ON Semiconductor®

Final Product/Process Change Notification

Document #:FPCN22966ZM
Issue Date:19 Feb 2021

Title of Change:	Wafer Fab Transfer for Trench 6 MOSFET Technology to Global Foundries in New York, US.
Proposed Changed Material First Ship Date:	19 Feb 2022 or earlier if approved by customer
Current Material Last Order Date:	19 Nov 2021 *Orders received after the Current Material Last Order Date expiration are to be considered as orders for new changed material as described in this PCN. Orders for current (unchanged) material after this date will be per mutual agreement and current material inventory availability*.
Current Material Last Delivery Date:	18 Feb 2022 *The Current Material Last Delivery Date may be subject to change based on build and depletion of the current (unchanged) material inventory*
Product Category:	Active components – Discrete components
Contact information:	Contact your local ON Semiconductor Sales Office or Ammar.Anuar@onsemi.com
PCN Samples Contact:	Contact your local ON Semiconductor Sales Office to place sample order or <PCN.samples@onsemi.com>. Sample requests are to be submitted no later than 45 days after publication of this change notification. Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements.
Sample Availability Date:	26 Feb 2021
PPAP Availability Date:	26 Feb 2021
Additional Reliability Data:	Contact your local ON Semiconductor Sales Office or Robert.Baran@onsemi.com
Type of Notification:	This is a Final Product/Process Change Notification (FPCN) sent to customers. FPCNs are issued 12 months prior to implementation of the change or earlier upon customer approval. ON Semiconductor will consider this proposed change and it's conditions acceptable, unless an inquiry is made in writing within 45 days of delivery of this notice. To do so, contact PCN.Support@onsemi.com.

Change Category

Category	Type of Change
Packing/Shipping	Dry pack requirements change
Test Flow	Move of all or part of electrical wafer test and/or final test to a different location/site/subcontractor
Process - Wafer Production	Move of all or part of wafer fab to a different location/site/subcontractor, New wafer diameter
Process - Assembly	Move of all or part of assembly to a different location/site/subcontractor., Change in process technology (e.g.,plating), Change of specified assembly process sequence (deletion and/or additional process step)

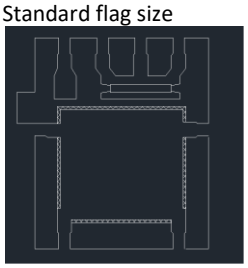
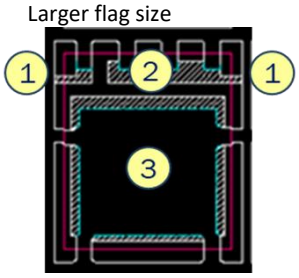
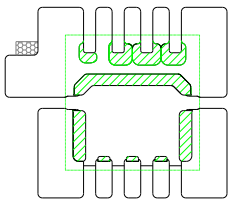
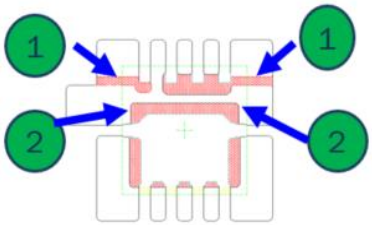
Description and Purpose:

This Product Change Notification is intended to increase capacity for ON's automotive 60V Trench 6 MOSFET technology products by transferring wafer fabrication for these products to the Global Foundries Fab located in New York, US.

The changes include transferring wafer fabrication, back grind and back metal, to Global Foundries, and utilizing 300mm instead of 200mm diameter wafers. And while the assembly location remains unchanged (at ON Semiconductor, Seremban, Malaysia), wafer saw and die attach tooling are being updated to accommodate 300mm wafers. In addition, the Wettable Flank leadframe design and plating process are being enhanced, as tabulated below, in order to improve the sidewall plating and the elimination of Dry Pack.

There is no change to the orderable part number.

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

	Before Change	After Change
Wafer Fabrication Site	ON Aizu, Japan ON Gresham, US	Global Foundries, US
Wafer Diameter	200mm (existing sites)	300mm (Global Foundries)
Wafer Probe Site	ON Seremban, Malaysia	Global Foundries, US
Back Grind, Back Metal Site	ON ISMF, Malaysia	Global Foundries, US
Wettable Flank Plating Site	Metek, Malaysia (Sub-con)	ON Seremban, Malaysia
S08FL Lead Frame design	1. No tie bar connect to the gate and source lead 2. Upset lead design 3. Standard flag size 	1. Additional tie bar connect to gate and source lead 2. Flat lead design 3. Larger flag size 
S08FL Case Outline	488AA	507BA
S08FL Dimension “L1” in case outline	0.125mm	0.15mm
u8FL Lead Frame design	1. No tie bar connect to the gate abd source lead 2. Chamfer flag. 	1. Additional tie bar connect to gate and source lead 2. Removed chamfer 
u8FL Case Outline	511AB	515AN
u8FL Dimension “L” in case outline	0.30mm – 0.56mm	0.30mm – 0.59mm
Sidewall Plating Method	Electroless SN plating	Electrolytic SN plating
Packing	Drypack (MSL 1)	No Drypack (MSL 1)

Reason / Motivation for Change:	Source/Supply/Capacity Changes Process/Materials Change
Anticipated impact on fit, form, function, reliability, product safety or manufacturability:	The device has been qualified and validated based on the same Product Specification. The device has successfully passed the qualification tests. Potential impacts can be identified, but due to testing performed by ON Semiconductor in relation to the PCN, associated risks are verified and excluded. No anticipated impacts.

