Tape and reel | C15 |
| UMW SDT23C24L02 | SOT-23 | 3000 | Tape and reel | C24 |

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