

ESD PROTECTION DIODE

VOLTAGE RANGE 5 to 24 Volts POWER RATING 350 Watts

FEATURES

- * IEC61000-4-2(ESD)±15kV(air),±8kV(CONTACT)
- * IEC61000-4-2(EFT)40A(5/50ns)
- * 350Watts Peak Pulse Power per (tp=8/20us)
- * Protects one I/O line(bidirectional)
- * Low clamping voltage
- * Working voltages:5V,12V,15V,24V
- * Low leakage current
- * Material:Halogen free

MECHANICAL DATA

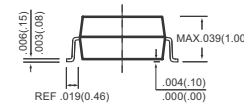
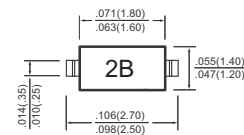
- * SOD-323 package
- * Flammability Rating:UL 94V-0
- * Packaging:Tape and Reel
- * High temperature soldering guaranteed:260°C/10s
- * Reel size:7 inch

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified.



SOD-323



Marking :SD05C-----2B ,SD12C-----12C
SD15C-----15C ,SD24C-----24C

Dimensions in inches and (millimeters)

MAXIMUM RATING @ Ta=25 °C unless otherwise specified

| Parameter | Symbol | Limits | Unit |
|--|-----------|---------------|------|
| Peak pulse power($t_p=8/20 \mu s$) | P_{pk} | 350 | W |
| Peak pulse current($t_p=8/20 \mu s$) | I_{PP} | 24 | A |
| ESD voltage(HBM waveform per IEC 6100-4-2) | V_{PP} | 30 | kV |
| Lead soldering temperature | T_L | 260 (10 sec.) | °C |
| Operating temperature | T_j | -55 to+125 | °C |
| Storage temperature | T_{STG} | -55 to+150 | °C |

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| SD05C TVS for 5V Lines | | | | | | |
|-------------------------------|---------------|-------------|-------------|-------------|-------------|---|
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
| Reverse stand-off voltage | V_{RWM} | | | 5 | V | |
| Reverse breakdown voltage | $V_{(BR)R}$ | 6 | | | V | $I_R=1mA$ |
| Clamping voltage | V_C | | | 9.8 14.5 | V | $I_{PP}=5A, t_p=8/20\mu s$ $I_{PP}=24A, t_p=8/20\mu s$ |
| Reverse leakage current | I_R | | | 10 | μA | $V_{RWM}=5V$ |
| Junction Capacitance | C_J | | | 200 | pF | $V_R=0V, f=1MHz$ |

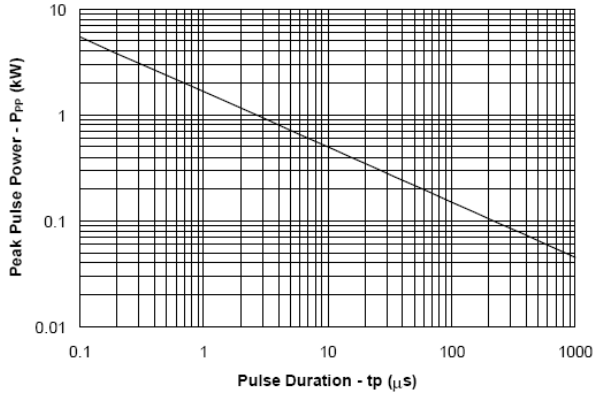
| SD12C TVS for 12V Lines | | | | | | |
|--------------------------------|---------------|-------------|-------------|-------------|-------------|---|
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
| Reverse stand-off voltage | V_{RWM} | | | 12 | V | |
| Reverse breakdown voltage | $V_{(BR)R}$ | 13.3 | | | V | $I_R=1mA$ |
| Clamping voltage | V_C | | | 19 24 | V | $I_{PP}=5A, t_p=8/20\mu s$ $I_{PP}=15A, t_p=8/20\mu s$ |
| Reverse leakage current | I_R | | | 1 | μA | $V_{RWM}=12V$ |
| Junction Capacitance | C_J | | | 100 | pF | $V_R=0V, f=1MHz$ |

| SD15C TVS for 15V Lines | | | | | | |
|--------------------------------|---------------|-------------|-------------|-------------|-------------|---|
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
| Reverse stand-off voltage | V_{RWM} | | | 15 | V | |
| Reverse breakdown voltage | $V_{(BR)R}$ | 16.7 | | | V | $I_R=1mA$ |
| Clamping voltage | V_C | | | 24 29 | V | $I_{PP}=5A, t_p=8/20\mu s$ $I_{PP}=12A, t_p=8/20\mu s$ |
| Reverse leakage current | I_R | | | 1 | μA | $V_{RWM}=15V$ |
| Junction Capacitance | C_J | | | 75 | pF | $V_R=0V, f=1MHz$ |

