



<b>Title of Change:</b>	MC74VHC1G_GTXX Family Datasheet updates per FPCN22038X	
<b>Effective date:</b>	26 June 2019	
<b>Contact information:</b>	Contact your local ON Semiconductor Sales Office or <david.manley@onsemi.com>	
<b>Type of notification:</b>	This Product Bulletin is for notification purposes only. ON Semiconductor will proceed with implementation of this change upon publication of this Product Bulletin.	
<b>Change Category:</b>	<input type="checkbox"/> Wafer Fab <input type="checkbox"/> Assembly Change <input type="checkbox"/> Test Change <input checked="" type="checkbox"/> Other            Datasheet Change	
<b>Change Sub-Category(s):</b>	<input type="checkbox"/> Manufacturing Site Addition <input type="checkbox"/> Material Change <input checked="" type="checkbox"/> Datasheet/Product Doc change <input type="checkbox"/> Manufacturing Site Transfer <input type="checkbox"/> Product specific change <input type="checkbox"/> Shipping/Packaging/Marking <input type="checkbox"/> Manufacturing Process Change <input type="checkbox"/> Other: _____	
<b>Sites Affected:</b>	ON Semiconductor Sites: None	External Foundry/Subcon Sites: None
<b>Description and Purpose:</b>		
<p>This PB is issued to notify customers of datasheet changes for the MC74VHC1G_GT family per FPCN22038X.</p> <p>Provided here are comparison between the new and old datasheets regarding changing specifications and/or specification conditions.</p> <ul style="list-style-type: none"> <li>• Areas of change are circled red.</li> <li>• Items from the old datasheet that will be changed are highlighted red.</li> <li>• The corresponding value on the new datasheet is highlighted in green.</li> <li>• Areas of change circled in yellow are changes that were found to be needed after the PCN</li> </ul> <p>There will be other changes that represent a cleanup and standardization to the datasheet to represent a family oriented specification format. These changes will include forms of the following:</p> <ul style="list-style-type: none"> <li>• Correction of clerical errors such as spelling.</li> <li>• Formatting to create family standards.</li> <li>• Combined the CMOS level and TTL level devices to the same datasheet.</li> <li>• Addition of new package types and possible removal of packages no longer available.</li> <li>• Standardization of the switching waveforms test circuit figures.</li> <li>• Formatting of the Device ordering information to provide more information to the customer regarding marking and Pin 1 orientation in tape or reel.</li> </ul> <ul style="list-style-type: none"> <li>• <b>Removed references to voltages above recommended operating conditions.</b></li> </ul>		
<p><b>Existing datasheet</b></p> <p>The MC74VHC1GXX input structure provides protection when voltages up to 7.0 V are applied, regardless of the supply voltage. This allows the MC74VHC1GXX to be used to interface 5.0 V circuits to 3.0 V circuits.</p>		
<p><b>New</b></p> <p>The input structures provide protection when voltages up to 5.5 V are applied, regardless of the supply voltage. This allows the device to be used to interface 5 V circuits to 3 V circuits.</p>		
<p>The internal circuit is composed of multiple stages, including an open drain output which provides the ability to set output switching level. This allows the MC74VHC1GXX to be used to interface 5V circuits to circuits of any voltage between V<sub>CC</sub> and 7 V using an external resistor and power supply.</p> <p>The MC74VHC1GXX input structure provides protection when voltages up to 7 V are applied, regardless of the supply voltage.</p>		
<p>The input structures provide protection when voltages up to 5.5 V are applied, regardless of the supply voltage. This allows the device to be used to interface 5 V circuits to 3 V circuits. The output structures also provide protection when V<sub>CC</sub> = 0 V and when the output voltage exceeds V<sub>CC</sub>. These input and output structures help prevent device destruction caused by supply voltage – input/output voltage mismatch, battery backup, hot insertion, etc.</p>		

- Maximum voltage rating changed from 7.0 volts to 6.5 volts (Excluding Automotive Devices)
- Thermal resistance and Power Dissipation adjusted to reflect new die.
- Electrostatic Discharge/Latchup adjusted to align with JEDEC Standard.

Existing datasheet

MAXIMUM RATINGS			
Symbol	Parameter	Value	Unit
V <sub>CC</sub>	DC Supply Voltage	-0.5 to +7.0	V
V <sub>IN</sub>	DC Input Voltage	-0.5 to +7.0	V
V <sub>OUT</sub>	DC Output Voltage	-0.5 to V <sub>CC</sub> + 0.5	V
I <sub>IK</sub>	DC Input Diode Current	-20	mA
I <sub>OK</sub>	DC Output Diode Current	±20	mA
I <sub>OUT</sub>	DC Output Sink Current	±12.5	mA
I <sub>CC</sub>	DC Supply Current per Supply Pin	±25	mA
T <sub>STG</sub>	Storage Temperature Range	-65 to +150	°C
T <sub>L</sub>	Lead Temperature, 1 mm from Case for 10 Seconds	260	°C
T <sub>J</sub>	Junction Temperature Under Bias	+150	°C
θ <sub>JA</sub>	Thermal Resistance	SC70-5/SC-88A (Note 1) TSOP-5 350 230	°C/W
P <sub>D</sub>	Power Dissipation in Still Air at 85°C	SC70-5/SC-88A TSOP-5 150 200	mW
MSL	Moisture Sensitivity	Level 1	-
F <sub>R</sub>	Flammability Rating	Oxygen Index: 28 to 34 UL 94 V-0 @ 0.125 in	-
V <sub>ESD</sub>	ESD Withstand Voltage	Human Body Model (Note 2) Machine Model (Note 3) Charged Device Model (Note 4) > 2000 > 200 N/A	V
I <sub>LATCHUP</sub>	Latchup Performance	Above V <sub>CC</sub> and Below GND at 125°C (Note 5)	±500 mA

