



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN APM-IPC/10/5740
Notification Date 07/06/2010

Alternative die for TL431C

Table 1. Change Implementation Schedule

| | |
|--|-------------|
| Forecasted implementation date for change | 30-Sep-2010 |
| Forecasted availability date of samples for customer | 29-Jun-2010 |
| Forecasted date for STMicroelectronics change Qualification Plan results availability | 29-Jun-2010 |
| Estimated date of changed product first shipment | 05-Oct-2010 |

Table 2. Change Identification

| | |
|---|--|
| Product Identification (Product Family/Commercial Product) | see attached list |
| Type of change | Waferfab process change |
| Reason for change | Capacity optimization |
| Description of the change | Following Divisional commitments towards a continuous improvement philosophy an alternative die in same technology and same wafer Fab has been qualified for Voltage reference TL431C. It allows ST to have more flexibility and improve service and delivery versus customers |
| Product Line(s) and/or Part Number(s) | See attached |
| Description of the Qualification Plan | See attached |
| Change Product Identification | Traceability codes |
| Manufacturing Location(s) | |

Table 3. List of Attachments

| | |
|----------------------------|--|
| Customer Part numbers list | |
| Qualification Plan results | |



| | | | | | | | |
|--|--|-------------------------------------|-------|--------|----------|-------|------------|
| Customer Acknowledgement of Receipt | | PCN APM-IPC/10/5740 | | | | | |
| Please sign and return to STMicroelectronics Sales Office | | Notification Date 07/06/2010 | | | | | |
| <input type="checkbox"/> Qualification Plan Denied <input type="checkbox"/> Qualification Plan Approved <input type="checkbox"/> Change Denied <input type="checkbox"/> Change Approved | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="padding: 2px;">Name:</td></tr> <tr><td style="padding: 2px;">Title:</td></tr> <tr><td style="padding: 2px;">Company:</td></tr> <tr><td style="padding: 2px;">Date:</td></tr> <tr><td style="padding: 2px;">Signature:</td></tr> </table> | | Name: | Title: | Company: | Date: | Signature: |
| Name: | | | | | | | |
| Title: | | | | | | | |
| Company: | | | | | | | |
| Date: | | | | | | | |
| Signature: | | | | | | | |
| Remark | | | | | | | |

DOCUMENT APPROVAL

| Name | Function |
|------------------|----------------------------|
| Riviera, Antonio | Division Marketing Manager |
| Naso, Lorenzo | Division Product Manager |
| Motta, Antonino | Division Q.A. Manager |

Presentation & main results of qualification

The **1431** is a programmable voltage reference in SO8 package with an output voltage from 2.5 to 36V. The sink current capability from 1 to 100mA. The voltage precision are 2.500V +/-0.4% and +/-0.25%.

The qualification has been combined with the **0431** (same product characteristics with the voltage precision of 2.5V +/-1% and +/-2%.) , belonging to the same family (as defined in the AEC Q100 appendix 1).

Electrical results:

| Product (lot) | Package/plant |
|---------------|-----------------|
| 1431 | SO8 / BOUSKOURA |

The yield analysis conforms to ST standard results

Electrical parameters distribution on 50 pieces at T°AMB = 25°C and at cold and hot temperatures

The results conform to datasheet specifications.

ESD measurement:

The results conform to datasheet specifications (see ESD certificate).

The units have been tested at 25°C and hot test before and after electrostatic discharge.

Latch-up measurement was performed according to ST specification (n°0018695):

No latch-up was observed.

The units have been tested at 25°C and hot test before and after stress.

Design FMEA: see appendix

Not available for the products designed before 2002 or designed from an existing old product.

Environmental and Quality information:

ST is certified ISO/TS16949:

certificate: 9136.STM2; approval authority IATF/CISQ-Auto.

ST Quality international awards:

EMAS & ISO 14001 OHSAS 18001 Environmental Management System; for all sites

Quality and Reliability tests were performed according to the qualification plan

| Reliability test | Nb of rejects | Package/plant | Test circuit |
|--|---------------|---------------|----------------|
| High Temperature Bias test (HTB) T°AMB = 150°C - Duration = 1000h 78u 1431 standard diff. lot Bouskoura Plant The units have been tested at 25°C , -40°C and 125°C before and after HTB | 0/78 | SO8/Bouskoura | N420AAD |
| Temperature & Humidity bias (THB) Including preconditioning according to MSL 1 (J-STD-020 for SMD package). T°AMB = 85°C humidity = 85% Duration = 1000h 78u 1431 standard diff. lot Bouskoura Plant The units have been tested at 25°C and 125°C before and after THB | 0/78 | SO8/Bouskoura | N420AAD |
| Temperature cycling (TC) (THB) Including preconditioning according to MSL 1 (J-STD-020 for SMD package). T°AMB = -65/150°C Nb cycles = 1000 78u 1431 standard diff. lot Bouskoura Plant The units have been tested at 25°C and 125°C before and after TC & bond pull test on 5 units after TC | 0/78 | SO8/Bouskoura | Not applicable |
| Pressure pot test (PPT) (THB) Including preconditioning according to MSL 1 (J-STD-020 for SMD package). T°AMB = 121°C Pressure = 2atm - Duration = 240h 78u 1431 standard diff. lot Bouskoura Plant The units have been tested at 25°C before and after PPT | 0/78 | SO8/Bouskoura | Not applicable |
| Gate leakage (GL) 6u 1431 standard diff. lot Bouskoura Plant The units have been tested at 25°C before and after GL | 0/6 | SO8/Bouskoura | Not applicable |
| Early Life failure rate (ELFR) T°AMB = 125°C - Duration = 48h 400u 1431 standard diff. lot Bouskoura Plant | 0/400 | SO8/Bouskoura | N420AAD |
| Solderability (SD) 1 lot | Not available | SO8/Bouskoura | Not applicable |
| Physical dimension (PD) 1 lot | Not available | SO8/Bouskoura | Not applicable |
| Bond Pull Strength (BPS) 1 lot | Not available | SO8/Bouskoura | Not applicable |
| Bond Shear Strength (BS) 1 lot | Not available | SO8/Bouskoura | Not applicable |

Conclusion

Electrical and reliability results meet or exceed the requirements set in the ST qualification program. The results conform to datasheet specifications and Product Qualification Plan PQP reference **ADCS_8137636** .

This device is qualified for the **SO8** package, **grade 1** according to the AEC-Q100.

Detailed results are available upon request

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