




|  <p>physical. chemical. biological.</p> | <p>ECR - Engineering Change Request ECN - Engineering Change Notice</p> | <p>A19-017</p> | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|----------------|----------|----------|-------------------------|---------------------------|-------------------------|----------------|--|--|-------------------|------------------------|---------------------------------------|--------------------------------|-----------|----------------------------------|----------------------------------|---------------|--------------------------------|----------------------|--------------------------|-------------------------------|
| <p>ECN Classification:</p> | <p>Class II (customer notification only, no approval required)</p> | | | | | | | | | | | | | | | | | | | | | | |
| <p>Project:</p> | <p>SMD with Soft Termination</p> | <p>Release by <input type="checkbox"/> Customer <input checked="" type="checkbox"/> IST:</p> | | | | | | | | | | | | | | | | | | | | | |
| <p>Division:</p> | <p>R&D</p> | <p>Date / Signature</p> | | | | | | | | | | | | | | | | | | | | | |
| <p>Product:</p> | <p>See product list in attachment</p> | <p>see page 2 _____</p> | | | | | | | | | | | | | | | | | | | | | |
| <p>Customer:</p> | <p>all</p> | <p>Name (in block letters)/ Position</p> | | | | | | | | | | | | | | | | | | | | | |
| <p>Abstract of change:</p> | <p>Change of wrap around contacts (end termination) for surface mount devices</p> | | | | | | | | | | | | | | | | | | | | | | |
| <p>Attachment:</p> | <p><input checked="" type="checkbox"/> Datasheet <input checked="" type="checkbox"/> Product List</p> | | | | | | | | | | | | | | | | | | | | | | |
| <p>Reason(s) for change: The scope of the change is a technology upgrade to end termination according to the state-of-the-art technology and make the sensor more robust in the customer's application.</p> <p>The aim of the technology upgrade is to improve the following parameters:</p> <ul style="list-style-type: none"> - Improved process reliability at soldering - Better long-term stability in thermal cycling and thermal shock conditions - Improved dimension reliability <p>There are no changes to the sensor characteristics or to the external dimensions (sensor length, width, height).</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Change details: For the internal approval IST performed following tests:</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Test procedure</th> <th>Details:</th> <th>Comment:</th> </tr> </thead> <tbody> <tr> <td>Long-term stability</td> <td>Aging and Thermal cycling</td> <td>1000 h duration, passed</td> </tr> <tr> <td>Solderability</td> <td>J_STD-002E Test A + A1</td> <td>passed</td> </tr> <tr> <td>Dewetting</td> <td>J_STD-002E Test A + A1</td> <td>passed</td> </tr> <tr> <td>Reflow Soldering & Profile</td> <td></td> <td>recommended profile in datasheet</td> </tr> <tr> <td>Temperature Cycling & Shear Test</td> <td>IEC 62137-1-2</td> <td>ongoing, internal tests passed</td> </tr> </tbody> </table> | | | Test procedure | Details: | Comment: | Long-term stability | Aging and Thermal cycling | 1000 h duration, passed | Solderability | J_STD-002E Test A + A1 | passed | Dewetting | J_STD-002E Test A + A1 | passed | Reflow Soldering & Profile | | recommended profile in datasheet | Temperature Cycling & Shear Test | IEC 62137-1-2 | ongoing, internal tests passed | | | |
| Test procedure | Details: | Comment: | | | | | | | | | | | | | | | | | | | | | |
| Long-term stability | Aging and Thermal cycling | 1000 h duration, passed | | | | | | | | | | | | | | | | | | | | | |
| Solderability | J_STD-002E Test A + A1 | passed | | | | | | | | | | | | | | | | | | | | | |
| Dewetting | J_STD-002E Test A + A1 | passed | | | | | | | | | | | | | | | | | | | | | |
| Reflow Soldering & Profile | | recommended profile in datasheet | | | | | | | | | | | | | | | | | | | | | |
| Temperature Cycling & Shear Test | IEC 62137-1-2 | ongoing, internal tests passed | | | | | | | | | | | | | | | | | | | | | |
| <p>The new wrap around contact (WAC) is based on a metalized polymer paste. To prevent the dissolution of the base metallization in solder an additional galvanic plating nickel barrier layer and a tin layer as end termination for easy solderability and prevention of oxidation is plated.</p> <p>For the new manufacturing process the sensor design was optimized. Both, the passivation glass and the pad were improved in terms of chemical resistance.</p> <p>The table below gives an overview of all implemented changes and modifications:</p> | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Sensor Type:</th> <th>2P</th> <th>2ST</th> </tr> </thead> <tbody> <tr> <td>Sensor element material</td> <td>Platinum</td> <td>Platinum</td> </tr> <tr> <td>Substrate type</td> <td>Ceramic - Al₂O₃</td> <td>Ceramic - Al₂O₃</td> </tr> <tr> <td>Glass passivation</td> <td>Glass I</td> <td>Glass II (higher chemical resistance)</td> </tr> <tr> <td>Pad composition (sensor level)</td> <td>Thin film</td> <td>Thick film</td> </tr> <tr> <td>Termination</td> <td>3-side</td> <td>5-side</td> </tr> <tr> <td>Termination material</td> <td>Adhesion layer + Au + Sn</td> <td>Metal polymer paste + Ni + Sn</td> </tr> </tbody> </table> | | | Sensor Type: | 2P | 2ST | Sensor element material | Platinum | Platinum | Substrate type | Ceramic - Al ₂ O ₃ | Ceramic - Al ₂ O ₃ | Glass passivation | Glass I | Glass II (higher chemical resistance) | Pad composition (sensor level) | Thin film | Thick film | Termination | 3-side | 5-side | Termination material | Adhesion layer + Au + Sn | Metal polymer paste + Ni + Sn |
| Sensor Type: | 2P | 2ST | | | | | | | | | | | | | | | | | | | | | |
| Sensor element material | Platinum | Platinum | | | | | | | | | | | | | | | | | | | | | |
| Substrate type | Ceramic - Al ₂ O ₃ | Ceramic - Al ₂ O ₃ | | | | | | | | | | | | | | | | | | | | | |
| Glass passivation | Glass I | Glass II (higher chemical resistance) | | | | | | | | | | | | | | | | | | | | | |
| Pad composition (sensor level) | Thin film | Thick film | | | | | | | | | | | | | | | | | | | | | |
| Termination | 3-side | 5-side | | | | | | | | | | | | | | | | | | | | | |
| Termination material | Adhesion layer + Au + Sn | Metal polymer paste + Ni + Sn | | | | | | | | | | | | | | | | | | | | | |

