

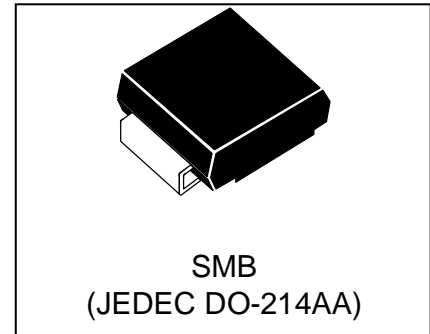


WS24P10SMB-BHS

Power Transient Voltage Suppressor

Features

- 1000 watts Peak Pulse Power (10/1000 μ s)
- Bidirectional Protection
- Fast Response Time : Typically < 1ns
- Excellent Clamping Capability
- Built-in Strain relief
- Low inductance
- Low profile package
- High temperature solder:260°C/10 seconds at terminal



Mechanical Characteristics

- JEDEC DO-214AA package
- Molding compound flammability rating: UL 94V-0
- Marking : See Marking Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

Applications

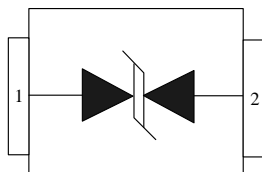
- I/O Interfaces
- Power lines
- Automotive and Telecommunication
- Computers & Consumer Electronics
- Industrial Electronics

| Absolute Maximum Rating | | | |
|---|-------------------|--------------|-------|
| Rating | Symbol | Value | Units |
| Peak Pulse Power (tp =10/1000 μ s) (see Note1,2) | P _{PPM} | 1000 | Watts |
| Peak pulse current (10/1000 μ s) (see Note2) | I _{PP} | 25.71 | A |
| Non-repetitive peak impulse Voltage (1.2/50 μ s-8/20 μ s, 2 Ω)(See Note1) | V _{PPSM} | 2000 | V |
| Power Dissipation on infinite heat sink T _L = 50 °C (Fig4) | P _D | 6.5 | W |
| Operating Junction Temperature range | T _J | -55 to + 150 | °C |
| Storage Temperature range | T _{STG} | -55 to + 150 | °C |

Note1: Peak Pulse Power Rating as Pulse Width, per Fig1.

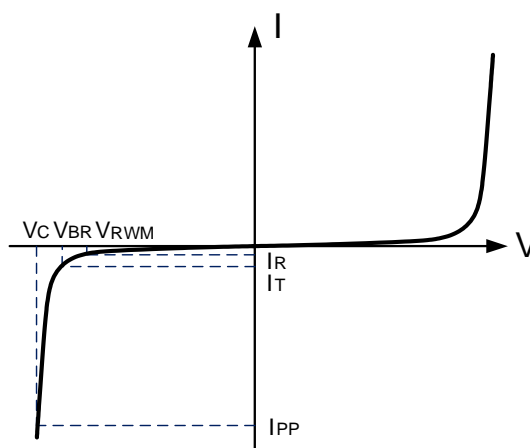
Note2: Peak Pulse Power or Current Derated above T_A=25°C Per Fig. 2 and Non-Repetitive Current Pulse, Per Fig.3.

Pin Configuration



Electrical Characteristics

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



| WS24P10SMB-BHS | | | | | |
|---------------------------|-----------|--|---------|---------|---------------|
| Parameter | Symbol | Conditions | Minimum | Maximum | Units |
| Reverse Stand-Off Voltage | V_{RWM} | | | 24 | V |
| Reverse Breakdown Voltage | V_{BR} | $I_T=1\text{mA}$ | 24.2 | 28 | V |
| Reverse Leakage Current | I_R | $V_{RWM}=24\text{V}$, $T=25^\circ\text{C}$ | | 1 | μA |
| Clamping Voltage | V_C | $I_{PP}=25.71\text{A}$, $t_p=10/1000\mu\text{s}$ | | 38.9 | V |
| Clamping Voltage | V_C | $V_{PPSM}=1000\text{V}$, $t_p=1.2/50-8/20\mu\text{s}(2\Omega)$ | | 28 | V |
| Clamping Voltage | V_C | $V_{PPSM}=2000\text{V}$, $t_p=1.2/50-8/20\mu\text{s}(2\Omega)$ | | 30 | V |