New

MAXIMUM RATINGS			
Symbol	Characteristics	Value	Unit
V <sub>CC</sub>	DC Supply Voltage	SC-74A, SC-88A, UDFN6, SOT-553, SOT-953 TSOP-5, SC-88A (NLV)	-0.5 to +7.0 -0.5 to +6.5
V <sub>IN</sub>	DC Input Voltage	SC-74A, SC-88A, UDFN6, SOT-553, SOT-953 TSOP-5, SC-88A (NLV)	-0.5 to +7.0 -0.5 to +6.5
V <sub>OUT</sub>	DC Output Voltage	Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V <sub>CC</sub> = 0 V)	-0.5 to V <sub>CC</sub> + 0.5 -0.5 to +7.0 -0.5 to +7.0
V <sub>OUT</sub>	DC Output Voltage	Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V <sub>CC</sub> = 0 V)	-0.5 to V <sub>CC</sub> + 0.5 -0.5 to +6.5 -0.5 to +6.5
I <sub>IK</sub>	DC Input Diode Current	V <sub>IN</sub> < GND	-20 mA
I <sub>OK</sub>	DC Output Diode Current	V <sub>OUT</sub> < GND	±20 mA
I <sub>OUT</sub>	DC Output Source/Sink Current		±12.5 mA
I <sub>CC</sub> or I <sub>QND</sub>	DC Supply Current per Supply Pin or Ground Pin		±25 mA
T <sub>STG</sub>	Storage Temperature Range		-65 to +150 °C
T <sub>L</sub>	Lead Temperature, 1 mm from Case for 10 secs		260 °C
T <sub>J</sub>	Junction Temperature Under Bias		+150 °C
θ <sub>JA</sub>	Thermal Resistance (Note 2)	SC-88A SC-74A TSOP-5 SOT-553 SOT-953 UDFN6	659 555 555 562 560 382
P <sub>D</sub>	Power Dissipation in Still Air	SC-88A SC-74A TSOP-5 SOT-553 SOT-953 UDFN6	190 225 225 222 223 327
MSL	Moisture Sensitivity		Level 1 -
F <sub>R</sub>	Flammability Rating	Oxygen Index: 28 to 34 UL 94 V-0 @ 0.125 in	- -
V <sub>ESD</sub>	ESD Withstand Voltage (Note 3)	Human Body Model Charged Device Model	2000 1000
I <sub>LATCHUP</sub>	Latchup Performance (Note 4)		±100 mA

- DC Output Voltage adjusted to clarify over voltage tolerance protection.
- Input Rise and fall time adjusted to reflect new process.

Existing datasheet

RECOMMENDED OPERATING CONDITIONS				
Symbol	Parameter	Min	Max	Unit
V <sub>CC</sub>	DC Supply Voltage	2.0	5.5	V
V <sub>IN</sub>	DC Input Voltage	0.0	5.5	V
V <sub>OUT</sub>	DC Output Voltage	0.0	V <sub>CC</sub>	V
T <sub>A</sub>	Operating Temperature Range	-55	+125	°C
t <sub>r</sub> , t <sub>f</sub>	Input Rise and Fall Time	V <sub>CC</sub> = 3.3 V ± 0.3 V V <sub>CC</sub> = 5.0 V ± 0.5 V	0 100 20	ns/V

New

RECOMMENDED OPERATING CONDITIONS				
Symbol	Characteristics	Min	Max	Unit
V <sub>CC</sub>	Positive DC Supply Voltage	1.65	5.5	V
V <sub>IN</sub>	DC Input Voltage	0	5.5	V
V <sub>OUT</sub>	DC Output Voltage	0	V <sub>CC</sub>	V
T <sub>A</sub>	Operating Temperature Range	-55	+125	°C
t <sub>r</sub> , t <sub>f</sub>	Input Rise and Fall Time (SC-88A (NLV), UDFN6, SOT-553)	V <sub>CC</sub> = 3.0 V to 3.6 V V <sub>CC</sub> = 4.5 V to 5.5 V	0 100 20	ns/V
t <sub>r</sub> , t <sub>f</sub>	Input Rise and Fall Time (SC-74A, SC-88A, SOT-953)	V <sub>CC</sub> = 1.65 V to 1.95 V V <sub>CC</sub> = 2.3 V to 2.7 V V <sub>CC</sub> = 3.0 V to 3.6 V V <sub>CC</sub> = 4.5 V to 5.5 V	0 20 20 5	ns/V

- Positive Threshold Voltages adjusted to remove minimum limits. Negative Threshold Voltages adjusted to remove maximum limits.
- Maximum Input Leakage Current adjusted to remove crossover with Power Off Leakage Current specification on all datasheets.