| Position | Name | Date & Signature |
|------------------------|-------------------|---|
| Quality Manager | Walter Zimmermann | 17. Nov. 2021  |
| Team Leader Technology | Yannick Barb | 17. Nov. 2021  |

Attachment:

Affected Products / Product list:

| Mat. No. Old | Mat. Name Old | | Mat. Name New | Mat. No. New |
|--------------|------------------|-----|-------------------|--------------------|
| 100565 | P1K0.0805.2P.B | --> | P1K0.0805.2ST.B | 101865 |
| 100596 | P1K0.0805.2P.B.S | --> | P1K0.0805.2ST.B.S | 102023 |
| 100597 | P0K1.0805.2P.B.S | --> | P0K1.0805.2ST.B.S | 152446 |
| 100612 | P0K1.0805.2P.B | --> | P0K1.0805.2ST.B | 152441 |
| 100613 | P0K1.0805.2P.A | --> | P0K1.0805.2ST.A | 150043 |
| 100614 | P0K1.0805.2P.A.S | --> | P0K1.0805.2ST.A.S | 150044 |
| 100617 | P0K5.0805.2P.A | --> | P0K5.0805.2ST.A | 150045 |
| 100618 | P0K5.0805.2P.B | --> | P0K5.0805.2ST.B | 150046 |
| 100619 | P0K5.0805.2P.B.S | --> | P0K5.0805.2ST.B.S | 150049 |
| 100620 | P1K0.0805.2P.A | --> | P1K0.0805.2ST.A | 150028 |
| 100621 | P1K0.0805.2P.A.S | --> | P1K0.0805.2ST.A.S | 150029 |
| 100635 | P0K1.0805.2P.C | --> | P0K1.0805.2ST.C | 152445 |
| 100659 | P1K0.0805.2P.C | --> | P1K0.0805.2ST.C | 102020 |
| 100667 | P0K5.0805.2P.C | --> | P0K5.0805.2ST.C | 150047 |
| 100965 | P1K0.0805.2P.A.S | --> | P1K0.0805.2ST.A.S | 150037 |
| 100966 | P1K0.0805.2P.B.S | --> | P1K0.0805.2ST.B.S | 150038 |
| 100986 | P0K1.0805.2P.B.S | --> | P0K1.0805.2ST.B.S | 150035 |
| 101020 | P0K1.0805.2P.A.S | --> | P0K1.0805.2ST.A.S | 150034 |
| 101063 | P1K0.0805.2P.K | --> | | please contact IST |
| 101068 | P0K1.0805.2P.C.S | --> | P0K1.0805.2ST.C.S | 150036 |
| 101105 | P1K0.0805.2P.C.S | --> | P1K0.0805.2ST.C.S | 150039 |
| 101229 | P1K0.0805.2P.C.S | --> | P1K0.0805.2ST.C.S | 102024 |
| 101328 | P1K0.0805.2P.A.S | --> | | please contact IST |
| 101452 | P1K0.0805.2P.K.S | --> | | please contact IST |
| 101572 | P0K1.0805.2P.A.S | --> | | please contact IST |
| 101709 | P0K5.0805.2P.A.S | --> | P0K5.0805.2ST.A.S | 150040 |
| 102058 | P1K0.0805.2P.A.S | --> | | please contact IST |
| 150023 | P0K1.0805.2P.A.S | --> | | please contact IST |
| 152040 | P0K1.0805.2P.B.S | --> | | please contact IST |
| 152050 | P0K1.0805.2P.A.S | --> | | please contact IST |
| 152054 | P1K0.0805.2P.B.S | --> | | please contact IST |
| 152055 | P1K0.0805.2P.A.S | --> | | please contact IST |