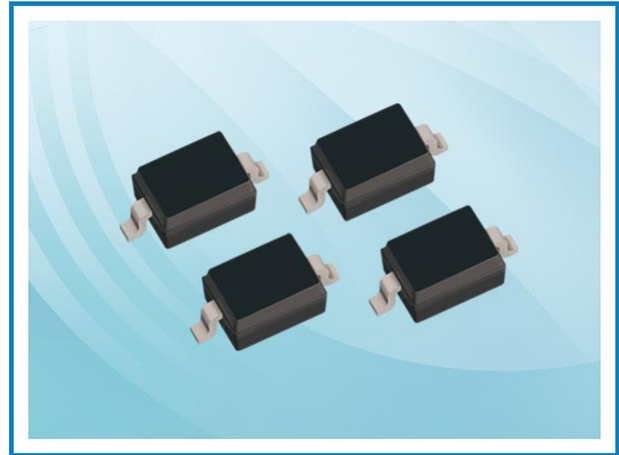


## PT24D3CE – ESD Protection Diode

### Feature

- 360 Watts peak pulse power (8/20 $\mu$ s)
- Bidirectional configurations
- Solid state silicon-avalanche technology
- Low clamping voltage
- Low leakage current
- IEC61000-4-2 (ESD)  $\pm$ 30 kV (Air),  $\pm$ 30 kV (Contact)
- IEC61000-4-4 (EFT) 40 A (5/50ns)
- IEC61000-4-5 (Lightning): 9 A (8/20 $\mu$ s)



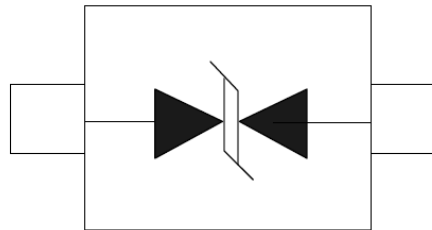
### Applications

- Microprocessor based equipment
- Notebooks, Desktops, and Servers
- Portable Instrumentation
- Personal Digital Assistant (PDA)
- Pagers Peripherals

### Mechanical Data

- SOD323 package
- Molding compound flammability rating: UL94 V-0
- Tape and Reel Packaging
- RoHS/WEEE Compliant

### Schematic and PIN Configuration



SOD-323

### Maximum Rating

| Parameter   | Symbol          | Limit    | Unit         |
|---|-----------------|----------|--------------|
| IEC61000-4-2 ESD Voltage – Air Mode                   | $V_{ESD}^{(1)}$ | $\pm$ 30 | kV           |
| IEC61000-4-2 ESD Voltage – Contact Mode               |                 | $\pm$ 30 |              |
| Peak Pulse Power                                      | $P_{PP}^{(2)}$  | 360      | W            |
| Peak Pulse Current                                    | $I_{PP}^{(2)}$  | 9        | A            |
| Maximum Lead Solder Temperature (10 seconds duration) | $T_L$           | 260      | $^{\circ}$ C |
| Junction Temperature                                  | $T_J$           | -55~150  | $^{\circ}$ C |
| Storage Temperature Range                             | $T_{stg}$       | -55~150  | $^{\circ}$ C |

Note:

1. Device stressed with ten non-repetitive ESD pulses.
2. Non-repetitive current pulse 8/20 $\mu$ s exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of  $T_A = 25^{\circ}$ C unless otherwise noted.

## PT24D3CE – ESD Protection Diode

### Electrical Characteristics

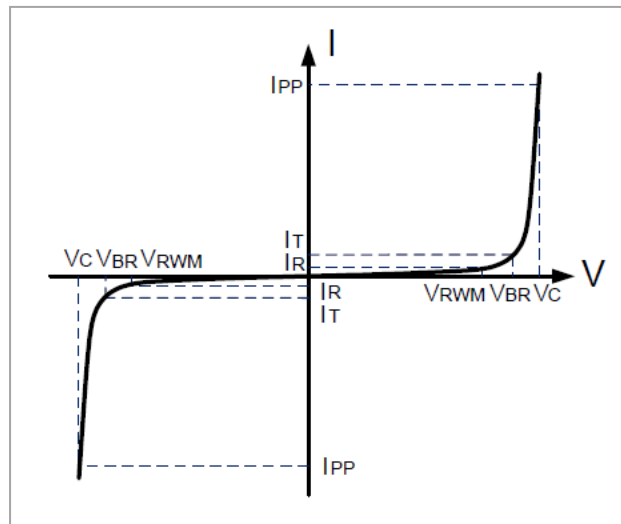
| Parameter                 | Symbol          | Test Conditions                        | Min  | Typ | Max | Unit          |
|---------------------------|-----------------|--|------|-----|-----|---------------|
| Reverse Stand-off Voltage | $V_{RWM}^{(1)}$ |  |      |     | 24  | V             |
| Reverse Breakdown Voltage | $V_{BR}$        | $I_T = 1 \text{ mA}$                   | 26.7 |     |     | V             |
| Reverse Leakage Current   | $I_R$           | $V_{RWM} = 24 \text{ V}$               |      |     | 0.5 | $\mu\text{A}$ |
| Clamping Voltage          | $V_C^{(2)}$     | $I_{PP} = 9 \text{ A}$                 |      | 40  | 48  | V             |
| Junction Capacitance      | $C_J$           | $V_R = 0 \text{ V}, f = 1 \text{ MHz}$ |      | 19  | 26  | pF            |

