

Test report:

OAKN Test Report

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| | | | |
|-----------------------------|---|--------------------------|--------------------|
| Test Request By: | Bel Fuse Limited | | |
| Tested Product Name: | OAKN Fuse | Date of Received: | 2019/09/02 |
| Type Designation: | OAKN 100A OAKN 150A OAKN 175A OAKN 200A OAKN 250A | Serial No: | Engineering Sample |
| Test Specification: | Qualification Test, refer to JSAE JASO D622 | | |
| Test Place: | | | |
| Test Result: | The tested sample mentioned above Pass the testing according to test specification | | |
| Test By: | | Review By: : | |
| Date: | 2019/09/03 | Date: | 2019/09/27 |
| Others: | Qualification Test for OAKN Series | | |

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TEST PLAN

| No. | Group | Test item | Testing according to | Type name | Quantity | Test condition | Acceptable Value/Range |
|-----|-------|-------------------------------|--------------------------|---|------------------------------|--|--|
| 1 | 0 | DCR | UL248-1 | OAKN 100A OAKN 150A OAKN 175A OAKN 200A OAKN 250A | 12pcs | Surrounding environment: 23+/-5°C, measuring current <=10% rated current, test point: fuse cap | Test data |
| 2 | A | Temperature rise | ISO8820-8 JASO D622 | Same as above | 2pcs from Item 1 | Surrounding environment: 23+/-5°C, measuring current 0.5In | <50K |
| 3 | B | Temperature /humidity cycling | JASO D622 6.3.4.1 | Same as above | 2pcs from Item 1 | 10 temperature/humidity cycles per standard in a constant temperature and humidity chamber | No appearance damage, Rc < 10% |
| 4 | B | Hot / cold shock test | JASO D622 6.3.6 | Same as above | 2pcs from Item 1 | 48 cycles, -30° C-100° C; | No appearance damage, Rc < 10% |
| 5 | B | High temperature storage | Bel Spec. | Same as above | 2pcs from Item 1 | 125°C for 100 hours | No appearance damage, Rc < 10% |
| 6 | B | Mechanical shock | JASO D622 6.3.3 | Same as above | 2pcs from Item 1 | Ambient temperature: 23+ - 5°C, fixed fuse in vibration tester, 10-55hz, sinusoidal, peak value 1.5mm; One way 2 hours, three ways | No appearance damage, Rc < 10% |
| 7 | B | Impulse current cycle test | Refer to JASO D622 6.3.2 | Same as above | 2pcs from Item 1 | Ambient temperature: 23+ - 5 °C , impulse current 2In/0.25s and 0.5In/ 15s for one cycle, total 50,000 cycles. | No appearance damage, Rc < 10% |
| 8 | B | Wipe with Gasoline oil | Refer to GB/T31465.1-5.4 | Same as above | All the above tested samples | Wipe the tubes with gasoline / lube for 30s each, | Marking will be indelible and easily legible |
| 9 | B | Terminal strength test | JASO D622 ISO8820-8 | Same as above | All the above tested samples | Disassemble the fuse with 4.5+/-1Nm (M5) | Terminal remains physically intact after three times disassemble |

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1. Purpose

Verify the electrical and reliability of the product.

2. Test equipment

| Equipment | Type | Manufacturer |
|------------------------------|-----------|--------------|
| Multimeter | 34401A | Agilent |
| Programmable DC Power supply | PST-3201 | GW |
| Programmable DC Power Supply | PSM-3004 | GW |
| mOHM meter | 1154D | DHK |
| Current Shunt | 2M-05 | T&M Research |
| Oscilloscope | TDS5104B | Tektronix |
| DC electronic Load | 63209 | Chroma |
| Electric vibration system | RT-S50ZY | SZZL |
| Power Supply | 6V3000A | YST |
| Temperature Measurement | 40032 | TH |
| Temperature/Humidity Chamber | RHP-150CT | REALE |
| Thermal Shock Chamber | TSA-71H-W | REALE |

3. Test equipment and scheme

The test was conducted according to the test scheme of 0AKN_Test_Report_2019. Mark the sample number (sample number from 1-12) and use the same sample to test all items in the test plan.

4. Test result

4.1.1 Initial test result

4.1.2 DCR (No. 1)

Test result **pass**

Table 1 0AKN 100A (No. 1)

| Error! Reference source not found. | | | | | | | |
|------------------------------------|------------|----------------------|--|----------------|------------|----------------------|--|
| Type: | DCR | Visual | | No.\ Item | DCR | Visual | |
| Start date: | 2019/09/03 | | | Finish date: | 2019/09/03 | | |
| Room temperature: | 24.7°C | | | Room humidity. | 63% | | |
| No.\ Item | DCR | Visual | | No.\ Item | DCR | Visual | |
| Unit: | mΩ | | | Unit: | mΩ | | |
| Maximum: | | | | Maximum: | | | |
| Minimum: | | No appearance damage | | Minimum: | | No appearance damage | |
| 1 | 0.905 | pass | | 7 | 0.901 | pass | |
| 2 | 0.899 | pass | | 8 | 0.901 | pass | |
| 3 | 0.892 | pass | | 9 | 0.899 | pass | |
| 4 | 0.898 | pass | | 10 | 0.896 | pass | |
| 5 | 0.901 | pass | | 11 | 0.897 | pass | |
| 6 | 0.899 | pass | | 12 | 0.902 | pass | |