Sites Affected:	
ON Semiconductor Sites	**External Foundry/Subcon Sites**
ON Semiconductor Gresham, United States	GlobalFoundries, Fab 10, New York, US
ON Semiconductor Aizu, Japan	
ON Semiconductor Seremban, Malaysia	
ON ISMF, Malaysia	

Marking of Parts/ Traceability of Change:	Material will be traceable with ONs lot trace code & tracking

Reliability Data Summary:

QV DEVICE NAME: NVMFS5C604NLT1G
RMS: 66102, 67568, 74121
PACKAGE: SO8FL-HE

Test	Specification	Condition	Interval	Result
HTRB	JESD22-A108	Ta=175°C, 100% max rated Vds	2016 hrs	0/231
HTGB	JESD22-A108	Ta=175°C, 100% max rated Vgss	2016 hrs	0/231
IOL	MIL-STD-750 (M1037) AEC-Q101	Ta=+25°C, delta Tj=100°C On/off =2 min	30000 cyc	0/231
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	192 hrs	0/231
PC	J-STD-020 JESD-A113	MSL1 @ 260°C		

QV DEVICE NAME: NVTFS5C680NLTAG
RMS: 66103, 67569
PACKAGE: u8FL

Test	Specification	Condition	Interval	Result
IOL	MIL-STD-750 (M1037) AEC-Q101	Ta=+25°C, delta Tj=100°C On/off =2 min	30000 cyc	0/231
TC	JESD22-A104	Ta= -55°C to +150°C	1000 cyc	0/231
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	192 hrs	0/231
uHAST	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs	0/231
PC	J-STD-020 JESD-A113	MSL1 @ 260°C		

QV DEVICE NAME: NVMFS5C404NT1G
RMS: 68528, 68531
PACKAGE: SO8FL-HE

Test	Specification	Condition	Interval	Result
HTSL	JESD22-A103	Ta = 150 °C	1008 hrs	0/84
uHAST	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs	0/84
HTGB	JESD22-A108	Ta=150°C, 100% max rated Vgss	1008 hrs	0/80
HTRB	JESD22-A108	Ta=150°C, 100% max rated Vds	1008 hrs	0/84
H3TRB	JESD22-A101	Temp = 85C, RH=85%, bias = 80% of rated V or 100V max	2016 hrs	0/84
TC+PC	JESD22-A104	Ta = -65°C to +150°C	1000 cyc	0/84
IOL+PC	MIL STD750, M 1037 AEC Q101	Ta=+25°C, deltaTj=100°C max, Ton = Toff = 2min	30000 cyc	0/84
PC	J-STD-020 JESD-A113	MSL 1 @ 260 °C		0/504
RSH	JESD22-B106	Ta = 265°C, 10 sec		0/15
SD	JSTD002	Ta = 245°C, 10 sec		0/15

QV DEVICE NAME: NVTFS6H850NTAG
RMS: 66103, 67569
PACKAGE: u8FL

Test	Specification	Condition	Interval	Result
HTSL	JESD22-A103	Ta = 175 °C	2016 hrs	0/231
HAST	JESD22 A110	130°C/85% RH ~18.8 psig, bias = 80% of rated V or up to maximum 100V	192 hrs	0/231
TC+PC	JESD22-A104	Ta = -55°C to +150°C	1000 cyc	0/231
UHAST	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs	0/231
IOL+PC	MIL STD750, M 1037 AEC Q101	Ta=+25°C, deltaTj=100°C max, Ton = Toff = 2min	30000 cyc	0/231
PC	J-STD-020 JESD-A113	MSL 1 @ 260 °C		0/924
RSH	JESD22-B106	Ta = 265°C, 10 sec		0/90
SD	JSTD002	Ta = 245°C, 10 sec		0/45

NOTE: AEC-1pager is attached.

To view attachments:
1.Download pdf copy of the PCN to your computer
2.Open the downloaded pdf copy of the PCN
3.Click on the paper clip icon available on the menu provided in the left/bottom portion of the screen to reveal the Attachment field
4.Then click on the attached file/s

Electrical Characteristics Summary:

Electrical characteristics are not impacted.

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****.*

Current Part Number	New Part Number	Qualification Vehicle
NVMFS5C604NLWFAFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C604NLWFAFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C604NLWFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C604NLWFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C612NLWFAFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C612NLWFAFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C612NLWFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C612NLWFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C628NLWFAFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C628NLWFAFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C628NLWFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C628NLWFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C646NLWFAFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C646NLWFAFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C646NLWFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C646NLWFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C670NLWFAFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C670NLWFAFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C670NLWFT1G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVMFS5C670NLWFT3G	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G
NVTFS5C680NLWFTAG	NA	NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G, NVTFS5C680NLTAG, NVTFS6H850NWFTAG

Appendix A: Changed Products

Product	Customer Part Number	Qualification Vehicle	New Part Number	Replacement Supplier
NVMFS5C604NLWFAFT1G		NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G	NA	
NVMFS5C612NLWFAFT1G		NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G	NA	
NVMFS5C646NLWFAFT1G		NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G	NA	
NVMFS5C670NLWFAFT1G		NVMFS5C604NLWFT1G, NVMFS5C404NWFT1G	NA	