Note:

1. Other voltages available upon request.
2. Non-repetitive current pulse 8/20 $\mu\text{s}$  exponential decay waveform according to IEC61000-4-5.
3. All ratings are measured at environmental temperature of  $T_A = 25^\circ\text{C}$  unless otherwise noted.

### Electrical Parameters

| Symbol    | Parameter                           |
|-----------|-------------------------------------|
| $V_C$     | Clamping Voltage @ $I_{PP}$         |
| $I_{PP}$  | Reverse Peak Pulse Current          |
| $V_{BR}$  | Breakdown Voltage @ $I_T$           |
| $I_T$     | Test Current                        |
| $I_R$     | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{RWM}$ | Working Peak Reverse Voltage        |



## PT24D3CE – ESD Protection Diode

### Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

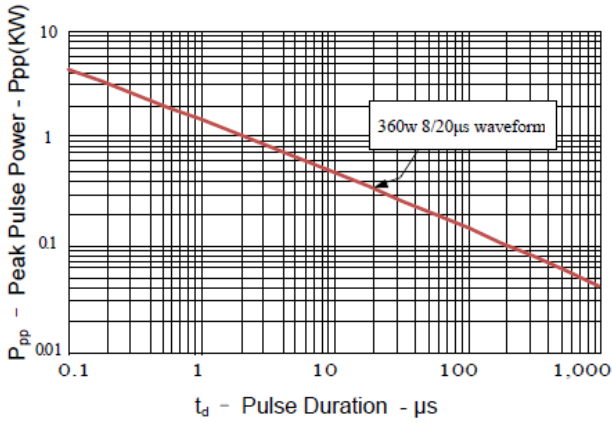


Figure 2: Power Derating Curve

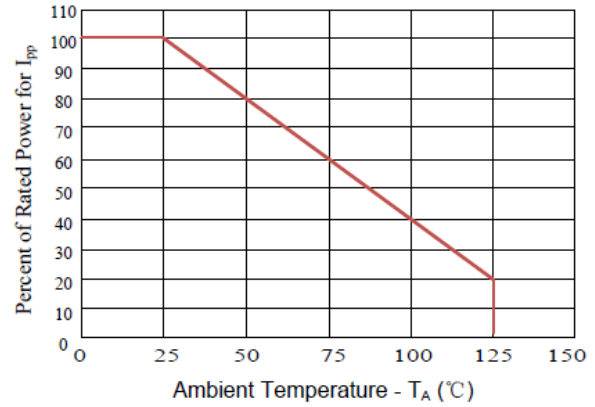


Figure 3: Pulse Waveform

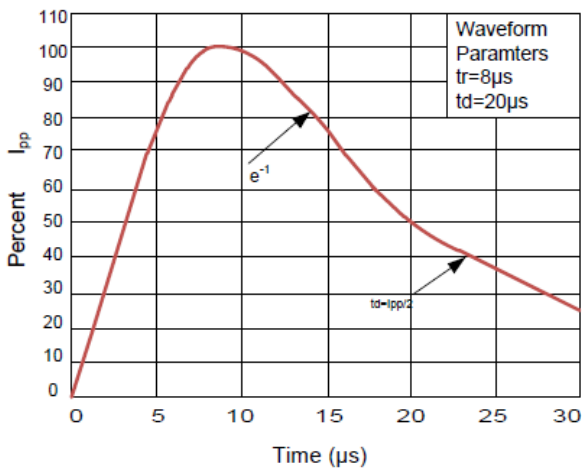
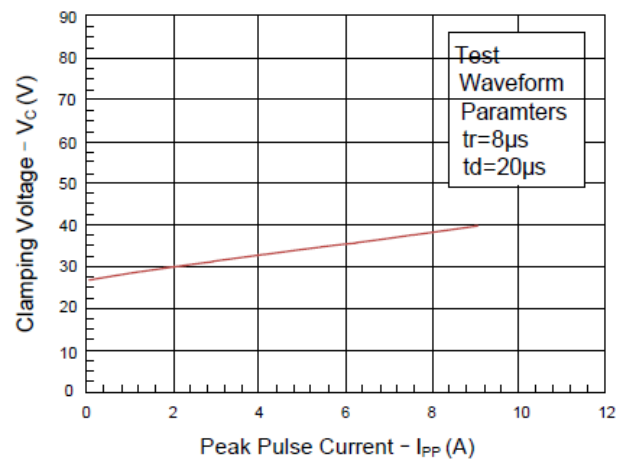
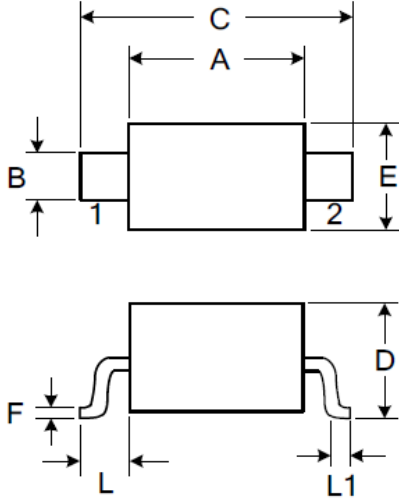