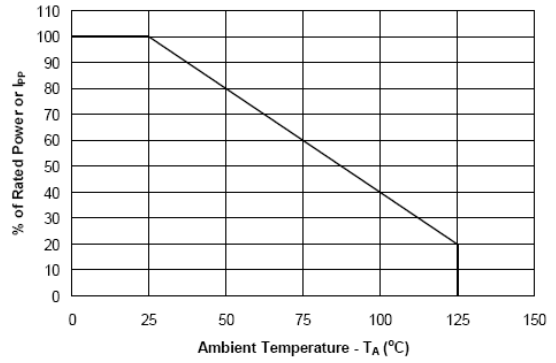
| SD24C TVS for 24V Lines | | | | | | |
|--------------------------------|---------------|-------------|-------------|-------------|-------------|--|
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions |
| Reverse stand-off voltage | V_{RWM} | | | 24 | V | |
| Reverse breakdown voltage | $V_{(BR)R}$ | 26.7 | | | V | $I_R=1mA$ |
| Clamping voltage | V_C | | | 40 44 | V | $I_{PP}=5A, t_p=8/20\mu s$ $I_{PP}=8A, t_p=8/20\mu s$ |
| Reverse leakage current | I_R | | | 1 | μA | $V_{RWM}=24V$ |
| Junction Capacitance | C_J | | | 50 | pF | $V_R=0V, f=1MHz$ |

RATING AND CHARACTERISTICS CURVES (SD05C THRU SD24C)

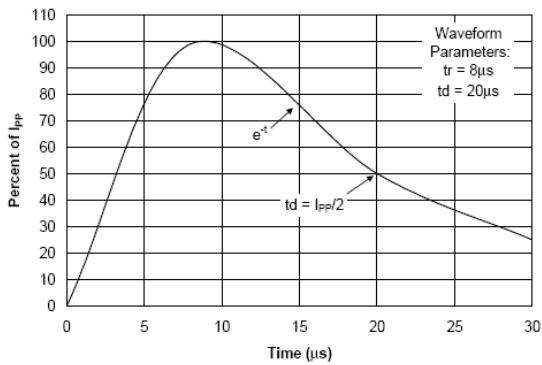
Non-Repetitive Peak Pulse Power vs. Pulse Time



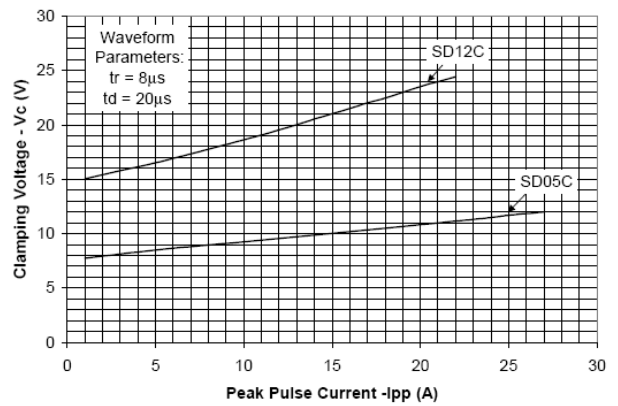
Power Derating Curve



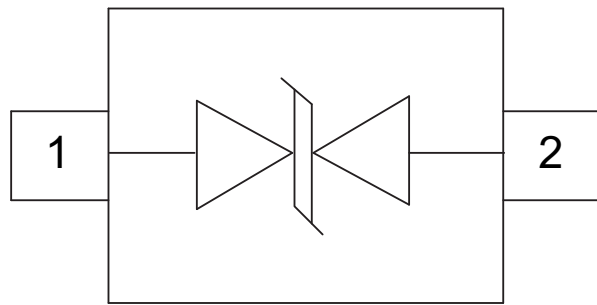
Pulse Waveform



Clamping Voltage vs. Peak Pulse Current

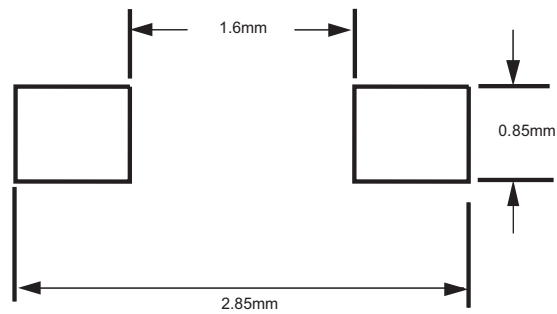


Schematic & PIN Configuration



SOD-323 (Top View)

