1. General description

The ESDHDxxBB series are designed to protect voltage sensitive components which are connected to data and transmission lines from overvoltage caused by ESD (electrostatic discharge), CDE (Cable Discharge Events), and EFT (electrical fast transients). Excellent clamping capability, low leakage, and fast response time, make these parts ideal for ESD protection on designs where board space is at a premium.

2. Features and benefits

- Transient protection for high-speed data lines
- Peak pulse power 90W @ 8/20μs waveform
- IEC 61000-4-2 (ESD) ±30kV(air), ±30kV(contact)
- Protects Bi-directional I/O line
- Low clamping voltage
- Low leakage current
- Meet MSL level1
- Halogen free and RoHS compliant

3. Applications

- Computer Interfaces Protection
- Microprocessors Protection
- Serial and Parallel Ports Protection
- Control Signal Lines Protection
- Power lines on PCB Protection
- Portable instrumentation
- Peripherals

4. Ordering information

<table>
<thead>
<tr>
<th>Type number</th>
<th>Package name</th>
<th>Orderable part number</th>
<th>Packing method</th>
<th>Small packing quantity</th>
<th>Package version</th>
<th>Package issue date</th>
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<tbody>
<tr>
<td>ESDHDxxBB</td>
<td>SOD523</td>
<td>ESDHDxxBBX</td>
<td>Tape and reel</td>
<td>3000</td>
<td>SOD523X</td>
<td>12-Nov-2021</td>
</tr>
<tr>
<td>ESDHD03BB</td>
<td>SOD523</td>
<td>ESDHD03BBX</td>
<td>Tape and reel</td>
<td>3000</td>
<td>SOD523X</td>
<td>12-Nov-2021</td>
</tr>
</tbody>
</table>

5. Absolute maximum ratings

In accordance with the Absolute Maximum Rating System (IEC 60134). 
$T_1 = 25$ °C unless otherwise specified.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Values</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_{PPM}$</td>
<td>peak pulse power</td>
<td>$t_p = 8/20$ μs</td>
<td>90</td>
<td>W</td>
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<tr>
<td>$V_{ESD}$</td>
<td>ESD per IEC 61000-4-2 (air)</td>
<td>±30</td>
<td>kV</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ESD per IEC 61000-4-2 (contact)</td>
<td>±30</td>
<td>kV</td>
<td></td>
</tr>
<tr>
<td>$T_{stg}$</td>
<td>storage temperature range</td>
<td>-55 to 150</td>
<td>°C</td>
<td></td>
</tr>
<tr>
<td>$T_j$</td>
<td>operating temperature range</td>
<td>-55 to 150</td>
<td>°C</td>
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</table>
6. Characteristics

$T_j = 25\, ^\circ\text{C}$ unless otherwise specified.

<table>
<thead>
<tr>
<th>Product type</th>
<th>Max. Reverse Working Voltage $V_{RWM}$ (V)</th>
<th>Min. Breakdown Voltage $V_{BR} @ I_r = 1, \text{mA}$ (V)</th>
<th>Max. Clamping Voltage $V_C @ I_{pp} = 1, \text{A}$ (V)</th>
<th>Max. Clamping Voltage $V_C @ \text{Max } I_{pp}$ (V)</th>
<th>Max. Peak Pulse current $I_{pp} @ 8/20, \mu\text{s}$ (A)</th>
<th>Maximum Reverse Leakage $I_R @ V_R$ (μA)</th>
<th>Typ. $C_j$ (pF) @ 0 V, 1 MHz</th>
<th>Marking</th>
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</thead>
<tbody>
<tr>
<td>ESDHD03BB</td>
<td>3.3</td>
<td>3.7</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>1</td>
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<td>CT</td>
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<td>8.5</td>
<td>10</td>
<td>9</td>
<td>1</td>
<td>15</td>
<td>DT</td>
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</tbody>
</table>
Fig. 1. Pulse rating curve

Fig. 2. Peak pulse power derating curve

Fig. 3. Pulse waveform

Fig. 4. Part numbering
7. Package outline

Recommended Footprint

Note:
1. All dimensions do not include mold flash and gate remain.

<table>
<thead>
<tr>
<th>Unit</th>
<th>A</th>
<th>A1</th>
<th>A2</th>
<th>b</th>
<th>c</th>
<th>D</th>
<th>E</th>
<th>E1</th>
<th>E2</th>
<th>L</th>
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<tbody>
<tr>
<td>MM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>MIN</td>
<td>0.51</td>
<td>0.50</td>
<td>0.01</td>
<td>0.25</td>
<td>0.08</td>
<td>0.75</td>
<td>1.10</td>
<td>1.50</td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>MAX</td>
<td>0.77</td>
<td>0.70</td>
<td>0.07</td>
<td>0.35</td>
<td>0.15</td>
<td>0.85</td>
<td>1.30</td>
<td>1.70</td>
<td></td>
<td>0.50</td>
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</tbody>
</table>
## 8. Legal information

### Data sheet status

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<tr>
<td>Objective [short] data sheet</td>
<td>Development</td>
<td>This document contains data from the objective specification for product development.</td>
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<tr>
<td>Preliminary [short] data sheet</td>
<td>Qualification</td>
<td>This document contains data from the preliminary specification.</td>
<td></td>
<td></td>
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<tr>
<td>Product [short] data sheet</td>
<td>Production</td>
<td>This document contains the product specification.</td>
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<td></td>
</tr>
</tbody>
</table>

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
[3] The product status of device(s) described in this document may have changed since this document was published and may differ from the latest information available on the Internet at URL http://www.ween-semi.com.

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