



Final Product/Process Change Notification

Document #: FPCN25572Z

Issue Date: 30 Jun 2023

Title of Change:	Qualification of Vanguard Fab and Some Assembly Related Changes for Logic parts.
Proposed Changed Material First Ship Date:	See attached file for proposed first ship date for each product
Current Material Last Order Date	See attached file. Changed Material Sample Availability Date column
Current Material Last Delivery Date:	See attached file. Proposed Changed Material First Ship Date column
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 or < PCN.samples@onsemi.com >. Sample requests are to be submitted no later than 30 days from the date of first notification, for this change. Samples delivery timing will be subject to request date, sample quantity and special customer packing/label requirements. See attached file for anticipated availability date.
Sample Availability Date:	See attached file for Changed Material Sample Availability Date.
PPAP Availability Date:	See attached file for Changed Material Sample Availability Date.
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. The change will be implemented at 'Proposed Changed Material First Ship Date' for each part number in the attached file, in compliance to J-STD-46 or ZVEI, or earlier upon customer approval, or per our signed agreements. onsemi will consider this change accepted on that date, 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:	As material from different FABs cannot be combined in to (1) reel, product from Vanguard will show "Diffused In: TW" on the label of the reel and box. Please see sample MPN on page 2 at the following link http://www.onsemi.com/pub_link/Collateral/LABELRM-D.PDF to see the location of the Diffused In notation.
Change Category	
Category	Type of Change
Process – Wafer Production	Move 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	Move assembly site, change of wire bonding



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Sites Affected:

onsemi Sites	External Foundry/Subcon Sites
onsemi Carmona, Philippines onsemi Leshan Phoenix Semiconductor, China onsemi Seremban, Malaysia onsemi Tarlac, Philippines onsemi Cebu, Philippines	Amkor Technology, Korea Amkor Technology, Philippines ATEC – Automated Technology, Philippines ATX Kun Shan, China ATX Chung Li, China ATX Shanghai, China Greatek Electronics, Taiwan Hana Jiaxing, China Hana Microelectronics, Thailand JCET Jiangyin, China Stars Microelectronics, Thailand UTAC Thai Ltd., Thailand UTL2 Bangsamak, Thailand Vanguard International Semiconductor, Taiwan

Description and Purpose:

The purpose of this notification is to notify customers of the qualification of Vanguard as a wafer supplier for most of the logic product portfolio. Please see the attached file for details on the disposition, sample schedule, and last order dates by part number. We have included the entire logic portfolio for your reference, including part numbers which are not changing, as well as those that have already been included on previous FPCNs.

The bulk of these products are currently processed at Tower Semiconductor, Ltd. (Tower) in Fab 1. Tower has communicated that all onsemi TS35/TS60/TS50 products in Fab 1 are to become obsolete in 2024, so an alternate source is required for customer support.

This FPCN will become effective for each part number on the 'Proposed Change Material First Ship Date' listed in the attached file. Deliveries will start immediately after receiving FPCN approval or Orders Authority (OA). We have no ability to support customer orders beyond the listed First Ship Date. If a customer does not wish to receive product from the new source, they should take action to cancel or push out all future orders. Customer should work with their local sales contacts to cancel or push orders as needed.

In addition, some products that are manufactured in TowerJazz Panasonic Semiconductor Co., Ltd. (TPSCo) in Japan and are also being transferred to Vanguard as well to consolidate our product portfolio and ensure strong future support.

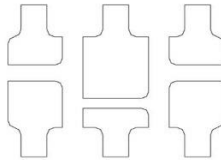
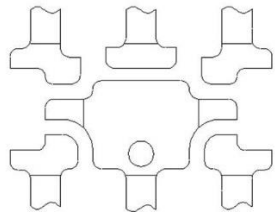
	From	To
Fab Site	Tower Semiconductor, TPSCo	Vanguard International Semiconductor (VIS)
Wafer size	150 mm and 200 mm	200 mm
Packaging	Refer to attached file and information below by Product Family/Qual Vehicle	Refer to attached file and information below by Product Family/Qual Vehicle
Part Number Changes	Refer to attached file	Refer to attached file
Product Marking	No change	
Datasheet	Current Revision	New Revision
Absolute Max Rating	6.5V or 7V	6.5V
Electrical Characteristics	Refer to attached file and information below by Product Family	Refer to attached file and information below by Product Family

5V MiniGate Logic

QV DEVICE NAME: NL27WZ14DBVT1G

PACKAGE: SC74

➤ Assembly changes:

	From	To
Lead frame	 Lead frame drawing is for reference only	 Lead frame drawing is for reference only
Mold Compound	Showa Denko GE200F HWG-S	Hysol GR640 HV

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet
- **Reliability Summary:** Refer to embedded excel RMS S82713.

