

PCN Number: 20150506001 **PCN Date:** 05/20/2015

Title: Qualification of RFAB and Vanguard as an additional wafer fab site options for select devices

Customer Contact: [PCN Manager](#) **Dept:** Quality Services

Proposed 1st Ship Date: 08/20/2015 **Estimated Sample Availability:** Date provided at sample request.

| | | |
|--|--|---|
| Change Type: | | |
| <input type="checkbox"/> Assembly Site | <input type="checkbox"/> Assembly Process | <input type="checkbox"/> Assembly Materials |
| <input type="checkbox"/> Design | <input type="checkbox"/> Electrical Specification | <input type="checkbox"/> Mechanical Specification |
| <input type="checkbox"/> Test Site | <input type="checkbox"/> Packing/Shipping/Labeling | <input type="checkbox"/> Test Process |
| <input type="checkbox"/> Wafer Bump Site | <input type="checkbox"/> Wafer Bump Material | <input type="checkbox"/> Wafer Bump Process |
| <input checked="" type="checkbox"/> Wafer Fab Site | <input type="checkbox"/> Wafer Fab Materials | <input type="checkbox"/> Wafer Fab Process |
| | <input type="checkbox"/> Part number change | |

PCN Details

Description of Change:

This change notification is to announce the addition of RFAB and Vanguard as an additional wafer fab site options for the products listed in the product affected section of this document.

| Current | | | | Additional | | |
|--------------|------------------|--------------------|----------------|---------------------|--------------------|----------------|
| Device Group | Current Fab Site | Process | Wafer Diameter | Additional Fab Site | Process | Wafer Diameter |
| 1 | ANAM-1 | C05 | 200 mm | RFAB | C05 | 300 mm |
| 2 | TSMC Fab 2 | VIS 0.6/0.5UM DPDM | 200 mm | Vanguard | VIS 0.6/0.5UM DPDM | 200 mm |

Reason for Change:

Continuity of Supply

Anticipated impact on Form, Fit, Function, Quality or Reliability (positive / negative):


None

Changes to product identification resulting from this PCN:

| Current | | |
|------------|----------------------|-------------------------|
| Chip Sites | Chip site code (20L) | Chip country code (21L) |
| ANAM-1 | ANM | KOR |
| TSMC-WF2 | TS2 | TWN |

| New | | |
|----------------|----------------------|-------------------------|
| Chip Site | Chip site code (20L) | Chip country code (21L) |
| RFAB | RFB | USA |
| Vanguard (VIS) | VAN | TWN |


Sample product shipping label (not actual product label)



MADE IN: Malaysia
2DC: 20:

| | |
|------------------------|----------|
| MSL '2 / 260C / 1 YEAR | SEAL DT |
| MSL 1 / 235C / UNLIM | 03/29/04 |

OPT:
ITEM: 39
LBL: 5A (L)T0:1750



(1P) SN74LS07NSR
(Q) 2000 (D) 0336
(31T) LOT: 3959047MLA
(4W) TKY (1T) 7523483S12
(P)
(2P) REV: (V) 0033317
(20L) CSO: SHE (21L) CCO:USA
(22L) ASO: MLA (23L) ACO: MYS

Product Affected:

| Group 1: Currently at ANAM-1, Adding RFAB | | |
|--|---------------|---------------|
| TAS5534DGG | TAS5538DGG | TAS5733PHP |
| TAS5534DGGR | TAS5538DGGR | TAS5733PHPR |
| Group 2: Currently at TSMC-WF2, , Adding Vanguard | | |
| OPA364AID | OPA364AIDR | OPA364IDG4 |
| OPA364AIDBVR | OPA364ID | OPA364IDR |
| OPA364AIDBVRG4 | OPA364IDBVR | OPA364IDRG4 |
| OPA364AIDBVRYG | OPA364IDBVRG4 | OPA2363AIRSVR |
| OPA364AIDBVT | OPA364IDBVT | |
| OPA364AIDBVTG4 | OPA364IDBVTG4 | |

Qualification Report

**C05 Die offload from DongBu to RFAB for TAS5538, TAS5534 and TAS5733
Approved 04/30/2015**

Product Attributes

| Attributes | Qual Device: TAS5538DGG | Qual Device: TAS5733PHP | QBS Process: VSP6825BZRC |
|----------------------------|------------------------------------|------------------------------------|-------------------------------------|
| Assembly Site | TAI | TAI | PHI |
| Package Family | TSSOP | HTQFP | JRBGA |
| Flammability Rating | UL 94 V-0 | UL 94 V-0 | UL 94 V-0 |
| Wafer Fab Site | RFAB | RFAB | RFAB HIJI |
| Wafer Fab Process | 1833C05 | 1833C05 LBC7 | 1833C05 LBC4 |

- QBS: Qual By Similarity
- Qual Device TAS5538DGG is qualified at LEVEL3-260C
- Qual Device TAS5733PHP is qualified at LEVEL3-260C
- Device TAS5733PHP contains multiple dies.
- Device VSP6825BZRC contains multiple dies.

