**General Description**

This product is intended for applications using a self-oscillating piezoelectric horn although it can be used in direct drive applications. Feedback control and a driver circuit are provided as well as a horn enable function. The design also provides an open drain N-channel driver suitable for use with a light emitting diode.

**Applications**

- Smoke detectors
- CO Detectors
- Personal Security Products
- Electronic Toys

**Features**

- Low Quiescent Current (<100na)
- Low Driver Ron - 20Ω typical at 9V
- Wide Operating Voltage Range
- 8 Pin DIP and SO Packages
- Available in Standard Packaging or RoHS Compliant Pb Free Packaging

**ABSOLUTE MAXIMUM RATINGS**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>VALUE</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>V_{DD}</td>
<td>18</td>
<td>V</td>
</tr>
<tr>
<td>Input Voltage Range Except FEED</td>
<td>V_{in}</td>
<td>-.3 to V_{DD} +.3</td>
<td>V</td>
</tr>
<tr>
<td>FEED Input Voltage Range</td>
<td>V_{fIdd}</td>
<td>-10 to +22</td>
<td>V</td>
</tr>
<tr>
<td>Input Current except FEED</td>
<td>I_{in}</td>
<td>10</td>
<td>mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>T_{A}</td>
<td>0 to 50</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>T_{STG}</td>
<td>-55 to 125</td>
<td>°C</td>
</tr>
<tr>
<td>Maximum Junction Temperature</td>
<td>T_{J}</td>
<td>150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only and operation at these conditions for extended periods may affect device reliability.

This product utilizes CMOS technology with static protection; however proper ESD prevention procedures should be used when handling this product. Damage can occur when exposed to extremely high static electrical charge.
DC Electrical Characteristics at TA = 25°C, VDD=9V, Typical Application (unless otherwise noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test Pin</th>
<th>Test Conditions</th>
<th>Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>VDD</td>
<td>2</td>
<td>Operating</td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Typ</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Units</td>
</tr>
<tr>
<td>Supply Current</td>
<td>IDD1</td>
<td>2</td>
<td>HRNEN,LEDEN and FEED=0V</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Input Voltage Low</td>
<td>VIL1</td>
<td>3,8</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Input Voltage High</td>
<td>VIH1</td>
<td>3,8</td>
<td></td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Input Leakage Low</td>
<td>IIL1</td>
<td>3,8</td>
<td>Vin=VSS</td>
<td>-100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>Input Leakage High</td>
<td>IHFD</td>
<td>4</td>
<td>FEED=-10V</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>Output Voltage Low</td>
<td>VOL1</td>
<td>6,7</td>
<td>Iol=16mA</td>
<td>.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Output Voltage High</td>
<td>VOL2</td>
<td>6,7</td>
<td>Iol=16mA, VDD=7.2V</td>
<td>.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td></td>
<td>VOL3</td>
<td>1</td>
<td>Iol=10mA, VDD=7.2V</td>
<td>.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Output Voltage High</td>
<td>VOH1</td>
<td>6,7</td>
<td>Ioh=-16mA</td>
<td>8.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8.7</td>
</tr>
<tr>
<td></td>
<td>VOH2</td>
<td>6,7</td>
<td>Ioh=-16mA, VDD=7.2V</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>V</td>
</tr>
</tbody>
</table>
Typical Application

Note: Place C2 close to the device power pins to minimize horn switching noise.
Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights.

Trademarks

The Microchip name and logo, the Microchip logo, Accuron, dsPIC, KEELOQ, KEELOQ logo, MPLAB, PIC, PICmicro, PICSTART, rfPIC, SmartShunt and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

FilterLab, Hampshire, Linear Active Thermistor, MXDEV, MXLAB, SEEVAL, SmartSensor and The Embedded Control Solutions Company are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, Application Maestro, CodeGuard, dsPICDEM, dsPICDEM.net, dsPICworks, dsSPEAK, ECAN, ECONOMONITOR, FanSense, In-Circuit Serial Programming, ICSP, ICEPIC, Mindi, MiWi, MPASM, MPLAB Certified logo, MPLINK, mTouch, nanoWatt XLP, PICkit, PICDEM, PICDEM.net, PICtail, PICCD logo, PowerCal, PowerInfo, PowerMate, PowerTool, REAL ICE, rfLAB, Select Mode, Total Endurance, TSHARC, WiperLock and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

All other trademarks mentioned herein are property of their respective companies.

© 2009, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

Printed on recycled paper.