

Title of Change:	Improve FAB process variation of SuperFET3 FRFET by optimizing Mask design, and internal passive component(capacitor) supply chain by Qualifying 2nd vendor.
Proposed Changed Material First Ship Date:	16 Aug 2023 or earlier if approved by customer
Current Material Last Order Date:	N/A <i>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.</i>
Current Material Last Delivery Date:	N/A <i>The Current Material Last Delivery Date may be subject to change based on build and depletion of the current (unchanged) material inventory</i>
Product Category:	Active components – Discrete components
Contact information:	Contact your local onsemi Sales Office or Peter.Lee@onsemi.com
PCN Samples Contact:	Contact your local onsemi Sales Office to place sample order. 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:	28 Feb 2023
PPAP Availability Date:	31 Jan 2023
Additional Reliability Data:	Contact your local onsemi Sales Office or songyong.sim@onsemi.com
Type of Notification:	This is a Final Product/Process Change Notification (FPCN) sent to customers. The change will be implemented at 'Proposed Change Material First Ship Date' in compliance to J-STD-46 or ZVEI, or earlier upon customer approval, or per our signed agreements. onsemi 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
Design	Design Change in Active Elements
Process - Assembly	Change of direct material supplier
Description and Purpose: SF3 FRFET has a variation at BVdss due to unstable charge balance, onsemi optimized PIL cell pitch and removed Si CNT ring in order to make stable charge balance margin and higher BV typical value. Please refer below illustration.	
1. Ring design change: Si contact removed (No Si CNT ring)	
	

2. MOCVD applied
 - a. POR: Ti 200A + TiN 1600A
 - b. New: IMP Ti 300A / MOCVD 200A + PVD TiN 1200A
3. Pillar Cell Size Reducing from 0.06 to 0.02 (PIL2 0.02 step)

And the supply chain of internal passive Capacitor is disrupted by EOL at the Current Capacitors' vendor, so onsemi qualified 2nd source to improve supply disruption.

	Before Change Description	After Change Description
Capacitor	Murata, N78683G001 : GCJ43QR7LV154K	Kemet, N78683G005 : C1812W154KBRAC Murata, N78683G001 : GCJ43QR7LV154K

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

Reason / Motivation for Change:	Supply disruption
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 onsemi in relation to the PCN, associated risks are verified and excluded. No anticipated impacts.
Sites Affected:	
onsemi Sites	External Foundry/Subcon Sites
onsemi Bucheon, Korea	None
onsemi Suzhou, China	
Marking of Parts/ Traceability of Change:	No change on Marking and Traceability

Reliability Data Summary:

QV DEVICE NAME: NVHL027N65S3F (QV1-1)

RMS: 81119

PACKAGE: TO247

Test	Specification	Condition	Interval	Results
HTRB	JESD22-A108	Tj=150°C, 100% max rated V	1008 hrs	0/80
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	96 hrs	0/80

QV DEVICE NAME: NTH027N65S3F (QV1-2)

RMS: 85050

PACKAGE: TO247

Test	Specification	Condition	Interval	Results
HTRB	JESD22-A108	Tj=150°C, 100% max rated V	1008 hrs	0/79
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	96 hrs	0/80

QV DEVICE NAME: NTP082N65S3F (QV1-3)

RMS: 82206

PACKAGE: TO220

Test	Specification	Condition	Interval	Results
HTRB	JESD22-A108	Tj=150°C, 100% max rated V	1008 hrs	0/80
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	96 hrs	0/80

QV DEVICE NAME: NVB082N65S3F (QV2)

RMS: 82687

PACKAGE: D2PAK

Test	Specification	Condition	Interval	Results
HTRB	JESD22-A108	Tj=150°C, 100% max rated V	1008 hrs	0/80
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	96 hrs	0/77

QV DEVICE NAME: FAM65HR51DS2

RMS: 70745

PACKAGE: APM16

Test	Specification	Condition	Interval	Results
HTSL	JESD22-A108	Ta=150°C	1008 hrs	0/24
THS	AQG324	Ta=-40°C~125°C, Tdwell>15min, dual temp. chambers	1000cycles	0/24
LTSL	JESD22-A110	Ta=-40°C	1008 hrs	0/24

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

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
FAM65CR51ADZ2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65CR51DZ2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65CR51XZ2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65HR51DS1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F, FAM65HR51DS2
FAM65HR51DS2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F, FAM65HR51DS2
FAM65HR51XS1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F, FAM65HR51DS2
NXV65HR51DZ2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
NXV65HR82DS1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F, FAM65HR51DS2
NXV65HR82DS2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F, FAM65HR51DS2
NXV65HR82DZ2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
NXV65HR82DZ1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65HR51XS2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F, FAM65HR51DS2
FAM65CR51XZ1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65CR51DZ1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65CR51AXZ2	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65CR51AXZ1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F
FAM65CR51ADZ1	NA	NVHL027N65S3F, NVB082N65S3F, NTH027N65S3F, NTP082N65S3F