Final Product/Process Change Notification

Document #:FPCN25572Z16
Issue Date:15 Jan 2024

Title of Change:	Update to **FPCN25572Z** - Update of US8 package final manufacturing site for the qualification of Vanguard Fab and Some Assembly Related Changes for Logic part.
Proposed Changed Material First Ship Date:	30 Sep 2024 or earlier if approved by customer
Current Material Last Order Date:	20 Nov 2023 *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:	N/A *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 – Integrated circuits
Contact information:	Contact your local onsemi Sales Office or logic.fpcn@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:	31 Mar 2024
PPAP Availability Date:	31 Jul 2024
Additional Reliability Data:	Contact your local onsemi Sales Office or ChangKit.Mok@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**
Process - Wafer Production	Move of all or part of wafer fab to a different location/site/subcontractor, New wafer diameter
Equipment	Production from a new equipment/tool which uses a different basic technology or which due to its unique form or function can be expected to influence the integrity of the final product
Data Sheet	Change of datasheet parameters/electrical specification (min./max./typ. values) and/or AC/DC specification
Process - Assembly	Change of mold compound, Change of wire bonding, Change of lead and heat slug plating material/plating thickness (external)

Description and Purpose:

With reference to **FPCN25572Z**, we would like to inform customers that we are qualifying SBN site for our US8 package instead of STARs due to STARs is not qualified to run automotive parts yet.

The qualification for SBN site is on-going and expected to complete qualification by end June 2024.

	From	To (Original Plan)	To (Final Plan)
Fab	Tower	Vanguard	Vanguard
Wafer Diameter	6 inch	8 inch	8 inch
Assembly Site	onsemi Seremban	Stars	onsemi Seremban (on-going qual)
Bond Wire	Au	PCC	PCC
Lead frame	CuAg	PPF	PPF
Mold Compound	EME-G600FB	EME G600	EME-G600FB
Die Attach	8900NC	HR-5104	8006NS

Datasheet Changes :

NLV17SZxx, NLV27WZxx, NLV37WZxx, NLV7SZxx to NL17SZxx-Q, NL27WZxx-Q, NL37WZxx-Q, NL7SZxx-Q Family

Absolute Maximum Ratings and Recommended Operating Conditions – NLV17SZU04, NLV27SZU04 to NL17SZU04A-Q, NL27WZU04A-Q

Existing Datasheet

MAXIMUM RATINGS

Symbol	Characteristics	Value	Unit
V_{CC}	DC Supply Voltage	−0.5 to +7.0	V
V_{IN}	DC Input Voltage	−0.5 to V_{CC} + 0.5	V
V_{OUT}	DC Output Voltage	−0.5 to V_{CC} + 0.5	V
I_{IK}	DC Input Diode Current	±50	mA

RECOMMENDED OPERATING CONDITIONS

Symbol	Characteristics		Min	Max	Unit
V_{CC}	Positive DC Supply Voltage		1.65	5.5	V
V_{IN}	DC Input Voltage		0	5.5	V
V_{OUT}	DC Output Voltage		0	V_{CC}	
T_A	Operating Temperature Range		−55	+125	°C
t_r, t_f	Input Rise and Fall Time	V_{CC} = 3.0 V to 3.6 V V_{CC} = 4.5 V to 5.5 V	0 0	100 20	ns/V

New

MAXIMUM RATINGS

Symbol	Characteristics		Value	Unit
V_{CC}	DC Supply Voltage		−0.5 to +6.5	V
V_{IN}	DC Input Voltage		−0.5 to +6.5	V
V_{OUT}	DC Output Voltage		−0.5 to V_{CC} + 0.5	V
I_{IK}	DC Input Diode Current	V_{IN} < GND	−50	mA

RECOMMENDED OPERATING CONDITIONS

Symbol	Characteristics		Min	Max	Unit
V_{CC}	Positive DC Supply Voltage		1.65	5.5	V
V_{IN}	DC Input Voltage		0	5.5	V
V_{OUT}	DC Output Voltage		0	V_{CC}	
T_A	Operating Temperature Range		−55	+125	°C
t_r, t_f	Input Rise and Fall Time	V_{CC} = 1.65 V to 1.95 V V_{CC} = 2.3 V to 2.7 V V_{CC} = 3.0 V to 3.6 V V_{CC} = 4.5 V to 5.5 V	0 0 0 0	20 20 10 5	ns/V

