MODEL: CMM-4030DB-26354-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>-29</td>
<td>-26</td>
<td>-23</td>
<td>dB FS</td>
</tr>
<tr>
<td>supply voltage (VDD)</td>
<td></td>
<td>1.6</td>
<td>2.0</td>
<td>3.6</td>
<td>V</td>
</tr>
<tr>
<td>current consumption (Ioo)</td>
<td></td>
<td>0.54</td>
<td></td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>sensitivity reduction</td>
<td>VDD = 3.6 ~ 1.6 V</td>
<td></td>
<td>-0.5</td>
<td></td>
<td>dB FS</td>
</tr>
<tr>
<td>frequency (f)</td>
<td></td>
<td>100</td>
<td></td>
<td>10,000</td>
<td>Hz</td>
</tr>
<tr>
<td>signal to noise ratio (S/N)</td>
<td></td>
<td>64</td>
<td></td>
<td></td>
<td>dBA</td>
</tr>
<tr>
<td>total harmonic distortion (THD)</td>
<td></td>
<td>0.2</td>
<td></td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>acoustic overload point (AOP)</td>
<td></td>
<td>120</td>
<td></td>
<td></td>
<td>dB SPL</td>
</tr>
<tr>
<td>output impedance (Zout)</td>
<td>at 1 kHz</td>
<td></td>
<td></td>
<td>300</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>
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<th>min</th>
<th>typ</th>
<th>max</th>
<th>units</th>
</tr>
</thead>
<tbody>
<tr>
<td>sleep current (I_{SLEEP})</td>
<td>FCLOCK &lt; 1 kHz</td>
<td>3</td>
<td>4</td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td>fall-asleep time</td>
<td>FCLOCK &lt; 1 kHz</td>
<td></td>
<td>50</td>
<td></td>
<td>μs</td>
</tr>
<tr>
<td>wake-up time</td>
<td>FCLOCK ≥ 1 MHz</td>
<td>52</td>
<td></td>
<td>52</td>
<td>ms</td>
</tr>
<tr>
<td>short circuit current (I_{SC})</td>
<td>grounded data pin</td>
<td>1</td>
<td>10</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>output load (CLOAD)</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 (FCLOCK)</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_{DC})</td>
<td></td>
<td>40</td>
<td>60</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>clock rise time (t_{CR})</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>clock fall time (t_{CF})</td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>logic input/output low (V_{IOL})</td>
<td>I_{OUT} = 1 mA</td>
<td>-0.30</td>
<td></td>
<td>0.35V_{VDD}</td>
<td>V</td>
</tr>
<tr>
<td>logic input/output high (V_{IOH})</td>
<td>I_{OUT} = 1 mA</td>
<td>0.65V_{VDD}</td>
<td></td>
<td>V_{DD}+0.3</td>
<td>V</td>
</tr>
<tr>
<td>delay time for valid data (t_{DV})</td>
<td></td>
<td>18</td>
<td></td>
<td>80</td>
<td>ns</td>
</tr>
<tr>
<td>delay time for high z (t_{DH})</td>
<td></td>
<td>0</td>
<td></td>
<td>18</td>
<td>ns</td>
</tr>
</tbody>
</table>

Notes: 1. All specifications measured at 23±2°C, humidity at 55±20%, V_{DD} = 2.0 V, FCLOCK = 2.4 MHz, unless otherwise noted.
TIMING CHARACTERISTICS

### Clock and Data Timing

- **Mic (High):**
  - **Data:** Vdd (rising clock edge)
  - **Latch Data On:** falling clock edge

- **Mic (Low):**
  - **Data:** GND (falling clock edge)
  - **Latch Data On:** rising clock edge

### Recommended Interface Circuit

**Single MIC**

- Microphone Select (L/R)
- Codec

**Double MIC**

- Microphone Select (L/R)
- Codec
ENVIRONMENTAL

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</tr>
</thead>
<tbody>
<tr>
<td>operating temperature</td>
<td></td>
<td>-40</td>
<td>105</td>
<td>85</td>
<td>°C</td>
</tr>
<tr>
<td>storage temperature</td>
<td>in packaging</td>
<td>-40</td>
<td>85</td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>RoHS</td>
<td></td>
<td>yes</td>
<td></td>
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MECHANICAL

<table>
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<tr>
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</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>
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<tr>
<td>weight</td>
<td></td>
<td>0.024</td>
<td></td>
<td></td>
<td>g</td>
</tr>
</tbody>
</table>

MECHANICAL DRAWING

units: mm
tolerance: ±0.1 mm
FREQUENCY RESPONSE CURVE
SOLDERABILITY

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</thead>
<tbody>
<tr>
<td>reflow soldering</td>
<td>see reflow profile</td>
<td></td>
<td></td>
<td>260</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

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</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>MSL</td>
<td>Class 1</td>
<td></td>
<td></td>
<td></td>
<td></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>
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</tr>
</tbody>
</table>

Note:
4. Recommended storage period no more than 1 year. Floor life [out of bag] no more than 4 weeks.
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