



Final Product/Process Change Notification

Document #: FPCN25572X

Issue Date: 30 Jun 2023

Title of Change:	Qualification of Vanguard Fab and Some Assembly Related Changes for Logic parts	
Proposed First Ship date:	See attached file for proposed first ship date for each product	
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.	
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:	Wafer Fab Change, Test 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 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	



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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 Diodes, Inc. South Portland, Maine 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, and Diodes Maine	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

NOTE: Some part numbers covered under FPCN24802X, FPCN24889X, FPCN24889XA, refer to attached file and those PCNs for detailed information

QV DEVICE NAME: NL27WZ14DFT2G, MC74VHC1G14DFT1G

PACKAGE: SC88/A

➤ Assembly changes:

	From	To
Assembly Site	Hana, onsemi Cebu and onsemi Leshan Phoenix Semiconductor	onsemi Seremban and onsemi Leshan Phoenix Semiconductor
Wire	Au, Au, Cu	Cu
Leadframe	PPF, C194, A42 Stamped	A42 Stamped
Mold Compound	G600 HF, CK5000A, GR640HV	GR640HV
Die Attach	2200D, 84-1LMIS4R, N/A – Eutectic	N/A – Eutectic
Plating	Preplated, 100% Sn, 100% Sn	100% Sn

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

➤ **Reliability Summary:** Refer to embedded excel RMS L85492, L82712 and S85493.



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QV DEVICE NAME: NL27WZ14DFT2G, MC74VHC1G14DFT1G

PACKAGE: SC88/A

➤ **Assembly changes:**

	From	To
Assembly Site	Hana, onsemi Cebu and onsemi Leshan Phoenix Semiconductor	onsemi Seremban and onsemi Leshan Phoenix Semiconductor
Wire	Au, Au, Cu	Cu
Leadframe	PPF, C194, A42 Stamped	A42 Stamped
Mold Compound	G600 HF, CK5000A, GR640HV	GR640HV
Die Attach	2200D, 84-1LMIS4R, N/A – Eutectic	N/A – Eutectic
Plating	Preplated, 100% Sn, 100% Sn	100% Sn

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

➤ **Reliability Summary:** Refer to embedded excel RMS L85492, L82712 and S85493.

QV DEVICE NAME: NL27WZ14DBVT1G, MC74VHC1G14DBVT1G

PACKAGE: SC74/A

➤ **Assembly changes:**

	From	To
Assembly Site	onsemi Seremban, Hana	onsemi Leshan Phoenix Semiconductor
Lead Frame	COPPER ALLOY CDA 194 with Ag SPOT Plated , PPF	Alloy 42 with OVERALL Cu Plated
Bond Wire	Au, Au	Cu
Mold Compound	SUMITOMO EME-G600FB, EMEG600	Hysol GR640
Die Attach	NON-COND EPOXY, ABLESTICK 2200D	Eutectic
Package Type	TSOP5, TSOP6, SOT23	SC74A, SC74, SC74A
Plating	100% Sn, 100% Sn, PPF	100% Sn

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

➤ **Reliability Summary:** Refer to embedded excel RMS S82713, L85044 and S82725.

QV DEVICE NAME: MC74VHC1G08P5T5G

PACKAGE: SOT953

➤ **Assembly changes:**

	From	To
Assembly Site	onsemi Leshan Phoenix Semiconductor	
Wire Type	Au or Cu	Cu
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.



Final Product/Process Change Notification

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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.



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QV DEVICE NAME: NL17SZ08MU1TCG and NL27WZ17MU1TCG

PACKAGE: UDFN6

➤ **UDFN6 1.45x1.0 Assembly changes:**

	From	To	
Assembly Site	onsemi Seremban, Tarlac, Stars	onsemi Seremban	onsemi Tarlac
Mold Compound	G760, EME-G770HM , EME-G760 , EME G700LTD	Sumitomo EME-G770HM	SUMITOMO EME-G760
Wire Type	Au or PCC	PCC	PCC
Lead Frame	PPF, LF UDFN 6L 1.45X1 PPF	LF PPF Plated (C7025)	LF PPF PLATED (C7025)
Die Attach	8006NS, HR-5104 Non Cond	8006NS	8006NS

➤ **UDFN6 1.2x1.0 Assembly changes:**

	From	To	
Assembly Site	onsemi Seremban, ATX Shanghai, AMKOR, UTAC, Tarlac	onsemi Seremban	onsemi Tarlac
Mold Compound	EME-G770HM, G631H, G700Y, G700HCD, EME-G760	Sumitomo EME-G770HM	SUMITOMO EME-G760
Wire Type	Au or PCC	PCC	PCC
Lead Frame	PPF, Rough PPF, LF sMLF 6L COL C7025, FRAME FR 6L UDFN 1.2X1.0M	LF PPF PLATED (C7025)	LF PPF PLATED (C7025)
Die Attach	8006NS, ATB-F125E, NEX-130CTX-N5	8006NS	8006NS

➤ **UDFN6 1.0x1.0 Assembly changes:**

	From	To	
Assembly Site	onsemi Seremban, Tarlac	onsemi Seremban	onsemi Tarlac
Mold Compound	G760, EME-G770HM, EME-G760	Sumitomo EME-G770HM	SUMITOMO EME-G760
Wire Type	Au or PCC	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 S87093, S87094, S87313 and S87316.



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QV DEVICE NAME: MC74VHC3G14MU3TCG

PACKAGE: uDFN8

➤ **uDFN8 1.45*1.0 Assembly changes:**

	From		To	
Assembly Site	onsemi Seremban	onsemi Tarlac	onsemi Seremban	onsemi Tarlac
Lead Frame	PPF	PPF	LF PPF PLATED (C7025)	LF PPF PLATED (C7025)

➤ **uQFN8 1.6*1.6 Assembly changes:**

	From	To	
Assembly Site	onsemi Seremban, ATX Shanghai, AMKOR, Tarlac	onsemi Seremban	onsemi Tarlac
Mold Compound	G760, G631H, G700Y, EME-G770HM, EME-G760	Sumitomo EME-G770HM	SUMITOMO EME-G760
Wire Type	Au or PCC	PCC	PCC
Lead Frame	PPF, Rough PPF, Rough PPF	LF PPF PLATED (C7025)	LF PPF PLATED (C7025)
Die Attach	8006NS, ATB-F125E, NEX-130CTX-N5		

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

➤ **Reliability Summary:** Refer to embedded excel RMS 87960 and 87889.

QV DEVICE NAME: NC7SZ14L6X, NC7WZ14FHX

PACKAGE: MicroPak and MicroPak 2

➤ **MicroPak Assembly Changes:**

	From	To
Assembly Site	Stars, Hana, UTAC	Stars
Wire	PCC, Au, Au	PCC
Lead frame	PPF, PPF, PPF	PPF
Mold Compound	EME G700LTD, CEL9220HF13H, G770HCD	EME G700LTD
Die Attach	HR-5104, 8006NS, 8006NS	HR-5104

➤ **MicroPak2 Assembly Changes:**

	From	To
Assembly Site	Stars, Hana, UTAC	Stars
Wire	PCC, Au, Au	PCC
Lead frame	PPF, PPF, PPF	PPF
Mold Compound	EME G700LTD, CEL9220HF13H, G770HCD	EME G700LTD
Die Attach	HR-5104, 8006NS, 8006NS	HR-5104

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

➤ **Reliability Summary:** Refer to embedded excel RMS 87728 and 87726.

