



Title of Change:	NCV70627 Parameters Change (Datasheet Update – Rev.0)
Proposed first ship date:	8 December 2016 or earlier after customer approval
Contact information:	Contact your local ON Semiconductor Sales Office or Javier Alonso <Javier.Alonso@onsemi.com>
Samples:	Contact your local ON Semiconductor Sales Office
Additional Reliability Data:	Contact your local ON Semiconductor Sales Office or Javier Alonso <Javier.Alonso@onsemi.com>
Type of notification:	This is a Final Product/Process Change Notification (FPCN) sent to customers. FPCNs are issued 12 months prior to implementation of the change or earlier after customer approval. ON Semiconductor will consider this change approved unless specific conditions of acceptance are provided in writing within 30 days of receipt of this notice. To do so, contact < PCN.Support@onsemi.com >.
Change Part Identification:	Affected products will be identified with date code.
Change category:	<input type="checkbox"/> Wafer Fab Change <input type="checkbox"/> Assembly Change <input type="checkbox"/> Test Change <input checked="" type="checkbox"/> Other _New datasheet version_
Change Sub-Category(s):	<input type="checkbox"/> Manufacturing Site Change/Addition <input type="checkbox"/> Manufacturing Process Change <input type="checkbox"/> Material Change <input type="checkbox"/> Product specific change <input checked="" type="checkbox"/> Datasheet/Product Doc change <input type="checkbox"/> Shipping/Packaging/Marking <input type="checkbox"/> Other: _____
Sites Affected:	<input type="checkbox"/> All site(s) <input checked="" type="checkbox"/> not applicable <input type="checkbox"/> ON Semiconductor site(s) : <input type="checkbox"/> External Foundry/Subcon site(s)
Description and Purpose	
<ol style="list-style-type: none"> 1) New package for this product added (QFN32 5x5, CASE488AM). 2) Absolute Maximum Ratings Supply voltage VBB and hardwired address VHW2: range changed to -0.3V to +40V. The reason to change from 36V to 40V is to improve the test coverage (increasing Vstress level) as the technology is able to withstand that voltage. 3) Tj - operating junction temperature range changed to <u>parametric</u> operating junction temperature and <u>functional</u> operating junction temperature. Original operating junction temperature was in range from -40 to +165 °C <u>Parametric</u> operating junction temperature is now in range from -40 to +145 °C <u>Functional</u> operating junction temperature is now in range from -40 to +160 °C (corrected value; to be compatible with other stepper driver chips) 4) Rθjp – thermal resistance, junction to exposed pad changed. Original value was 0.95 K/W but since chip contains non-conductive die attach following values are correct: For <u>SSOP</u> package Rθjp is 3.3 K/W. For <u>QFN</u> package Rθjp is 14 K/W. The reason for change is the correction of that parameter for SSOP and including the one for QFN package. 5) Idd_lim – current limitation on the Vdd voltage changed from 80mA to 85mA (@VBB=14V, pin shorted to ground). The reason for relaxing the parameter is to have Cpk>1.67 and stable yields in production for both packages over the fab process window. 6) Added PCB design example for QFN package. The reason of adding of PCB example for QFN is to be consistent with SSOP PCB example 	

**Reliability Data Summary: See attached Qualification reports**

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Electrical Characteristic Summary:**Absolute Maximum Ratings**

- **Original Datasheet (Table 2, p 3):**

Parameter		Min	Max	Unit
V_{BB} , VHW2	Supply voltage, hardwired address pin (Note 4)	-0.3	+36 (Note 3)	V

NOTE:

3. For limited time: $V_{BB} < 0.5$ s, SWI and HW2 pins < 1.0 s.
4. Maximum allowed voltage between two device pins is 60 V.

- **Updated Datasheet (Table 2, p 2):**

Parameter		Min	Max	Unit
V_{BB} , VHW2	Supply voltage, hardwired address pin (Note 4)	-0.3	+40 (Note 3)	V

NOTE:

3. For limited time: $V_{BB} < 0.5$ s, SWI and HW2 pins < 1.0 s.
4. Maximum allowed voltage between two device pins is 60 V.

Operating Ranges

- **Original Datasheet (Table 3, p3) :**

Table 3. OPERATING RANGES

Parameter		Min	Max	Unit
V_{BB}	Supply voltage	+5.5	+29	V
T_J	Operating junction temperature range (Note 5)	-40	+165	°C

NOTE:

5. The circuit functionality is not guaranteed outside the Operating junction temperature range. A mission profile describes the application specific conditions such as, but not limited to, the cumulative operating conditions over life time, the system power dissipation, the system's environmental conditions, the thermal design of the customer's system, the modes, in which the device is operated by the customer, etc.

- **Updated Datasheet (Table 3, p2) :**

Table 3. OPERATING RANGES

Parameter		Min	Max	Unit
V_{BB}	Supply voltage	+5.5	+29	V
T_{JP}	Parametric Operating junction temperature range (Note 8)	-40	+145	°C
T_{JF}	Functional Operating junction temperature range (Note 9)	-40	+160	°C

NOTE:

8. The parametric characteristics of the circuit are not guaranteed outside the parametric operating junction temperature range.
9. The maximum functional operating temperature range can be limited by thermal shutdown T_{tsd} .



Thermal Resistance

- Original Datasheet (Table 5, p6) :

Package	Rth Junction-to-Leads and Exposed Pad - Rthjp	Rth Junction-to-Ambient Rthja (1S0P)	Rth Junction-to-Ambient Rthja (2S2P)
SSOP-36EP	0,95	60	30

- Updated Datasheet (Table 6, p5) :

Table 6. THERMAL RESISTANCE

Characteristics	Package	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Exposed Pad (Note 10)	SSOP-36	R _{θJP}	-	3.3	-	K/W
Thermal Resistance, Junction-to-Exposed Pad (Note 10)	QFN32	R _{θJP}	-	14	-	K/W

10. Also includes typical solder thickness under the Exposed Pad (EP).

DC Parameters

- Original Datasheet (Table 6, p8) :

I _{ddLim}	Current limitation	Pin shorted to ground V _{BB} = 14 V			80	mA
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- Updated Datasheet (Table 7, p7) :

I _{ddLim}	Current limitation	Pin shorted to ground V _{BB} = 14 V			85	mA
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List of affected Standard Parts:

Part Number	Qualification Vehicle
NCV70627DQ001G	NA
NCV70627DQ001R2G	NA
NCV70627MW002R2G	NA