


**PRODUCT / PROCESS CHANGE NOTIFICATION**

**1. PCN basic data**

|                      |   |                                      |
|----------------------|---|--------------------------------------|
| 1.1 Company          |  | STMicroelectronics International N.V |
| 1.2 PCN No.          | ADG/24/14591  |                                      |
| 1.3 Title of PCN     | TO-220FP ultra narrow leads line transfer from Shenzhen to TFME Tongke (China)    |                                      |
| 1.4 Product Category | Power MOSFET  |                                      |
| 1.5 Issue date       | 2024-03-29  |                                      |

**2. PCN Team**

|                                  |                       |
|----------------------------------|-----------------------|
| <b>2.1 Contact supplier</b>      |                       |
| 2.1.1 Name                       | Robert Goodman        |
| 2.1.2 Phone                      | +1 6024856271         |
| 2.1.3 Email                      | robert.goodman@st.com |
| <b>2.2 Change responsibility</b> |                       |
| 2.2.1 Product Manager            | Maurizio GIUDICE      |
| 2.1.2 Marketing Manager          | Paolo PETRALI         |
| 2.1.3 Quality Manager            | Vincenzo MILITANO     |

**3. Change**

|                     |   |                                   |
|---------------------|---|-----------------------------------|
| <b>3.1 Category</b> | <b>3.2 Type of change</b>   | <b>3.3 Manufacturing Location</b> |
| Transfer            | Line transfer for a full process or process brick (process step, control plan, recipes) from one site to another site: Assembly site (SOP 2617) | TFME Tongke (China)               |

**4. Description of change**

|   |   |  |
|---|---|--|
|   | <b>Old</b>  | <b>New</b>   |
| 4.1 Description   | TO-220FP ultra narrow leads products are manufactured in Shenzhen (China) | TO-220FP ultra narrow leads products are manufactured in TFME Tongke (China) |
| 4.2 Anticipated Impact on form,fit, function, quality, reliability or processability? | PROCESSABILITY  |  |

**5. Reason / motivation for change**

|                      |   |
|----------------------|---|
| 5.1 Motivation       | TO-220FP ultra narrow leads Shenzhen line closure and equipment transfer to TFME Tongke |
| 5.2 Customer Benefit | SERVICE CONTINUITY  |

**6. Marking of parts / traceability of change**

|                 |  |
|-----------------|--|
| 6.1 Description | By internal traceability and dedicated FG code |
|-----------------|--|

**7. Timing / schedule**

|                                     |              |
|-------------------------------------|--------------|
| 7.1 Date of qualification results   | 2024-02-19   |
| 7.2 Intended start of delivery      | 2024-06-28   |
| 7.3 Qualification sample available? | Upon Request |

**8. Qualification / Validation**

|  |   |                   |            |
|--|---|-------------------|------------|
| 8.1 Description                                    | 14591 REPPTD23076_3.0_SUNRISE PROJECT by package TO220 FP Ultra Narrow Leads_Industrial.pdf |                   |            |
| 8.2 Qualification report and qualification results | Available (see attachment)  | <b>Issue Date</b> | 2024-03-29 |

**9. Attachments (additional documentations)**

14591 Public product.pdf  
 14591 PCN 14591 TO-220FP UNL production Line transfer from Shenzhen to Tongke.pdf  
 14591 REPPTD23076\_3.0\_SUNRISE PROJECT by package TO220 FP Ultra Narrow Leads\_Industrial.pdf

| 10. Affected parts      |                         |                          |
|-------------------------|-------------------------|--------------------------|
| 10.1 Current            |                         | 10.2 New (if applicable) |
| 10.1.1 Customer Part No | 10.1.2 Supplier Part No | 10.1.2 Supplier Part No  |
|                         | STFU18N65M2             |                          |
|                         | STFU28N65M2             |                          |

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## Public Products List

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**PCN Title :** TO-220FP ultra narrow leads line transfer from Shenzhen to TFME Tongke (China)

**PCN Reference :** ADG/24/14591

**Subject :** Public Products List

Dear Customer,

Please find below the Standard Public Products List impacted by the change.