Table 2 0AKN 150A (No. 1)

| Error! Reference source not found. | | | | | | | |
|------------------------------------|------------|--------|--|----------------|------------|--------|--|
| Type: | DCR | Visual | | No.\ Item | DCR | Visual | |
| Start date: | 2019/09/03 | | | Finish date: | 2019/09/03 | | |
| Room temperature: | 24.7°C | | | Room humidity. | 63% | | |
| No.\ Item | DCR | Visual | | No.\ Item | DCR | Visual | |
| Unit: | mΩ | | | Unit: | mΩ | | |

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| Maximum: | | | | Maximum: | | | |
|----------|-------|----------------------|--|----------|-------|----------------------|--|
| Minimum: | | No appearance damage | | Minimum: | | No appearance damage | |
| 1 | 0.600 | pass | | 7 | 0.606 | pass | |
| 2 | 0.594 | pass | | 8 | 0.597 | pass | |
| 3 | 0.601 | pass | | 9 | 0.591 | pass | |
| 4 | 0.593 | pass | | 10 | 0.602 | pass | |
| 5 | 0.597 | pass | | 11 | 0.599 | pass | |
| 6 | 0.599 | pass | | 12 | 0.603 | pass | |

Table 3 0AKN 175A (No. 1)

| Error! Reference | | | | | | | |
|-------------------|-------------------|----------------------|--|-----------|-------|----------------------|--|
| Type: | source not found. | | | | | | |
| Start date: | 2019/09/03 | | | | | | |
| Room temperature: | 24.7°C | | | | | | |
| No.\ Item | DCR | Visual | | No.\ Item | DCR | Visual | |
| Unit: | mΩ | | | Unit: | mΩ | | |
| Maximum: | | | | Maximum: | | | |
| Minimum: | | No appearance damage | | Minimum: | | No appearance damage | |
| 1 | 0.498 | pass | | 7 | 0.502 | pass | |
| 2 | 0.499 | pass | | 8 | 0.498 | pass | |
| 3 | 0.496 | pass | | 9 | 0.489 | pass | |
| 4 | 0.498 | pass | | 10 | 0.507 | pass | |
| 5 | 0.497 | pass | | 11 | 0.499 | pass | |
| 6 | 0.501 | pass | | 12 | 0.503 | pass | |

Table 4 0AKN 200A (No. 1)

| Error! Reference | | | | | | | |
|-------------------|-------------------|----------------------|--|-----------|-----|----------------------|--|
| Type: | source not found. | | | | | | |
| Start date: | 2019/09/03 | | | | | | |
| Room temperature: | 24.7°C | | | | | | |
| No.\ Item | DCR | Visual | | No.\ Item | DCR | Visual | |
| Unit: | mΩ | | | Unit: | mΩ | | |
| Maximum: | | | | Maximum: | | | |
| Minimum: | | No appearance damage | | Minimum: | | No appearance damage | |

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| | | | | | | | |
|---|--------|------|--|----|--------|------|--|
| 1 | 0.4008 | pass | | 7 | 0.4003 | pass | |
| 2 | 0.3976 | pass | | 8 | 0.3992 | pass | |
| 3 | 0.3949 | pass | | 9 | 0.3986 | pass | |
| 4 | 0.4001 | pass | | 10 | 0.4001 | pass | |
| 5 | 0.3958 | pass | | 11 | 0.3974 | pass | |
| 6 | 0.3966 | pass | | 12 | 0.3955 | pass | |

Table 5 0AKN 250A (No. 1)

| Error! Reference | | | | | | | |
|-------------------------|--------------------------|----------------------|--|----------------|------------|----------------------|--|
| Type: | source not found. | | | | | | |
| Start date: | 2019/09/03 | | | Finish date: | 2019/09/03 | | |
| Room temperature: | 24.7°C | | | Room humidity. | 63% | | |
| No.\ Item | DCR | Visual | | No.\ Item | DCR | Visual | |
| Unit: | mΩ | | | Unit: | mΩ | | |
| Maximum: | | | | Maximum: | | | |
| Minimum: | | No appearance damage | | Minimum: | | No appearance damage | |
| 1 | 0.3135 | pass | | 7 | 0.3117 | pass | |
| 2 | 0.3143 | pass | | 8 | 0.3137 | pass | |
| 3 | 0.3118 | pass | | 9 | 0.3132 | pass | |
| 4 | 0.3114 | pass | | 10 | 0.3109 | pass | |
| 5 | 0.3105 | pass | | 11 | 0.3119 | pass | |
| 6 | 0.3128 | pass | | 12 | 0.3122 | pass | |

4.2. Electrical test result group A

4.2.1 Temperature rise (No. 2)

Test result: **pass**
Table 6 0AKN 100A (No. 2)

| Type | 0AKN 100A | | | | | | |
|------------------|-------------------|--------|--|----------------|------------|--|--|
| Start date: | 2019/09/04 | | | Finish date: | 2019/09/04 | | |
| Room temperature | 24.5°C | | | Room Humidity. | 51% | | |
| No.\ Item | Temperatur e rise | Visual | | | | | |

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| | | | | | | | |
|----------|--------|----------------------|--|--|--|--|--|
| | @0.5In | | | | | | |
| Unit: | K | | | | | | |
| Maximum: | 50 | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 1 | 19.3 | pass | | | | | |
| 2 | 17.8 | pass | | | | | |