QV DEVICE NAME: MC74VHC1G14DBVT1G

PACKAGE: SC74A

➤ Assembly changes:

	From	To
Assembly Site	onsemi Seremban	onsemi Leshan Phoenix Semiconductor
Lead Frame	COPPER ALLOY CDA 194 with Ag SPOT Plated	Alloy 42 with OVERALL Cu Plated
Bond Wire	Au	Cu
Mold Compound	SUMITOMO EME-G600FB	Hysol GR640
Die Attach	NON-COND EPOXY	Eutectic
Package Type	TSOP5	SC74A

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet
- **Reliability Summary:** Refer to embedded excel RMS S82725.

QV DEVICE NAME: NL27WZ14DFT2G

PACKAGE: SC88

➤ Assembly changes:

	From	To
Bond Wire	Au	Cu

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS L82712.



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5V MiniGate Logic

QV DEVICE NAME: MC74VHC1G14DFT1G

PACKAGE: SC88A

➤ Assembly changes:

	From	To
Bond Wire	Au or Cu	Cu

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS S85493.

QV DEVICE NAME: MC74VHC1G08P5T5G

PACKAGE: SOT953

➤ Assembly changes:

	From	To
Assembly Site	onsemi Leshan Phoenix Semiconductor	
Mold Compound	Showa Denko GE200F or Hysol GR640 HV	Hysol GR640 HV

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS S87090.

QV DEVICE NAME: NL17SZ08XV5T2GH

PACKAGE: SOT553

➤ Assembly changes:

	From	To
Assembly Site	onsemi Leshan Phoenix Semiconductor	
Bond Wire	Au or Cu	Cu
Mold Compound	Showa Denko GE200F	Hysol GR640 HV

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS S87092.

5V MiniGate Logic

QV DEVICE NAME : NL17SZ08MU1TCG and NL27WZ17MU1TCG

PACKAGE: UDFN6

➤ UDFN6 1.45x1.0 Assembly changes:

	From	To	
Assembly Site	onsemi Seremban	onsemi Seremban	onsemi Tarlac
Mold Compound	G760	Sumitomo EME-G770HM	SUMITOMO EME-G760
Wire Type	Au	PCC	PCC
Lead Frame	PPF	LF PPF Plated (C7025)	LF PPF PLATED (C7025)
Die Attach	8006NS	8006NS	8006NS

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS S87093, S87094, S87313 and S87316.

QV DEVICE NAME: MC74VHC3G14MU3TCG

PACKAGE: uDFN8

➤ uDFN8 1.6*1.6 Assembly changes:

	From	To	
Assembly Site	onsemi Seremban	onsemi Seremban	onsemi Tarlac
Mold Compound	G760	Sumitomo EME-G770HM	SUMITOMO EME-G760
Wire Type	Au	PCC	PCC
Lead Frame	PPF	LF PPF PLATED (C7025)	LF PPF PLATED (C7025)

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS S87960 and S87889.

QV DEVICE NAME: NC7WZ132K8X

PACKAGE: US8

➤ US8 Assembly Changes:

	From	To
Assembly Site	onsemi Seremban	Stars
Bond Wire	Au	PCC
Lead frame	CuAg	PPF
Mold Compound	EME-G600FB	EME G700LTD
Die Attach	8900NC	HR-5104

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS S87355.



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3V MiniGates Logic

QV DEVICE NAME: NC7SP14P5X

PACKAGE: SC88A

➤ **SC88 Assembly changes:**

	From	To
Assembly Site	onsemi Leshan Phoenix Semiconductor	onsemi Leshan Phoenix Semiconductor
Bond Wire	Au, Cu	Cu

- **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.
- **Reliability Summary:** Refer to embedded excel RMS S88008 and S88413.

HC Logic, LCX Logic, LVX Logic, VHC Logic, FACT Logic, Bus Switch, LV Logic, 5V Analog Switch

3V MiniGates Logic

QV DEVICE NAME: NLV74HC595ADTR2G, MC74LVX4051DTR2G, NLVHC4851ADTR2G, MC74LCX14DTR2G, NLV74HC244ADTR2G, MC74HC244ADTR2G

PACKAGE: TSSOP-14, TSSOP-16, TSSOP-20, TSSOP-48

➤ TSSOP-14 Assembly changes:

	From	To	
Assembly Site	onsemi Carmona, ATEC	onsemi Carmona	ATEC
Mold Compound	G600, G700LS	G700LS	G600
Wire Type	0.8 mil Au, 0.8 mil Cu	1 mil PCC	1 mil PCC
Lead Frame	PPF	PPF	Cu with Ag spot

➤ TSSOP-16 Assembly changes:

	From	To	
Assembly Site	onsemi Carmona, ATEC	onsemi Carmona	ATEC
Mold Compound	G600, G700LS	G700LS	G600
Wire Type	0.8 mil Au, 0.8 mil Cu	1 mil PCC	1 mil PCC
Lead Frame	PPF	PPF	Cu with Ag spot

➤ TSSOP-20 Assembly changes:

	From	To	
Assembly Site	onsemi Carmona, ATEC	onsemi Carmona	ATEC
Mold Compound	G700LS, CEL800JF	G700LS	G700LS
Epoxy	QMI519, CRM-1076WB	CRM-1076WB	CRM-1076WB
Wire Type	0.8 mil Au, 0.8 mil Cu	1 mil PCC	1 mil PCC

➤ TSSOP-48 Assembly Changes:

Not defined yet, FPCN will be updated when data is available

➤ **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.

➤ **Reliability Summary:** Refer to embedded excel RMS 088463, 089920, 089358, 88467, 89368, 89374, 89375, 88468, 89399, 89395, 89401 and TBD (TSSOP48).

HC Logic, LCX Logic, LVX Logic, VHC Logic, FACT Logic, Bus Switch, LV Logic, 5V Analog Switch

QV DEVICE NAME: MC74LCX14DR2G, NLV74HC595ADR2G, MC74HC595ADR2G, MC74LVX4051DR2G, NLV74HC4851ADR2G, MC74HC4851ADR2G, NLV74HC244ADWR2G, MC74HC244ADWR2G

PACKAGE: SOIC-14, SOIC-16, and SOICW-20

➤ For SOIC-14 package assembly changes:

	From	To		
Assembly Site	onsemi Carmona, Hana Micro., ATX Kunshan, ASE Chungli	onsemi Carmona	Hana Micro.	ATX Kunshan
LeadFrame	Cu with Ag spot	Cu with Ag spot	PPF	Cu with Ag spot
Bond Wire	0.8 mil Au, 0.8 mil Cu	1 mil PCC	1 mil PCC	1 mil PCC
Die Attach	CRM-1076WB	CRM-1076WB	CRM-1076WB	EN4900GC
Mold Compound	G600	G600	G600	CEL9240HF10AK

➤ For SOIC-16 package assembly changes:

	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	CRM-1076WB	CRM-1076WB	EN4900GC
Mold Compound	G600	G600	G600	CEL9240HF10AK

➤ For SOICW-20 package assembly changes:

	From	To	
Assembly Site	onsemi Carmona, ATEC, Greteck, ASE Chungli	onsemi Carmona	Greteck
Bond Wire	0.8 mil Au, 0.8 mil Cu	1 mil PCC	1 mil PCC
Die Attach	CRM-1076WB	CRM-1076WB	EN4900GC
Mold Compound	G600	G600	G600F

➤ **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.

➤ **Reliability Summary:** Refer to embedded excel RMS 89379, 89388, 89394, 89362, 89367, 89369, 89372, 88465, 89377, 89396 and 89402



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HC Logic, LCX Logic, LVX Logic, VHC Logic, FACT Logic, Bus Switch, LV Logic, 5V Analog Switch

QV DEVICE NAME: NLV74HC595AMN1TWG, MC74LVX4051MNTWG, NLV74HC4851AMN1TWG, NLV68SZ126MN2TWG

PACKAGE: QFN-16 and QFN-20

➤ For QFN-16 package assembly changes:

	From	To	
Assembly Site	onsemi Seremban	onsemi Tarlac	onsemi Seremban
LeadFrame	Cu with Ag spot	Cu with Ag spot	Cu with Ag spot
Die Attach	WBC 8006NS	CRM-1076WB	WBC 8006NS
Bond Wire	0.8 mil Au	0.8 mil PCC	0.8 mil PCC
Mold Compound	G760	G770HMD	G770HMD

➤ For QFN-20 package assembly changes in onsemi Tarlac:

	From	To
Die Attach	CRM1084P	CRM-1076WB
Bond Wire	0.8 mil PCC	1 mil PCC
Mold Compound	G760	G770HMD

➤ **Electrical Characteristics:** Refer to tables at the end of this document for changes to datasheet.

➤ **Reliability Summary:** Refer to embedded excel RMS 89269, 89405, 89440, 89427, 90474, 90492 and 89442.

Additional QVs for some remaining products TBD, FPCN to be updated when information is available

3V Translator, Autosense Translator, Bus Interface, 12V Analog Switch, FST Logic

QV DEVICE NAME: TBD

Qual vehicles and change information for these product families is still being developed. FPCN will be updated when information is available. Estimated dates for sample availability and qualification are available in the file attached.