|             |             |                |
|-------------|-------------|----------------|
| STFU23N80K5 | STFU28N65M2 | STFU18N65M2    |
| STFU26N60M2 | STFU13N65M2 | STFU13N80K5    |
| STFU10N80K5 | STFU10NK60Z | STFU25N60M2-EP |
| STFU15NM65N | STFU18N60M2 | STFU13N60M2    |
| STFU24N60M2 | STFU14N80K5 | STFU15N80K5    |
| STFU9N65M2  |             |                |

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life.augmented

## Product/process change notification: ADG/24/14591

TO-220FP ultra narrow leads production line transfer from Shenzhen to TFME Tongke (China)

### Description of the change

Analog, Power & Discrete, MEMS & Sensors (APMS)  
Power Transistor Sub-Group  
**High Voltage Division**

Industrial

Dear Customer,

Following the continuous improvement of our service and with the aim of ensuring service continuity, this document announces the transfer of the TO-220FP ultra narrow leads assembly equipment and test line to TFME Tongke (China). Tongke is a plant of Tongfu Microelectronics (China) also named TFME.

TO-220FP ultra narrow leads products, manufactured in TFME Tongke, guarantee the same equipment, BOM (bill of materials), POA, quality and electrical characteristics as current production.

| Involved Products | Package                     | Test Vehicle | Samples Availability | End of Qualification |
|-------------------|-----------------------------|--------------|----------------------|----------------------|
| HV Power MOSFET   | TO-220FP ultra narrow leads | STFU26N60M2  | 30-Apr-24            | 30-Apr-24            |

Yours faithfully

March 28, 2024

### Reason

Service Continuity

### Date of implementation

June 28, 2024

### Impact of the change

|                |   |
|----------------|---|
| Form           |   |
| Fit            |   |
| Function       |   |
| Reliability    |   |
| Processibility | X |

### Qualification of the change

See attached Qualification report plan.

Product/Process Change Notification:

ADG/24/14591

TO-220FP ultra narrow leads production line transfer from Shenzhen to TFME Tongke (China)

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**Marking and traceability:**

Unless otherwise stated by customer specific requirement, traceability of products in TO-220FP ultra narrow leads, manufactured in TFME Tongke (China), will be ensured by internal code (Finished Good) and Q.A. number.

Product/process change notification:

ADG/24/14591

TO-220FP ultra narrow leads production line transfer from Shenzhen to TFME Tongke (China)

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**TO220 FP Ultra Narrow Leads Assembling & testing  
line relocation from ST Shenzhen to Tongke (China)  
plant of TFME  
for HV MOSFET products Industrial domain  
Reliability Evaluation Plan**

| General Information on selected Test Vehicle |                             |
|--|-----------------------------|
| Commercial Product                           | STFU26N60M2                 |
| Product Line                                 | MQ6W01                      |
| Silicon process Technology                   | MDmesh M2                   |
| Package                                      | TO220 FP Ultra Narrow Leads |

***Note:** this document is a summary of the qualification plan that will be performed in good faith by STMicroelectronics to evaluate the electronic devices conformance to its specific mission profile and release them to mass production for Standard Application. This document and its contents shall not be disclosed to a third party without previous written agreement from STMicroelectronics or under the approval of the author (see below).*

Revision history

| Rev. | Changes description    | Author       | Date                        |
|------|------------------------|--------------|-----------------------------|
| 1.0  | Initial release        | A. Settineri | 20 <sup>th</sup> June 2023  |
| 2.0  | Update to modify title |              | 21 <sup>st</sup> June 2023  |
| 3.0  | Update terms of use    |              | 28 <sup>th</sup> March 2024 |

Approved by

| Function                     | Location           | Name         | Date                        |
|------------------------------|--------------------|--------------|-----------------------------|
| Division Reliability Manager | ST Catania (Italy) | M. De Tomasi | 28 <sup>th</sup> March 2024 |

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## 1. Reliability Evaluation Overview

### 1.1. Objective and Reliability strategy

Aim of this document is to present the reliability evaluation plan to Assembling & testing line relocation from ST Shenzhen to Tongke (China) plant of TFME for HV MOSFET designed in Power MOSFET MDmesh M2, for Standard application domain.

