**MODEL:** CMM-4030DB-26154-TR | **DESCRIPTION:** MEMS MICROPHONE

**FEATURES**
- digital (PDM)
- small package
- reflow solder compatible
- omnidirectional

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**ELECTRICAL**

<table>
<thead>
<tr>
<th>parameter</th>
<th>conditions/description</th>
<th>min</th>
<th>typ</th>
<th>max</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>directivity</td>
<td>omnidirectional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sensitivity (S)</td>
<td>at 94 dB SPL, 1 kHz</td>
<td>-27</td>
<td>-26</td>
<td>-25</td>
<td>dB FS</td>
</tr>
<tr>
<td>supply voltage (V&lt;sub&gt;DD&lt;/sub&gt;)</td>
<td></td>
<td>1.6</td>
<td>2.0</td>
<td>3.6</td>
<td>V</td>
</tr>
<tr>
<td>current consumption (I&lt;sub&gt;IO&lt;/sub&gt;)</td>
<td></td>
<td>0.54</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>sensitivity reduction</td>
<td>V&lt;sub&gt;DD&lt;/sub&gt; = 3.6 – 1.6 V</td>
<td>-0.5</td>
<td></td>
<td></td>
<td>dB FS</td>
</tr>
<tr>
<td>frequency (f)</td>
<td></td>
<td>100</td>
<td>10,000</td>
<td></td>
<td>Hz</td>
</tr>
<tr>
<td>signal to noise ratio (S/N)</td>
<td>at 94 dB SPL, 1 kHz (A-weighted)</td>
<td>64</td>
<td></td>
<td></td>
<td>dBA</td>
</tr>
<tr>
<td>total harmonic distortion (THD)</td>
<td>at 94 dB SPL, 1 kHz</td>
<td>0.2</td>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>acoustic overload point (AOP)</td>
<td>at 10% THD, 1 kHz</td>
<td>120</td>
<td></td>
<td></td>
<td>dB SPL</td>
</tr>
<tr>
<td>output impedance (Z&lt;sub&gt;out&lt;/sub&gt;)</td>
<td>at 1 kHz</td>
<td>300</td>
<td></td>
<td></td>
<td>Ω</td>
</tr>
<tr>
<td>power supply rejection (PSR)</td>
<td>100 mVp-p square wave at 217 Hz (A-weighted)</td>
<td>-90</td>
<td></td>
<td></td>
<td>dB FS</td>
</tr>
</tbody>
</table>

**DIGITAL INTERFACE**

<table>
<thead>
<tr>
<th>parameter</th>
<th>conditions/description</th>
<th>min</th>
<th>typ</th>
<th>max</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>sleep current (I&lt;sub&gt;SLEEP&lt;/sub&gt;)</td>
<td>F&lt;sub&gt;CLOCK&lt;/sub&gt; &lt; 1 kHz</td>
<td>3</td>
<td>4</td>
<td></td>
<td>µA</td>
</tr>
<tr>
<td>fall-asleep time</td>
<td>F&lt;sub&gt;CLOCK&lt;/sub&gt; &lt; 1 kHz</td>
<td></td>
<td>50</td>
<td></td>
<td>µs</td>
</tr>
<tr>
<td>wake-up time</td>
<td>F&lt;sub&gt;CLOCK&lt;/sub&gt; ≥ 1 MHz</td>
<td>52</td>
<td></td>
<td></td>
<td>ms</td>
</tr>
<tr>
<td>short circuit current (I&lt;sub&gt;ISC&lt;/sub&gt;)</td>
<td>grounded data pin</td>
<td>1</td>
<td>10</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>output load (C&lt;sub&gt;LOAD&lt;/sub&gt;)</td>
<td></td>
<td>100</td>
<td></td>
<td></td>
<td>pF</td>
</tr>
<tr>
<td>data format</td>
<td>1-Bit PDM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clock frequency (F&lt;sub&gt;CLOCK&lt;/sub&gt;)</td>
<td></td>
<td>1.0</td>
<td>2.4</td>
<td>3.2</td>
<td>MHz</td>
</tr>
<tr>
<td>clock duty cycle (F&lt;sub&gt;dc&lt;/sub&gt;)</td>
<td></td>
<td>40</td>
<td>60</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>clock rise time (t&lt;sub&gt;cr&lt;/sub&gt;)</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>clock fall time (t&lt;sub&gt;cf&lt;/sub&gt;)</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>logic input/output low (V&lt;sub&gt;IO&lt;/sub&gt;)</td>
<td>I&lt;sub&gt;out&lt;/sub&gt; = 1 mA</td>
<td>-0.30</td>
<td>0.35xV&lt;sub&gt;DD&lt;/sub&gt;</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>logic input/output high (V&lt;sub&gt;IO&lt;/sub&gt;)</td>
<td>I&lt;sub&gt;out&lt;/sub&gt; = 1 mA</td>
<td>0.85xV&lt;sub&gt;DD&lt;/sub&gt;</td>
<td>V&lt;sub&gt;DD&lt;/sub&gt;+0.3</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>delay time for valid data (t&lt;sub&gt;OV&lt;/sub&gt;)</td>
<td></td>
<td>18</td>
<td>80</td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>delay time for high z (t&lt;sub&gt;OH&lt;/sub&gt;)</td>
<td></td>
<td>0</td>
<td>18</td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, V<sub>DD</sub> = 2.0 V, F<sub>CLOCK</sub> = 2.4 MHz, unless otherwise noted.
TIMING CHARACTERISTICS