Existing datasheet

DC ELECTRICAL CHARACTERISTICS									
Symbol	Parameter	Test Conditions	T <sub>A</sub> = 25°C			T <sub>A</sub> = 85°C		-55 ≤ T <sub>A</sub> ≤ 125°C	
			Min	Typ	Max	Min	Max	Min	Max
V <sub>T+</sub>	Positive Threshold Voltage		3.0 4.5 5.5	1.2 1.75 2.15	2.0 3.0 3.6	2.20 3.15 3.65	2.20 3.15 3.65	2.20 3.15 3.65	V
V <sub>T-</sub>	Negative Threshold Voltage		3.0 4.5 5.5	0.9 1.35 1.65	1.5 2.3 2.9	1.9 2.75 3.35	0.9 1.35 1.65	0.9 1.35 1.65	V
V <sub>H</sub>	Hysteresis Voltage		3.0 4.5 5.5	0.30 0.40 0.50	0.57 0.67 0.74	1.20 1.40 1.60	0.30 0.40 0.50	1.20 1.40 1.60	V
V <sub>OH</sub>	Minimum High-Level Output Voltage	V <sub>IN</sub> = V <sub>T+</sub> - Min I <sub>OH</sub> = -50 μA	2.0 3.0 4.5	1.9 2.9 4.4	2.0 3.0 4.5	1.9 2.9 4.4	1.9 2.9 4.4	1.9 2.9 4.4	V
V <sub>OL</sub>	Maximum Low-Level Output Voltage	V <sub>IN</sub> = V <sub>T+</sub> + Max I <sub>OL</sub> = 50 μA	2.0 3.0 4.5	0.0 0.0 0.0	0.1 0.1 0.1	0.1 0.1 0.1	0.1 0.1 0.1	0.1 0.1 0.1	V
I <sub>IN</sub>	Maximum Input Leakage Current	V <sub>IN</sub> = 5.5 V or GND	0 to 5.5		±0.1	±1.0	±1.0	±1.0	μA
I <sub>CC</sub>	Maximum Quiescent Supply Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5		1.0	20	40	40	μA

New

DC ELECTRICAL CHARACTERISTICS (MC74VHC1GT14)											
Symbol	Parameter	Test Conditions	V <sub>CC</sub> (V)	T <sub>A</sub> = 25°C			-40°C ≤ T <sub>A</sub> ≤ 85°C		-55°C ≤ T <sub>A</sub> ≤ 125°C		Unit
				Min	Typ	Max	Min	Max	Min	Max	
V <sub>T+</sub>	Positive Threshold Voltage		3.0 4.5 5.5	-	1.40 2.00 2.10	1.60 2.00 2.10	-	1.6	-	1.6	V
V <sub>T-</sub>	Negative Threshold Voltage		3.0 4.5 5.5	0.35 0.5 0.6	1.01 1.13 1.13	-	-	0.35	-	0.35	V
V <sub>H</sub>	Hysteresis Voltage		3.0 4.5 5.5	0.30 0.40 0.50	0.64 0.73 0.81	1.20 1.40 1.60	0.30 0.40 0.50	1.20 1.40 1.60	0.30 0.40 0.50	1.20 1.40 1.60	V
V <sub>OH</sub>	High-Level Output Voltage	V <sub>IN</sub> = V <sub>T+</sub> or V <sub>T-</sub> I <sub>OH</sub> = -50 μA I <sub>OH</sub> = -50 μA I <sub>OH</sub> = -4 mA I <sub>OH</sub> = -8 mA	2.0 3.0 4.5 4.5	1.9 2.9 4.4 3.94	2.0 3.0 4.5 3.94	-	-	1.9 2.9 4.4 3.80	-	1.9 2.9 4.4 3.86	V
V <sub>OL</sub>	Low-Level Output Voltage	V <sub>IN</sub> = V <sub>T+</sub> or V <sub>T-</sub> I <sub>OL</sub> = 50 μA I <sub>OL</sub> = 50 μA I <sub>OL</sub> = 4 mA I <sub>OL</sub> = 8 mA	2.0 3.0 4.5 4.5	0.0 0.0 0.0 0.38	0.1 0.1 0.1 0.44	0.1 0.1 0.1 0.44	-	0.1 0.1 0.1 0.44	-	0.1 0.1 0.1 0.52	V
I <sub>IN</sub>	Input Leakage Current	V <sub>IN</sub> = 5.5 V or GND	1.65 to 5.5	-	-	±0.1*	±1.0	±1.0	-	±1.0	μA
I <sub>OFF</sub>	Power Off Leakage Current	V <sub>IN</sub> = 5.5 V or V <sub>OUT</sub> = 5.5 V	0	-	-	1.0	10	10	-	10	μA
I <sub>CC</sub>	Quiescent Supply Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5	-	-	1.0	20	20	-	40	μA
I <sub>OUT</sub>	Increase in Quiescent Supply Current per Input Pin	One Input: V <sub>IN</sub> = 3.4 V, Other Input at V <sub>CC</sub> or GND	5.5	-	-	1.35	1.5	1.5	-	1.65	mA

- Minimum limits will be removed on all propagation delay, Output Enable time and Output Disable Time specifications.

Existing datasheet

AC ELECTRICAL CHARACTERISTICS  $C_{load} = 50\text{ pF}$ , Input  $t_r/t_f = 3.0\text{ ns}$

Symbol	Parameter	Test Conditions	$T_A = 25^\circ\text{C}$			$T_A = 85^\circ\text{C}$		$-55 \leq T_A \leq 125^\circ\text{C}$		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$t_{PLH}$ $t_{PLL}$	Maximum Propagation Delay, A or B to Y	$V_{CC} = 3.3 \pm 0.3\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 15\text{ pF}$ $C_L = 50\text{ pF}$	4.6	11.9	1.0	14.0	1.0	16.1	ns	
		$V_{CC} = 5.0 \pm 0.5\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 15\text{ pF}$ $C_L = 50\text{ pF}$	3.6	7.7	1.0	9.0	1.0	10.3		
			4.3	9.7	1.0	11.0	1.0	12.3		