5 V MiniGate Logic Datasheet Changes

NLV74HC1Gxx, NLVHC1Gxx to MC74HC1Gxx-Q Family

Absolute Maximum Ratings and Recommended Operating Conditions

Existing Datasheet

MAXIMUM RATINGS				
Symbol	Parameter	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	

RECOMMENDED OPERATING CONDITIONS				
Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage	2.0	6.0	V
V_{IN}	DC Input Voltage	0.0	V_{CC}	V
V_{OUT}	DC Output Voltage	0.0	V_{CC}	V
T_A	Operating Temperature Range	-55	+125	°C
t_r, t_f	Input Rise and Fall Time			ns
		$V_{CC} = 2.0\text{ V}$	0	1000
		$V_{CC} = 3.0\text{ V}$	0	800
		$V_{CC} = 4.5\text{ V}$	0	500
		$V_{CC} = 6.0\text{ V}$	0	400

New

MAXIMUM RATINGS				
Symbol	Parameter	Value	Unit	
V_{CC}	DC Supply Voltage	-0.5 to +6.5	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	

RECOMMENDED OPERATING CONDITIONS				
Symbol	Parameter	Min	Max	Unit
V_{CC}	DC Supply Voltage	2.0	6.0	V
V_{IN}	DC Input Voltage	0.0	V_{CC}	V
V_{OUT}	DC Output Voltage	0.0	V_{CC}	V
T_A	Operating Temperature Range	-55	+125	°C
t_r, t_f	Input Rise and Fall Time			ns/V
		$V_{CC} = 2.0\text{ V}$	0	20
		$V_{CC} = 2.3\text{ V to }2.7\text{ V}$	0	20
		$V_{CC} = 3.0\text{ V to }3.6\text{ V}$	0	10
		$V_{CC} = 4.5\text{ V to }6.0\text{ V}$	0	5

DC Characteristics - No changes except for MC74HC1G14-Q

DC Characteristics – MC74HC1G14-Q

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	V_{CC} (V)	$T_A = 25^\circ\text{C}$			$-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		Unit
				Min	Typ	Max	Min	Max	Min	Max	
V_{T+}	Positive Threshold Voltage		3.0	1.85	2.0	2.2	–	2.2	–	2.2	V
			4.5	2.86	3.0	3.15	–	3.15	–	3.15	
			5.5	3.5	3.6	3.85	–	3.85	–	3.85	
V_{T-}	Negative Threshold Voltage		3.0	0.9	1.5	1.65	0.9	–	0.9	–	V
			4.5	1.35	2.3	2.46	1.35	–	1.35	–	
			5.5	1.65	2.9	3.05	1.65	–	1.65	–	

New

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	V_{CC} (V)	$T_A = 25^\circ\text{C}$			$-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		Unit
				Min	Typ	Max	Min	Max	Min	Max	
V_{T+}	Positive Threshold Voltage		3.0	–	2.0	2.2	–	2.2	–	2.2	V
			4.5	–	3.0	3.15	–	3.15	–	3.15	
			5.5	–	3.6	3.85	–	3.85	–	3.85	
V_{T-}	Negative Threshold Voltage		3.0	0.9	1.5	–	0.9	–	0.9	–	V
			4.5	1.35	2.3	–	1.35	–	1.35	–	
			5.5	1.65	2.9	–	1.65	–	1.65	–	

AC Characteristics – No change

NLV74VHC1Gxx, NLVVHC1Gxx to MC74VHC1Gxx Family

Absolute Maximum Ratings and Recommended Operating Conditions

5 V MiniGate Logic Datasheet Changes

Existing Datasheet

MAXIMUM RATINGS				
Symbol	Characteristic	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 (NLV)	1Gxx	-0.5 to $V_{CC} + 0.5$	V
		1GTxx	-0.5 to $V_{CC} + 0.5$	V
		Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode ($V_{CC} = 0$ V)	-0.5 to +7.0 -0.5 to +7.0 -0.5 to +7.0	
I_{IK}	DC Input Diode Current	$V_{IN} < GND$	-20	mA
I_{OK}	DC Output Diode Current (NLV)	1Gxx	$V_{OUT} > V_{CC}$, $V_{OUT} < GND$	±20
		1GTxx	$V_{OUT} < GND$	-20

RECOMMENDED OPERATING CONDITIONS				
Symbol	Characteristic	Min	Max	Unit
V_{CC}	Positive DC Supply Voltage	2.0	5.5	V
V_{IN}	DC Input Voltage	0	5.5	V
V_{OUT}	DC Output Voltage	1Gxx	0	V_{CC}
		1GTxx	Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode ($V_{CC} = 0$ V)	0 0 0
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	100 20
				ns/V