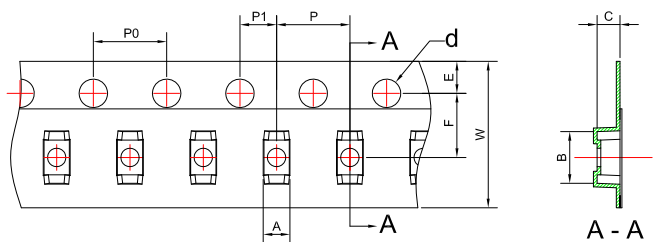
Recommended Pad Layout



Dimensions in inches and (millimeters)

SOD-323 Tape and Reel

SOD-323 Embossed Carrier Tape



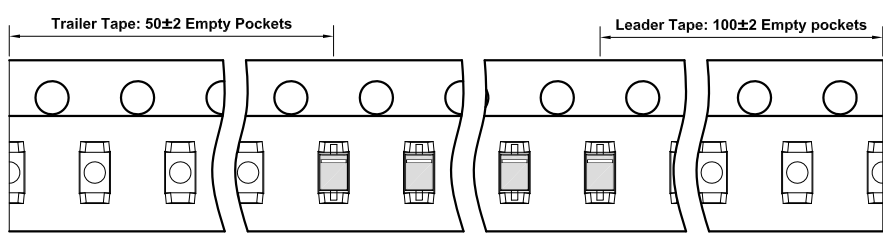
Packaging Description:

SOD-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. The reels are blue in color and made of recyclable plastic.

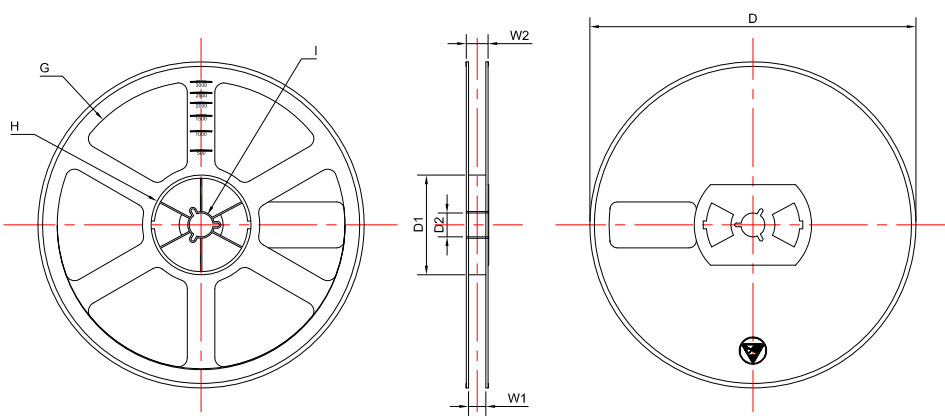
Dimensions are in millimeter

| Pkg Type | A | B | C | d | E | F | P0 | P | P1 | W |
|-------------|-------|-------|-------|-------|------|------|------|------|------|-----------|
| SOD-323 | 1.46 | 2.90 | 1.25 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |
| (Tolerance) | ±0.05 | ±0.05 | ±0.05 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | +0.3/-0.1 |

SOD-323 Tape Leader and Trailer



SOD-323 Reel



Unit: mm

| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
|-------------|---------|-------|-------|--------|--------|-------|------|-------|
| 7" Dia | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |
| Tolerance | ±2 | ±1 | ±1 | ±1 | ±1 | ±1 | ±1 | ±1 |

Packaging Quantity

| Reel | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) |
|-------|-----------|--------|--------------|---------|-----------------|
| 3,000 | 7 inch | 45,000 | 210*208*203 | 180,000 | 440*440*230 |

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