



Final Product/Process Change Notification

Document #:FPCN24902X

Issue Date:26 Aug 2022

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| Title of Change: | AR0521, AR0522 TSMC site transfer for FSI process |
| Proposed First Ship date: | 05 Dec 2022 or earlier if approved by customer |
| Contact Information: | Contact your local onsemi Sales Office or Mike.Webster@onsemi.com |
| PCN Samples Contact: | Contact your local onsemi Sales Office. Sample requests are to be submitted no later than 30 days from the date of first notification, Initial PCN or Final PCN, for this change. Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements. |
| Additional Reliability Data: | Contact your local onsemi Sales Office or Amy.Wu@onsemi.com |
| Type of Notification: | This is a Final Product/Process Change Notification (FPCN) sent to customers. FPCNs are issued 90 days prior to implementation of the change. onsemi will consider this change accepted, unless an inquiry is made in writing within 30 days of delivery of this notice. To do so, contact PCN.Support@onsemi.com |
| Marking of Parts/ Traceability of Change: | Date code |
| Change Category: | Wafer Fab Change |
| Change Sub-Category(s): | Manufacturing Site Transfer |

Sites Affected:

onsemi Sites

None

External Foundry/Subcon Sites

TSMC Semiconductor, Taiwan

Description and Purpose:

The proposed change is to transfer all front side CMOS manufacturing of the commercial product family (AR0521, AR0522, AR1335) from TSMC Fab 12 to TSMC Fab 14. The current manufacturing wafer process flow is for front side processing to occur in FAB 12 and then backside processing to occur in Fab 14, with wafers shipping to Fab 14 after completing in Fab 12.

In an effort to expand manufacturing capacity at TSMC, we will qualify material to run front-side MFG entirely at the Fab 14 facility. These two facilities use identical manufacturing equipment, processes and maintenance plans. Fab 14 currently manufactures both commercial and automotive products for onsemi. They are located on separate TSMC sites in Taiwan.

The qualification vehicle has demonstrated equivalent performance between sites.

There will be no change to form, fit or function of the product.

| | Before Change Description | After Change Description |
|--------------------|---------------------------|--------------------------|
| Front-End MFG Site | TSMC Fab 12 | TSMC Fab 14 |

There are no product material changes as a result of this change.

There is no product marking change as a result of this change.



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Reliability Data Summary:

QV DEVICE NAME: AR0521CS, AR0522CS

PACKAGE: mPLCC

| Test | Specification | Condition | Interval | Results |
|------|------------------------------------|--|----------|---------|
| HTOL | JESD22-A018 | TJ = <u>125</u> °C, 100 % max rated Vcc | 1008 hrs | 0/231 |
| PC | J-STD-020 JESD22-A113 | MSL 4 @ 260 °C | | 0/240 |
| HTSL | JESD22-A103 | Ta= <u>150</u> °C | 504 hrs | 0/120 |
| TC | JESD22-A104 | Ta= <u>-55</u> °C to <u>+125</u> °C | 1000 cyc | 0/120 |
| THB | JESD22-A101 | 85°C, 85% RH, with bias | 1000 hrs | 0/120 |
| WBS | AEC Q100-001 AEC Q003 | CPK >1.67 | | Pass |
| WBP | MIL-STD883 Method 2011 AEC Q003 | CPK >1.67 or 0 Fails after TC (test #A4) | | Pass |
| HBM | AEC Q100-002 | 0 Fails; 2KV HBM | | Pass |
| CDM | AEC Q100-011 | 0 Fails: 750V for corner pins, 500V all other pins | | Pass |
| LU | AEC Q100-004 | 0 Fails | | Pass |

Electrical Characteristics Summary:

There is no change in electrical characteristics. Anova results for mid-level, dark, BIST showed p-value of <.05 and R² of > 10%.

List of Affected Parts:

Note: Only the standard (off the shelf) part numbers are listed in the parts list. Any custom parts affected by this PCN are shown in the customer specific PCN addendum in the PCN email notification, or on the [PCN Customized Portal](#).

| Part Number | Qualification Vehicle |
|-------------------------|-----------------------|
| AR0522SRSC09SURA0-DP | AR0521SR2C09SURA0-DR |
| AR0522SRSC09SURA0-DP1 | AR0521SR2C09SURA0-DR |
| AR0522SRSC09SURA0-DR | AR0521SR2C09SURA0-DR |
| AR0522SRSC09SURA0-DR1 | AR0521SR2C09SURA0-DR |
| AR0522SRSM09SURA0-DP | AR0521SR2C09SURA0-DR |
| AR0522SRSM09SURA0-DP1 | AR0521SR2C09SURA0-DR |
| AR0522SRSM09SURA0-DR | AR0521SR2C09SURA0-DR |
| AR0521SR2C09SURA0-DP | AR0521SR2C09SURA0-DR |
| AR0521SR2C09SURA0-DP1 | AR0521SR2C09SURA0-DR |
| AR0521SR2C09SURA0-DR | AR0521SR2C09SURA0-DR |
| AR0521SR2C09SURA0-DR1 | AR0521SR2C09SURA0-DR |
| AR0521SR2C09SURA0-MV-DP | AR0521SR2C09SURA0-DR |
| AR0521SR2M09SURA0-DP | AR0521SR2C09SURA0-DR |
| AR0521SR2M09SURA0-DP1 | AR0521SR2C09SURA0-DR |
| AR0521SR2M09SURA0-DR | AR0521SR2C09SURA0-DR |



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|-------------------------|----------------------|
| AR0521SR2M09SURA0-DR1 | AR0521SR2C09SURA0-DR |
| AR0521SR2M09SURA0-MV-DP | AR0521SR2C09SURA0-DR |
| AR0522SRSM09SURA0-DR1 | AR0521SR2C09SURA0-DR |

Appendix A: Changed Products

PCN#: FPCN24902X
Issue Date: Aug 25, 2022

DIKG: DIGI-KEY

| Product | Customer Part Number | Qualification Vehicle | New Part Number | Replacement Supplier |
|-----------------------|----------------------|-----------------------|-----------------|----------------------|
| AR0522SRSM09SURA0-DP1 | | AR0521SR2C09SURA0-DR | NA | |
| AR0521SR2M09SURA0-DP | | AR0521SR2C09SURA0-DR | NA | |
| AR0521SR2M09SURA0-DP1 | | AR0521SR2C09SURA0-DR | NA | |
| AR0521SR2C09SURA0-DP1 | | AR0521SR2C09SURA0-DR | NA | |