Protect the charger port in mobile devices and save PCB-space with NXP’s new 300 W surge protection device in leadless DFN2020-3. This discrete solution offers superior electrical performance, a higher PCB design flexibility and easier routing than integrated solutions currently available.

**FEATURES AND BENEFITS**

- Six types from $V_{RWM} = 7.5$ to 26 V
- High surge rating: $P_{PPP} = 300$ W $10/1000\, \mu$s pulse
- Very compact package: DFN2020-3 (2 x 2 x 0.62 mm)
- Low leakage current: down to 1 nA
- High ESD robustness: $V_{ESD} = 30$ kV (IEC61000-4-2)

Surge pulses from the power supply, e.g. via a car charger, are a severe threat for the charger port VBUS line of smart phones and other portables. Supply voltages of these chargers often exceed the 5V level – requiring high reverse standoff voltages.

The AEC-Q101 qualified NXP PTVSxU1UPA series, with reverse standoff voltages from 7.5 to 26 V, is ideally suited to protect the charger port in mobile devices against transient overvoltages.

The low leakage current of only 1 nA reduces the power consumption and helps extend the battery lifetime.

The PTVSxU1UPA series is a discrete solution that offers superior electrical performance, a higher PCB design flexibility and easier routing than array or integrated solutions currently available.

**PTVSxxx application**

[Diagram showing interface and overvoltage protection]

- Package info, including outline and soldering footprint: www.nxp.com/packages/SOT1061.html
**PTVSxU1UPA series versus alternative solutions**

<table>
<thead>
<tr>
<th>Type</th>
<th>$V_{RWM}$ (V)</th>
<th>$V_{BS}$ min (V)</th>
<th>$V_{BS}$ max (V)</th>
<th>$I_{PPM}$ 10/1000 us (A)</th>
<th>$V_{CL}$ 10/1000 μs (V)</th>
<th>$P_{PPM}$ 10/1000 μs (W)</th>
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<tbody>
<tr>
<td>PTVS7V5U1UPA</td>
<td>7.5</td>
<td>8.33</td>
<td>9.21</td>
<td>23.3</td>
<td>12.9</td>
<td>300</td>
<td>DFN2020-3 (SOT1061) 2.0 x 2.0 x 0.62</td>
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<tr>
<td>PTVS10VU1UPA</td>
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<td>11.1</td>
<td>12.3</td>
<td>17.6</td>
<td>17</td>
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<td>13.3</td>
<td>14.7</td>
<td>15.1</td>
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<td>18.5</td>
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<td>24.4</td>
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<td>28.9</td>
<td>31.9</td>
<td>7</td>
<td>43</td>
<td>300</td>
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</tbody>
</table>

- Portfolio overview with parametric search
- Datasheets and supporting documentation
- Spice models / application notes / thermal design guides
- Order products online (via distribution partners)

**Application: 3 datalines + 1 surge**

**Integrated OVP:**

- OVP with surge protection

**Performance: Small PCB area**

- Customized electrical parameters
- Benchmark performance
- Easy PCB routing

**Electrical**

- $V_{RWM} = 7.5 – 26$ V ($V_{BUS}$)
- $P_{PPM} = 3000$ W (8/20μs pulse)
- $C_{D} (V_{Line}) = $ down to 0.25 pF

- $V_{RWM} = 12$ V ($V_{BUS}$) / 5 V ($V_{Line}$)
- $P_{PPM} (V_{BUS}) = 2500$ W (8/20μs)
- $C_{D} (V_{Line}) = 0.35$ pF

- **Not applicable**

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Date of release: May 2014
Document order number: 9397 750 17539
Printed in the Netherlands