Starting from present product portfolio, here below the features and the classification for reliability evaluation of the product belonging to the mentioned family and selected as Test Vehicle.

#### 1.1.1. Classification table

| Technology | Commercial Product | Product line | BVDs (V) | Die size (mm <sup>2</sup> ) | Gate wires   | Source wires | Classification for reliability evaluation                  |
|------------|--------------------|--------------|----------|-----------------------------|--------------|--------------|--|
| MDmesh M2  | STFU26N60M2        | MQ6W01       | 600      | 19.70                       | 5 mils Al/Mg | 10 mils Al   | Test Vehicle requiring full reliability evaluation on 1lot |

Reliability activity will be performed in agreement with **ST 0061692** specification as listed in below Test Plan. For details on test conditions, generic data used and specifications references, refer to test results summary in section 2.

#### 1.1.2. Test Plan

**Test Plan Table for MASTER**

| #  | TEST NAME | DESCRIPTION / COMMENTS                | TEST FLAG |
|----|-----------|---------------------------------------|-----------|
| 1  | TEST      | Pre- and Post- Stress Electrical Test | Yes       |
| 2  | PC        | Preconditioning                       | No        |
| 3  | EV        | External Visual                       | Yes       |
| 4  | HTRB      | High Temperature Reverse Bias         | Yes       |
| 5  | HTGB      | High Temperature Gate Bias            | Yes       |
|    | HTGB(n)   | High Temperature Gate Bias – negative | Yes       |
| 6  | HTSL      | High Temperature Storage Life         | Yes       |
| 7  | THB       | Temperature Humidity bias             | Yes       |
| 8  | AC        | Autoclave                             | Yes       |
| 9  | TC        | Temperature Cycling                   | Yes       |
| 10 | IOL       | Intermittent Operational Life         | Yes       |

## 2. Tests Summary

### 2.1. Test summary (table) for MASTER

Test method revision reference is the one active at the date of reliability trial execution.

| Test  | #  | Reference                              | STM Test Conditions  | Lots* | S.S. | Total | Comments                  |
|-------|----|--|--|-------|------|-------|---------------------------|
| TEST  | 1  |  | User specification or supplier's standard specification  | 1     | 616  | 616   | All qualification parts   |
| PC    | 2  | JEDEC/IPC<br>J-STD-020<br>JESD22-A-113 | -  | -     | -    | -     | Not included in qual plan |
| EV    | 3  | JESD22<br>B-101                        | All qualification parts submitted for testing  | 1     | 616  | 616   |                           |
| HTRB  | 4  | MIL-STD-750-1<br>M1038 Method<br>A     | Tj=150°C, Vds= 80% BVdss nominal, 1000h  | 1     | 77   | 77    |                           |
| HTGB  | 5  | JESD22 A-108                           | HTGB +<br>Tj=150°C Vgs= +25V, 1000h  | 1     | 77   | 77    |                           |
|       |    |  | HTGB +<br>Tj=150°C Vgs= -25V, 1000h  | 1     | 77   | 77    |                           |
| HTSL  | 6  | JESD22A103                             | Ta=150°C 1000h   | 1     | 77   | 77    |                           |
| H3TRB | 7  | JESD22A-101                            | Ta=85°C, RH=85%<br>Vds =100V, 1000h  | 1     | 77   | 77    |                           |
| AC    | 8  | JESD22 A-102                           | <b>ENV. SEQ. (ES)</b><br><b>Environmental Sequence</b><br>TC: Ta=-55/150°C, 100cy<br>+<br>AC: Ta=121°C, RH100%, Pa=2atm for 96 hours | 1     | 77   | 77    |                           |
| TC    | 9  | JESD22A-104<br>Appendix 6<br>J-STD-035 | Ta=-55°C /+150°C, 1000cy   | 1     | 77   | 77    |                           |
| IOL   | 10 | MIL-STD-750<br>Method 1037             | Ta=25°C with parts powered to insure<br>$\Delta T_j \geq 100^\circ\text{C}$ , 15Kcy  | 1     | 77   | 77    |                           |

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