New

MAXIMUM RATINGS				
Symbol	Characteristic	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	$V_{IN} < GND$	-20	mA
I_{OK}	DC Output Diode Current	$V_{OUT} < GND$	-20	mA

RECOMMENDED OPERATING CONDITIONS				
Symbol	Characteristic	Min	Max	Unit
V_{CC}	Positive DC Supply Voltage	2.0	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
T_A	Operating Temperature Range	-55	+125	°C
t_r, t_f	Input Rise and Fall Time	$V_{CC} = 2.0$ V	0	20
		$V_{CC} = 2.3$ 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	20 10 5
				ns/V

DC Characteristics - No changes except for MC74VHC1G14-Q and MC74VHC1GT14-Q

DC Characteristics for MC74VHC1G14-Q

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS (NLV74VHC1G14)											
Symbol	Parameter	Test Conditions	V _{CC}	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		3.0	1.2	2.0	2.2	-	2.2	-	2.2	V
			4.5	1.75	3.0	3.15	-	3.15	-	3.15	
			5.5	2.15	3.6	3.85	-	3.85	-	3.85	
V _{T-}	Negative Input Threshold Voltage		3.0	0.9	1.5	1.9	0.9	-	0.9	-	V
			4.5	1.35	2.3	2.75	1.35	-	1.35	-	
			5.5	1.65	2.9	3.35	1.65	-	1.65	-	

New

DC ELECTRICAL CHARACTERISTICS (MC74VHC1G14)											
Symbol	Parameter	Test Conditions	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		3.0	-	2.0	2.2	-	2.2	-	2.2	V
			4.5	-	3.0	3.15	-	3.15	-	3.15	
			5.5	-	3.6	3.85	-	3.85	-	3.85	
V _{T-}	Negative Input Threshold Voltage		3.0	0.9	1.5	-	0.9	-	0.9	-	V
			4.5	1.35	2.3	-	1.35	-	1.35	-	
			5.5	1.65	2.9	-	1.65	-	1.65	-	

DC Characteristics for MC74VHC1GT14-Q

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS (NLV74VHC1GT14)											
Symbol	Parameter	Test Conditions	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		3.0	1.2	1.4	1.6	-	1.6	-	1.6	V
			4.5	1.58	1.74	2.0	-	2.0	-	2.0	
			5.5	1.79	1.94	2.1	-	2.1	-	2.1	
V _{T-}	Negative Input Threshold Voltage		3.0	0.35	0.76	0.93	0.35	-	0.35	-	V
			4.5	0.5	1.01	1.18	0.5	-	0.5	-	
			5.5	0.6	1.13	1.29	0.6	-	0.6	-	

New

DC ELECTRICAL CHARACTERISTICS (MC74VHC1GT14)											
Symbol	Parameter	Test Conditions	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		3.0	-	1.4	1.6	-	1.6	-	1.6	V
			4.5	-	1.74	2.0	-	2.0	-	2.0	
			5.5	-	1.94	2.1	-	2.1	-	2.1	
V _{T-}	Negative Input Threshold Voltage		3.0	0.35	0.76	-	0.35	-	0.35	-	V
			4.5	0.5	1.01	-	0.5	-	0.5	-	
			5.5	0.6	1.13	-	0.6	-	0.6	-	

AC Characteristics - No change

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, NL27WZU04-Q

5 V MiniGate Logic Datasheet Changes

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}	V
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	0 100	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}	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 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	V
I _{IK}	DC Input Diode Current	V _{IN} < GND -50	mA
I _{OK}	DC Output Diode Current	V _{OUT} < GND -50	mA
I _{OK}	DC Output Diode Current	(NL17SZ32P5T5G-L22088 Only) ±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	V _{CC} 5.5 5.5	V
V _{OUT}	DC Output Voltage	(NL17SZ32P5T5G-L22088 Only) 0	V _{CC}	V
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	0 100 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	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	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 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, NL37WZ17-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, NLV7SZ99 to NL7SZ57-Q, NL7SZ58-Q, NL7SZ97-Q, NL7SZ98-Q, NLSZ99-Q

5 V MiniGate Logic Datasheet Changes

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 _{TH}	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 _{TL}	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 _{HI}	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 _{TH}	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 _{TL}	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 _{HI}	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 × V _{CC}	–	–	0.75 × V _{CC}	–	V
			2.3 to 5.5	0.70 × V _{CC}	–	–	0.70 × V _{CC}	–	
V _{IL}	Low-Level Input Voltage		1.65 to 1.95	–	–	0.25 × V _{CC}	–	0.25 × V _{CC}	V
			2.3 to 5.5	–	–	0.30 × V _{CC}	–	0.30 × 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 × V _{CC}	–	–	0.65 × V _{CC}	–	V
			2.3 to 5.5	0.70 × V _{CC}	–	–	0.70 × V _{CC}	–	
V _{IL}	Low-Level Input Voltage		1.65 to 1.95	–	–	0.35 × V _{CC}	–	0.35 × V _{CC}	V
			2.3 to 5.5	–	–	0.30 × V _{CC}	–	0.30 × V _{CC}	

