Honeywell Microbolometer Patent Portfolio Analysis

Will Honeywell continue to lead the Microbolometer patent landscape with the evolution of a new consumer market?

HONEYWELL, PIONEER OF THE VOX MICROBOLOMETER TECHNOLOGY

The American company Honeywell is a pioneer actor in the microbolometer technology. In collaboration with the US Department of Defense, the company started the development of this new uncooled thermal sensor technology in the late 70’s. For military purposes, the technology was classified until 1992.

Following the declassification, Honeywell began licensing its patents related to microbolometers to several other companies in the early 90’s. A 2nd wave of license agreements took place in the early 2000’s. Both periods are linked to publications of Honeywell’s microbolometer patents. Nowadays, the VOx infrared sensor developed by Honeywell is the most used compare to other uncooled detector technologies such as amorphous silicon or pyroelectric sensors. Honeywell’s portfolio covers a wide range of microbolometer technologies: material, design, fabrication, systems including a microbolometer, ...

If the development of the microbolometer technology has been lead by the Defense sector and Honeywell, nowadays, the market is fast growing thanks to the development of many new consumer applications: thermography, night vision, surveillance, fire detection, building energy performance,… The global market size for uncooled thermal sensor was estimated to be nearly $222 million in 2013 and is estimated to reach $630 million by 2020, at a CAGR of 11.6% from 2015-2020. VOx technology represents 79% of the microbolometer market.

Despite those new applications and its pioneer status, Honeywell hasn’t filed many new patent applications in the microbolometer technology recently. The patent average age is 14 years and the number of dead patents is superior to the number of alive patents. Moreover, key patents will expire in the coming years.

While Honeywell makes the most of license agreements from its granted patents with various major actors in the microbolometer domain, the company doesn’t give VOx microbolometer technology an intense focus nowadays. However, Honeywell has also developed other MEMS technologies, including packaging or optics, which are particularly interesting for microbolometers. Therefore, the IP environment and the market for microbolometer and infrared imaging should be changing in the near future.
Honeywell Microbolometer - Patent Portfolio Analysis - 2015

CITATIONS NETWORK & IP COMPETITIVE ENVIRONMENT

The microbolometer portfolio of Honeywell is cited by more than 300 patent assignees in more than 600 patent families. For its part, Honeywell cites 325 patent families in its portfolio, representing around 250 assignees. Combining the Citations Network with the analysis of the content of citing/cited patents, the IP competitors of Honeywell in the microbolometer domain have been ranked in order to establish a general view of the IP Competitive Environment. Thus IP competitor developing microbolometer technologies have been identified.

IDENTIFY KEY PATENTS

Key patents have been identified based on several indicators, including family size, legal status, citations analysis and impact on microbolometer technology. Patents recently expired and patents expiring in the next few years have also been analyzed. About 10 keys patents have been identified, some of which will expire in the next 3 years, thus the technology disclosed will be free to be used.

Our report also includes an Excel database containing all of the analyzed patents. This database allows for multi-criteria searches and includes patent publication number, hyperlinks to the original documents, priority date, title, abstract, patent assignees, technological segments and legal status for each member of the patent family.

IDENTIFY IP BLOCKING PATENTS

Analyzing citations and citing applicants, patents with an IP blocking potential for other patent applicants in the microbolometer domain have been identified. Most of those patents are related to the manufacture or the design of a microbolometer array. Other patents are related to devices including a thermal sensor of the microbolometer type.

Patents of Honeywell’s portfolio have also been classified according to the technical issues addressed by the company.

Key Patents

<table>
<thead>
<tr>
<th>Patent Family</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Image of patent]</td>
<td>- A two-level microstructure infrared bolometer array.</td>
</tr>
<tr>
<td>[Image of patent]</td>
<td>- The structure increases the sensitivity to produce absorption levels</td>
</tr>
<tr>
<td>[Image of patent]</td>
<td>- Patent issue US898910A was granted in the USA</td>
</tr>
<tr>
<td>[Image of patent]</td>
<td>- Forward Citations: 90 citing families (main assignees: L-3, NEC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patent Family</th>
<th>Key Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Image of patent]</td>
<td>- A two-level infrared bolometer array based on a pin-type microbridge detector structure with integrated circuitry on a silicon substrate</td>
</tr>
<tr>
<td>[Image of patent]</td>
<td>- Patent issue US805918A was granted in the USA</td>
</tr>
<tr>
<td>[Image of patent]</td>
<td>- Patent issue US805918A was reexamined in the USA</td>
</tr>
<tr>
<td>[Image of patent]</td>
<td>- Forward Citations: 46 citing families (main assignees: L-3, BAE Systems)</td>
</tr>
</tbody>
</table>