Qualification Results

**Data Displayed as: Number of lots / Total
sample size / Total failed**

| Type | Test Name / Condition | Duration | Qual Device: TAS5538DGG | Qual Device: TAS5733PHP | QBS Process: VSP6825BZRC |
|-------------|----------------------------------|-----------------|------------------------------------|------------------------------------|-------------------------------------|
| HAST | Biased HAST, 130C/85%RH | 96 Hours | - | - | 3/230/0 |
| TC | Temperature Cycle, -65/150C | 500 Cycles | - | - | 3/231/0 |
| HTSL | High Temp Storage Bake 170C | 420 Hours | - | - | 3/231/0 |
| HTOL | Life Test, 140C | 480 Hours | - | - | 3/231/0 |

| | | | | | |
|-----|-----------------------------|---------------------------|--------|--------|---|
| WBS | Ball Bond Shear | Wires | 1/76/0 | 1/76/0 | - |
| WBP | Bond Pull | Wires | 1/76/0 | 1/76/0 | - |
| HBM | ESD - HBM | 2500 V | 1/3/0 | - | - |
| HBM | ESD - HBM | 3000 V | - | 1/3/0 | - |
| CDM | ESD - CDM | 1000 V | 1/3/0 | - | - |
| CDM | ESD - CDM | 1500 V | - | 1/3/0 | - |
| LU | Latch-up | (per JESD78) | 1/6/0 | 1/6/0 | - |
| ED | Electrical Characterization | Per Data Sheet Parameters | Pass | Pass | - |

Qualification Report

**Transfer OPA364 from TSMC Fab2 to Vanguard aka VIS Fab - qualified process flow (0.6um/0.5um).
Approved 04/24/2015**

Product Attributes

| Attributes | Qual Device: OPA364AIDBVR | QBS Process: DDC112Y | QBS Process: TSC2046IPW | QBS Process: OPA2364AIDGK |
|----------------------------|------------------------------|-------------------------|----------------------------|------------------------------|
| Assembly Site | NFME | CRS | TAI | ASE SHANGHAI |
| Package Family | SOT | TQFP | TSSOP | VSSOP |
| Flammability Rating | UL 94 V-0 | UL94 Class V-0 | UL94 Class V-0 | UL 94 V-0 |
| Wafer Fab Site | VANGUARD | VANGUARD | VANGUARD | VANGUARD |
| Wafer Fab Process | VIS 0.6um DPDM | VIS 0.6um DPDM | VIS 0.6um DPDM | 0.6/0.5 DPDM |

- QBS: Qual By Similarity
- Qual Device OPA364AIDBVR is qualified at LEVEL2-260CG

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

| Type | Test Name / Condition | Duration | Qual Device: OPA364AI DBVR | QBS Process: DDC112Y | QBS Process: TSC2046 IPW | QBS Process: OPA2364 AIDGK |
|-------|-------------------------------|------------|----------------------------------|-------------------------|--------------------------------|----------------------------------|
| HAST | Biased HAST, 130C/85%RH | 96 Hours | - | 1/77/0 | 1/77/0 | - |
| AC | Autoclave 121C | 96 Hours | - | 1/77/0 | 1/77/0 | - |
| UHAST | Unbiased HAST, 130C/85%RH | 96 Hours | - | - | - | - |
| TC | Temperature Cycle, -65/150C | 500 Cycles | - | 1/77/0 | 1/77/0 | 3/231/0 |
| HTSL | High Temp. Storage Bake, 150C | 1000 Hours | - | 1/77/0 | - | - |
| HTSL | High Temp. Storage Bake, 170C | 420 Hours | - | - | 1/77/0 | - |
| HTSL | High Temp. Storage Bake, 175C | 500 Hours | - | - | - | - |

| | | | | | | |
|------|-------------------------------|-----------------------------------|-------|--------|--------|---------|
| TS | Thermal Shock - 65/150C | 500 Cycles | - | 1/77/0 | 1/77/0 | - |
| HTOL | Life Test, 125C | 1000 Hours | - | - | - | - |
| HTOL | Life Test, 150C | 300 Hours | - | 1/77/0 | 1/77/0 | 3/231/0 |
| ELFR | Early Life Failure Rate, 125C | 48 Hours | - | - | - | - |
| WBS | Ball Bond Shear | Wires | - | 1/50/0 | - | - |
| EM | Electromigration | - | - | - | Pass | - |
| HBM | ESD - HBM | 2500 V | 1/3/0 | - | - | 2/6/0 |
| CDM | ESD - CDM | 1000 V | 1/3/0 | 1/12/0 | 1/12/0 | 3/9/0 |
| LU | Latch-up | (per JESD78) | 1/6/0 | 1/6/0 | 1/6/0 | 3/18/0 |
| ED | Auto Electrical Distributions | Cpk>1.67 Room, hot, and cold test | - | - | - | - |
| ED | Electrical Characterization | Per Datasheet Parameters | Pass | Pass | Pass | Pass |
| WBS | Bond Strength | Wires | - | - | 1/70/0 | - |