QV DEVICE NAME: NC7WZ132K8X

PACKAGE: US8

➤ **US8 Assembly Changes:**

	From	To
Assembly Site	Stars, onsemi Seremban, Hana	Stars
Wire	PCC, PCC, Au, Au	PCC
Lead frame	PPF, PPF, CuAg, CuAg	PPF
Mold Compound	EME G600, EME-G600FB, EME-G600 HF	EME G600
Die Attach	HR-5104, 8006NS, 8900NC, ABLESTIK 84-1	HR-5104

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

➤ **Reliability Summary:** Refer to embedded excel RMS 87355.

QV DEVICE NAME: NC7WZ132L8X

PACKAGE: MicroPak 8L

➤ **MicroPak 8L Assembly Changes:**

	From	To
Assembly Site	Stars, Hana	Stars
Wire	PCC, Au	PCC
Lead frame	PPF, PPF	PPF
Mold Compound	EME G700LTD, CEL9220HF13H	EME G700LTD
Die Attach	HR-5104, 8006NS	HR-5104

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

➤ **Reliability Summary:** Refer to embedded excel RMS 91332.

3V MiniGate Logic

QV DEVICE NAME: NC7SV157P6X

PACKAGE: SC88

➤ **SC88 Assembly changes:**

	From	To
Assembly Site	Hana, onsemi Cebu	onsemi Leshan Phoenix Semiconductor
Wire	Au, Au	Cu
Leadframe	PPF, C194	A42 Stamped
Mold Compound	G600 HF, CK5000A	GR640HV
Die Attach	2200D, 84-1LMIS4R	N/A – Eutectic
Plating	Preplated, 100% Sn	100% Sn

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

➤ **Reliability Summary:** Refer to embedded excel RMS 91004.

QV DEVICE NAME: NC7SP14P5X

PACKAGE: SC88A

➤ **SC88A Assembly changes:**

	From	To
Assembly Site	Hana, onsemi Cebu, onsemi Leshan Phoenix Semiconductor	onsemi Leshan Phoenix Semiconductor
Wire	Au, Au, Au	Cu
Leadframe	PPF, C194, A42 stamped	A42 Stamped
Mold Compound	G600 HF, CK5000A, GR640HV	GR640HV
Die Attach	2200D, 84-1LMIS4R, N/A – Eutectic	N/A – Eutectic
Plating	Preplated, 100% Sn	100% Sn

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

➤ **Reliability Summary:** Refer to embedded excel RMS 88008.



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3V MiniGate Logic

QV DEVICE NAME: NL17SG14P5T5G

PACKAGE: SOT953

➤ **Assembly changes:**

	From	To
Assembly Site	onsemi Leshan Phoenix Semiconductor	
Bond Wire	Au	Cu
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 88110.

QV DEVICE NAME: NL17SV16XV5T2G

PACKAGE: SOT553

➤ **Assembly changes:**

	From	To
Assembly Site	onsemi Leshan Phoenix Semiconductor	
Bond Wire	Au	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 88114.

3V MiniGate Logic

QV DEVICE NAME: NC7SPU04L6X, NC7SV08FHX

PACKAGE: MicroPak and MicroPak 2

➤ **MicroPak Assembly Changes:**

	From	To
Assembly Site	Stars, Hana, UTAC	Stars
Wire	PCC, Au, Au	PCC
Lead frame	PPF, PPF, PPF	PPF
Mold Compound	EME G700LTD, CEL9220HF13H, G770HCD	EME G700LTD
Die Attach	HR-5104, 8006NS, 8006NS	HR-5104

➤ **MicroPak2 Assembly Changes:**

	From	To
Assembly Site	Stars, Hana, UTAC	Stars
Wire	PCC, Au, Au	PCC
Lead frame	PPF, PPF, PPF	PPF
Mold Compound	EME G700LTD, CEL9220HF13H, G770HCD	EME G700LTD
Die Attach	HR-5104, 8006NS, 8006NS	HR-5104

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

➤ **Reliability Summary:** Refer to embedded excel RMS 88230 and 90908.

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

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 O88463, O89920, O89358, 88467, 89368, 89374, 89375, 88468, 89399, 89395, 89401 and TBD (TSSOP48)



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HC, LCX, LVX, VHC, FACT and LV Logic, Bus Switch, 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, EN4900GC	CRM-1076WB	CRM-1076WB	EN4900GC
Mold Compound	G600, CEL9240HF10AK	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, EN4900GC	CRM-1076WB	CRM-1076WB	EN4900GC
Mold Compound	G600, CEL9240HF10AK	G600	G600	CEL9240HF10AK

➤ For SOICW-20 package assembly changes:

	From	To	
Assembly Site	onsemi Carmona, ATEC, Greatek, ASE Chungli	onsemi Carmona	Greatek
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, 89365, 89367, 89369, 89370, 89372, 88465, 89376, 89377, 89396 and 89402.

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

QV DEVICE NAME: 74LCX14BQX, NLV74HC595AMN1TWG, MC74LVX4051MNTWG, NLV68SZ126MN2TWG, 74LCX244BQX
PACKAGE: QFN-14, QFN-16, and QFN-20

➤ For QFN-14 package assembly changes:

	From	To
Assembly Site	Hana Micro.	onsemi Tarlac
Die Attach	ABLETHERM 8600	CRM-1076WB
Bond Wire	1 mil Au	1 mil PCC
Mold Compound	CEL9220HF13H	G770HMD

➤ For QFN-16 (2.5 mm x 3.5 mm x 0.5 mm) package assembly changes:

	From	To	
Assembly Site	Hana Micro., Stars Micro.	onsemi Tarlac	onsemi Seremban
LeadFrame	PPF	Cu with Ag spot, PPF	Cu with Ag spot
Die Attach	HR-5104, ABLETHERM 8600	CRM-1076WB	WBC 8006NS
Bond Wire	0.8 mil Au, 1 mil Au	0.8 mil PCC, 1 mil PCC	0.8 mil PCC
Mold Compound	G700LTD, CEL9220HF13H	G770HMD	G770HMD

➤ For QFN-16 (3 mm x 3 mm x 0.5 mm) package assembly changes:

	From	To
Assembly Site	Stars Micro.	onsemi Tarlac
LeadFrame	PPF	Cu with Ag Spot
Die Attach	8200TI	CRM-1076WB
Bond Wire	1 mil Au	1 mil PCC
Mold Compound	G700LTD	G770HMD

➤ For QFN-20 package assembly changes:

	From	To
Assembly Site	Hana Micro., Stars Micro.	onsemi Tarlac
Die Attach	HR-5104, ABLETHERM 8600	CRM-1076WB
Bond Wire	0.8 mil Au, 1 mil Au	1 mil PCC
Mold Compound	CEL9220HF13H, G700LTD	G770HMD

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

➤ **Reliability Summary:** Refer to embedded excel RMS 89447, 89269, 89405, 89440, 89427, 89442 and 89448

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

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

There are no expected datasheet changes to the 5 V Minigate logic devices.

