Final Product/Process Change Notification

Document #:FPCN25572X18
Issue Date:15 Nov 2023

Title of Change:	Update to **FPCN25572X** - Info for SOIC-16 Only.
Proposed First Ship date:	16 Feb 2024 or earlier if approved by customer
Contact Information:	Contact your local onsemi Sales Office or logic.fpcn@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 ChangKit.Mok@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:	Custom source on label will show TW instead of US to indicate new die source from Vanguard. Changed material may be identified by plant code or lot code too.
Change Category:	Wafer Fab Change, Assembly Change
Change Sub-Category(s):	Manufacturing Site Transfer, Datasheet/Product Doc change

Sites Affected:

onsemi Sites	**External Foundry/Subcon Sites**
onsemi Carmona, Philippines	ATEC - Automated Technology, Philippines
	ATX Kun Shan, China
	Vanguard International Semiconductor, Taiwan

Description and Purpose:

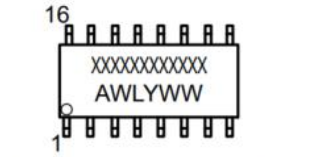
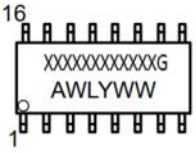
With reference to **FPCN25572X**, this FPCN presents the information solely for SOIC-16 package.

	From	**To**
Fab Site	Tower Semiconductor	Vanguard International Semiconductor (VIS)
Wafer Size	150 mm	200 mm

	From	**To**		
Assembly Site	onsemi Carmona, ATEC, ATX Kunshan, ASE Chungli	onsemi Carmona	ATEC	ATX Kunshan
Bond Wire	0.8 mil Au, 0.8 mil Cu	1 mil PCC	1 mil PCC	1 mil PCC
Die Attach	CRM-1076WB, EN4900GC	CRM-1076WB	CRM-1076WB	EN4900GC
Mold Compound	G600, CEL9240HF10AK	G600	G600	CEL9240HF10AK

	From	**To**	
Test Site	onsemi Carmona	onsemi Carmona	ATEC

➢ **Marking change for specified parts listed in the marking embedded excel file:**

	From	To
SOIC-16 Product Marking Change	 A = Assembly Location WL, L = Wafer Lot YY, Y = Year WW, W = Work Week X = Device Code	 A = Assembly Location WL, L = Wafer Lot YY, Y = Year WW, W = Work Week G or ▪ = Pb−Free Package X = Device Code

Reliability Data Summary:

➢ **Refer to embedded excel RMS O89367, O89362, O89365, O89369, O89370, O89372, O88465, O89376, and O89377.**

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:

	From	To
Datasheet	Current Revision	New Revision
Absolute Max Voltage Rating	7 V	6.5 V

➢ **Additional change for only LCX Device Family:**

	From	To
Recommended Operating Voltage Range	2.0 – 3.6 V	1.65 – 5.5 V
Recommended Operating Temperature Range	-40 – 85 °C	-40 – 125 °C

➢ **Additional change for MM74HC595MX and MM74HC595M only:**

	From	To
SER to SCK Hold Time at Vcc = 5V, Ta = 25C	0 ns	5 ns

➢ **Additional change for MC74LVX4051DG, MC74LVX4051DR2G, MC74LVX4052DG, MC74LVX4052DR2G, MC74LVX4053DR2G, MC74LVXT4051DR2G, MC74LVXT4052DR2G, and MC74LVXT4053DR2G only:**

Datasheet Existing vs Updated Comparison:

Existing Datasheet

MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{EE}	Negative DC Supply Voltage		-7.0 to +0.5	V
V_{CC}	Positive DC Supply Voltage	(Referenced to GND)	-0.5 to +7.0	V
		(Referenced to V_{EE})	-0.5 to +7.0	
V_{IS}	Analog Input Voltage		V_{EE}-0.5 to V_{CC}+0.5	V
V_{IN}	Digital Input Voltage	(Referenced to GND)	-0.5 to +7.0	V
I	DC Current, Into or Out Of Any Pin		±50	mA
T_{STG}	Storage Temperature Range		-65 to +150	°C
T_L	Lead Temperature, 1 mm from Case for 10 seconds		+260	°C
T_J	Junction Temperature under Bias		+150	°C
θ_{JA}	Thermal Resistance	SOIC	143	°C/W
		TSSOP	164	
P_D	Power Dissipation in Still Air	SOIC	500	mW
		TSSOP	450	
MSL	Moisture Sensitivity		Level 1	
F_R	Flammability Rating	Oxygen Index: 30% - 35%	UL 94-V0 @ 0.125 in	°C/W
V_{ESD}	ESD Withstand Voltage	Human Body Model (Note 1)	> 2000	V
		Machine Model (Note 2)	> 200	
		Charged Device Model (Note 3)	> 1000	
$I_{LATCHUP}$	Latchup Performance	Above V_{CC} and Below GND at 125°C (Note 4)	±300	mA

Updated Datasheet

MAXIMUM RATINGS (Voltages referenced to GND unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{CC}	Positive DC Supply Voltage		-0.5 to +6.5	V
V_{CC} - V_{EE}	DC Supply Voltage		-0.5 to +6.5	V
V_{IS}	Analog Input Voltage		V_{EE}-0.5 to V_{CC}+0.5	V
V_{IN}	Digital Input Voltage	(Referenced to V_{EE})	-0.5 to +6.5	V
I	DC Current, Into or Out Of Any Pin		±50	mA
T_{STG}	Storage Temperature Range		-65 to +150	°C
T_L	Lead Temperature, 1 mm from Case for 10 seconds		+260	°C
T_J	Junction Temperature under Bias		+150	°C
θ_{JA}	Thermal Resistance	SOIC-16	128	°C/W
		TSSOP-16	159	
P_D	Power Dissipation in Still Air	SOIC-16	995	mW
		TSSOP-16	787	
MSL	Moisture Sensitivity		Level 1	
F_R	Flammability Rating	Oxygen Index: 30% - 35%	UL 94-V0 @ 0.125 in	°C/W
V_{ESD}	ESD Withstand Voltage	Human Body Model (Note 1)	> 2000	V
		Charged Device Model (Note 2)	> 1000	
$I_{LATCHUP}$	Latchup Performance	Above V_{CC} and Below GND (V_{EE}=GND) at 125°C (Note 3)	±100	mA

Existing Datasheet

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter		Min	Max	Unit
V_{EE}	Negative DC Supply Voltage	(Referenced to GND)	-6.0	GND	V
V_{CC}	Positive DC Supply Voltage	(Referenced to GND)	2.5	6.0	V
		(Referenced to V_{EE})	2.5	6.0	
V_{IS}	Analog Input Voltage		V_{EE}	V_{CC}	V
V_{IN}	Digital Input Voltage	(Note 5) (Referenced to GND)	0	6.0	V
T_A	Operating Temperature Range		-55	+125	°C
t_r, t_f	Input Transition Rise or Fall Rate	V_{CC} = 3.0 V ± 0.3 V	0	100	nS/V
	(Channel Select or Enable Inputs)	V_{CC} = 5.0 V ± 0.5 V	0	20	

Updated Datasheet

RECOMMENDED OPERATING CONDITIONS (Voltages referenced to GND unless otherwise specified)

Symbol	Parameter		Min	Max	Unit
V_{CC}	Positive DC Supply Voltage		2.5	6.0	V
V_{EE}	Negative DC Supply Voltage		-3.5	GND	V
V_{CC} - V_{EE}	DC Supply Voltage		2.5	6.0	V
V_{IS}	Analog Input Voltage		V_{EE}	V_{CC}	V
V_{IN}	Digital Input Voltage	(Note 4) (Referenced to V_{EE})	0	6.0	V
T_A	Operating Temperature Range		-55	+125	°C
t_r, t_f	Input Transition Rise or Fall Rate	V_{CC} = 3.0 V ± 0.3 V	0	100	nS/V
	(Channel Select or Enable Inputs)	V_{CC} = 5.0 V ± 0.5 V	0	20	