AC Characteristics – No change

3 V MiniGate Logic Datasheet Changes

NL175SGxx to NL175SGxx-Q Family

Absolute Maximum Ratings and Recommended Operating Conditions

Existing Datasheet

MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	DC Supply Voltage	-0.5 to +5.5	V
V _{IN}	DC Input Voltage	-0.5 to +4.6	V
V _{OUT}	DC Output Voltage	-0.5 to V _{CC} + 0.5 Power-Down Mode (V _{CC} = 0 V)	V

RECOMMENDED OPERATING CONDITIONS

Symbol	Characteristics	Min	Max	Unit
V _{CC}	Positive DC Supply Voltage	0.9	3.6	V
V _{IN}	Digital Input Voltage	0.0	3.6	V
V _{OUT}	Output Voltage	0.0	V _{CC} 3.6	V
T _A	Operating Temperature Range	-55	+125	°C
Δt / ΔV	Input Transition Rise or Fall Rate	0	10	ns/V

New

MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V _{CC}	DC Supply Voltage	-0.5 to +4.3	V
V _{IN}	DC Input Voltage	-0.5 to +4.3	V
V _{OUT}	DC Output Voltage	-0.5 to V _{CC} + 0.5 Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V _{CC} = 0 V)	V

Table 1. RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V _{CC}	Positive DC Supply Voltage	0.9	3.6	V
V _{IN}	Digital Input Voltage	0	3.6	V
V _{OUT}	Output Voltage	0	V _{CC} 3.6	V
T _A	Operating Free-Air Temperature	-55	+125	°C
t _r , t _f	Input Transition Rise or Fall Rate	0	10	ns/V

DC Input Characteristics for NL175G08-Q

5 V MiniGate Logic Datasheet Changes

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25°C		T _A = -55°C to +125°C		Unit
				Min	Max	Min	Max	
V _{IH}	High-Level Input Voltage		0.9	V _{CC}		V _{CC}		V
			1.1 to 1.3	0.7xV _{CC}		0.7xV _{CC}		
			1.4 to 1.6	0.65xV _{CC}		0.65xV _{CC}		
			1.65 to 1.95	0.65xV _{CC}		0.65xV _{CC}		
			2.3 to 2.7	1.7		1.7		
			3.0 to 3.6	2.0		2.0		
V _{IL}	Low-Level Input Voltage		0.9		GND		GND	V
			1.1 to 1.3		0.3xV _{CC}		0.3xV _{CC}	
			1.4 to 1.6		0.35xV _{CC}		0.35xV _{CC}	
			1.65 to 1.95		0.35xV _{CC}		0.35xV _{CC}	
			2.3 to 2.7		0.7		0.7	
			3.0 to 3.6		0.8		0.8	

New

Table 2. DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25°C			T _A = -55°C to +125°C		Unit
				Min	Typ	Max	Min	Max	
V _{IH}	High-Level Input Voltage		0.9	-	V _{CC}	-	-	-	V
			1.1 to 1.3	0.7 × V _{CC}	-	-	0.7 × V _{CC}	-	
			1.4 to 1.6	0.65 × V _{CC}	-	-	0.65 × V _{CC}	-	
			1.65 to 1.95	0.65 × V _{CC}	-	-	0.65 × V _{CC}	-	
			2.3 to 2.7	1.7	-	-	1.7	-	
			3.0 to 3.6	2.0	-	-	2.0	-	
V _{IL}	Low-Level Input Voltage		0.9	-	GND	-	-	-	V
			1.1 to 1.3	-	-	0.3 × V _{CC}	-	0.3 × V _{CC}	
			1.4 to 1.6	-	-	0.35 × V _{CC}	-	0.35 × V _{CC}	
			1.65 to 1.95	-	-	0.35 × V _{CC}	-	0.35 × V _{CC}	
			2.3 to 2.7	-	-	0.7	-	0.7	
			3.0 to 3.6	-	-	0.8	-	0.8	

