ON Semiconductor

Product Bulletin

Document # : PB21542X
Issue Date: 15 November 2016

Title of Change:	Datasheet update PYTHON 2000/5000
Effective date:	15 November 2016
Contact information:	Contact your local ON Semiconductor Sales Office
Type of notification:	ON Semiconductor will consider this change accepted.
Change category:	☐ Wafer Fab Change ☐ Assembly Change ☐ Test Change ☒ Other Datasheet update

Change Sub-Category(s):

☐ Manufacturing Site Change/Addition
☐ Manufacturing Process Change
☐ Material Change
☐ Product specific change
☒ Datasheet/Product Doc change
☐ Shipping/Packaging/Marking
☐ Other: _____

Sites Affected:

☐ All site(s) ☒ not applicable ☐ ON Semiconductor site(s) : ☐ External Foundry/Subcon site(s)

DESCRIPTION AND PURPOSE:

The datasheet for the products referenced in this Product Bulletin has been revised to add several new family members to the PYTHON 2000/5000 product family in addition to two datasheet changes addressed in this Product Bulletin.
Parts added to the existing variants are low speed grades for the PYTHON 5000 only. (P3 variants, NOIP3SN5000*-*). This grade (P3) is not available for all variants of PYTHON2000. Additionally, the PYTHON 2000/5000 is now available in an LGA package option for which the details are shown in Rev 3 of the datasheet.

The table summarizes the changes made to this datasheet since production release (Revision P0, dated April 2015). No change has been made to the sensor design or technology of these products as part of this datasheet revision. The datasheet has been revised and updated where needed to improve the accuracy of the specifications and/or settings listed so as to provide optimal performance.

PRODUCT BULLETIN NOTIFICATIONS:

1. Tightened power supply voltage tolerance on page 4 from +/- 300mV to +/- 100mV is recommended for optimal image quality.
2. The optical center referenced from the package center, for the PYTHON 2000 differs from that of the PYTHON 5000 in the x-direction by 76.8 µm. (No design or product changes involved, this is only a clarification compared to Rev 0 of the datasheet.)
   Optical center referenced from Package center:
   PYTHON 5000: [-231.38, 1697.17] µm => No change
   PYTHON 2000: [-154.58, 1697.17] µm => Change due to the even number of kernel offset in readout not captured in the Table.

Rev 1, 2	August 2016	Page 1: Major edits introducing the P3 version advertising frame rates and low power consumptions Page 2: Ordering Table: Added P3 OPNs and revised the package mark information to include P3 options and protective foil options. Page 3: Major edits on Table 1 and 2: Added P3 specification values and data with (frame rates, power consumption). Changed description on Table 3 to reflect "junction" temperature. Page 4: Table 5: Updated allowable variation on supplies. Revised typical currents on supply rail for P1 option. Added new section for P3 typical power dissipation for available mux modes. Added fin/fspi ratio and revised frame rates table to include P3 options. Page 6: Update QE graph with recent measurement and included RGB plots. Page 11: Cosmetic changes referencing PYTHON 5000 and PYTHON 2000. Page 16-19: Updated Table 6, 7, 8, 9, 12 and 13 with register settings for P3 operations. Page 22: Removed paragraph about e-black in the black calibration paragraph Page 29: Edited description of binning configuration to match PYTHON1300 P3 description Page 30: Updated Table 21 with the P3 mux settings; added Table 22 Page 33: Added Analog gain setting up to 8x Page 39~42: Updated wording to refer to P3 version Page 45: Added top view on description of figure 36 Page 45-50: Added references to P3 to the figures caption Page 51: Register 1: [9:8] updated description consistent naming Page 67: Updated text description Page 68: Table 39 pin description: added reference to "Not connected for P3" for relevant pins