Absolute Maximum Ratings and Recommended Operating Conditions – All other devices

Existing Datasheet

MAXIMUM RATINGS

Symbol	Characteristics		Value	Unit
V_{CC}	DC Supply Voltage		−0.5 to +7.0	V
V_{IN}	DC Input Voltage		−0.5 to +7.0	V
V_{OUT}	DC Output Voltage	Active−Mode (High or Low State) Tri−State Mode (Note 1) Power−Down Mode (V_{CC} = 0 V)	−0.5 to V_{CC} + 0.5 −0.5 to +7.0 −0.5 to +7.0	V
	DC Output Voltage	(NL17SZ32P5T5G−L22088 Only)	−0.5 to V_{CC} + 0.5	
I_{IK}	DC Input Diode Current	V_{IN} < GND	−50	mA
I_{OK}	DC Output Diode Current	V_{OUT} < GND	−50	mA
	DC Output Diode Current	(NL17SZ32P5T5G−L22088 Only)	±50	

RECOMMENDED OPERATING CONDITIONS

Symbol	Characteristics		Min	Max	Unit
V_{CC}	Positive DC Supply Voltage		1.65	5.5	V
V_{IN}	DC Input Voltage		0	5.5	V
V_{OUT}	DC Output Voltage	Active−Mode (High or Low State) Tri−State Mode (Note 1) Power−Down Mode (V_{CC} = 0 V)	0 0 0	V_{CC} 5.5 5.5	V
	DC Output Voltage	(NL17SZ32P5T5G−L22088 Only)	0	V_{CC}	
T_A	Operating Temperature Range		−55	+125	°C
t_r, t_f	Input Rise and Fall Time	V_{CC} = 3.0 V to 3.6 V V_{CC} = 4.5 V to 5.5 V	0 0	100 20	ns/V

New

MAXIMUM RATINGS

Symbol	Characteristics		Value	Unit
V_{CC}	DC Supply Voltage		−0.5 to +6.5	V
V_{IN}	DC Input Voltage		−0.5 to +6.5	V
V_{OUT}	DC Output Voltage	Active−Mode (High or Low State) Tri−State Mode (Note 1) Power−Down Mode (V_{CC} = 0 V)	−0.5 to V_{CC} + 0.5 −0.5 to +6.5 −0.5 to +6.5	V
I_{IK}	DC Input Diode Current	V_{IN} < GND	−50	mA
I_{OK}	DC Output Diode Current	V_{OUT} < GND	−50	mA

RECOMMENDED OPERATING CONDITIONS

Symbol	Characteristics		Min	Max	Unit
V_{CC}	Positive DC Supply Voltage		1.65	5.5	V
V_{IN}	DC Input Voltage		0	5.5	V
V_{OUT}	DC Output Voltage	Active−Mode (High or Low State) Tri−State Mode (Note 1) Power−Down Mode (V_{CC} = 0 V)	0 0 0	V_{CC} 5.5 5.5	V
T_A	Operating Temperature Range		−55	+125	°C
t_r, t_f	Input Rise and Fall Time	V_{CC} = 1.65 V to 1.95 V V_{CC} = 2.3 V to 2.7 V V_{CC} = 3.0 V to 3.6 V V_{CC} = 4.5 V to 5.5 V	0 0 0 0	20 20 10 5	ns/V

DC Input Characteristics – NLV17SZ14, NLV17SZ17, NLV27WZ14, NLV27WZ17, NLV37WZ14, NLV37WZ17 to NL17SZ14-Q, NL17SZ17-Q, NL27WZ14-Q, NL27WZ17-Q, NL37WZ14-Q, NLV37WZ17-Q