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

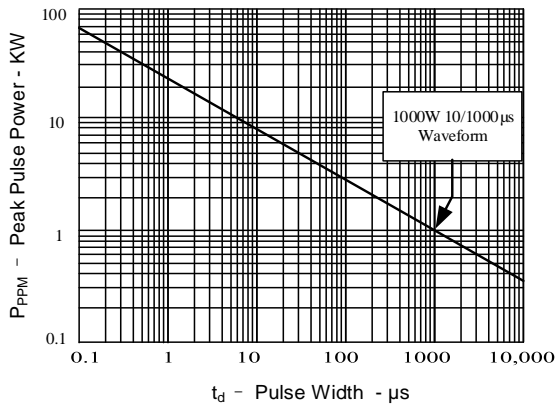


Figure 2: Pulse Derating Curve

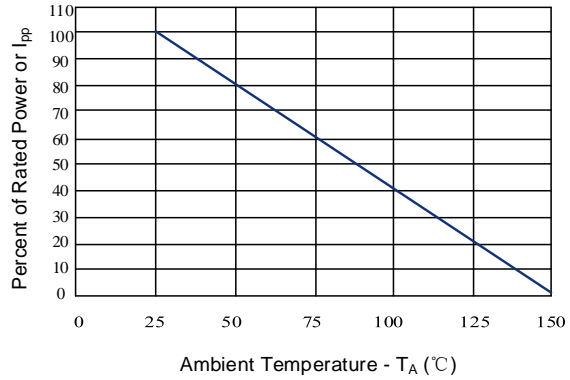


Figure 3: Pulse Waveform

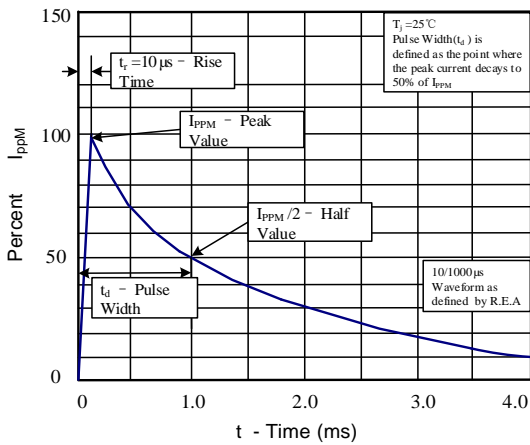
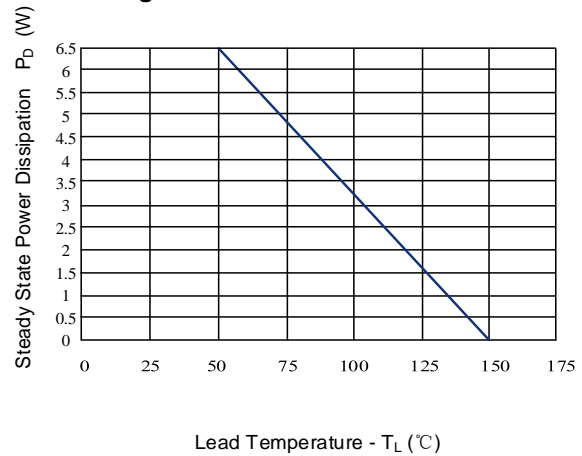
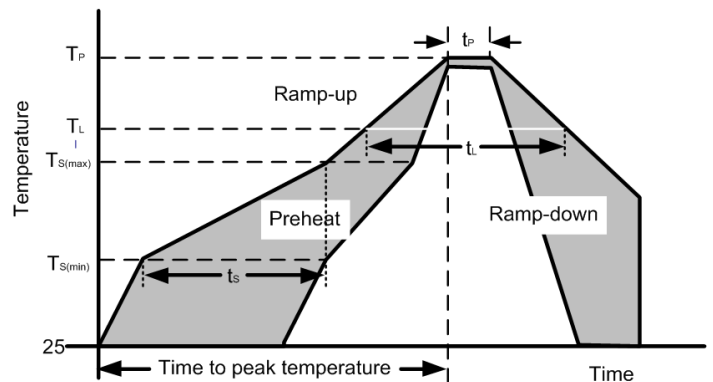


Figure 4: Steady State Power Dissipation Derating Curve



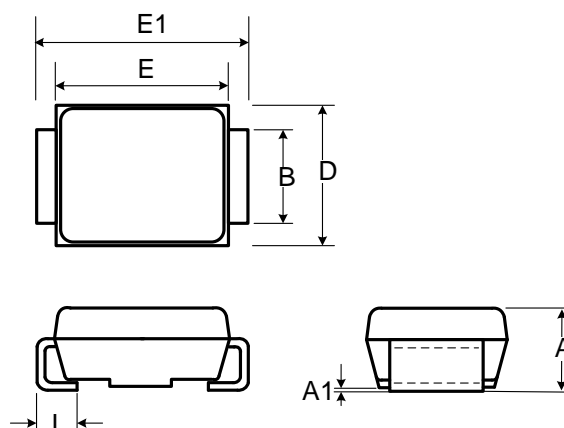
Soldering Parameters

| Reflow Condition | | |
|--|----------------------------------|-------------------------|
| Pre Heat | Temperature Min ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_s) | 60-190 s |
| Average ramp up rate (Liquidus Temp) (T_L) to peak | | 3°C/s max |
| Ts(max) to TL - Ramp-up Rate | | 3°C/s max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Temperature (t_L) | 60-150 s |
| Peak Temperature (T_P) | | 260 ^{+0/-5} °C |
| Time within actual peak Temperature (t_p) | | 20-40 s |
| Ramp-down Rate | | 5°C/s max |
| Time 25°C to peak Temperature (T_P) | | 8 minutes max |
| Do not exceed | | 260°C |

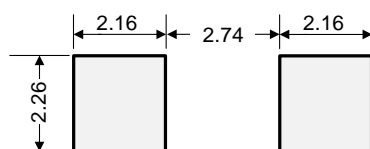


Outline Drawing – SMB(DO-214AA)

| Ref. (mm) | Millimeters | |
|-----------|-------------|------|
| | Min. | Max. |
| A | 2.13 | 2.60 |
| A1 | - | 0.30 |
| B | 1.90 | 2.20 |
| E | 4.10 | 4.75 |
| E1 | 5.21 | 5.59 |
| D | 3.30 | 3.94 |
| L | 0.76 | 1.52 |

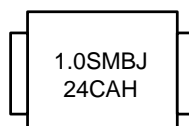


Recommended Solder Pad Layout



Dimensions in mm

Marking Code



Package Information

| Package Type | Description | Quantity (pcs) | Standard |
|---------------|----------------------------|----------------|-----------|
| SMB(DO-214AA) | Tape & Reel -12mm/13" tape | 3000 | EIA-481-D |

Contact Information

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Specifications are subject to change without notice.
 The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.
 Users should verify actual device performance in their specific applications.