		Page 72: Updated mechanical drawing Figure 50 – added Pin (0,0) reference Page 72-73: Added packaging and tray specification Page 74: Added Protective foil option description Page 75: Edited reference document section.
Rev 3	November 2016	Page 1: Addition of the new LGA-128 pin package. Page 2: Updated Ordering Table with new LGA-128 pins OPNs. Updated package mark to reflect LGA option. Page 3: Updating Table 1 with LGA-128 pin package Page 4-5: Removed fin from description as it is irrelevant for ratspi parameter. Changed Frame Specifications table to reflect Maximum. Page 13: Referenced Column-level correction application in AND9362/D required for Zero-ROT, available on Image Sensor Portal. Page 15: Replaced url with hyperlink to Image Sensor Portal. Page 30: Change y_stop to y_end Page 67: Updated Table 38 to reflect addition of new LGA-128 package. Page 70: Insertion of new Table 40 Pin List for LGA-128 pad package. Page 76: Insertion of new LGA package drawing with glass lid. Page 77: Update Mechanical Specification optical center information for PYTHON 5MP & 2MP. Added CTE number for LGA-128 pins to the Mechanical Specification Table. Page 78: Depicting Optical center information with a Table reflecting coordinates for P5000/2000. Replaced optical center image applicable for LCC and LGA package (Figure 51). Page 79: Updated Table 41 to reflect LGA-128 pin package. Page 80: Replaced Figure 54 and Figure 55 with a clearer image of the protective foil. Page 81: Replaced url with hyperlink to Image Sensor Portal. Formatting change through the document on P1, P3 replaced with P1-SN/SE/FN and P3-SN/SE.

List of affected standard parts:

PART NUMBER (OPN)	DESCRIPTION
PYTHON 5000	
NOIP1SN5000A−QDI	5 MegaPixel, Monochrome, 84−pin LCC
NOIP1SE5000A−QDI	5 MegaPixel, Bayer Color, 84−pin LCC
NOIP1FN5000A−QDI	5 MegaPixel, Monochrome with enhanced NIR, 84−pin LCC
NOIP1SN5000A−QTI	5 MegaPixel, Monochrome, Protective Film, 84−pin LCC
NOIP1SE5000A−QTI	5 MegaPixel, Bayer Color, Protective Film, 84−pin LCC
NOIP1FN5000A−QTI	5 MegaPixel, Monochrome with enhanced NIR, Protective Film, 84−pin LCC
LOW SPEED GRADES PYTHON 5000 introduced in NOIP1SN5000A/D.rev2:	
NOIP3SN5000A−QDI	5 MegaPixel, 4 LVDS Outputs, Monochrome, 84−pin LCC
NOIP3SE5000A−QDI	5 MegaPixel, 4 LVDS Outputs, Bayer Color, 84−pin LCC
NOIP3SN5000A−QTI	5 MegaPixel, 4 LVDS Outputs, Monochrome, Protective Film, 84−pin LCC
NOIP3SE5000A−QTI	5 MegaPixel, 4 LVDS Outputs, Bayer Color, Protective Film, 84−pin LCC
PYTHON 2000	
NOIP1SN2000A−QDI	2 MegaPixel, Monochrome, 84−pin LCC
NOIP1SE2000A−QDI	2 MegaPixel, Bayer Color, 84−pin LCC
NOIP1FN2000A−QDI	2 MegaPixel, Monochrome with enhanced NIR, 84−pin LCC
NOIP1SN2000A−QTI	2 MegaPixel, Monochrome, Protective Film, 84−pin LCC
NOIP1SE2000A−QTI	2 MegaPixel, Bayer Color, Protective Film, 84−pin LCC
NOIP1FN2000A−QTI	2 MegaPixel, Monochrome with enhanced NIR, Protective Film, 84−pin LCC
LIST OF NEWLY INTRODUCED STANDARD PARTS in NOIP1SN5000A/D.rev3:	
PYTHON 5000	
NOIP1SN5000A−LTI	5 MegaPixel, Monochrome, Protective Film, 128-pin LGA
NOIP1SE5000A−LTI	5 MegaPixel, Bayer Color, Protective Film, 128-pin LGA
NOIP1FN5000A−LTI	5 MegaPixel, Monochrome with enhanced NIR, Protective Film, 128-pin LGA

PYTHON 2000	
NOIP1SN2000A−LTI	2 MegaPixel, Monochrome, Protective Film, 128-pin LGA
NOIP1SE2000A−LTI	2 MegaPixel, Bayer Color, Protective Film, 128-pin LGA
NOIP1FN2000A−LTI	2 MegaPixel, Monochrome with enhanced NIR, Protective Film, 128-pin LGA