Table 7 0AKN 150A (No. 2)

| | | | | | | | |
|------------------|--------------------------|----------------------|--|----------------|------------|--|--|
| Type | 0AKN 150A | | | Finish | | | |
| Start date: | 2019/09/04 | | | date: | 2019/09/04 | | |
| Room temperature | 24.5°C | | | Room Humidity. | 51% | | |
| No.\ Item | Temperatur e rise @0.5In | Visual | | | | | |
| Unit: | K | | | | | | |
| Maximum: | 50 | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 1 | 21.9 | pass | | | | | |
| 2 | 20.3 | pass | | | | | |

Table 8 0AKN 175A (No. 2)

| | | | | | | | |
|------------------|--------------------------|----------------------|--|----------------|------------|--|--|
| Type | 0AKN 175A | | | Finish | | | |
| Start date: | 2019/09/04 | | | date: | 2019/09/04 | | |
| Room temperature | 24.5°C | | | Room Humidity. | 51% | | |
| No.\ Item | Temperatur e rise @0.5In | Visual | | | | | |
| Unit: | K | | | | | | |
| Maximum: | 50 | | | | | | |
| Minimum: | | No appearance damage | | | | | |

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| | | | | | | | |
|---|------|------|--|--|--|--|--|
| 1 | 21.3 | pass | | | | | |
| 2 | 21.4 | pass | | | | | |

Table 9 0AKN 200A (No. 2)

| Type | | | 0AKN 200A | | | | |
|------------------|--------------------------|----------------------|--------------|--|--|--|--|
| Start date: | | | Finish date: | | | | |
| Room temperature | | | 2019/09/04 | | | | |
| No.\ Item | Temperatur e rise @0.5In | Visual | | | | | |
| Unit: | K | | | | | | |
| Maximum: | 50 | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 1 | 22.3 | pass | | | | | |
| 2 | 21.5 | pass | | | | | |

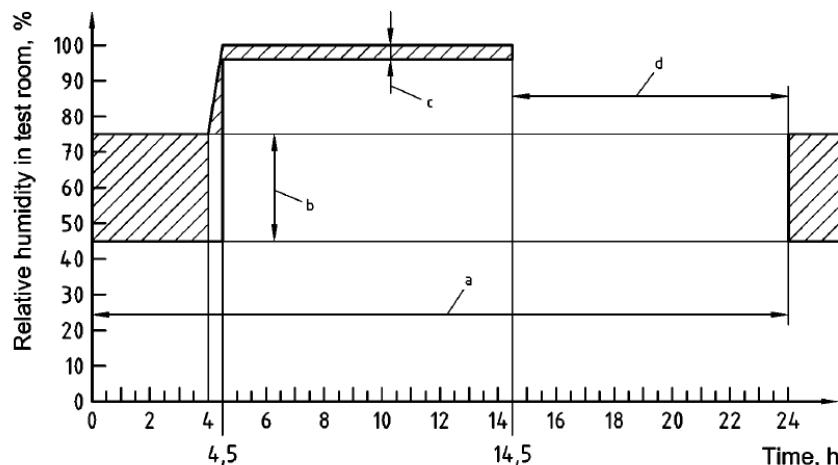
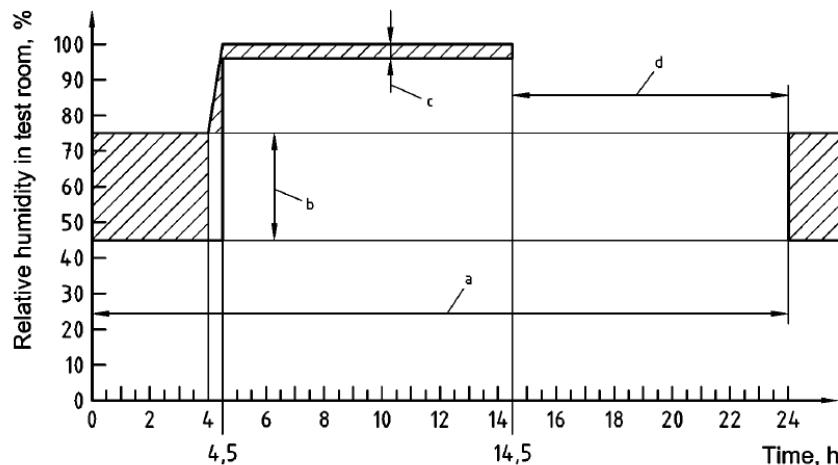
Table 10 0AKN 250A (No. 2)

| Type | | | 0AKN 250A | | | | |
|------------------|--------------------------|----------------------|--------------|--|--|--|--|
| Start date: | | | Finish date: | | | | |
| Room temperature | | | 2019/09/04 | | | | |
| No.\ Item | Temperatur e rise @0.5In | Visual | | | | | |
| Unit: | K | | | | | | |
| Maximum: | 50 | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 1 | 27.7 | pass | | | | | |
| 2 | 29.6 | pass | | | | | |

4.3. Reliability test result group B

4.3.1 Temperature /humidity cycling test result(No. 3)

10 temperature-humidity cycles according the following setting and 24 hours per cycle



Test result: pass

Table 11 Error! Reference source not found. (No. 3)

| | | | | |
|----------------------|------------|--------|----------------|------------|
| Type: | 0AKN 100A | | Finish | |
| Start date: | 2019/09/03 | | date: | 2019/09/16 |
| Room temperature...: | 24.8°C | | Room Humidity. | 58% |
| No.\ Item | DCR | Visual | | |
| Unit: | mΩ | | | |
| Maximum: | | | | |