3 V MiniGate Logic Datasheet Changes

NL17SGxx 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	Output at High or Low State Power-Down Mode (V _{CC} = 0 V)	-0.5 to +4.6 -0.5 to +4.6	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	V _{CC} = 3.3 V ± 0.3 V		0 / 10

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	Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V _{CC} = 0 V)	-0.5 to +4.3 -0.5 to +4.3 -0.5 to +4.3	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	V _{CC} = 3.3 V ± 0.3 V		0 / 10

DC Input Characteristics for NL17SGxx except for NL17SG14, NL17SG17 and NL17SGU04

Existing Datasheet

DC ELECTRICAL CHARACTERISTICS						
Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25°C		Unit
				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			Unit	
				Min	Typ	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	

3 V MiniGate Logic Datasheet Changes

DC Input Characteristics for NL17SGxx except for NL17SG14 and NL17SG17

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 _{TP}	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 _{TT}	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 _{TP}	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 _{TT}	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

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 _{OH} = V _{IH} or V _{IL} I _{OH} = -20 μA	0.9	0.75		0.75			V
			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		
			I _{OH} = -8.0 mA	3.0 to 3.6	2.48		2.48		
V _{OL}	Low-Level Output Voltage	V _{OH} = V _{IH} or V _{IL} I _{OL} = 20 μA	0.9		0.1	0.1			V
			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} I _{OH} = -20 μA	0.9	-	0.75	-	-	-	V	
			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		
			I _{OH} = -8.0 mA	3.0 to 3.6	2.48	-	-	2.48		
V _{OL}	Low-Level Output Voltage	V _{IH} = V _{IH} or V _{IL} I _{OL} = 20 μA	0.9	-	0.1	-	-	-	V	
			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	-	-	0.25 x V _{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	2.7 to 3.6	-	-	0.4	-		0.4

AC Characteristics for NL17SGxx except for NL17SG125 and NL17SG126

3 V MiniGate Logic Datasheet Changes

Existing Datasheet

AC ELECTRICAL CHARACTERISTICS (Input $t_r = t_f = 3.0$ 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_{PLL}	Propagation Delay, A to 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_{PLL}	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			

AC Characteristics for NL17SG125 and NL17SG126

Existing Datasheet

AC ELECTRICAL CHARACTERISTICS (Input $t_r = t_f = 3.0$ 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	t_{ON}	Max	Min	Max	
t_{PHZ} , t_{PLZ}	Output Disable Time, OE to Y	$C_L = 10$ pF, $R_L = 100$ k Ω	0.9	-	100.4	-	-	-	ns
			1.1 to 1.3	-	9.1	14.4	-	22.4	
			1.4 to 1.6	-	7.1	9.1	-	10.4	
			1.65 to 1.95	-	6.5	8.3	-	9	
			2.3 to 2.7	-	5.8	7.3	-	8.8	
			3.0 to 3.6	-	5.4	6.9	-	7.6	
		$C_L = 15$ pF, $R_L = 100$ k Ω	0.9	-	122.2	-	-	-	ns
			1.1 to 1.3	-	9.8	15.3	-	25.1	
			1.4 to 1.6	-	7.8	9.8	-	11.3	
			1.65 to 1.95	-	7.2	9.2	-	10.6	
			2.3 to 2.7	-	7	8.2	-	10.3	
			3.0 to 3.6	-	6.6	7.7	-	9.5	
		$C_L = 30$ pF, $R_L = 100$ k Ω	0.9	-	217.1	-	-	-	ns
			1.1 to 1.3	-	13.2	19.6	-	31.9	
			1.4 to 1.6	-	12.2	13.5	-	14.9	
1.65 to 1.95	-		11.4	12.7	-	13.9			
2.3 to 2.7	-		11.3	12.2	-	13.5			
3.0 to 3.6	-		10.2	11.5	-	12.9			

New

AC ELECTRICAL CHARACTERISTICS (Input $t_r = t_f = 3.0$ 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	t_{ON}	Max	Min	Max	
t_{PHZ} , t_{PLZ}	Output Disable Time, OE to Y	$C_L = 10$ pF, $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
			1.1 to 1.3	-	TBD	TBD	-	TBD	
			1.4 to 1.6	-	TBD	9.1	-	10.4	
			1.65 to 1.95	-	TBD	8.3	-	9	
			2.3 to 2.7	-	TBD	7.3	-	8.8	
			3.0 to 3.6	-	TBD	6.9	-	-	
		$C_L = 15$ pF, $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
			1.1 to 1.3	-	TBD	TBD	-	TBD	
			1.4 to 1.6	-	TBD	9.8	-	11.3	
			1.65 to 1.95	-	TBD	9.2	-	10.6	
			2.3 to 2.7	-	TBD	8.2	-	10.3	
			3.0 to 3.6	-	TBD	7.7	-	-	
		$C_L = 30$ pF, $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
			1.1 to 1.3	-	TBD	TBD	-	TBD	
			1.4 to 1.6	-	TBD	13.5	-	14.9	
1.65 to 1.95	-		TBD	12.7	-	13.9			
2.3 to 2.7	-		TBD	12.2	-	13.5			
3.0 to 3.6	-		TBD	11.5	-	12.9			

3 V MiniGate Logic Datasheet Changes

t_{pZH} , t_{pZL}	Output Enable Time, OE to Y	$C_L = 10$ pF; $R_L = 100$ k Ω	0.9	-	11.0	13.3	-	15.8	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	8.4	10.9	-	13.0	
		$R_L = 5$ k Ω	1.4 to 1.6	-	5.3	7.8	-	8.3	
		$R_L = 5$ k Ω	1.65 to 1.95	-	3.9	5.5	-	5.9	
		$R_L = 5$ k Ω	2.3 to 2.7	-	2.5	3.5	-	3.8	
		$R_L = 5$ k Ω	3.0 to 3.6	-	2.1	2.7	-	3	
		$C_L = 15$ pF; $R_L = 100$ k Ω	0.9	-	12.0	14.8	-	17.0	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	9.0	11.7	-	13.8	
		$R_L = 5$ k Ω	1.4 to 1.6	-	5.9	8.9	-	11	
		$R_L = 5$ k Ω	1.65 to 1.95	-	4.4	6.3	-	6.5	
		$R_L = 5$ k Ω	2.3 to 2.7	-	2.9	3.9	-	4.2	
		$R_L = 5$ k Ω	3.0 to 3.6	-	2.3	3	-	3.3	
		$C_L = 30$ pF; $R_L = 100$ k Ω	0.9	-	13.0	15.2	-	18.3	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	10.0	13.1	-	15.2	
		$R_L = 5$ k Ω	1.4 to 1.6	-	8.3	12.2	-	13.7	
		$R_L = 5$ k Ω	1.65 to 1.95	-	6.1	8.6	-	9.7	
		$R_L = 5$ k Ω	2.3 to 2.7	-	3.8	5	-	5.5	
		$R_L = 5$ k Ω	3.0 to 3.6	-	2.9	3.8	-	4.2	

t_{pZH} , t_{pZL}	Output Enable Time, OE to Y	$C_L = 10$ pF; $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	TBD	TBD	-	TBD	
		$R_L = 5$ k Ω	1.4 to 1.6	-	TBD	7.8	-	8.3	
		$R_L = 5$ k Ω	1.65 to 1.95	-	TBD	5.5	-	5.9	
		$R_L = 5$ k Ω	2.3 to 2.7	-	TBD	3.5	-	3.8	
		$R_L = 5$ k Ω	3.0 to 3.6	-	TBD	2.7	-	-	
		$C_L = 15$ pF; $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	TBD	TBD	-	TBD	
		$R_L = 5$ k Ω	1.4 to 1.6	-	TBD	8.9	-	11	
		$R_L = 5$ k Ω	1.65 to 1.95	-	TBD	6.3	-	6.5	
		$R_L = 5$ k Ω	2.3 to 2.7	-	TBD	3.9	-	4.2	
		$R_L = 5$ k Ω	3.0 to 3.6	-	TBD	3	-	-	
		$C_L = 30$ pF; $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	TBD	TBD	-	TBD	
		$R_L = 5$ k Ω	1.4 to 1.6	-	TBD	12.2	-	13.7	
		$R_L = 5$ k Ω	1.65 to 1.95	-	TBD	8.6	-	9.7	
		$R_L = 5$ k Ω	2.3 to 2.7	-	TBD	5	-	5.5	
		$R_L = 5$ k Ω	3.0 to 3.6	-	TBD	3.8	-	4.2	