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V_{CC} (V)	T_A = 25°C			−55°C ≤ T_A ≤ 125°C		Units
				Min	Typ	Max	Min	Max	
V_{T+}	Positive Input Threshold Voltage		1.65	0.6	1.0	1.4	0.6	1.4	V
			2.3	1.0	1.5	1.8	1.0	1.8	
			2.7	1.2	1.7	2.0	1.2	2.0	
			3.0	1.3	1.9	2.2	1.3	2.2	
			4.5	1.9	2.7	3.1	1.9	3.1	
			5.5	2.2	3.3	3.6	2.2	3.6	
V_{T-}	Negative Input Threshold Voltage		1.65	0.2	0.5	0.8	0.2	0.8	V
			2.3	0.4	0.75	1.15	0.4	1.15	
			2.7	0.5	0.87	1.4	0.5	1.4	
			3.0	0.6	1.0	1.5	0.6	1.5	
			4.5	1.0	1.5	2.0	1.0	2.0	
			5.5	1.2	1.9	2.3	1.2	2.3	

New

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V_{CC} (V)	T_A = 25°C			−55°C ≤ T_A ≤ 125°C		Units
				Min	Typ	Max	Min	Max	
V_{T+}	Positive Input Threshold Voltage		1.65	–	1.0	1.4	–	1.4	V
			2.3	–	1.5	1.8	–	1.8	
			2.7	–	1.7	2.0	–	2.0	
			3.0	–	1.9	2.2	–	2.2	
			4.5	–	2.7	3.1	–	3.1	
			5.5	–	3.3	3.6	–	3.6	
V_{T-}	Negative Input Threshold Voltage		1.65	0.2	0.5	–	0.2	–	V
			2.3	0.4	0.75	–	0.4	–	
			2.7	0.5	0.87	–	0.5	–	
			3.0	0.6	1.0	–	0.6	–	
			4.5	1.0	1.5	–	1.0	–	
			5.5	1.2	1.9	–	1.2	–	

DC Input Characteristics – NLV7SZ57, NLV7SZ58, NLV7SZ97, NLV7SZ98, NLVSZ99 to NL7SZ57-Q, NL7SZ58-Q, NL7SZ97-Q, NL7SZ98-Q, NLSZ99-Q

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V_{CC} (V)	T_A = 25°C			−40°C ≤ T_A ≤ 85°C		−55°C ≤ T_A ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
V_{T+}	Positive Input Threshold Voltage		1.65	0.79	–	1.16	–	1.16	–	1.16	V
			2.3	1.11	–	1.56	–	1.56	–	1.56	
			3.0	1.5	–	1.87	–	1.87	–	1.87	
			4.5	2.16	–	2.74	–	2.74	–	2.74	
			5.5	2.61	–	3.33	–	3.33	–	3.33	
V_{T-}	Negative Input Threshold Voltage		1.65	0.35	–	0.62	0.35	–	0.35	–	V
			2.3	0.58	–	0.87	0.58	–	0.58	–	
			3.0	0.84	–	1.19	0.84	–	0.84	–	
			4.5	1.41	–	1.9	1.41	–	1.41	–	
			5.5	1.78	–	2.2	1.78	–	1.78	–	
V_H	Negative Input Threshold Voltage		1.65	0.3	–	0.62	0.3	0.62	0.3	0.62	V
			2.3	0.4	–	0.8	0.4	0.8	0.4	0.8	
			3.0	0.53	–	0.87	0.53	0.87	0.53	0.87	
			4.5	0.71	–	1.04	0.71	1.04	0.71	1.04	
			5.5	0.8	–	1.2	0.8	1.2	0.8	1.2	

New

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V_{CC} (V)	T_A = 25°C			−40°C ≤ T_A ≤ 85°C		−55°C ≤ T_A ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
V_{T+}	Positive Input Threshold Voltage		1.65	–	–	1.4	–	1.4	–	1.4	V
			2.3	–	–	1.8	–	1.8	–	1.8	
			3.0	–	–	2.2	–	2.2	–	2.2	
			4.5	–	–	3.1	–	3.1	–	3.1	
			5.5	–	–	3.6	–	3.6	–	3.6	
V_{T-}	Negative Input Threshold Voltage		1.65	0.2	–	–	0.2	–	0.2	–	V
			2.3	0.4	–	–	0.4	–	0.4	–	
			3.0	0.6	–	–	0.6	–	0.6	–	
			4.5	1.0	–	–	1.0	–	1.0	–	
			5.5	1.2	–	–	1.2	–	1.2	–	
V_H	Negative Input Threshold Voltage		1.65	0.1	0.1	0.9	0.48	0.9	0.1	0.9	V
			2.3	0.25	0.25	1.1	0.75	1.1	0.25	1.1	
			3.0	0.4	0.4	1.2	0.93	1.2	0.4	1.2	
			4.5	0.6	0.6	1.5	1.2	1.5	0.6	1.5	
			5.5	0.7	0.7	1.7	1.4	1.7	0.7	1.7	