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| | | | | | | | |
|----------|-------|----------------------|--|--|--|--|--|
| Minimum: | | No appearance damage | | | | | |
| 3 | 0.897 | pass | | | | | |
| 4 | 0.905 | pass | | | | | |

Table 12 Error! Reference source not found. (No. 3)

| | | | | | | | |
|----------------------|------------|----------------------|--|--|--|--|--|
| Type: | 0AKN 150A | | | | | | |
| Start date: | 2019/09/03 | | | | | | |
| Room temperature...: | 24.8°C | | | | | | |
| No.\ Item | DCR | Visual | | | | | |
| Unit: | mΩ | | | | | | |
| Maximum: | | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 3 | 0.606 | pass | | | | | |
| 4 | 0.597 | pass | | | | | |

Table 13 Error! Reference source not found. (No. 3)

| | | | | | | | |
|----------------------|------------|----------------------|--|--|--|--|--|
| Type: | 0AKN 175A | | | | | | |
| Start date: | 2019/09/03 | | | | | | |
| Room temperature...: | 24.8°C | | | | | | |
| No.\ Item | DCR | Visual | | | | | |
| Unit: | mΩ | | | | | | |
| Maximum: | | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 3 | 0.499 | pass | | | | | |
| 4 | 0.502 | pass | | | | | |

Table 14 Error! Reference source not found. (No. 3)

| | | | | | | | |
|-------------|------------|--|--|--|--|--|--|
| Type: | 0AKN 200A | | | | | | |
| Start date: | 2019/09/03 | | | | | | |

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| | | | |
|----------------------|--------|----------------------|-----|
| Room temperature...: | 24.8°C | Room Humidity.: | 58% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 3 | 0.3972 | pass | |
| 4 | 0.4031 | pass | |

Table 15 Error! Reference source not found. (No. 3)

| | | | |
|----------------------|------------|----------------------|------------|
| Type: | 0AKN 250A | | |
| Start date: | 2019/09/03 | Finish date: | 2019/09/16 |
| Room temperature...: | 24.8°C | Room Humidity.: | 58% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 3 | 0.3141 | pass | |
| 4 | 0.3135 | pass | |

4.3.2 Hot / cold shock test result (No. 4))

48 cycles of hot / cold shock and the condition of single cycle as the following:

1. -30+/-2°C continued 30min;
2. Switching time 15s maximum;
3. 100+/-2°C continued 30min;
4. Switching time 15s maximum;

Test result: **pass**

Table 16 Error! Reference source not found.(No. 4)

| | | | |
|-------------|---|--------------|------------|
| Type: | Error! Reference source not found. | | |
| Start date: | 2019/09/05 | Finish date: | 2019/09/10 |

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| | | | |
|-------------------|--------|----------------------|-----|
| Room temperature. | 25.1°C | Room humidity. | 59% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 5 | 0.902 | pass | |
| 6 | 0.903 | pass | |

Table 17 Error! Reference source not found.(No. 4)

| | | | |
|-------------------|---|----------------------|------------|
| Type: | Error! Reference source not found. | | |
| Start date: | 2019/09/05 | Finish date: | 2019/09/10 |
| Room temperature. | 25.1°C | Room humidity. | 59% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 5 | 0.599 | pass | |
| 6 | 0.603 | pass | |

Table 18 Error! Reference source not found.(No. 4)

| | | | |
|-------------------|---|----------------------|------------|
| Type: | Error! Reference source not found. | | |
| Start date: | 2019/09/05 | Finish date: | 2019/09/10 |
| Room temperature. | 25.1°C | Room humidity. | 59% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 5 | 0.497 | pass | |
| 6 | 0.502 | pass | |

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Table 19 Error! Reference source not found.(No. 4)

| Error! Reference source not found. | | | | | | | | |
|---|---|----------------------|----------------|------------|--|--|--|--|
| Type: | Error! Reference source not found. | | | | | | | |
| Start date: | 2019/09/05 | | Finish date: | 2019/09/10 | | | | |
| Room temperature. | 25.1°C | | Room humidity. | 59% | | | | |
| No.\ Item | DCR | Visual | | | | | | |
| Unit: | mΩ | | | | | | | |
| Maximum: | | | | | | | | |
| Minimum: | | No appearance damage | | | | | | |
| 5 | 0.3965 | pass | | | | | | |
| 6 | 0.3982 | pass | | | | | | |

Table 20 Error! Reference source not found.(No. 4)

| Error! Reference source not found. | | | | | | | | |
|---|---|----------------------|----------------|------------|--|--|--|--|
| Type: | Error! Reference source not found. | | | | | | | |
| Start date: | 2019/09/05 | | Finish date: | 2019/09/10 | | | | |
| Room temperature. | 25.1°C | | Room humidity. | 59% | | | | |
| No.\ Item | DCR | Visual | | | | | | |
| Unit: | mΩ | | | | | | | |
| Maximum: | | | | | | | | |
| Minimum: | | No appearance damage | | | | | | |
| 5 | 0.3119 | pass | | | | | | |
| 6 | 0.3150 | pass | | | | | | |

4.3.3 High temperature storage test result (No. 5)

Test result: **Pass**
Table 21 Error! Reference source not found. (No. 5)

| | | | |
|-------------|------------|--------|------------|
| Type: | 0AKN 100A | | |
| Start date: | 2019/09/12 | Finish | 2019/09/19 |