New

AC ELECTRICAL CHARACTERISTICS (Input  $t_r = t_f = 3.0\text{ ns}$ )

Symbol	Parameter	Conditions	$V_{CC}\text{ (V)}$	$T_A = 25^\circ\text{C}$			$-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		Unit
				Min	Typ	Max	Min	Max	Min	Max	
$t_{PLH}$ $t_{PLL}$	Propagation Delay, A to Y (Figures 3 and 4)	$C_L = 15\text{ pF}$	3.0 to 3.6	-	4.6	11.9	-	14.0	-	16.1	ns
		$C_L = 50\text{ pF}$	-	-	6.1	15.4	-	17.5	-	19.6	
		$C_L = 15\text{ pF}$ $C_L = 50\text{ pF}$	4.5 to 5.5	-	3.6	7.7	-	9.0	-	10.3	
				-	4.3	9.7	-	11.0	-	12.3	

AC ELECTRICAL CHARACTERISTICS  $C_{load} = 50\text{ pF}$ , Input  $t_r/t_f = 3.0\text{ ns}$

Symbol	Parameter	Test Conditions	$T_A = 25^\circ\text{C}$			$T_A = 85^\circ\text{C}$		$-55 \leq T_A \leq 125^\circ\text{C}$		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$t_{PZL}$	Maximum Output Enable Time, A or B to Y	$V_{CC} = 3.3 \pm 0.3\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 15\text{ pF}$ $C_L = 50\text{ pF}$	7.6	11.9	1.0	14.0	1.0	16.1	ns	
		$V_{CC} = 5.0 \pm 0.5\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 15\text{ pF}$ $C_L = 50\text{ pF}$	4.9	7.7	1.0	9.0	1.0	10.3		
			6.4	9.7	1.0	11.0	1.0	12.3		
$t_{PLZ}$	Maximum Output Disable Time	$V_{CC} = 3.3 \pm 0.3\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 50\text{ pF}$	10.1	15.4	-	17.5	-	19.6	ns	
		$V_{CC} = 5.0 \pm 0.5\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 50\text{ pF}$	6.4	9.7	-	11.0	-	12.3		

AC ELECTRICAL CHARACTERISTICS  $C_{load} = 50\text{ pF}$ , Input  $t_r/t_f = 3.0\text{ ns}$

Symbol	Parameter	Test Conditions	$T_A = 25^\circ\text{C}$			$-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		$-55^\circ\text{C} \leq T_A \leq 125^\circ\text{C}$		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$t_{PZL}$	Maximum Output Enable Time, A or B to Y	$V_{CC} = 3.3 \pm 0.3\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 15\text{ pF}$ $C_L = 50\text{ pF}$	-	7.6	11.9	-	14.0	-	16.1	ns
		$V_{CC} = 5.0 \pm 0.5\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 15\text{ pF}$ $C_L = 50\text{ pF}$	-	4.9	7.7	-	9.0	-	10.3	
		$V_{CC} = 3.3 \pm 0.3\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 50\text{ pF}$	-	6.4	9.7	-	11.0	-	12.3	
$t_{PLZ}$	Maximum Output Disable Time	$V_{CC} = 3.3 \pm 0.3\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 50\text{ pF}$	-	10.1	15.4	-	17.5	-	19.6	ns
		$V_{CC} = 5.0 \pm 0.5\text{ V}$ $R_L = R_i = 500\ \Omega$ $C_L = 50\text{ pF}$	-	6.4	9.7	-	11.0	-	12.3	

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](#).

- |                  |                  |                   |
|------------------|------------------|-------------------|
| M74VHC1G125DFT1G | M74VHC1GT126DF2G | MC74VHC1G04DFT2G  |
| M74VHC1G125DFT2G | M74VHC1GT14DFT1G | MC74VHC1G05DFT1G  |
| M74VHC1G126DFT1G | M74VHC1GT14DFT2G | MC74VHC1G05DFT2G  |
| M74VHC1G126DFT2G | M74VHC1GT32DFT1G | MC74VHC1G07DFT1G  |
| M74VHC1G132DFT1G | M74VHC1GT32DFT2G | MC74VHC1G07DFT2G  |
| M74VHC1G132DFT2G | M74VHC1GT50DFT1G | MC74VHC1G08DFT1G  |
| M74VHC1G135DFT1G | M74VHC1GT50DFT2G | MC74VHC1G08DFT2G  |
| M74VHC1G135DFT2G | M74VHC1GT86DFT1G | MC74VHC1G09DFT1G  |
| M74VHC1GT00DFT1G | M74VHC1GT86DFT2G | MC74VHC1G09DFT2G  |
| M74VHC1GT00DFT2G | M74VHC1GU04DFT1G | MC74VHC1G125DFT1G |
| M74VHC1GT02DFT1G | M74VHC1GU04DFT2G | MC74VHC1G14DFT1G  |
| M74VHC1GT02DFT2G | MC74VHC1G00DFT1G | MC74VHC1G14DFT2G  |
| M74VHC1GT04DFT1G | MC74VHC1G00DFT2G | MC74VHC1G32DFT1G  |
| M74VHC1GT04DFT2G | MC74VHC1G01DFT1G | MC74VHC1G32DFT2G  |
| M74VHC1GT04DFT3G | MC74VHC1G01DFT2G | MC74VHC1G50DFT1G  |
| M74VHC1GT08DFT1G | MC74VHC1G02DFT1G | MC74VHC1G50DFT2G  |
| M74VHC1GT08DFT2G | MC74VHC1G02DFT2G | MC74VHC1G86DFT1G  |
| M74VHC1GT125DF1G | MC74VHC1G03DFT1G | MC74VHC1G86DFT2G  |
| M74VHC1GT125DF2G | MC74VHC1G03DFT2G | MC74VHC1GU04DF1G  |
| M74VHC1GT126DF1G | MC74VHC1G04DFT1G | NL17VHC1GT50DF1G  |