t_{pHZ} , t_{pLZ}	Output Disable Time, OE to Y	$C_L = 10$ pF; $R_L = 100$ k Ω	0.9	-	100.4	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	9.1	14.4	-	22.4	
		$R_L = 5$ k Ω	1.4 to 1.6	-	7.1	9.1	-	10.4	
		$R_L = 5$ k Ω	1.65 to 1.95	-	6.5	8.3	-	9	
		$R_L = 5$ k Ω	2.3 to 2.7	-	5.8	7.3	-	8.8	
		$R_L = 5$ k Ω	3.0 to 3.6	-	5.4	6.9	-	7.6	
		$C_L = 15$ pF; $R_L = 100$ k Ω	0.9	-	122.2	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	9.8	15.3	-	25.1	
		$R_L = 5$ k Ω	1.4 to 1.6	-	7.8	9.8	-	11.3	
		$R_L = 5$ k Ω	1.65 to 1.95	-	7.2	9.2	-	10.6	
		$R_L = 5$ k Ω	2.3 to 2.7	-	7	8.2	-	10.3	
		$R_L = 5$ k Ω	3.0 to 3.6	-	6.6	7.7	-	9.5	
		$C_L = 30$ pF; $R_L = 100$ k Ω	0.9	-	217.1	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	13.2	19.6	-	31.9	
		$R_L = 5$ k Ω	1.4 to 1.6	-	12.2	13.5	-	14.9	
		$R_L = 5$ k Ω	1.65 to 1.95	-	11.4	12.7	-	13.9	
		$R_L = 5$ k Ω	2.3 to 2.7	-	11.3	12.2	-	13.5	
		$R_L = 5$ k Ω	3.0 to 3.6	-	10.2	11.5	-	12.9	

t_{pHZ} , t_{pLZ}	Output Disable Time, OE to Y	$C_L = 10$ pF; $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	TBD	TBD	-	TBD	
		$R_L = 5$ k Ω	1.4 to 1.6	-	TBD	9.1	-	10.4	
		$R_L = 5$ k Ω	1.65 to 1.95	-	TBD	8.3	-	9	
		$R_L = 5$ k Ω	2.3 to 2.7	-	TBD	7.3	-	8.8	
		$R_L = 5$ k Ω	3.0 to 3.6	-	TBD	6.9	-	-	
		$C_L = 15$ pF; $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	TBD	TBD	-	TBD	
		$R_L = 5$ k Ω	1.4 to 1.6	-	TBD	9.8	-	11.3	
		$R_L = 5$ k Ω	1.65 to 1.95	-	TBD	9.2	-	10.6	
		$R_L = 5$ k Ω	2.3 to 2.7	-	TBD	8.2	-	10.3	
		$R_L = 5$ k Ω	3.0 to 3.6	-	TBD	7.7	-	-	
		$C_L = 30$ pF; $R_L = 100$ k Ω	0.9	-	TBD	-	-	-	ns
		$R_L = 5$ k Ω	1.1 to 1.3	-	TBD	TBD	-	TBD	
		$R_L = 5$ k Ω	1.4 to 1.6	-	TBD	13.5	-	14.9	
		$R_L = 5$ k Ω	1.65 to 1.95	-	TBD	12.7	-	13.9	
		$R_L = 5$ k Ω	2.3 to 2.7	-	TBD	12.2	-	13.5	
		$R_L = 5$ k Ω	3.0 to 3.6	-	TBD	11.5	-	12.9	

NC7SPxx, NC7WPxx, NC7NPxx Family

Absolute Maximum Ratings

Existing Datasheet

Absolute Maximum Ratings (Note 1)	
Supply Voltage (V_{CC})	-0.5V to +4.6V
DC Input Voltage (V_{IN})	-0.5V to +4.6V
DC Output Voltage (V_{OUT})	-0.5V to $V_{CC} + 0.5V$
HIGH or LOW State (Note 2)	
$V_{CC} = 0V$	-0.5V to 4.6V

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	Active-Mode (High or Low State)	-0.5 to $V_{CC} + 0.5$
		Tri-State Mode (Note 1)	-0.5 to +4.3
		Power-Down Mode ($V_{CC} = 0V$)	-0.5 to +4.3

3 V MiniGate Logic Datasheet Changes

DC Input Characteristics for NC7SPxx, NC7WPxx, NC7NPxx except for NC7SP14, NC7SP17, NC7WP14, NC7NP14, NC7SP57, NC7SP58 and NC7SPU04

Existing Datasheet

DC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	T _A = +25°C		T _A = -40°C to +85°C		Units	Conditions
			Min	Max	Min	Max		
V _{IH}	HIGH Level Input Voltage	0.90	0.65 x V _{CC}	0.65 x V _{CC}			V	
		1.10 ≤ V _{CC} ≤ 1.30	0.65 x V _{CC}	0.65 x V _{CC}				
		1.40 ≤ V _{CC} ≤ 1.60	0.65 x V _{CC}	0.65 x V _{CC}				
		1.65 ≤ V _{CC} ≤ 1.95	0.65 x V _{CC}	0.65 x V _{CC}				
		2.30 ≤ V _{CC} ≤ 2.70	1.6	1.6				
		3.00 ≤ V _{CC} ≤ 3.60	2.1	2.1				
V _{IL}	LOW Level Input Voltage	0.90	0.35 x V _{CC}	0.35 x V _{CC}			V	
		1.10 ≤ V _{CC} ≤ 1.30	0.35 x V _{CC}	0.35 x V _{CC}				
		1.40 ≤ V _{CC} ≤ 1.60	0.35 x V _{CC}	0.35 x V _{CC}				
		1.65 ≤ V _{CC} ≤ 1.95	0.35 x V _{CC}	0.35 x V _{CC}				
		2.30 ≤ V _{CC} ≤ 2.70	0.7	0.7				
		3.00 ≤ V _{CC} ≤ 3.60	0.9	0.9				

New

DC Electrical Characteristics

Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25 °C			T _A = -40°C to +85°C			Unit
				Min	Typ	Max	Min	Max		
V _{IH}	High-Level Input Voltage	V _{IH} = V _{IH} or V _{IL}	0.9	-	0.5	-	-	-	-	V
			1.1 to 1.3	0.65 x V _{CC}	-	-	0.65 x V _{CC}	-		
			1.4 to 1.6	0.65 x V _{CC}	-	-	0.65 x V _{CC}	-		
			1.65 to 1.95	0.65 x V _{CC}	-	-	0.65 x V _{CC}	-		
			2.3 to 2.7	1.6	-	-	1.6	-		
			3.0 to 3.6	2.1	-	-	2.1	-		
V _{IL}	Low-Level Input Voltage	V _{IH} = V _{IH} or V _{IL}	0.9	-	0.5	-	-	-	-	V
			1.1 to 1.3	-	-	0.35 x V _{CC}	-	0.35 x V _{CC}	-	
			1.4 to 1.6	-	-	0.35 x V _{CC}	-	0.35 x V _{CC}	-	
			1.65 to 1.95	-	-	0.35 x V _{CC}	-	0.35 x V _{CC}	-	
			2.3 to 2.7	-	-	0.7	-	0.7	-	
			3.0 to 3.6	-	-	0.9	-	0.9	-	