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| Room temperature. | | | date: | | | | | |
|-------------------|-------|----------------------|-------|--|--|--|--|--|
| No.\ Item | DCR | Visual | | | | | | |
| Unit: | mΩ | | | | | | | |
| Maximum: | | | | | | | | |
| Minimum: | | No appearance damage | | | | | | |
| 7 | 0.905 | pass | | | | | | |
| 8 | 0.908 | pass | | | | | | |

Table 22 Error! Reference source not found. (No. 5)

| Room temperature. | | | Finish date: | | | | | |
|-------------------|-------|----------------------|--------------|--|--|--|--|--|
| No.\ Item | DCR | Visual | | | | | | |
| Unit: | mΩ | | | | | | | |
| Maximum: | | | | | | | | |
| Minimum: | | No appearance damage | | | | | | |
| 7 | 0.612 | pass | | | | | | |
| 8 | 0.605 | pass | | | | | | |

Table 23 Error! Reference source not found. (No. 5)

| Room temperature. | | | Finish date: | | | | | |
|-------------------|-------|----------------------|--------------|--|--|--|--|--|
| No.\ Item | DCR | Visual | | | | | | |
| Unit: | mΩ | | | | | | | |
| Maximum: | | | | | | | | |
| Minimum: | | No appearance damage | | | | | | |
| 7 | 0.504 | pass | | | | | | |
| 8 | 0.501 | pass | | | | | | |

Table 24 Error! Reference source not found. (No. 5)

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 Type: **OAKN 200A**

 Start date: **2019/09/12**

 Room temperature. **24.6°C**

Finish

 date: **2019/09/19**

 Room humidity. **66%**

| No.\ Item | DCR | Visual | | | | | |
|-----------|--------|----------------------|--|--|--|--|--|
| Unit: | mΩ | | | | | | |
| Maximum: | | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 7 | 0.4018 | pass | | | | | |
| 8 | 0.4023 | pass | | | | | |

Table 25 Error! Reference source not found. (No. 5)

 Type: **OAKN 250A**

 Start date: **2019/09/12**

 Room temperature. **24.6°C**

Finish

 date: **2019/09/19**

 Room humidity. **66%**

| No.\ Item | DCR | Visual | | | | | |
|-----------|--------|----------------------|--|--|--|--|--|
| Unit: | mΩ | | | | | | |
| Maximum: | | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 7 | 0.3148 | pass | | | | | |
| 8 | 0.3181 | pass | | | | | |

4.3.4 Mechanical shock test result (No. 6)

Test result:
Pass
Table 26 Error! Reference source not found. (No. 6)
**Error! Reference
source not found.**

 Type: **Error! Reference
source not found.**

 Start date: **2019/09/16**

 Room temperature. **24.8°C**

Finish

 date: **2019/09/23**

 Room humidity. **57%**
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| | | | | | | | |
|-----------|-------|----------------------------|--|--|--|--|--|
| No.\ Item | DCR | visual | | | | | |
| Unit: | mΩ | | | | | | |
| Maximum: | | | | | | | |
| Minimum: | | No appearance damage | | | | | |
| 9 | 0.902 | pass | | | | | |
| 10 | 0.903 | pass | | | | | |

Table 27 Error! Reference source not found. (No. 6)

| | | | |
|---|--------|----------------------------|------------|
| Error! Reference source not found. | | | Finish |
| Type: | | | date:: |
| Start date: | | 2019/09/16 | 2019/09/23 |
| Room temperature. | 24.8°C | Room humidity. | 57% |
| No.\ Item | DCR | visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 9 | 0.596 | pass | |
| 10 | 0.607 | pass | |

Table 28 Error! Reference source not found. (No. 6)

| | | | |
|---|--------|----------------------------|------------|
| Error! Reference source not found. | | | Finish |
| Type: | | | date:: |
| Start date: | | 2019/09/16 | 2019/09/23 |
| Room temperature. | 24.8°C | Room humidity. | 57% |
| No.\ Item | DCR | visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 9 | 0.491 | pass | |
| 10 | 0.511 | pass | |

Table 29 Error! Reference source not found. (No. 6)**Confidential and Proprietary:**

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| Error! Reference | | |
|-------------------------|--------------------------|----------------------|
| Type: | source not found. | |
| Start date: | 2019/09/16 | Finish date:: |
| Room temperature. | 24.8°C | Room humidity. |
| No.\ Item | DCR | visual |
| Unit: | mΩ | |
| Maximum: | | |
| Minimum: | | No appearance damage |
| 9 | 0.4001 | pass |
| 10 | 0.4033 | pass |

Table 30 Error! Reference source not found. (No. 6)

| Error! Reference | | |
|-------------------------|--------------------------|----------------------|
| Type: | source not found. | |
| Start date: | 2019/09/16 | Finish date:: |
| Room temperature. | 24.8°C | Room humidity. |
| No.\ Item | DCR | visual |
| Unit: | mΩ | |
| Maximum: | | |
| Minimum: | | No appearance damage |
| 9 | 0.3160 | pass |
| 10 | 0.3138 | pass |

4.3.5 Impulse current cycle test result(No. 7)

Test result: **Pass**
Table 31 Error! Reference source not found. (No. 7)

| Error! Reference | | |
|-------------------------|--------------------------|--------------|
| Type: | source not found. | |
| Start date:: | 2019/09/10 | Finish date: |
| | | 2019/09/22 |

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| | | | |
|-------------------|--------|----------------------|-----|
| Room temperature. | 25.3°C | Room humidity. | 63% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 11 | 0.902 | pass | |
| 12 | 0.907 | pass | |