Qualification Report

**OPA2363 model on Vanguard (aka VIS FAB - qualified process flow 0.5um/0.6um) model transfer from TSMC FAB2
Approved 08/23/2013**

Product Attributes

| Attributes | Qual Device: OPA2363IDGS | QBS Process: DDC112Y | QBS Process: OPA343U | QBS Process: TSC2046IPW |
|----------------------------|-----------------------------|----------------------------|----------------------------|----------------------------|
| Assembly Site | ASESH | CRS | OSE | TAI |
| Package Family | MSOP | TQFP | SOIC | TSSOP |
| Flammability Rating | UL 94 V-0 | UL94 Class V-0 | UL94 Class V-0 | UL94 Class V-0 |
| Wafer Fab Site | VANGUARD (VIS) | VANGUARD | VANGUARD | VANGUARD |
| Wafer Fab Process | VIS 0.6/0.5UM DPDM | 0.5/0.6UM DPDM | 0.5/0.6UM DPDM | 0.5/0.6UM DPDM |

- QBS: Qual By Similarity
- Qual Device OPA2363IDGS is qualified at LEVEL2-260C

Qualification Results

Data Displayed as: Number of lots / Total sample size / Total failed

| Type | Test Name / Condition | Duration | Qual Device: OPA2363IDGS | QBS Process: DDC112Y | QBS Process: OPA343U | QBS Process: TSC2046IPW |
|------|---------------------------|----------|-----------------------------|----------------------------|----------------------------|-------------------------------|
| HAST | **Biased HAST, 130C/85%RH | 96 Hours | - | 1/77/0 | - | 1/77/0 |
| AC | **Autoclave 121C | 96 Hours | - | 1/77/0 | 1/77/0 | 1/77/0 |

| | | | | | | |
|------|-------------------------------------|--------------------------|-------|---------|---------|--------|
| TC | **Temperature Cycle, - 65/+150C | 500 Cycles | - | 1/77/0 | 1/77/0 | 1/77/0 |
| HTSL | **High Temp. Storage Bake, 150C | 1000 Hours | - | 1/77/0 | - | - |
| HTSL | **High Temp. Storage Bake, 170C | 420 Hours | - | - | - | 1/77/0 |
| TS | **Thermal Shock, - 65C/+150C | 500 Cycles | - | - | - | 1/77/0 |
| TS | **Thermal Shock, - 65C/+150C | 1000 Cycles | - | 1/77/0 | - | - |
| HTOL | High Temp Operating Life Test, 150C | 300 Hours | - | 1/116/0 | 1/240/0 | 1/77/0 |
| HBM | ESD - HBM | 1000 V | 1/6/0 | - | - | - |
| HBM | ESD - HBM | 2000 V | - | 1/3/0 | - | 1/3/0 |
| HBM | ESD HBM | 500 V | - | - | 1/3/0 | - |
| CDM | ESD CDM | 500 V | 1/3/0 | 1/3/0 | 1/3/0 | 1/3/0 |
| LU | Latch-up | (per JESD78) | 1/6/0 | 1/6/0 | 1/6/0 | 1/6/0 |
| ED | Electrical Characterization | Per Datasheet Parameters | Pass | Pass | Pass | Pass |

These notes apply to qualification of TAS5538, TAS5534 and TAS5733 OPA364 and OPA2363

- Preconditioning was performed for Autoclave, Unbiased HAST, THB/Biased HAST, Temperature Cycle, Thermal Shock, and HTSL, as applicable

- The following are equivalent HTOL options based on an activation energy of 0.7eV : 125C/1k Hours, 140C/480 Hours, 150C/300 Hours, and 155C/240 Hours

- The following are equivalent HTSL options based on an activation energy of 0.7eV : 150C/1k Hours, and 170C/420 Hours

- The following are equivalent Temp Cycle options per JESD47 : -55C/125C/700 Cycles and - 65C/150C/500 Cycles

Quality and Environmental data is available at TI's external Web site: <http://www.ti.com/>

Green/Pb-free Status:

Qualified Pb-Free(SMT) and Green

For questions regarding this notice, e-mails can be sent to the regional contacts shown below, or you can contact your local Field Sales Representative.

| Location | E-Mail |
|-----------------|--|
| USA | PCNAmericasContact@list.ti.com |
| Europe | PCNEuropeContact@list.ti.com |
| Asia Pacific | PCNAsiaContact@list.ti.com |
| Japan | PCNJapanContact@list.ti.com |