Figure 4: Clamping Voltage vs. Ipp



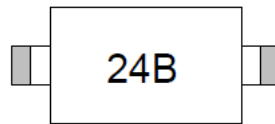
## PT24D3CE – ESD Protection Diode

### SOD323 Package Outline Dimensions



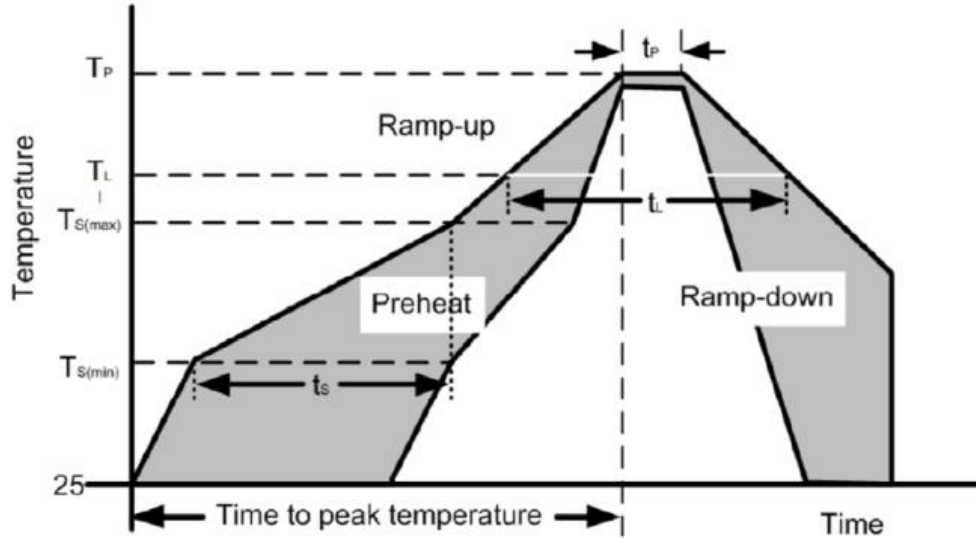
| Symbol | Dimensions (mm) |       |
|--------|-----------------|-------|
|        | Min             | Max   |
| A      | 1.600           | 1.800 |
| B      | 0.250           | 0.350 |
| C      | 2.500           | 2.700 |
| D      |                 | 1.000 |
| E      | 1.200           | 1.400 |
| F      | 0.080           | 0.150 |
| L      | 0.475 Ref.      |       |
| L1     | 0.250           | 0.400 |
| H      |                 | 0.100 |