DC Input Characteristics for NC7SP14, NC7SP17, NC7WP14, NC7NP14, NC7SP57 and NC7SP58

Existing Datasheet

DC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	Conditions	T _A = +25°C		T _A = -40°C to +85°C		Units
				Min	Max	Min	Max	
V _P	Positive Threshold Voltage	0.90		0.3	0.6	0.3	0.6	V
		1.10		0.4	1.0	0.4	1.0	
		1.40		0.5	1.2	0.5	1.2	
		1.65		0.7	1.5	0.7	1.5	
		2.30		1.0	1.9	1.0	1.9	
		3.00		1.5	2.6	1.5	2.6	
V _N	Negative Threshold Voltage	0.90		0.1	0.6	0.1	0.6	V
		1.10		0.15	0.7	0.15	0.7	
		1.40		0.2	0.8	0.2	0.8	
		1.65		0.25	0.9	0.25	0.9	
		2.30		0.4	1.15	0.4	1.15	
		3.00		0.6	1.5	0.6	1.5	
V _H	Hysteresis Voltage	0.90		0.07	0.5	0.07	0.5	V
		1.10		0.08	0.6	0.08	0.6	
		1.40		0.09	0.8	0.09	0.8	
		1.65		0.10	1.0	0.10	1.0	
		2.30		0.25	1.1	0.25	1.1	
		3.00		0.60	1.8	0.60	1.8	

New

DC Electrical Characteristics

Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25 °C			T _A = -40°C to +85°C			Unit
				Min	Typ	Max	Min	Max		
V _P	Positive Threshold Voltage		0.9	-	TBD	-	-	-	-	V
			1.1	-	-	TBD	-	TBD	-	
			1.4	-	-	1.2	-	1.2	-	
			1.65	-	-	1.5	-	1.5	-	
			2.3	-	-	1.9	-	1.9	-	
			3.0	-	-	2.6	-	2.6	-	
V _N	Negative Threshold Voltage		0.9	-	TBD	-	-	-	-	V
			1.1	TBD	-	-	TBD	-		
			1.4	0.2	-	-	0.2	-		
			1.65	0.25	-	-	0.25	-		
			2.3	0.4	-	-	0.4	-		
			3.0	0.6	-	-	0.6	-		
V _H	Hysteresis Voltage		0.9	-	TBD	-	-	-	-	V
			1.1	TBD	-	-	TBD	-		
			1.4	0.09	-	-	0.09	-		
			1.65	0.1	-	-	0.1	-		
			2.3	0.25	-	-	0.25	-		
			3.0	0.6	-	-	0.6	-		

DC Input Characteristics for NC7SPU04 – TBD

DC Output Characteristics for NC7SPxx, NC7WPxx and NC7NPxx

DC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	T _A = +25°C		T _A = -40°C to +85°C		Units	Conditions
			Min	Max	Min	Max		
V _{OH}	HIGH Level Output Voltage	0.90	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1	V	I _{OH} = -20 µA
		1.10 ≤ V _{CC} ≤ 1.30	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1		
		1.40 ≤ V _{CC} ≤ 1.60	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1		
		1.65 ≤ V _{CC} ≤ 1.95	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1		
		2.30 ≤ V _{CC} ≤ 2.70	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1		
		3.00 ≤ V _{CC} ≤ 3.60	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1	V _{CC} - 0.1		
		1.10 ≤ V _{CC} ≤ 1.30	0.75 x V _{CC}	0.70 x V _{CC}				
		1.40 ≤ V _{CC} ≤ 1.60	1.07	0.99				
		1.65 ≤ V _{CC} ≤ 1.95	1.24	1.22				
		2.30 ≤ V _{CC} ≤ 2.70	1.95	1.87				
3.00 ≤ V _{CC} ≤ 3.60	2.61	2.55						
V _{OL}	LOW Level Output Voltage	0.90	0.1	0.1	0.1	0.1	V	I _{OL} = 20 µA
		1.10 ≤ V _{CC} ≤ 1.30	0.1	0.1	0.1	0.1		
		1.40 ≤ V _{CC} ≤ 1.60	0.1	0.1	0.1	0.1		
		1.65 ≤ V _{CC} ≤ 1.95	0.1	0.1	0.1	0.1		
		2.30 ≤ V _{CC} ≤ 2.70	0.1	0.1	0.1	0.1		
		3.00 ≤ V _{CC} ≤ 3.60	0.1	0.1	0.1	0.1		
		1.10 ≤ V _{CC} ≤ 1.30	0.30 x V _{CC}	0.30 x V _{CC}				
		1.40 ≤ V _{CC} ≤ 1.60	0.31	0.37				
		1.65 ≤ V _{CC} ≤ 1.95	0.31	0.35				
		2.30 ≤ V _{CC} ≤ 2.70	0.31	0.33				
3.00 ≤ V _{CC} ≤ 3.60	0.31	0.33						

DC Electrical Characteristics

Symbol	Parameter	Conditions	V _{CC} (V)	T _A = 25 °C			T _A = -40°C to +85°C			Unit	
				Min	Typ	Max	Min	Max			
V _{OH}	High-Level Output Voltage	V _{IH} = V _{IH} or V _{IL} I _{OH} = -20 µA	0.9	-	V _{CC} - 0.1	-	-	-	-	V	
			1.1 to 1.3	V _{CC} - 0.1	-	-	V _{CC} - 0.1	-			
			1.4 to 1.6	V _{CC} - 0.1	-	-	V _{CC} - 0.1	-			
			1.65 to 1.95	V _{CC} - 0.1	-	-	V _{CC} - 0.1	-			
			2.3 to 2.7	V _{CC} - 0.1	-	-	V _{CC} - 0.1	-			
			3.0 to 3.6	V _{CC} - 0.1	-	-	V _{CC} - 0.1	-			
			I _{OH} = -0.5 mA	1.1 to 1.3	0.75 x V _{CC}	-	-	0.70 x V _{CC}	-		
			I _{OH} = -1.0 mA	1.4 to 1.6	1.07	-	-	0.99	-		
			I _{OH} = -1.5 mA	1.65 to 1.95	1.24	-	-	1.22	-		
			I _{OH} = -2.1 mA	2.3 to 2.7	1.95	-	-	1.87	-		
I _{OH} = -2.6 mA	3.0 to 3.6	2.61	-	-	2.55	-					
V _{OL}	Low-Level Output Voltage	V _{IH} = V _{IH} or V _{IL} I _{OL} = 20 µA	0.9	-	0.1	-	-	-	-	V	
			1.1 to 1.3	-	-	0.1	-	0.1	-		
			1.4 to 1.6	-	-	0.1	-	0.1	-		
			1.65 to 1.95	-	-	0.1	-	0.1	-		
			2.3 to 2.7	-	-	0.1	-	0.1	-		
			3.0 to 3.6	-	-	0.1	-	0.1	-		
			I _{OL} = 0.5 mA	1.1 to 1.3	-	-	0.3 x V _{CC}	-	0.3 x V _{CC}		-
			I _{OL} = 1.0 mA	1.4 to 1.6	-	-	0.31	-	0.37		-
			I _{OL} = 1.5 mA	1.65 to 1.95	-	-	0.31	-	0.35		-
			I _{OL} = 2.1 mA	2.3 to 2.7	-	-	0.31	-	0.33		-