**CLOCK**

**DATA (SELECT=V_{cc})**

**DATA (SELECT=Gnd)**

<table>
<thead>
<tr>
<th>Microphone</th>
<th>Select [L/R]</th>
<th>Asserts Data On</th>
<th>Latch Data On</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic [High]</td>
<td>Vdd</td>
<td>rising clock edge</td>
<td>falling clock edge</td>
</tr>
<tr>
<td>Mic [Low]</td>
<td>GND</td>
<td>falling clock edge</td>
<td>rising clock edge</td>
</tr>
</tbody>
</table>

RECOMMENDED INTERFACE CIRCUIT

Single MIC

Double MIC
ENVIRONMENTAL

<table>
<thead>
<tr>
<th>parameter</th>
<th>conditions/description</th>
<th>min</th>
<th>typ</th>
<th>max</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>operating temperature</td>
<td></td>
<td>-40</td>
<td>105</td>
<td>105</td>
<td>°C</td>
</tr>
<tr>
<td>storage temperature</td>
<td>in packaging</td>
<td>-40</td>
<td>85</td>
<td>85</td>
<td>°C</td>
</tr>
<tr>
<td>RoHS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MECHANICAL

<table>
<thead>
<tr>
<th>parameter</th>
<th>conditions/description</th>
<th>min</th>
<th>typ</th>
<th>max</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimensions</td>
<td>4.00 x 3.00 x 1.10</td>
<td></td>
<td></td>
<td></td>
<td>mm</td>
</tr>
<tr>
<td>acoustic port</td>
<td>bottom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>terminals</td>
<td>surface mount</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>weight</td>
<td>0.024</td>
<td></td>
<td></td>
<td></td>
<td>g</td>
</tr>
</tbody>
</table>

MECHANICAL DRAWING

units: mm
tolerance: ±0.1 mm

TERMINAL CONNECTIONS

<table>
<thead>
<tr>
<th>TERM.</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VDD</td>
</tr>
<tr>
<td>2</td>
<td>DATA</td>
</tr>
<tr>
<td>3</td>
<td>CLOCK</td>
</tr>
<tr>
<td>4</td>
<td>L/R</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
</tr>
</tbody>
</table>

Recommended Vacuum Nozzle Pickup
Top View

Recommended PCB Layout
Top View
FREQUENCY RESPONSE CURVE

![Frequency Response Curve Image]
## SOLDERABILITY

<table>
<thead>
<tr>
<th>parameter</th>
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<th>typ</th>
<th>max</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>reflow soldering</td>
<td>see reflow profile</td>
<td>260</td>
<td></td>
<td></td>
<td>°C</td>
</tr>
</tbody>
</table>

Note:  
1. Vacuuming over acoustical hole is not allowed.  
2. Not suitable for wash process.  
3. Not recommended to exceed 5 reflow cycles.

## PACKAGING

<table>
<thead>
<tr>
<th>parameter</th>
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<th>min</th>
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<th>max</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>reel storage</td>
<td>at relative humidity &lt;75%</td>
<td>-40</td>
<td>85</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>reel size</td>
<td>Ø170 mm max</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>reel QTY</td>
<td>1,000 pcs per reel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:  
4. Recommended storage period no more than 1 year. Floor life (out of bag) no more than 4 weeks.
CUI Devices offers a one (1) year limited warranty. Complete warranty information is listed on our website.

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