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
MC74HCT4852ADR2G	MC74HC4851ADR2G, NLV74HC4851ADR2G
MC74HC4852ADR2G	MC74HC4851ADR2G, NLV74HC4851ADR2G
MM74HCT138MX	MC74HC595ADR2G, NLV74HC595ADR2G
MM74HCT138M	MC74HC595ADR2G, NLV74HC595ADR2G
MM74HC595MX	MC74HC595ADR2G, NLV74HC595ADR2G
MM74HC595M	MC74HC595ADR2G, NLV74HC595ADR2G
MM74HC175MX	MC74HC595ADR2G, NLV74HC595ADR2G
MM74HC138MX	MC74HC595ADR2G, NLV74HC595ADR2G
MM74HC138M	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHCT259ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G

MC74VHCT257ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHCT139ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHCT138ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHC595DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHC259DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHC257DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHC157DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHC139DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74VHC138DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LVXT8053DR2G	MC74LVX4051DR2G
MC74LVXT8051DR2G	MC74LVX4051DR2G
MC74LVXT8051DG	MC74LVX4051DR2G
MC74LVXT4053DR2G	MC74LVX4051DR2G
MC74LVXT4052DR2G	MC74LVX4051DR2G
MC74LVXT4051DR2G	MC74LVX4051DR2G
MC74LVX8053DR2G	MC74LVX4051DR2G
MC74LVX8051DR2G	MC74LVX4051DR2G
MC74LVX4053DR2G	MC74LVX4051DR2G
MC74LVX4052DR2G	MC74LVX4051DR2G
MC74LVX4052DG	MC74LVX4051DR2G
MC74LVX4051DR2G	MC74LVX4051DR2G
MC74LVX4051DG	MC74LVX4051DR2G
MC74LVX259DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LVX257DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LVX157DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LVX139DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LVX138DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LV594ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LCX258DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LCX257DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LCX158DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LCX158DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LCX157DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74LCX138DR2G	MC74HC595ADR2G, NLV74HC595ADR2G

MC74HCT595ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HCT595ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HCT4851ADR2G	MC74HC4851ADR2G, NLV74HC4851ADR2G
MC74HCT366ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HCT365ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HCT138ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC597ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC597ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC595ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC595ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC589ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC589ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC4851ADR2G	MC74HC4851ADR2G, NLV74HC4851ADR2G
MC74HC4851ADG	MC74HC4851ADR2G, NLV74HC4851ADR2G
MC74HC390ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC390ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC365ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC259ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC251ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC251ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC238ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC238ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC175ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC175ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC174ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC165ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC165ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC157ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC157ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC153ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC153ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC151ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC139ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC138ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G

MC74HC138ADG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74HC112ADR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT259DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT257DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT253DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT163DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT157DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT157DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT153DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT153DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT139DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT139DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT138DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74ACT138DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC259DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC259DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC257DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC253DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC163DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC157DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC157DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC139DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC139DG	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC138DR2G	MC74HC595ADR2G, NLV74HC595ADR2G
MC74AC138DG	MC74HC595ADR2G, NLV74HC595ADR2G
74VHC157MX	MC74HC595ADR2G, NLV74HC595ADR2G
74VHC139MX	MC74HC595ADR2G, NLV74HC595ADR2G
74ACT139SCX	MC74HC595ADR2G, NLV74HC595ADR2G
74ACT138SCX	MC74HC595ADR2G, NLV74HC595ADR2G
74ACT138SC	MC74HC595ADR2G, NLV74HC595ADR2G
74AC139SCX	MC74HC595ADR2G, NLV74HC595ADR2G
74AC138SCX	MC74HC595ADR2G, NLV74HC595ADR2G
74AC138SC	MC74HC595ADR2G, NLV74HC595ADR2G