AC Characteristics for NC7SPxx, NC7WPxx and NC7NPxx except for NC7SP125, NC7SP126, NC7WP125 and NC7SP74



3 V MiniGate Logic Datasheet Changes

Existing Datasheet

AC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	Conditions	T _A = +25°C			T _A = -40°C to +85°C			Units	Figure Number
				Min.	Typ.	Max.	Min.	Max.			
t _{PHL} , t _{PLH}	Propagation Delay	0.90	C _L = 10pF, R _L = 1MΩ	66.0						ns	Figure 1 Figure 2
		1.10 ≤ V _{CC} ≤ 1.30		3.5	24.0	34.5	3.0	41.6			
		1.40 ≤ V _{CC} ≤ 1.60		2.5	7.0	14.8	2.0	15.0			
		1.65 ≤ V _{CC} ≤ 1.95		2.0	6.0	12.0	1.5	12.2			
		2.30 ≤ V _{CC} ≤ 2.70		1.5	5.0	9.4	1.0	9.9			
		3.00 ≤ V _{CC} ≤ 3.60		1.0	4.0	8.3	1.0	9.0			
	Propagation Delay, A to Y (Figures 3 and 4)	0.90	C _L = 15pF, R _L = 1MΩ	71.0						ns	Figure 1 Figure 2
		1.10 ≤ V _{CC} ≤ 1.30		4.0	28.0	37.3	3.5	46.3			
		1.40 ≤ V _{CC} ≤ 1.60		3.0	8.0	15.5	2.5	16.5			
		1.65 ≤ V _{CC} ≤ 1.95		2.5	6.0	12.6	2.0	13.6			
		2.30 ≤ V _{CC} ≤ 2.70		2.0	5.0	9.9	1.5	10.8			
		3.00 ≤ V _{CC} ≤ 3.60		1.5	4.0	8.7	1.0	9.5			
	Propagation Delay, A to Y (Figures 3 and 4)	0.90	C _L = 30pF, R _L = 1MΩ	76.0						ns	Figure 1 Figure 2
		1.10 ≤ V _{CC} ≤ 1.30		5.0	31.0	39.3	4.0	49.7			
		1.40 ≤ V _{CC} ≤ 1.60		4.0	9.0	17.8	3.5	18.2			
		1.65 ≤ V _{CC} ≤ 1.95		3.0	7.0	14.4	2.0	15.9			
		2.30 ≤ V _{CC} ≤ 2.70		2.0	6.0	11.3	1.5	12.8			
		3.00 ≤ V _{CC} ≤ 3.60		1.5	5.0	9.2	1.0	10.7			

New

AC Electrical Characteristics

Symbol	Parameter	Test Condition	V _{CC} (V)	T _A = 25 °C			T _A = -40°C to +85°C			Unit	
				Min	Typ	Max	Min	Max			
t _{PHL} , t _{PLH}	Propagation Delay, A to Y (Figures 3 and 4)	R _L = 1 MΩ, C _L = 10 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	TBD	-	-	
			1.4 to 1.6	-	TBD	-	14.8	-	15.0	-	-
			1.65 to 1.95	-	TBD	-	12.0	-	12.2	-	-
			2.3 to 2.7	-	TBD	-	9.4	-	9.9	-	-
			3.0 to 3.6	-	TBD	-	8.3	-	9.0	-	-
t _{PHZ} , t _{PLZ}	Propagation Delay, A to Y (Figures 3 and 4)	R _L = 1 MΩ, C _L = 15 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	TBD	-	-	
			1.4 to 1.6	-	TBD	-	15.5	-	16.5	-	-
			1.65 to 1.95	-	TBD	-	12.6	-	13.6	-	-
			2.3 to 2.7	-	TBD	-	9.9	-	10.8	-	-
			3.0 to 3.6	-	TBD	-	8.7	-	9.5	-	-
t _{PHZ} , t _{PLZ}	Propagation Delay, A to Y (Figures 3 and 4)	R _L = 1 MΩ, C _L = 30 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	TBD	-	-	
			1.4 to 1.6	-	TBD	-	17.8	-	18.2	-	-
			1.65 to 1.95	-	TBD	-	14.4	-	15.9	-	-
			2.3 to 2.7	-	TBD	-	11.3	-	12.8	-	-
			3.0 to 3.6	-	TBD	-	9.2	-	10.7	-	-

AC Characteristics for NC7SP125, NC7SP126 and NC7WP125

Existing Datasheet

AC Electrical Characteristics

Symbol	Parameter	V _{CC} (V)	T _A = +25 °C			T _A = -40°C to +85°C			Units	Conditions	Figure Number
			Min	Typ	Max	Min	Max				
t _{PHL} , t _{PLH}	Propagation Delay	0.90	28.0						ns	C _L = 10 pF R _L = 1 MΩ	
		1.10 ≤ V _{CC} ≤ 1.30	4.0	10.0	19.1	3.5	39.6				
		1.40 ≤ V _{CC} ≤ 1.60	2.0	6.0	11.2	1.5	14.5				
		1.65 ≤ V _{CC} ≤ 1.95	1.5	5.0	8.8	1.0	11.6				
		2.30 ≤ V _{CC} ≤ 2.70	1.0	4.0	6.3	0.8	8.2				
		3.00 ≤ V _{CC} ≤ 3.60	1.0	3.0	5.3	0.5	7.2				
t _{PHZ} , t _{PLZ}	Output Enable Time	0.90	29.0						ns	C _L = 10 pF R _U = 5000Ω R _O = 5000Ω S ₁ = GND for t _{PHZ} S ₁ = V _I for t _{PLZ}	
		1.10 ≤ V _{CC} ≤ 1.30	4.0	8.0	17.5	3.5	40.4				
		1.40 ≤ V _{CC} ≤ 1.60	2.0	6.0	11.9	1.5	14.8				
		1.65 ≤ V _{CC} ≤ 1.95	1.5	5.0	9.7	1.0	12.3				
		2.30 ≤ V _{CC} ≤ 2.70	1.0	4.0	7.7	0.8	10.5				
		3.00 ≤ V _{CC} ≤ 3.60	1.0	3.0	6.9	0.5	8.6				
t _{PHZ} , t _{PLZ}	Output Disable Time	0.90	28.0						ns	C _L = 10 pF R _U = 5000Ω R _O = 5000Ω S ₁ = GND for t _{PHZ} S ₁ = V _I for t _{PLZ}	
		1.10 ≤ V _{CC} ≤ 1.30	4.0	8.0	20.5	3.5	42.0				
		1.40 ≤ V _{CC} ≤ 1.60	2.0	6.0	17.6	1.5	18.9				
		1.65 ≤ V _{CC} ≤ 1.95	1.5	5.0	17.4	1.0	18.7				
		2.30 ≤ V _{CC} ≤ 2.70	1.0	4.0	16.4	0.8	17.7				
		3.00 ≤ V _{CC} ≤ 3.60	1.0	3.0	16.2	0.5	17.5				
t _{PHL} , t _{PLH}	Propagation Delay	0.90	28.0						ns	C _L = 15 pF R _L = 1 MΩ	Figures 1, 2
		1.10 ≤ V _{CC} ≤ 1.30	5.0	10.0	20.5	4.5	42.5				
		1.40 ≤ V _{CC} ≤ 1.60	3.0	7.0	11.8	2.5	15.4				
		1.65 ≤ V _{CC} ≤ 1.95	2.0	5.0	9.1	2.0	12.2				
		2.30 ≤ V _{CC} ≤ 2.70	1.5	4.0	6.6	1.0	8.6				
		3.00 ≤ V _{CC} ≤ 3.60	1.0	3.0	5.6	0.5	7.5				
t _{PHZ} , t _{PLZ}	Output Enable Time	0.90	31.0						ns	C _L = 10 pF R _U = 5000Ω R _O = 5000Ω S ₁ = GND for t _{PHZ} S ₁ = V _I for t _{PLZ}	Figures 1, 2
		1.10 ≤ V _{CC} ≤ 1.30	5.0	11.0	18.2	4.5	43.3				
		1.40 ≤ V _{CC} ≤ 1.60	3.0	7.0	12.5	2.5	15.5				
		1.65 ≤ V _{CC} ≤ 1.95	2.0	5.0	10.2	2.0	12.9				
		2.30 ≤ V _{CC} ≤ 2.70	1.5	4.0	8.0	1.0	9.9				
		3.00 ≤ V _{CC} ≤ 3.60	1.0	3.0	7.2	0.5	8.9				
t _{PHZ} , t _{PLZ}	Output Disable Time	0.90	30.0						ns	C _L = 10 pF R _U = 5000Ω R _O = 5000Ω S ₁ = GND for t _{PHZ} S ₁ = V _I for t _{PLZ}	Figures 1, 2
		1.10 ≤ V _{CC} ≤ 1.30	5.0	11.0	21.6	4.5	44.9				
		1.40 ≤ V _{CC} ≤ 1.60	3.0	7.0	17.1	2.5	20.0				
		1.65 ≤ V _{CC} ≤ 1.95	2.0	5.0	16.9	2.0	19.9				
		2.30 ≤ V _{CC} ≤ 2.70	1.5	4.0	16.8	1.0	18.1				
		3.00 ≤ V _{CC} ≤ 3.60	1.0	3.0	16.6	0.5	17.8				