DC Input Characteristics – All other devices

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V_{CC} (V)	T_A = 25°C			−55°C ≤ T_A ≤ 125°C		Units
				Min	Typ	Max	Min	Max	
V_{IH}	High−Level Input Voltage		1.65 to 1.95	0.75 x V_{CC}	–	–	0.75 x V_{CC}	–	V
			2.3 to 5.5	0.70 x V_{CC}	–	–	0.70 x V_{CC}	–	
V_{IL}	Low−Level Input Voltage		1.65 to 1.95	–	–	0.25 x V_{CC}	–	0.25 x V_{CC}	V
			2.3 to 5.5	–	–	0.30 x V_{CC}	–	0.30 x V_{CC}	

New

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V_{CC} (V)	T_A = 25°C			−55°C ≤ T_A ≤ 125°C		Units
				Min	Typ	Max	Min	Max	
V_{IH}	High−Level Input Voltage		1.65 to 1.95	0.65 x V_{CC}	–	–	0.65 x V_{CC}	–	V
			2.3 to 5.5	0.70 x V_{CC}	–	–	0.70 x V_{CC}	–	
V_{IL}	Low−Level Input Voltage		1.65 to 1.95	–	–	0.35 x V_{CC}	–	0.35 x V_{CC}	V
			2.3 to 5.5	–	–	0.30 x V_{CC}	–	0.30 x V_{CC}	

AC Characteristics – No 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 Seremban, Malaysia	Vanguard International Semiconductor, Taiwan

Marking of Parts/ Traceability of Change:	Custom source on label will show TW instead of US/JP to indicate new die source from Vanguard. Changed material may be identified by plant code or lot code too.

Reliability Data Summary:

QV DEVICE NAME : NC7WZ132K8X / NLV37WZ14USG
RMS : S94843 / S94844
PACKAGE : US8

Test	Specification	Condition	Interval
High Temperature Operating Life	JESD22-A108	Ta=125°C, 100 % max rated Vcc	1008 hrs
High Temperature Storage Life	JESD22-A103	Ta= 150°C	1008 hrs
Preconditioning	J-STD-020 JESD-A113	MSL 1 @260°C	-
Temperature Cycling	JESD22-A104	Ta= -65°C to +150°C	500 cyc
Highly Accelerated Stress Test	JESD22-A110	130°C, 85% RH, 18.8psig, bias	96 hrs
Unbiased Highly Accelerated Stress Test	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs
Resistance to Solder Heat	JESD22- B106	Ta = 265°C, 10 sec Required for through hole devices only	0/30

Estimated Completion by 30 June 2024.

Electrical Characteristics Summary:

Electrical characteristics available upon request.

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
NLV37WZ17USG	NL37WZ17USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV37WZ16USG	NL37WZ16USG-Q	NC7WZ132K8X , NLV37WZ14USG

NLV37WZ14USG	NL37WZ14USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV37WZ07USG	NL37WZ07USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV37WZ04USG	NL37WZ04USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV27WZ86USG	NL27WZ86USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV27WZ32USG	NL27WZ32USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV27WZ126USG	NL27WZ126USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV27WZ125USG	NL27WZ125USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV27WZ08USG-22523Z	NL27WZ08USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV27WZ08USG	NL27WZ08USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV27WZ00USG	NL27WZ00USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV17SZ74USG-22523Z	NL17SZ74USG-Q	NC7WZ132K8X , NLV37WZ14USG
NLV17SZ74USG	NL17SZ74USG-Q	NC7WZ132K8X , NLV37WZ14USG