### Marking



## PT24D3CE – ESD Protection Diode

### Reflow Soldering Parameters

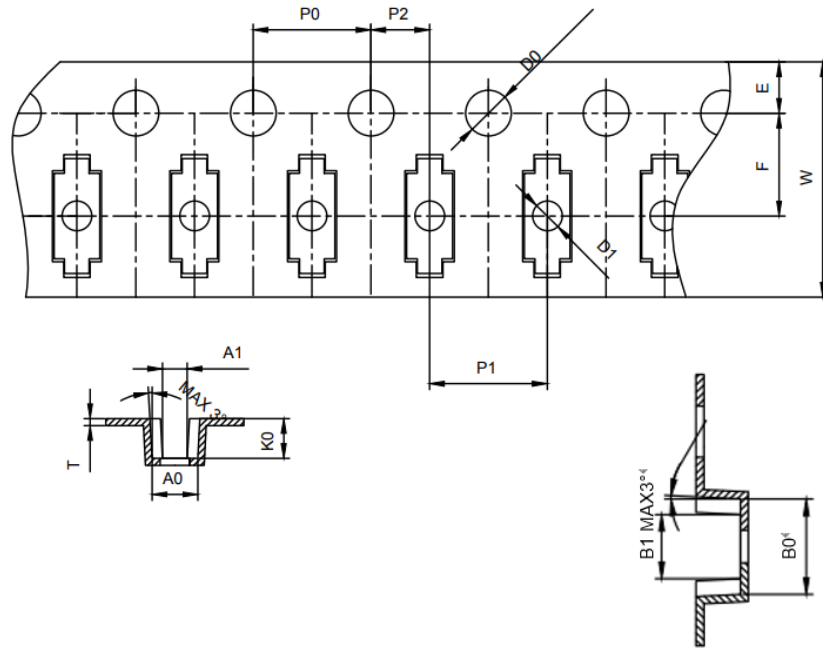


|  |   |
|--|---|
| Reflow Condition                                       | Pb-Free assembly                        |
| Pre Heat Temperature Min ( $T_s$ (min) ) 150°C         | Temperature Min ( $T_s$ (min) ) 150°C   |
| Pre Heat Temperature Min ( $T_s$ (max) ) 200°C         | Temperature Min ( $T_s$ (max) ) 200°C   |
| Pre Heat Time (min to max) ( $t_s$ ) 60-190 secs       | Time (min to max) ( $t_s$ ) 60-190 secs |
| Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak | 5°C/seconds max                         |
| $T_s(max)$ to $T_L$ —Ramp-up Rate                      | 5°C/seconds max                         |
| Reflow Temperature ( $T_L$ ) (Liquidus)                | 217°C                                   |
| Reflow Temperature ( $t_l$ )                           | 60-150 seconds                          |
| Peak Temperature ( $T_p$ )                             | 260+0/-5°C                              |
| Time within actual peak Temperature ( $t_p$ )          | 20-40 seconds                           |
| Ramp-down Rate   | 5°C/seconds max                         |
| Time 25°C to peak Temperature ( $T_p$ )                | 8 minutes Max.                          |
| Do not exceed  | 280°C                                   |

## PT24D3CE – ESD Protection Diode

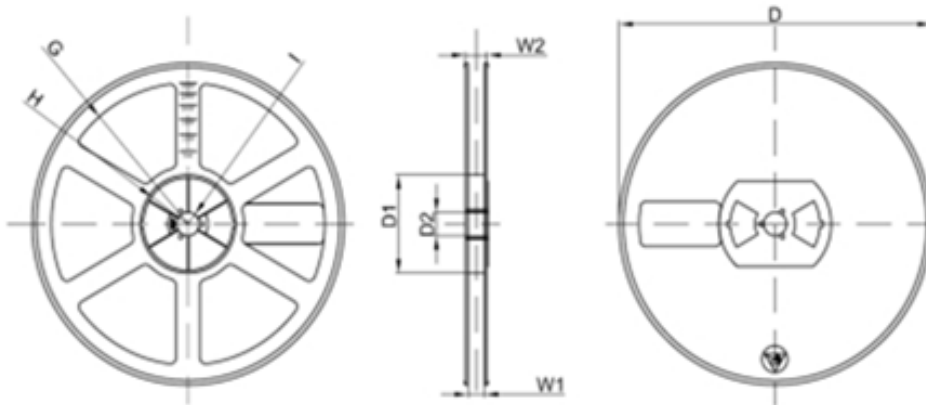
### Packaging Information

| Order Code | Packaging | Reel Size | PCS/Reel |
|------------|-----------|-----------|----------|
| PT24D3CE   | SOD323    | 7 inch    | 3,000    |



| Carrier Tape | SOD323 (mm) | Tolerance |
|--------------|-------------|-----------|
| A0           | 1.50        | ±0.1      |
| A1           | 0.84        | ±0.1      |
| B0           | 2.80        | ±0.1      |
| K0           | 1.20        | ±0.1      |
| P0           | 4.00        | ±0.1      |
| P1           | 4.00        | ±0.05     |
| P2           | 2.00        | ±0.05     |
| T            | 0.23        | ±0.03     |
| E            | 1.75        | ±0.1      |
| F            | 3.50        | ±0.05     |
| D0           | 1.55        | ±0.5      |
| D1           | 1.10        | ±0.1      |
| W            | 8.00        | +0.3/-0.1 |
| B1           | 1.95        | ±0.1      |

## PT24D3CE – ESD Protection Diode



| Reel Option | 7" dia<br>(mm) | Tolerance |
|-------------|----------------|-----------|
| D           | Ø178.00        | ±2        |
| D1          | 54.40          | ±1        |
| D2          | 13.00          | ±1        |
| G           | R78.00         | ±1        |
| H           | R25.60         | ±1        |
| I           | R6.50          | ±1        |
| W1          | 9.50           | ±1        |
| W2          | 12.30          | ±1        |