New

AC Electrical Characteristics

Symbol	Parameter	Test Condition	V _{CC} (V)	T _A = 25 °C			T _A = -40°C to +85°C			Unit	
				Min	Typ	Max	Min	Max			
t _{PHL} , t _{PLH}	Propagation Delay, A to Y (Figures 3 and 4)	R _L = 1 MΩ, C _L = 10 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	39.6	-	-	
			1.4 to 1.6	-	TBD	-	11.2	-	14.8	-	-
			1.65 to 1.95	-	TBD	-	8.6	-	11.6	-	-
			2.3 to 2.7	-	TBD	-	6.3	-	8.2	-	-
			3.0 to 3.6	-	TBD	-	5.3	-	7.2	-	-
t _{PHZ} , t _{PLZ}	Output Enable Time, OE to Y (Figures 3 and 4)	R _L = R _O = 5 kΩ, C _L = 10 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	40.4	-	-	
			1.4 to 1.6	-	TBD	-	11.9	-	14.8	-	-
			1.65 to 1.95	-	TBD	-	9.7	-	12.3	-	-
			2.3 to 2.7	-	TBD	-	7.7	-	10.5	-	-
			3.0 to 3.6	-	TBD	-	6.9	-	8.6	-	-
t _{PHZ} , t _{PLZ}	Output Disable Time, OE to Y (Figures 3 and 4)	R _L = R _O = 5 kΩ, C _L = 10 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	42.0	-	-	
			1.4 to 1.6	-	TBD	-	15.3	-	18.0	-	-
			1.65 to 1.95	-	TBD	-	14.7	-	17.8	-	-
			2.3 to 2.7	-	TBD	-	13.7	-	15.0	-	-
			3.0 to 3.6	-	TBD	-	13.5	-	14.8	-	-
t _{PHL} , t _{PLH}	Propagation Delay, A to Y (Figures 3 and 4)	R _L = 1 MΩ, C _L = 15 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	42.5	-	-	
			1.4 to 1.6	-	TBD	-	11.8	-	15.4	-	-
			1.65 to 1.95	-	TBD	-	9.1	-	12.2	-	-
			2.3 to 2.7	-	TBD	-	6.6	-	8.6	-	-
			3.0 to 3.6	-	TBD	-	5.6	-	7.5	-	-
t _{PHZ} , t _{PLZ}	Output Enable Time, OE to Y (Figures 3 and 4)	R _L = R _O = 5 kΩ, C _L = 15 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	43.3	-	-	
			1.4 to 1.6	-	TBD	-	12.5	-	15.5	-	-
			1.65 to 1.95	-	TBD	-	10.2	-	12.9	-	-
			2.3 to 2.7	-	TBD	-	8.0	-	9.9	-	-
			3.0 to 3.6	-	TBD	-	7.2	-	8.9	-	-
t _{PHZ} , t _{PLZ}	Output Disable Time, OE to Y (Figures 3 and 4)	R _L = R _O = 5 kΩ, C _L = 15 pF	0.9	-	TBD	-	-	-	-	ns	
			1.1 to 1.3	-	TBD	TBD	-	44.9	-	-	
			1.4 to 1.6	-	TBD	-	15.9	-	18.8	-	-
			1.65 to 1.95	-	TBD	-	15.2	-	18.2	-	-
			2.3 to 2.7	-	TBD	-	14.1	-	15.4	-	-
			3.0 to 3.6	-	TBD	-	13.9	-	15.1	-	-

3 V MiniGate Logic Datasheet Changes

Symbol	Parameter	Test Condition	Min	Typ	Max	Units	Conditions	Figure Number		
t_{PHL} t_{PLH}	Propagation Delay	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	5.5	12.0	23.4	5.0	51.1	ns	$C_L = 30$ pF $R_L = 1$ M Ω	Figures 1, 2
t_{PDH} t_{PZL}	Output Enable Time	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	6.0	13.0	24.4	5.0	51.9	ns	$C_L = 30$ pF $R_U = 5000\Omega$ $R_D = 5000\Omega$ $S_1 = GND$ for t_{PDH} $S_1 = V_1$ for t_{PZL}	Figures 1, 2
t_{PHZ} t_{PLZ}	Output Disable Time	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	6.0	13.0	24.8	5.0	53.5	ns	$C_L = 30$ pF $R_U = 5000\Omega$ $R_D = 5000\Omega$ $S_1 = GND$ for t_{PHZ} $S_1 = V_1$ for t_{PLZ}	Figures 1, 2

Symbol	Parameter	Test Condition	Min	Typ	Max	Units
t_{su} t_{su}	Propagation Delay, A to Y (Figures 3 and 4)	$R_L = 1$ M Ω , $C_L = 30$ pF	0.9	-	TBD	ns
t_{en} t_{en}	Output Enable Time, OE to Y (Figures 3 and 4)	$R_L = R_U = 5$ k Ω , $C_L = 30$ pF	0.9	-	TBD	ns
t_{dis} t_{dis}	Output Disable Time, OE to Y (Figures 3 and 4)	$R_L = R_U = 5$ k Ω , $C_L = 30$ pF	0.9	-	TBD	ns

AC Characteristics for NC7SP74

AC Electrical Characteristics (10pF, 1M Ω)