Table 32 Error! Reference source not found. (No. 7)

| | | | |
|-------------------|---|----------------------|------------|
| Type: | Error! Reference source not found. | | |
| Start date:: | 2019/09/10 | Finish date: | 2019/09/22 |
| Room temperature. | 25.3°C | Room humidity. | 63% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 11 | 0.603 | pass | |
| 12 | 0.606 | pass | |

Table 33 Error! Reference source not found. (No. 7)

| | | | |
|-------------------|---|----------------------|------------|
| Type: | Error! Reference source not found. | | |
| Start date:: | 2019/09/10 | Finish date: | 2019/09/22 |
| Room temperature. | 25.3°C | Room humidity. | 63% |
| No.\ Item | DCR | Visual | |
| Unit: | mΩ | | |
| Maximum: | | | |
| Minimum: | | No appearance damage | |
| 11 | 0.501 | pass | |
| 12 | 0.506 | pass | |

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Table 34 Error! Reference source not found. (No. 7)

| Error! Reference source not found. | | | Finish | | | | | |
|---|------------|----------------------|--------|--|--|--|-----------|------------|
| Type: | | | | | | | date: | 2019/09/22 |
| Start date:: | 2019/09/10 | | | | | | Room | 63% |
| Room temperature. | 25.3°C | | | | | | humidity. | |
| No.\ Item | DCR | Visual | | | | | | |
| Unit: | mΩ | | | | | | | |
| Maximum: | | | | | | | | |
| Minimum: | | No appearance damage | | | | | | |
| 11 | 0.3996 | pass | | | | | | |
| 12 | 0.3978 | pass | | | | | | |

Table 35 Error! Reference source not found. (No. 7)

| Error! Reference source not found. | | | Finish | | | | | |
|---|------------|----------------------|--------|--|--|--|-----------|------------|
| Type: | | | | | | | date: | 2019/09/22 |
| Start date:: | 2019/09/10 | | | | | | Room | 63% |
| Room temperature. | 25.3°C | | | | | | humidity. | |
| No.\ Item | DCR | Visual | | | | | | |
| Unit: | mΩ | | | | | | | |
| Maximum: | | | | | | | | |
| Minimum: | | No appearance damage | | | | | | |
| 11 | 0.3155 | pass | | | | | | |
| 12 | 0.3145 | pass | | | | | | |

4.3.6 Test result of wiping the tubes with gasoline / lube, (No. 8)

*Gasoline is GB #92, lubricating oil is synthetic oil.

Test result: **Pass**

Table 36 Error! Reference source not found. (No. 8)

| | | | |
|--------------|------------|--------|------------|
| Type: | 0AKN 100A | Finish | 2019/09/26 |
| Start date:: | 2019/09/26 | | |

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| | | | | date: | | | |
|----------------------|---------------------------------|-----------|---------------------------------|-------------------|--|-----|--|
| Room temperature. | | 25.2°C | | Room humidity. | | 62% | |
| No.\ Item | Marking can be recognized | No.\ Item | Marking can be recognized | | | | |
| Unit: | | Unit: | | | | | |
| Maximum: | | Maximum:: | | | | | |
| Minimum:: | | Minimum:: | | | | | |
| 1 | pass | 7 | pass | | | | |
| 2 | pass | 8 | pass | | | | |
| 3 | pass | 9 | pass | | | | |
| 4 | pass | 10 | pass | | | | |
| 5 | pass | 11 | pass | | | | |
| 6 | pass | 12 | pass | | | | |

Table 37 Error! Reference source not found. (No. 8)

| Type: | 0AKN 150A | | | | | |
|----------------------|---------------------------------|-----------|---------------------------------|--|-------------------|-----|
| Start date:: | 2019/09/26 | | | | | |
| Room temperature. | 25.2°C | | | | Room humidity. | 62% |
| No.\ Item | Marking can be recognized | No.\ Item | Marking can be recognized | | | |
| Unit: | | Unit: | | | | |
| Maximum: | | Maximum:: | | | | |
| Minimum:: | | Minimum:: | | | | |
| 1 | pass | 7 | pass | | | |
| 2 | pass | 8 | pass | | | |
| 3 | pass | 9 | pass | | | |
| 4 | pass | 10 | pass | | | |
| 5 | pass | 11 | pass | | | |
| 6 | pass | 12 | pass | | | |

Table 38 Error! Reference source not found. (No. 8)

| Type: | 0AKN 175A | | | | | |
|----------------------|---------------------------------|-----------|---------------------------------|--|-------------------|-----|
| Start date:: | 2019/09/26 | | | | | |
| Room temperature. | 25.2°C | | | | Room humidity. | 62% |
| No.\ Item | Marking can be recognized | No.\ Item | Marking can be recognized | | | |

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| No.\ Item | Marking can be recognized | | No.\ Item | Marking can be recognized | | | |
|-----------|---------------------------|--|-----------|---------------------------|--|--|--|
| Unit: | | | Unit: | | | | |
| Maximum: | | | Maximum:: | | | | |
| Minimum:: | | | Minimum:: | | | | |
| 1 | pass | | 7 | pass | | | |
| 2 | pass | | 8 | pass | | | |
| 3 | pass | | 9 | pass | | | |
| 4 | pass | | 10 | pass | | | |
| 5 | pass | | 11 | pass | | | |
| 6 | pass | | 12 | pass | | | |