Japanese translation of the notification starts here.  
通知の日本語訳はここから始まります。

*Note: The Japanese version is for reference only. In case of any differences between the English and Japanese version, the English version shall control.*

注：日本語版は参照用です。英語版と日本語版の違いがある場合は、英語版が優先されます。



変更件名:	MC74VHC1G_GTXX ファミリー FPCN22038X についてのデータシートの更新	
発効日:	26 June 2019	
連絡先情報:	現地のオン・セミコンダクター営業所または <david.manley@onsemi.com>にお問い合わせください。	
通知種別:	本製品速報は通知目的のみのものです。オン・セミコンダクターは本製品速報の発行により本変更を実行します。	
変更カテゴリ:	<input type="checkbox"/> ウェハファブの変更 <input type="checkbox"/> アセンブリの変更 <input type="checkbox"/> 試験の変更 <input checked="" type="checkbox"/> その他              データシートの変更	
変更サブカテゴリ:	<input type="checkbox"/> 製造拠点の追加 <input type="checkbox"/> 材料の変更 <input checked="" type="checkbox"/> データシート/製品資料の変更 <input type="checkbox"/> 製造拠点の移転 <input type="checkbox"/> 製品仕様の変更 <input type="checkbox"/> 出荷/パッケージング/表記 <input type="checkbox"/> 製造プロセスの変更 <input type="checkbox"/> その他: _____	
影響を受ける拠点:	オン・セミコンダクター拠点: なし	外部製造工場 / 下請業者拠点: なし
説明および目的:	<p>本 PB は、MC74VHC1G_GT ファミリー FPCN22038X についてのデータシートの変更をお客様にお知らせするものです。</p> <p>仕様および/または仕様条件の変更に関する新旧データシート間での比較を以下に示します。</p> <ul style="list-style-type: none"> <li>変更箇所は赤色の丸で囲まれています。</li> <li>旧データシートから変更される項目は赤色でハイライトされています。</li> <li>新データシートで対応する値は緑色でハイライトされています。</li> <li>黄色の丸で囲んだ変更箇所は PCN の後に変更が必要であることがわかったものです</li> </ul> <p>他にも、ファミリーに合わせて仕様フォーマットを表現するためにデータシートの整理と標準化をしたことによる変更があります。これらの変更は、以下のよう形で行われます。</p> <ul style="list-style-type: none"> <li>スペルなどの事務的なミスの訂正。</li> <li>ファミリーの標準を作成するための書式設定。</li> <li>CMOS レベルと TTL レベルのデバイスを同じデータシートに統合。</li> <li>新しいパッケージタイプの追加、および入手できなくなったパッケージの削除見込み。</li> <li>波形切り替え試験回路図の標準化。</li> <li>マーキング、およびテープまたはリールでのピン 1 の向きに関して、お客様にさらに情報を提供するための、デバイス注文情報の書式設定。</li> </ul> <ul style="list-style-type: none"> <li><b>推奨動作条件を超える電圧へのリファレンスを削除。</b></li> </ul> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><b>Existing datasheet</b></p> <p>The MC74VHC1GXX input structure provides protection when voltages up to <b>7.0 V</b> are applied, regardless of the supply voltage. This allows the MC74VHC1GXX to be used to interface 5.0 V circuits to 3.0 V circuits.</p> <p>The internal circuit is composed of multiple stages, including an open drain output which provides the ability to set output switching level. This allows the MC74VHC1GXX to be used to interface 5V circuits to circuits of any voltage between <math>V_{CC}</math> and <b>7 V</b> using an external resistor and power supply.</p> <p>The MC74VHC1GXX input structure provides protection when voltages up to <b>7 V</b> are applied, regardless of the supply voltage.</p> </div> <div style="width: 45%;"> <p><b>New</b></p> <p>The input structures provide protection when voltages up to <b>5.5 V</b> are applied, regardless of the supply voltage. This allows the device to be used to interface 5 V circuits to 3 V circuits.</p> <p>The input structures provide protection when voltages up to <b>5.5 V</b> are applied, regardless of the supply voltage. This allows the device to be used to interface 5 V circuits to 3 V circuits. The output structures also provide protection when <math>V_{CC} = 0 V</math> and when the output voltage exceeds <math>V_{CC}</math>. These input and output structures help prevent device destruction caused by supply voltage – input/output voltage mismatch, battery backup, hot insertion, etc.</p> </div> </div>	

- 最大定格電圧が 7.0V から 6.5V に変更 (車載デバイスを除く)
- 新規のダイを反映するために熱抵抗とワット損を調整。
- JEDEC 規格に合わせるために静電放電/ラッチアップを調整。