DC Input Characteristics for NL17SG14-Q and NL17SG17-Q

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V _{CC} (V)	T _A = 25°C			-55°C ≤ T _A ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	
V _{T+}	Positive-Going Input Threshold Voltage		0.9	0.64	0.7	0.86	0.62	0.87	V
			1.1	0.73	0.81	0.95	0.71	1	
			1.4	0.86	0.94	1.16	0.84	1.2	
			1.65	0.95	1.06	1.25	0.94	1.3	
			2.3	1.22	1.36	1.6	1.18	1.65	
			3.0	1.51	1.8	2.05	1.38	2.1	
V _{T-}	Negative-Going Input Threshold Voltage		0.9	0.09	0.23	0.30	0.08	0.33	V
			1.1	0.15	0.33	0.39	0.12	0.43	
			1.4	0.3	0.47	0.54	0.25	0.55	
			1.65	0.35	0.6	0.65	0.3	0.65	
			2.3	0.55	0.85	0.88	0.5	0.88	
			3.0	0.95	1.13	1.16	0.9	1.16	
V _H	Hysteresis Voltage		0.9	0.15	0.5	0.75	0.2	0.8	V
			1.1	0.15	0.5	0.75	0.2	0.8	
			1.4	0.15	0.5	0.75	0.2	0.8	
			1.65	0.15	0.5	0.75	0.2	0.8	
			2.3	0.15	0.5	0.75	0.2	0.8	
			3.0	0.25	0.65	0.85	0.3	0.9	

New

Table 3. DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25°C			T _A = -55°C to +125°C		Unit
				Min	Typ	Max	Min	Max	
V _{T+}	Positive Going Input Threshold Voltage		0.9	-	0.7	-	-	-	V
			1.1	-	0.81	0.95	-	0.95	
			1.4	-	0.94	1.16	-	1.16	
			1.65	-	1.06	1.3	-	1.3	
			2.3	-	1.36	1.73	-	1.73	
			3.0	-	1.8	2.24	-	2.24	
V _{T-}	Negative Going Input Threshold Voltage		0.9	-	0.23	-	-	-	V
			1.1	0.15	0.33	-	0.15	-	
			1.4	0.3	0.47	-	0.3	-	
			1.65	0.35	0.6	-	0.35	-	
			2.3	0.55	0.85	-	0.55	-	
			3.0	0.95	1.13	-	0.95	-	
V _H	Hysteresis Voltage		0.9	-	0.27	-	-	-	V
			1.1	0.2	0.35	0.8	0.2	0.8	
			1.4	0.25	0.41	0.86	0.25	0.86	
			1.65	0.30	0.46	0.9	0.30	0.9	
			2.3	0.40	0.56	1.05	0.40	1.05	
			3.0	0.49	0.59	1.1	0.49	1.1	

DC Input Characteristics for NL17SGU04-Q - TBD

DC Output Characteristics for NL17SGxx-Q

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Condition	V _{CC} (V)	T _A = 25°C			-55°C ≤ T _A ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	
V _{OH}	High-Level Output Voltage	V _{IH} = V _{IH} or V _{IL}	0.9	0.75			0.75		V
			I _{OH} = -20 μA						
			I _{OH} = -0.3 mA	1.1 to 1.3	0.75 x V _{CC}		0.75 x V _{CC}		
			I _{OH} = -1.7 mA	1.4 to 1.6	0.75 x V _{CC}		0.75 x V _{CC}		
			I _{OH} = -3.0 mA	1.65 to 1.95	V _{CC} - 0.45		V _{CC} - 0.45		
			I _{OH} = -4.0 mA	2.3 to 2.7	2.0		2.0		
V _{OL}	Low-Level Output Voltage	V _{IH} = V _{IH} or V _{IL}	0.9		0.1		0.1		V
			I _{OL} = 20 μA						
			I _{OL} = 0.3 mA	1.1 to 1.3	0.25 x V _{CC}		0.25 x V _{CC}		
			I _{OL} = 1.7 mA	1.4 to 1.6	0.25xV _{CC}		0.25 x V _{CC}		
			I _{OL} = 3.0 mA	1.65 to 1.95		0.45	0.45		
			I _{OL} = 4.0 mA	2.3 to 2.7		0.4	0.4		
			I _{OL} = 8.0 mA	3.0 to 3.6		0.4	0.4		