Table 39 Error! Reference source not found. (No. 8)Type: **OAKN 200A**Start date:: **2019/09/26**Finish date: **2019/09/26**Room temperature. **25.2°C**Room humidity. **62%**

| No.\ Item | Marking can be recognized | | No.\ Item | Marking can be recognized | | | |
|-----------|---------------------------|--|-----------|---------------------------|--|--|--|
| Unit: | | | Unit: | | | | |
| Maximum: | | | Maximum:: | | | | |
| Minimum:: | | | Minimum:: | | | | |
| 1 | pass | | 7 | pass | | | |
| 2 | pass | | 8 | pass | | | |
| 3 | pass | | 9 | pass | | | |
| 4 | pass | | 10 | pass | | | |
| 5 | pass | | 11 | pass | | | |
| 6 | pass | | 12 | pass | | | |

Table 40 Error! Reference source not found. (No. 8)Type: **OAKN 250A**Start date:: **2019/09/26**Finish date: **2019/09/26**Room temperature. **25.2°C**Room humidity. **62%**

| No.\ Item | Marking can be recognized | | No.\ Item | Marking can be recognized | | | |
|-----------|---------------------------|--|-----------|---------------------------|--|--|--|
| | | | | | | | |

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| | | | | | | | |
|-----------|------|--|-----------|------|--|--|--|
| Unit: | | | Unit: | | | | |
| Maximum: | | | Maximum:: | | | | |
| Minimum:: | | | Minimum:: | | | | |
| 1 | pass | | 7 | pass | | | |
| 2 | pass | | 8 | pass | | | |
| 3 | pass | | 9 | pass | | | |
| 4 | pass | | 10 | pass | | | |
| 5 | pass | | 11 | pass | | | |
| 6 | pass | | 12 | pass | | | |

4.3.7 Terminal strength test, (No. 9)

*Gasoline is GB #92, lubricating oil is synthetic oil.

Test result: **Pass**

Table 41 Error! Reference source not found. (No. 9)

| | | | | |
|-------------|------------|--|-----------|------------|
| Type: | 0AKN 100A | | Finish | |
| Start date: | 2019/09/03 | | date: | 2019/09/26 |
| Room | | | Room | |
| temperatu | 25.7°C | | humidity. | 67% |
| re. | | | | |

| No.\ Item | Times of disassembling | Visual | | No.\ Item | Times of disassembling | Visual | |
|-----------|------------------------|----------------------|--|-----------|------------------------|----------------------|--|
| Unit: | | | | Unit: | | | |
| Maximum: | | | | Maximum : | | | |
| Minimum: | 3 | No appearance damage | | Minimum: | 3 | No appearance damage | |
| 1 | >3 | pass | | 7 | >3 | pass | |
| 2 | >3 | pass | | 8 | >3 | pass | |
| 3 | >3 | pass | | 9 | >3 | pass | |
| 4 | >3 | pass | | 10 | >3 | pass | |
| 5 | >3 | pass | | 11 | >3 | pass | |
| 6 | >3 | pass | | 12 | >3 | pass | |

Table 42 Error! Reference source not found. (No. 9)

| | |
|-------|-----------|
| Type: | 0AKN 150A |
|-------|-----------|

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| | | | |
|-------------|------------|--------------|------------|
| Start date: | 2019/09/03 | Finish date: | 2019/09/26 |
|-------------|------------|--------------|------------|

Room temperature 25.7°C Room humidity. 67%

| No.\ Item | Times of disassembling | Visual | No.\ Item | Times of disassembling | Visual |
|-----------|------------------------|----------------------|-----------|------------------------|----------------------|
| Unit: | | | Unit: | | |
| Maximum: | | | Maximum : | | |
| Minimum: | 3 | No appearance damage | Minimum: | 3 | No appearance damage |
| 1 | >3 | pass | 7 | >3 | pass |
| 2 | >3 | pass | 8 | >3 | pass |
| 3 | >3 | pass | 9 | >3 | pass |
| 4 | >3 | pass | 10 | >3 | pass |
| 5 | >3 | pass | 11 | >3 | pass |
| 6 | >3 | pass | 12 | >3 | pass |

Table 43 Error! Reference source not found. (No. 9)

Type: 0AKN 175A

| | | | |
|-------------|------------|--------------|------------|
| Start date: | 2019/09/03 | Finish date: | 2019/09/26 |
|-------------|------------|--------------|------------|

Room temperature 25.7°C Room humidity. 67%

| No.\ Item | Times of disassembling | Visual | No.\ Item | Times of disassembling | Visual |
|-----------|------------------------|----------------------|-----------|------------------------|----------------------|
| Unit: | | | Unit: | | |
| Maximum: | | | Maximum : | | |
| Minimum: | 3 | No appearance damage | Minimum: | 3 | No appearance damage |
| 1 | >3 | pass | 7 | >3 | pass |
| 2 | >3 | pass | 8 | >3 | pass |
| 3 | >3 | pass | 9 | >3 | pass |
| 4 | >3 | pass | 10 | >3 | pass |
| 5 | >3 | pass | 11 | >3 | pass |
| 6 | >3 | pass | 12 | >3 | pass |