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**ASSIGNEES CITED IN THE REPORT:**
Honeywell, Raytheon, Hughes, Panasonic, Texas Instruments, NEC, CEA, Fluke, Mitsubishi Electric, L-3 Communications, BAE Systems, Toshiba, Lockheed, Qualcomm, US Army

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### TABLE OF CONTENT

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Methodology</td>
<td>4</td>
</tr>
<tr>
<td>Search Strategy</td>
<td>5</td>
</tr>
<tr>
<td>Technology Overview</td>
<td>6</td>
</tr>
<tr>
<td>Uncooled Thermal Detector Market Forecast</td>
<td>8</td>
</tr>
<tr>
<td><strong>IP Overview</strong></td>
<td>9</td>
</tr>
<tr>
<td>Time Evolution of Patent Publications</td>
<td>10</td>
</tr>
<tr>
<td>Priority Countries</td>
<td>11</td>
</tr>
<tr>
<td>Timeline of Countries of Filings</td>
<td>12</td>
</tr>
<tr>
<td>Mapping of Patent Publications</td>
<td>13</td>
</tr>
<tr>
<td>Current Legal Status of Patents in the Portfolio</td>
<td>14</td>
</tr>
<tr>
<td>Mapping of Granted Patents &amp; Pending Applications</td>
<td>15</td>
</tr>
<tr>
<td>Size of Patent Families</td>
<td>16</td>
</tr>
<tr>
<td>Number of Total Claims – US Patents</td>
<td>17</td>
</tr>
<tr>
<td>Main IP Representatives</td>
<td>18</td>
</tr>
<tr>
<td>Technical Issues</td>
<td>19</td>
</tr>
<tr>
<td>Main IPC Classes – Honeywell Microbolometer Portfolio</td>
<td>21</td>
</tr>
<tr>
<td>Main IPC Timeline Evolution</td>
<td>22</td>
</tr>
<tr>
<td>Main Inventor Collaborations</td>
<td>23</td>
</tr>
<tr>
<td>Timeline of the Contribution of Main Inventors</td>
<td>24</td>
</tr>
<tr>
<td>IP Blocking Potential of Most Cited Patent Families</td>
<td>25</td>
</tr>
<tr>
<td>Citation Network</td>
<td>26</td>
</tr>
<tr>
<td>Forward Citations Timeline</td>
<td>27</td>
</tr>
<tr>
<td>Competitive IP Environment</td>
<td>28</td>
</tr>
<tr>
<td>IP Collaboration Network</td>
<td>29</td>
</tr>
<tr>
<td>Microbolometer Actors and Material</td>
<td>30</td>
</tr>
<tr>
<td>Patent Litigation</td>
<td>31</td>
</tr>
<tr>
<td>Patents Recently Expired (2014-2015)</td>
<td>32</td>
</tr>
<tr>
<td>Patents Expiring between 2016 &amp; 2018</td>
<td>35</td>
</tr>
<tr>
<td>Key Patents</td>
<td>40</td>
</tr>
<tr>
<td>Conclusions</td>
<td>45</td>
</tr>
<tr>
<td>Honeywell’s Microbolometer Portfolio Summary</td>
<td>46</td>
</tr>
<tr>
<td>Conclusions</td>
<td>47</td>
</tr>
<tr>
<td>SWOT Matrix</td>
<td>49</td>
</tr>
<tr>
<td><strong>Annex</strong></td>
<td>50</td>
</tr>
<tr>
<td>Main IP Competitors</td>
<td>51</td>
</tr>
<tr>
<td>Terminology for Patent Analysis</td>
<td>53</td>
</tr>
</tbody>
</table>

---

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