Symbol	Parameter	V_{CC} (V)	$T_A = +25^\circ\text{C}$			$T_A = -40^\circ\text{C to } +85^\circ\text{C}$			Units	Conditions	Figure Number
			Min	Typ	Max	Min	Max				
f_{max}	Maximum Clock Frequency	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	50	40.0	-	50	-	-	MHz	$C_L = 10$ pF $R_D = 1$ M Ω	Figures 1, 5
t_{PLH} t_{PHL}	Propagation Delay, CK to Q, \bar{Q}	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	4.0	15.0	22.0	3.5	31.0	-	ns	$C_L = 10$ pF $R_D = 1$ M Ω	Figures 1, 3
t_{PLH} t_{PHL}	Propagation Delay, CLR, PR, to Q, \bar{Q}	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	4.0	12.0	23.0	4.0	34.0	-	ns	$C_L = 10$ pF $R_D = 1$ M Ω	Figures 1, 3
t_D	Setup Time, CK to D	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	7.0	10.0	-	7.0	-	-	ns	$C_L = 10$ pF $R_D = 1$ M Ω	Figures 1, 4
t_H	Hold Time, CK to D	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	0.5	1.0	-	0.5	-	-	ns	$C_L = 10$ pF $R_D = 1$ M Ω	Figures 1, 4
t_W	Pulse Width, CK, PR, CLR	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	5.0	5.0	-	5.0	-	-	ns	$C_L = 10$ pF $R_D = 1$ M Ω	Figures 1, 5
t_{rec}	Recover Time, CLR, PR to CK	0.90 $1.10 \leq V_{CC} \leq 1.30$ $1.40 \leq V_{CC} \leq 1.80$ $1.65 \leq V_{CC} \leq 1.95$ $2.30 \leq V_{CC} \leq 2.70$ $3.00 \leq V_{CC} \leq 3.60$	8.5	12.0	-	8.5	-	-	ns	$C_L = 10$ pF $R_D = 1$ M Ω	Figures 1, 4

AC Electrical Characteristics ($R_L = 1$ M Ω , $C_L = 10$ pF)

Symbol	Parameter	Test Condition	V_{CC} (V)	$T_A = 25^\circ\text{C}$			$T_A = -40^\circ\text{C to } +85^\circ\text{C}$			Unit
				Min	Typ	Max	Min	Max		
f_{max}	Maximum Clock Frequency (Figures 3 and 4)		0.9	-	TBD	-	-	-	MHz	
t_{PLH} t_{PHL}	Propagation Delay, CK to Q, \bar{Q} (Figures 3 and 4)		0.9	-	TBD	-	-	-	ns	
t_{PLH} t_{PHL}	Propagation Delay, CLR, PR to Q, \bar{Q} (Figures 3 and 4)		0.9	-	TBD	-	-	-	ns	
t_D	Setup Time, CK to D (Figures 3 and 4)		0.9	-	TBD	-	-	-	ns	
t_H	Hold Time, CK to D (Figures 3 and 4)		0.9	-	TBD	-	-	-	ns	
t_W	Pulse Width, CK, CLR, PR (Figures 3 and 4)		0.9	-	TBD	-	-	-	ns	
t_{rec}	Recovery Time, CLR, PR to CK (Figures 3 and 4)		0.9	-	TBD	-	-	-	ns	

3 V MiniGate Logic Datasheet Changes

AC Electrical Characteristics (15pF, 1MΩ)								AC Electrical Characteristics (R _L = 1 MΩ, C _L = 15 pF)														
Symbol	Parameter	V _{CC} (V)	T _A = +25°C			T _A = -40°C to +85°C			Units	Conditions	Figure Number	Symbol	Parameter	Test Condition	V _{CC} (V)	T _A = 25 °C			T _A = -40°C to +85°C			Unit
			Min	Typ	Max	Min	Max	Min								Typ	Max	Min	Max			
f _{MAX}	Maximum Clock Frequency	0.90	50	16.0	40.0	150			MHz	C _L = 15 pF R _D = 1 MΩ	Figures 1, 5	f _{MAX}	Maximum Clock Frequency (Figures 3 and 4)		0.9	TBD	TBD	TBD	TBD	TBD	MHz	
t _{PLH} t _{PHL}	Propagation Delay CK to Q, \bar{Q}	0.90	5.0	16.0	23.0	4.5	34.0		ns	C _L = 15 pF R _D = 1 MΩ	Figures 1, 3	t _{PLH} t _{PHL}	Propagation Delay, CK to Q, \bar{Q} (Figures 3 and 4)		0.9	TBD	TBD	TBD	TBD	34.0	ns	
t _{PLH} t _{PHL}	Propagation Delay CLR, PR, to Q, \bar{Q}	0.90	5.0	15.0	24.0	5.0	37.0		ns	C _L = 15 pF R _D = 1 MΩ	Figures 1, 3	t _{PLH} t _{PHL}	Propagation Delay, CLR, PR to Q, \bar{Q} (Figures 3 and 4)		0.9	TBD	TBD	TBD	TBD	37.0	ns	
t _S	Setup Time, CK to D	0.90	7.0	10.0	7.0	3.0			ns	C _L = 15 pF R _D = 1 MΩ	Figures 1, 4	t _S	Setup Time, CK to D (Figures 3 and 4)		0.9	TBD	TBD	TBD	TBD		ns	
t _H	Hold Time, CK to D	0.90	0.5	1.0	0.5	0.5			ns	C _L = 15 pF R _D = 1 MΩ	Figures 1, 4	t _H	Hold Time, CK to D (Figures 3 and 4)		0.9	TBD	TBD	TBD	TBD		ns	
t _W	Pulse Width, CK, PR, CLR	0.90	5.0	5.0	5.0	2.0			ns	C _L = 15 pF R _D = 1 MΩ	Figures 1, 5	t _W	Pulse Width, CK, CLR, PR (Figures 3 and 4)		0.9	TBD	TBD	TBD	TBD		ns	
t _{REC}	Recover Time, CLR, PR to CK	0.90	8.5	12.0	8.5	2.0			ns	C _L = 15 pF R _D = 1 MΩ	Figures 1, 4	t _{REC}	Recovery Time, CLR, PR to CK (Figures 3 and 4)		0.9	TBD	TBD	TBD	TBD		ns	

NC7SVxx, NC7WVxx Family

Absolute Maximum Ratings

Existing Datasheet

Absolute Maximum Ratings (Note 1)	
Supply Voltage (V _{CC})	-0.5V to +4.6V
DC Input Voltage (V _{IN})	-0.5V to +4.6V
DC Output Voltage (V _{OUT})	
HIGH or LOW State (Note 2)	-0.5V to V _{CC} + 0.5V
V _{CC} = 0V	-0.5V to 4.6V

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	Active-Mode (High or Low State)	-0.5 to V _{CC} + 0.5
		Tri-State Mode (Note 1)	-0.5 to +4.3
		Power-Down Mode (V _{CC} = 0 V)	-0.5 to +4.3

Thermal Characteristics

Existing Datasheet

θ _{JA}	Thermal Resistance	SC70-6	425	°C/W
		MicroPak™-6	500	
		MicroPak2™-6	560	
P _D	Power Dissipation at +85°C	MicroPak™-6	130	mW
		SC70-6	150	
		MicroPak2™-6	120	

New

θ _{JA}	Thermal Resistance (Note 2)	SC-88 MicroPak	377 154	°C/W
P _D	Power Dissipation in Still Air	SC-88 MicroPak	332 812	mW

All Other Families

Additional datasheet changes will be published in the PCN updates as soon as available.

Reliability Data Summary:

Refer to information below by 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/s.

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](#).

To view attached Parts List:

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