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Table 44 Error! Reference source not found. (No. 9)

| | | | | | | | |
|-------------|------------|------------------------|--------|-----------|------------------------|----------------------|--|
| Type: | 0AKN 200A | | | Finish | | | |
| Start date: | 2019/09/03 | | | date: | 2019/09/26 | | |
| Room | | | | Room | 67% | | |
| temperatu | 25.7°C | | | humidity. | | | |
| re. | No.\ Item | Times of disassembling | Visual | No.\ Item | Times of disassembling | Visual | |
| Unit: | | | | Unit: | | | |
| Maximum: | | | | Maximum : | | | |
| Minimum: | 3 | No appearance damage | | Minimum: | 3 | No appearance damage | |
| 1 | >3 | pass | | 7 | >3 | pass | |
| 2 | >3 | pass | | 8 | >3 | pass | |
| 3 | >3 | pass | | 9 | >3 | pass | |
| 4 | >3 | pass | | 10 | >3 | pass | |
| 5 | >3 | pass | | 11 | >3 | pass | |
| 6 | >3 | pass | | 12 | >3 | pass | |

Table 45 Error! Reference source not found. (No. 9)

| | | | | | | | |
|-------------|------------|------------------------|--------|-----------|------------------------|----------------------|--|
| Type: | 0AKN 250A | | | Finish | | | |
| Start date: | 2019/09/03 | | | date: | 2019/09/26 | | |
| Room | | | | Room | 67% | | |
| temperatu | 25.7°C | | | humidity. | | | |
| re. | No.\ Item | Times of disassembling | Visual | No.\ Item | Times of disassembling | Visual | |
| Unit: | | | | Unit: | | | |
| Maximum: | | | | Maximum : | | | |
| Minimum: | 3 | No appearance damage | | Minimum: | 3 | No appearance damage | |
| 1 | >3 | pass | | 7 | >3 | pass | |
| 2 | >3 | pass | | 8 | >3 | pass | |
| 3 | >3 | pass | | 9 | >3 | pass | |

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| | | | | | | | |
|---|----|------|--|----|----|------|--|
| 4 | >3 | pass | | 10 | >3 | pass | |
| 5 | >3 | pass | | 11 | >3 | pass | |
| 6 | >3 | pass | | 12 | >3 | pass | |

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5. Test image

Image 1, Mechanical shock curve

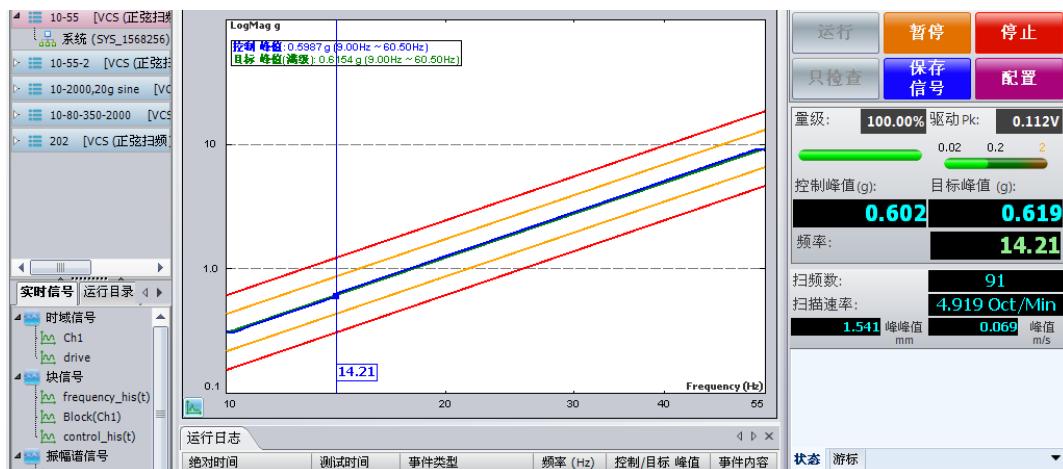


Image 2, Hot -cold shock curve

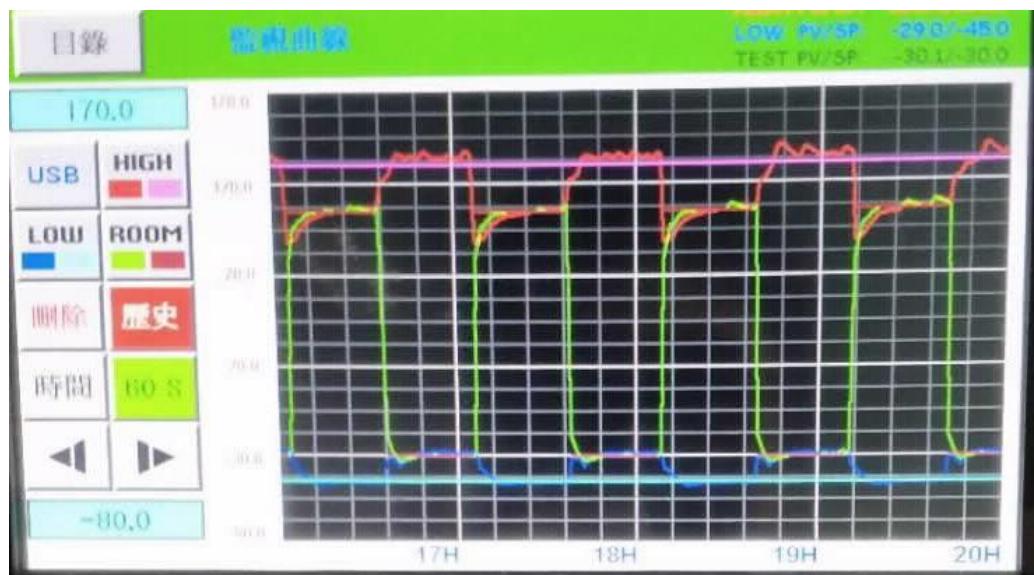


Image 3, Temperature-humidity cycling curve



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