New

Table 3. DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25°C			T _A = -55°C to +125°C		Unit
				Min	Typ	Max	Min	Max	
V _{OH}	High-Level Output Voltage	V _{IH} = V _{IH} or V _{IL}	0.9	-	0.75	-	-	-	V
			I _{OH} = -20 μA						
			I _{OH} = -0.3 mA	1.1 to 1.3	0.75 × V _{CC}	-	0.75 × V _{CC}	-	
			I _{OH} = -1.7 mA	1.4 to 1.6	0.75 × V _{CC}	-	0.75 × V _{CC}	-	
			I _{OH} = -3.0 mA	1.65 to 1.95	V _{CC} - 0.45	-	V _{CC} - 0.45	-	
			I _{OH} = -4.0 mA	2.3 to 2.7	2.0	-	2.0	-	
V _{OL}	Low-Level Output Voltage	V _{IH} = V _{IH} or V _{IL}	0.9	-	0.1	-	-	-	V
			I _{OL} = 20 μA						
			I _{OL} = 0.3 mA	1.1 to 1.3	-	0.25 × V _{CC}	-	0.25 × V _{CC}	
			I _{OL} = 1.7 mA	1.4 to 1.6	-	0.25 × V _{CC}	-	0.25 × V _{CC}	
			I _{OL} = 3.0 mA	1.65 to 1.95	-	0.45	-	0.45	
			I _{OL} = 4.0 mA	2.3 to 2.7	-	0.4	-	0.4	
			I _{OL} = 8.0 mA	2.7 to 3.6	-	0.4	-	0.4	

AC Characteristics for NL17SGxx-Q

5 V MiniGate Logic Datasheet Changes

Existing Datasheet

AC ELECTRICAL CHARACTERISTICS (Input $t_i = t_f = 3.0$ ns)

Symbol	Parameter	Test Condition	V_{CC} (V)	$T_A = 25^\circ\text{C}$			$T_A = -55^\circ\text{C to } +125^\circ\text{C}$		Unit
				Min	Typ	Max	Min	Max	
t_{PLH} , t_{PHL}	Propagation Delay, A or Y	$C_L = 10$ pF, $R_L = 1$ M Ω	0.9	-	27.3	-	-	-	ns
			1.1 to 1.3	-	13.0	22.6	1.0	35.9	
			1.4 to 1.6	-	7.5	10.5	1.0	11.3	
			1.65 to 1.95	-	6.0	7.8	1.0	8.2	
			2.3 to 2.7	-	4.3	5.4	1.0	5.8	
			3.0 to 3.6	-	3.5	4.4	1.0	4.6	
		$C_L = 15$ pF, $R_L = 1$ M Ω	0.9	-	29.5	-	-	-	ns
			1.1 to 1.3	-	14.3	25.1	1.0	41.6	
			1.4 to 1.6	-	8.0	11.5	1.0	12.6	
			1.65 to 1.95	-	6.3	8.4	1.0	8.7	
			2.3 to 2.7	-	4.6	5.7	1.0	6.1	
			3.0 to 3.6	-	3.7	4.6	1.0	5.0	
		$C_L = 30$ pF, $R_L = 1$ M Ω	0.9	-	40.5	-	-	-	ns
			1.1 to 1.3	-	19.6	35.7	1.0	58.1	
			1.4 to 1.6	-	10.7	15.8	1.0	17.6	
			1.65 to 1.95	-	7.8	10.7	1.0	11.7	
			2.3 to 2.7	-	5.4	6.9	1.0	8.1	
			3.0 to 3.6	-	4.3	5.2	1.0	6.1	

New

Table 4. AC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Condition	V_{CC} (V)	$T_A = 25^\circ\text{C}$			$T_A = -55^\circ\text{C to } +125^\circ\text{C}$		Unit
				Min	Typ	Max	Min	Max	
t_{PLH} , t_{PHL}	Propagation Delay, A to Y (Figures 2 and 3)	$C_L = 10$ pF, $R_L = 1$ M Ω	0.9	-	TBD	-	-	-	ns
			1.1 to 1.3	-	TBD	TBD	-	TBD	
			1.4 to 1.6	-	TBD	10.5	-	11.3	
			1.65 to 1.95	-	TBD	7.8	-	8.2	
			2.3 to 2.7	-	TBD	5.4	-	5.8	
			3.0 to 3.6	-	TBD	4.4	-	4.6	
		$C_L = 15$ pF, $R_L = 1$ M Ω	0.9	-	TBD	-	-	-	ns
			1.1 to 1.3	-	TBD	TBD	-	TBD	
			1.4 to 1.6	-	TBD	11.5	-	12.6	
			1.65 to 1.95	-	TBD	8.4	-	8.7	
			2.3 to 2.7	-	TBD	5.7	-	6.1	
			3.0 to 3.6	-	TBD	4.6	-	5.0	
		$C_L = 30$ pF, $R_L = 1$ M Ω	0.9	-	TBD	-	-	-	ns
			1.1 to 1.3	-	TBD	TBD	-	TBD	
			1.4 to 1.6	-	TBD	15.8	-	17.6	
			1.65 to 1.95	-	TBD	10.7	-	11.7	
			2.3 to 2.7	-	TBD	6.9	-	8.1	
			3.0 to 3.6	-	TBD	5.2	-	6.1	

Reliability Data Summary:

Refer to attached file of the Product Family/Qual Vehicle.

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](#).

To view attached Parts List:

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/s.