Final Product/Process Change Notification

Document #:FPCN24821X
Issue Date:03 Nov 2022

Title of Change:	NCP12400 Family design change for improved yields
Proposed First Ship date:	08 Feb 2023 or earlier if approved by customer
Contact Information:	Contact your local onsemi Sales Office or Scott.Brow@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:	Product with the designated change can be identified by lot and date code information.
Change Category:	Wafer Fab Change
Change Sub-Category(s):	Datasheet/Product Doc change, Design Change

Sites Affected:

onsemi Sites	**External Foundry/Subcon Sites**
onsemi, Gresham United States	None

Description and Purpose:

onsemi would like to inform its customers of a design change to the NCP12400 family of products which are listed in the List of Affected Parts below. These design changes are intended to improve the overall yield of the product and stabilize our ability to effectively provide product to our customers. While there are some datasheet changes associated with this that were 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
Parametric Change	Current Datasheet	See Parametric changes summary

As the product is qualified for assembly at both onsemi Carmona, Philippines and ATXKS, reliability data was taken at both sites for this change.

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

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

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Parametric changes summary:

Characteristic	Test Condition	Symbol	Before			After			
Brown-Out thresholds (option BAHAB)	V_{HV} going up V_{HV} going down	VHV(start) VHV(stop)	93 90	103 100	113 110	93 87	103 97	113 107	V
Brown-Out thresholds (option C)	V_{HV} going up V_{HV} going down	VHV(start) VHV(stop)	87 85	95 93	103 101	87 82	95 90	103 98	V
Timer duration for no line detection		tX2_DET	21	32	43	70	100	130	ms
HV pin voltage when X2 discharging process is ended		VX2_END	10	11	12	20	30	40	V

New Parameters added to the Datasheet:

Off-state leakage current	V_{HV} = 500 V, V_{CC} = 15 V	Istart(off)	-	9	25	µA
Minimum voltage for current source operation	DSS option	VHV(min)	-	30	60	V
X2 Discharge current		IDISCH	2	3	4	mA

Reliability Data Summary:

QV DEVICE NAME NCP12400CBBAB0DR2G
RMS 80799 OSPI
PACKAGE SOIC 8-P7 STD VHVIC PBFH

Test	Specification	Condition	Interval	Results
HTOL	JESD22-A108	Ta=125°C, 100 % max rated Vcc, HV=800V	1008 hrs	0/80
HTSL	JESD22-A103	Ta=150°C	2016 hrs	0/320
PC	J-STD-020 JESD-A113	MSL 1 @ 260 °C, Pre TC, uHAST, HAST for surface mount pkgs only		0/1200
TC	JESD22-A104	Ta= -65°C to +150°C	500 cyc	0/320
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	192 hrs	0/320
uHAST	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs	0/320
BS	AEC-Q100-001	Cpk 1.33, 30 bonds from 5units		pass
BS	AEC-Q100-001	Cpk 1.33, 30 bonds from 5units, After TC500/1000 & HTSL1008/2016		pass
BPS	M883 Method 2011	3gm Pull Force Min		pass
BPS	M883 Method 2011	3gm Pull Force Min After TC500/1000 & HTSL1008/2016		pass
ESD HBM	AEC-Q100-002	c = 0, Test @ R, HV included	2.5kV	0/3
ESD HBM	AEC-Q100-002	c = 0, Test @ R, HV excluded	5kV	0/3
ESD CDM	AEC-Q100-011	c = 0, Test @ R	1.25kV	0/3
ED	ON Data Sheet	Cpk > 1.67 Test @ R, H, C	Cpk>1.67	0/90
LU	AEC-Q100-004	Test @ EP; Test & Stress @ R	LU+>100mA LU->100mA	0/6

QV DEVICE NAME NCP12400CBBAB0DR2G
RMS 82290 ATXKS
PACKAGE SOIC 8-P7 STD VHVIC PBFH

Test	Specification	Condition	Interval	Results
HTOL	JESD22-A108	Ta=125°C, 100 % max rated Vcc, HV=800V	1008 hrs	0/80
HTSL	JESD22-A103	Ta=150°C	1008 hrs	0/80
PC	J-STD-020 JESD-A113	MSL 1 @ 260 °C, Pre TC, uHAST, HAST for surface mount pkgs only		0/330
TC	JESD22-A104	Ta= -65°C to +150°C	500 cyc	0/80
HAST	JESD22-A110	130°C, 85% RH, 18.8psig, bias	192 hrs	0/80
uHAST	JESD22-A118	130°C, 85% RH, 18.8psig, unbiased	96 hrs	0/80
BPS	M883 Method 2011	3gm Pull Force Min		pass
BPS	M883 Method 2011	3gm Pull Force Min After TC500		pass
ED	ON Data Sheet	Cpk > 1.67 Test @ R, H, C	Cpk>1.67	0/30

Electrical Characteristics Summary:

Parametric changes summary above.

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
NCP12400BBAAA0DR2G	NCP12400CBBAB0DR2G
NCP12401EBEAB0DR2G	NCP12400CBBAB0DR2G
NCP12401CBEAB0DR2G	NCP12400CBBAB0DR2G
NCP12400BBHAA1DR2G	NCP12400CBBAB0DR2G
NCP12400BBHAB0DR2G	NCP12400CBBAB0DR2G
NCP12400CAHAB0DR2G	NCP12400CBBAB0DR2G
NCP12400CBAAB0DR2G	NCP12400CBBAB0DR2G
NCP12400CBBAB0DR2G	NCP12400CBBAB0DR2G
NCP12400CBHAA0DR2G	NCP12400CBBAB0DR2G
NCP12400EAHBB0DR2G	NCP12400CBBAB0DR2G
NCP12400BBEBA0DR2G	NCP12400CBBAB0DR2G
NCP12400BBBBB2DR2G	NCP12400CBBAB0DR2G
NCP12400BBBBA0DR2G	NCP12400CBBAB0DR2G