Existing datasheet

MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V <sub>CC</sub>	DC Supply Voltage	-0.5 to +7.0	V
V <sub>IN</sub>	DC Input Voltage	-0.5 to +7.0	V
V <sub>OUT</sub>	DC Output Voltage	-0.5 to V <sub>CC</sub> +0.5	V
I <sub>IK</sub>	DC Input Diode Current	-20	mA
I <sub>OK</sub>	DC Output Diode Current	±20	mA
I <sub>OUT</sub>	DC Output Sink Current	±12.5	mA
I <sub>CC</sub>	DC Supply Current per Supply Pin	±25	mA
T <sub>STG</sub>	Storage Temperature Range	-65 to +150	°C
T <sub>L</sub>	Lead Temperature, 1 mm from Case for 10 Seconds	260	°C
T <sub>J</sub>	Junction Temperature Under Bias	+150	°C
θ <sub>JA</sub>	Thermal Resistance	350 230	°C/W
P <sub>D</sub>	Power Dissipation in Still Air at 85°C	150 200	mW
MSL	Moisture Sensitivity	Level 1	-
F <sub>R</sub>	Flammability Rating	Oxygen Index: 28 to 34	UL 94 V-0 @ 0.125 in
V <sub>ESD</sub>	ESD Withstand Voltage	>2000 >200 N/A	V
I <sub>LATCHUP</sub>	Latchup Performance	Above V <sub>CC</sub> and Below GND at 125°C (Note 5)	±500 mA

New

MAXIMUM RATINGS

Symbol	Characteristics	Value	Unit
V <sub>CC</sub>	DC Supply Voltage	TSOP-5, SC-88A (NLV) SC-74A, SC-88A, UDFN6, SOT-553, SOT-953	-0.5 to +7.0 -0.5 to +6.5
V <sub>IN</sub>	DC Input Voltage	TSOP-5, SC-88A (NLV) SC-74A, SC-88A, UDFN6, SOT-553, SOT-953	-0.5 to +7.0 -0.5 to +6.5
V <sub>OUT</sub>	DC Output Voltage	Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V <sub>CC</sub> = 0 V)	-0.5 to V <sub>CC</sub> + 0.5 -0.5 to +7.0
I <sub>IK</sub>	DC Input Diode Current	V <sub>IN</sub> < GND	-20 mA
I <sub>OK</sub>	DC Output Diode Current	V <sub>OUT</sub> < GND	±20 mA
I <sub>OUT</sub>	DC Output Source/Sink Current		±12.5 mA
I <sub>CC</sub> or I <sub>QND</sub>	DC Supply Current per Supply Pin or Ground Pin		±25 mA
T <sub>STG</sub>	Storage Temperature Range		-65 to +150 °C
T <sub>L</sub>	Lead Temperature, 1 mm from Case for 10 sec		260 °C
T <sub>J</sub>	Junction Temperature Under Bias		+150 °C
θ <sub>JA</sub>	Thermal Resistance (Note 2)	SC-88A SC-74A TSOP-5 SOT-553 SOT-953 UDFN6	659 555 225 555 560 382
P <sub>D</sub>	Power Dissipation in Still Air	SC-88A SC-74A TSOP-5 SOT-553 SOT-953 UDFN6	190 225 225 222 223 327
MSL	Moisture Sensitivity		Level 1
F <sub>R</sub>	Flammability Rating	Oxygen Index: 28 to 34	UL 94 V-0 @ 0.125 in
V <sub>ESD</sub>	ESD Withstand Voltage (Note 3)	Human Body Model Machine Model Charged Device Model	2000 1000
I <sub>Latchup</sub>	Latchup Performance (Note 4)		±100 mA

- OVT 保護について明確化するために DC 出力電圧を調整。
- 新規プロセスを反映するために入力立ち上がり/立ち下がり時間を調整。

Existing datasheet

RECOMMENDED OPERATING CONDITIONS

Symbol	Parameter	Min	Max	Unit
V <sub>CC</sub>	DC Supply Voltage	2.0	5.5	V
V <sub>IN</sub>	DC Input Voltage	0.0	5.5	V
V <sub>OUT</sub>	DC Output Voltage	0.0	V <sub>CC</sub>	V
T <sub>A</sub>	Operating Temperature Range	-55	+125	°C
t <sub>r</sub> , t <sub>f</sub>	Input Rise and Fall Time	V <sub>CC</sub> = 3.3 V ± 0.3 V V <sub>CC</sub> = 5.0 V ± 0.5 V	100 20	ns/V

New

RECOMMENDED OPERATING CONDITIONS

Symbol	Characteristic	Min	Max	Unit
V <sub>CC</sub>	Positive DC Supply Voltage	1.65	5.5	V
V <sub>IN</sub>	DC Input Voltage	0	5.5	V
V <sub>OUT</sub>	DC Output Voltage	Active-Mode (High or Low State) Tri-State Mode (Note 1) Power-Down Mode (V <sub>CC</sub> = 0 V)	0 V <sub>CC</sub> 0.5	V
T <sub>A</sub>	Operating Temperature Range	-55	+125	°C
t <sub>r</sub> , t <sub>f</sub>	Input Rise and Fall Time	V <sub>CC</sub> = 3.0 V to 3.6 V V <sub>CC</sub> = 4.5 V to 5.5 V	0 20	ns/V
	Input Rise and Fall Time	V <sub>CC</sub> = 1.65 V to 1.95 V V <sub>CC</sub> = 2.3 V to 2.7 V V <sub>CC</sub> = 3.0 V to 3.6 V V <sub>CC</sub> = 4.5 V to 5.5 V	0 0 10 5	ns/V

- Positive Threshold voltage の下限を削除。Negative Threshold voltage の上限を削除。
- すべてのデータシートの電源オフリーク電流仕様でクロスオーバーを除去したのに合わせて最大入力リーク電流を調整。

