Final Product/Process Change Notification

Document #:FPCN24861X
Issue Date:12 Oct 2023

Title of Change:	NCP1615/NCP1616 re-design from Dual die co-pack (VHVIC3 + ONC25HV) to Single die solution (ONBCD25-UH7)
Proposed First Ship date:	01 Feb 2024 or earlier if approved by customer
Contact Information:	Contact your local onsemi Sales Office or Jiri.Konarik@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 Tomas.Vajter@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:	Labels on boxes and reels will show "Diffused In: JP" for product produced out of Aizu, Japan. There is no changes to the marking of the actual units.
Change Category:	Wafer Fab Change
Change Sub-Category(s):	Design change, Manufacturing Site Transfer, Datasheet/Product Doc change

Sites Affected:

onsemi Sites	**External Foundry/Subcon Sites**
onsemi Aizu, Japan	None

Description and Purpose:

onsemi would like to inform its customers of a design change to the NCP1615/NCP1616 family of products which are listed in the List of Affected Parts below. This is re-design change from actual dual die co-package solution to single die device solution. Actual VHVIC3 and ONC25HV technologies produced in Gresham, US will be replaced by ONBCD25-UH7 produced in Aizu, Japan.

This design change is intended to improve the overall yield of the product and stabilize our ability to effectively provide product to our customers. While there will be some datasheet changes associated with this that are unavoidable, the product is expected to be a drop-in replacement to the existing design. Customers are highly recommended to request samples to validate any changes. We will not be able to accept any rejections of the FPCN when it is released, as we will not be able to maintain the original product and have to convert to the new design.

	From	**To**
Data sheet	Rev 8	Rev 9
Wafer Fab Site	Gresham, US	AIZU, Japan

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

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

Specific electrical characteristics changes are provided in section Electrical Characteristics Summary.

Reliability Data Summary:

QV DEVICE NAME : NCP1615C4DR2G
RMS # : 83464, 87932, 90619
PACKAGE : SOIC16 AU MULT HPBF

Test	Specification	Condition	Interval	Results
High Temperature Operating Life	JESD22-A108	Ta=125°C, 100 % max rated Vcc, HV = 700V	1008 hrs	0/240
High Temperature Storage Life	JESD22-A103	Ta= 150°C	1008 hrs	0/240
Preconditioning	J-STD-020 JESD-A113	MSL 1 @260 °C, Pre TC, uHAST, HAST for surface mount pkgs only		0/1080
Temperature Cycling	JESD22-A104	Ta= -65°C to +150°C	1000 cyc	0/240
Highly Accelerated Stress Test	JESD22-A110	130°C, 85% RH, 18.8psig, bias	96 hrs	0/240
Unbiased Highly Accelerated Stress Test	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs	0/240

Electrical Characteristics Summary:

Table 4. Maximum Ratings improvement:

Rating	Pin	Symbol	Before			After			
			Min	Typ	Max	Min	Typ	Max	Unit
Supply Input Voltage	VCC	VCC(MAX)	-0.3	-	28	-0.3	-	30	V
Machine model per JEDEC Standard JESD22 A114			> 200			Removed			V
Human Body Model per JEDEC Standard JESD22−A114E	HV, HVFB		700			> 2000			V

Table 5. Electrical Characteristics changes:

Characteristic	Test Condition	Symbol	Before			After			
			Min	Typ	Max	Min	Typ	Max	Unit
Start-Up Threshold A/B Version (removed) C/D Version	Vcc increasing	VCC(on)	10.0 16.0	10.5 17.0	11.0 17.5	- 16.0	- 17.0	- 18.0	V
Vcc Hysteresis A/C Version B Version (EoL)	Vcc(on) - Vcc(off)	Vcc(hys)	7 1	8 2	- -	7 -	8 -	- -	V
Start-Up Circuit Off-State Leakage Current	VHV = 400V VHV = 700V	IHV(off1) IHV(off2)	- -	- -	30 50	- -	- -	70 75	uA
Before Start-Up (A/B) Version) (removed)	Vcc=Vcc(on)-0.5 V	Icc2b	-	0.6	1.00	-	-	-	mA

Reference voltage	T_J = 25°C	VREF	2.475	2.500	2.525	2.475	2.500	2.525	V
	T_J = -40 to 125°C	VREF	2.460	2.500	2.540	2.445	2.500	2.550	
Discharge Timer Duration (removed)		tline(discharge)	21	32	60	-	-	-	ms
Upslope Detection Reset Timer (added)	HV increasing	tHV(UP)	-	-	-	-	14	-	ms
Downslope Detection Reset Timer (added)	HV decreasing	tHV(down)	-	-	-	-	1	-	ms
HV Discharge Current (added)		IHV(discharge)	-	-	-	-	4	-	mA
Maximum On time - Low Line	VHV = 162.5 V, VControl = VControl(MAX)	ton(LL)	22	25	29	20.5	23.7	27.5	us
	VHV = 162.5 V, VControl = 2.5 V	ton(LL)2	9.5	11	13	9.5	11	13	
FFcontrol Pin Current – High Line	VHV = 325 V, VControl = VControl(MAX)	IDT2	120	135	148	-	-	-	uA
A5 Version (EoL)			92	103	114	90	102	114	
All Other Versions									
System Sart-Up Threshold	VHV increasing	VBO(start)	102	111	118	102	111	118	V
C4/C5 Version			86	95	102	-	-	-	
C2/D2 Version (EoL)			106/110	115	121	-	-	-	
C3 Version (EoL)									
System Shut-Down Threshold	VHV decreasing	VBO(stop)	92	100	108	92	100	108	V
C4/C5 Version			78	87	94	-	-	-	
C2/D2 Version (EoL)			95/99	104	110	-	-	-	
C3 Version (EoL)									
Hysteresis	VHV increasing	VBO(hyst)	7	-	-	7	11	-	V
C4/C5 Version			5	-	-	-	-	-	
C2/D2 (EoL)									

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
NCP1616A2DR2G	NCP1615C4DR2G
NCP1616A1DR2G	NCP1615C4DR2G
NCP1615C5DR2G	NCP1615C4DR2G
NCP1615C4DR2G	NCP1615C4DR2G