Existing datasheet

DC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions	V <sub>CC</sub> (V)		T <sub>A</sub> = 25 °C		T <sub>A</sub> = 85 °C		-55 ≤ T <sub>A</sub> ≤ 125 °C		Unit
			Min	Typ	Min	Max	Min	Max			
V <sub>T+</sub>	Positive Threshold Voltage		3.0	1.2	2.0	2.20	2.20	3.15	3.85	2.20	V
V <sub>T-</sub>	Negative Threshold Voltage		4.5	1.75	3.0	3.15	3.15	3.85	3.85	3.15	V
V <sub>H</sub>	Hysteresis Voltage		3.0	0.9	1.5	1.9	0.9	0.9	1.65	0.9	V
V <sub>OH</sub>	High-Level Output Voltage	V <sub>IN</sub> ≤ V <sub>T+</sub> - Min I <sub>OH</sub> = -50 μA	2.0	1.9	2.0	1.9	1.9	1.9	2.9	1.9	V
V <sub>OL</sub>	Low-Level Output Voltage	I <sub>OH</sub> = 4 mA I <sub>OL</sub> = 8 mA	3.0	2.58	3.0	2.48	2.48	2.4	3.86	2.4	V
I <sub>IN</sub>	Maximum Input Leakage Current	V <sub>IN</sub> = 5.5 V or GND	0 to 5.5		±0.1	±1.0	±1.0	±1.0	±1.0	±1.0	μA
I <sub>CC</sub>	Maximum Quiescent Supply Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5		1.0	20	20	40	40	40	μA

New

DC ELECTRICAL CHARACTERISTICS (MC74VHC1G14)

Symbol	Parameter	Test Conditions	V <sub>CC</sub> (V)		T <sub>A</sub> = 25 °C		-40 °C ≤ T <sub>A</sub> ≤ 85 °C		-55 °C ≤ T <sub>A</sub> ≤ 125 °C		Unit
			Min	Typ	Min	Max	Min	Max			
V <sub>T+</sub>	Positive Threshold Voltage		3.0	1.40	1.60	1.6	1.6	2.0	2.1	1.6	V
V <sub>T-</sub>	Negative Threshold Voltage		4.5	1.74	2.00	2.0	2.0	2.1	2.1	2.0	V
V <sub>H</sub>	Hysteresis Voltage		3.0	0.35	0.76	0.35	0.35	0.35	0.35	0.35	V
V <sub>OH</sub>	High-Level Output Voltage	V <sub>IN</sub> = V <sub>OH</sub> or V <sub>IL</sub> I <sub>OH</sub> = -50 μA I <sub>OL</sub> = 50 μA	2.0	1.9	2.0	1.9	1.9	1.9	2.9	1.9	V
V <sub>OL</sub>	Low-Level Output Voltage	V <sub>IN</sub> = V <sub>OH</sub> or V <sub>IL</sub> I <sub>OH</sub> = -50 μA I <sub>OL</sub> = 50 μA	3.0	2.59	3.0	2.48	2.48	2.4	3.86	2.4	V
I <sub>IN</sub>	Input Leakage Current	V <sub>IN</sub> = 5.5 V or GND	1.65 to 5.5		±0.1*	±1.0	±1.0	±1.0	±1.0	±1.0	μA
I <sub>OFF</sub>	Power Off Leakage Current	V <sub>IN</sub> = 5.5 V or V <sub>OUT</sub> = 5.5 V	0		1.0	10	10	10	10	10	μA
I <sub>CC</sub>	Quiescent Supply Current	V <sub>IN</sub> = V <sub>CC</sub> or GND	5.5		1.0	20	20	40	40	40	μA
I <sub>OUT</sub>	Increase in Quiescent Supply Current per Input Pin	One Input: V <sub>IN</sub> = 3.4 V; Other Input at V <sub>CC</sub> or GND	5.5		1.35	1.5	1.5	1.65	1.65	1.65	mA

- すべての伝播遅延と出カインーブル時間と出力ディスエーブル時間の仕様から下限を削除。

Existing datasheet

AC ELECTRICAL CHARACTERISTICS  $C_{load} = 50$  pF, Input  $t_{r/f} = 3.0$  ns

Symbol	Parameter	Test Conditions	$T_A = 25^\circ\text{C}$			$T_A \leq 85^\circ\text{C}$		$-55 \leq T_A \leq 125^\circ\text{C}$		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$t_{PLH}$ , $t_{PHL}$	Maximum Propagation Delay, A or B to Y	$V_{CC} = 3.3 \pm 0.3$ V $C_L = 15$ pF $R_L = 50$ $\Omega$	4.6	11.9	1.0	14.0	1.0	16.1	ns	
		$V_{CC} = 5.0 \pm 0.5$ V $C_L = 15$ pF $R_L = 50$ $\Omega$	3.6	7.7	1.0	9.0	1.0	10.3		
			4.3	9.7	1.0	11.0	1.0	12.3		

New

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

Symbol	Parameter	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	
$t_{PLH}$ , $t_{PHL}$	Propagation Delay, A to Y (Figures 3 and 4)	$C_L = 15$ pF	3.0 to 3.6	-	4.6	11.9	-	14.0	-	16.1	ns
		$C_L = 50$ pF	-	6.1	15.4	-	17.5	-	19.6		
		$C_L = 15$ pF $C_L = 50$ pF	4.5 to 5.5	-	3.6	7.7	-	9.0	-	10.3	
				-	4.3	9.7	-	11.0	-	12.3	

AC ELECTRICAL CHARACTERISTICS  $C_{load} = 50$  pF, Input  $t_{r/f} = 3.0$  ns

Symbol	Parameter	Test Conditions	$T_A = 25^\circ\text{C}$			$T_A \leq 85^\circ\text{C}$		$-55 \leq T_A \leq 125^\circ\text{C}$		Unit
			Min	Typ	Max	Min	Max	Min	Max	
$t_{PLZ}$	Maximum Output Enable Time, A or B to Y	$V_{CC} = 3.3 \pm 0.3$ V $R_L = R_I = 500$ $\Omega$ $C_L = 15$ pF $C_L = 50$ pF	7.6	11.9	1.0	14.0	1.0	16.1	ns	
		$V_{CC} = 5.0 \pm 0.5$ V $R_L = R_I = 500$ $\Omega$ $C_L = 15$ pF $C_L = 50$ pF	4.9	7.7	1.0	9.0	1.0	10.3		
			6.4	9.7	1.0	11.0	1.0	12.3		
$t_{PLZ}$	Maximum Output Disable Time	$V_{CC} = 3.3 \pm 0.3$ V $R_L = R_I = 500$ $\Omega$ $C_L = 50$ pF	10.1	15.4	-	17.5	-	19.6	ns	
		$V_{CC} = 5.0 \pm 0.5$ V $R_L = R_I = 500$ $\Omega$ $C_L = 50$ pF	6.4	9.7	-	11.0	-	12.3		

AC ELECTRICAL CHARACTERISTICS  $C_{load} = 50$  pF, Input  $t_r = t_f = 3.0$  ns

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	
$t_{PLZ}$	Maximum Output Enable Time, A or B to Y	$V_{CC} = 3.3 \pm 0.3$ V $R_L = R_I = 500$ $\Omega$ $C_L = 15$ pF $C_L = 50$ pF	-	7.6	11.9	-	14.0	-	16.1	ns	
		$V_{CC} = 5.0 \pm 0.5$ V $R_L = R_I = 500$ $\Omega$ $C_L = 15$ pF $C_L = 50$ pF	-	4.9	7.7	-	9.0	-	10.3		
		$V_{CC} = 3.3 \pm 0.3$ V $R_L = R_I = 500$ $\Omega$ $C_L = 50$ pF	-	6.4	9.7	-	11.0	-	12.3		
$t_{PLZ}$	Maximum Output Disable Time	$V_{CC} = 3.3 \pm 0.3$ V $R_L = R_I = 500$ $\Omega$ $C_L = 50$ pF	-	10.1	15.4	-	17.5	-	19.6	ns	
		$V_{CC} = 5.0 \pm 0.5$ V $R_L = R_I = 500$ $\Omega$ $C_L = 50$ pF	-	6.4	9.7	-	11.0	-	12.3		

影響を受ける部品の一覧:

注: 標準の部品番号(既製品)のみが部品一覧に記載されます。本 PCN に影響を受けるカスタム 部品は、PCN メールの顧客の特定の PCN の付属文書、または PCN カスタマイズポータルに記載されています。

- |                  |                  |                   |
|------------------|------------------|-------------------|
| M74VHC1G125DFT1G | M74VHC1GT126DF2G | MC74VHC1G04DFT2G  |
| M74VHC1G125DFT2G | M74VHC1GT14DFT1G | MC74VHC1G05DFT1G  |
| M74VHC1G126DFT1G | M74VHC1GT14DFT2G | MC74VHC1G05DFT2G  |
| M74VHC1G126DFT2G | M74VHC1GT32DFT1G | MC74VHC1G07DFT1G  |
| M74VHC1G132DFT1G | M74VHC1GT32DFT2G | MC74VHC1G07DFT2G  |
| M74VHC1G132DFT2G | M74VHC1GT50DFT1G | MC74VHC1G08DFT1G  |
| M74VHC1G135DFT1G | M74VHC1GT50DFT2G | MC74VHC1G08DFT2G  |
| M74VHC1G135DFT2G | M74VHC1GT86DFT1G | MC74VHC1G09DFT1G  |
| M74VHC1GT00DFT1G | M74VHC1GT86DFT2G | MC74VHC1G09DFT2G  |
| M74VHC1GT00DFT2G | M74VHC1GU04DFT1G | MC74VHC1G125DFT1G |
| M74VHC1GT02DFT1G | M74VHC1GU04DFT2G | MC74VHC1G14DFT1G  |
| M74VHC1GT02DFT2G | MC74VHC1G00DFT1G | MC74VHC1G14DFT2G  |
| M74VHC1GT04DFT1G | MC74VHC1G00DFT2G | MC74VHC1G32DFT1G  |
| M74VHC1GT04DFT2G | MC74VHC1G01DFT1G | MC74VHC1G32DFT2G  |
| M74VHC1GT04DFT3G | MC74VHC1G01DFT2G | MC74VHC1G50DFT1G  |
| M74VHC1GT08DFT1G | MC74VHC1G02DFT1G | MC74VHC1G50DFT2G  |
| M74VHC1GT08DFT2G | MC74VHC1G02DFT2G | MC74VHC1G86DFT1G  |
| M74VHC1GT125DF1G | MC74VHC1G03DFT1G | MC74VHC1G86DFT2G  |
| M74VHC1GT125DF2G | MC74VHC1G03DFT2G | MC74VHC1GU04DF1G  |
| M74VHC1GT126DF1G | MC74VHC1G04DFT1G | NL17VHC1GT50DF1G  |