

阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

Read Statement

1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

NBVSBA011 Series

2.5 V/3.3 V, LVPECL Voltage-Controlled Crystal Oscillator (VCXO) PureEdge™ Product Series

The NBVSBA011 series voltage-controlled crystal oscillator (VCXO) devices are designed to meet today's requirements for 2.5 V and 3.3 V LVPECL clock generation applications. These devices use a high Q fundamental mode crystal and Phase Locked Loop (PLL) multiplier to provide a wide range of frequencies from 60 MHz to 700 MHz (factory configurable per user specifications) with a pullable range of ± 100 ppm and a frequency stability of ± 50 ppm. The silicon-based PureEdge™ product design provides users with exceptional frequency stability and reliability. They produce an ultra low jitter and phase noise LVPECL differential output.

The NBVSBA011 series are members of ON Semiconductor's PureEdge™ clock family that provides accurate and precision clock generation solutions.

Available in the industry standard 5.0 x 7.0 x 1.8 mm and in a new 3.2 x 5.0 x 1.2 mm SMD (CLCC) package on 16 mm tape and reel in quantities of 1,000.

Features

- LVPECL Differential Output
- Operating Range: 2.5 V $\pm 5\%$, 3.3 V $\pm 10\%$
- Ultra Low Jitter and Phase Noise – 0.5 ps (12 kHz – 20 MHz)
- Factory Configurable Frequencies from 60 MHz to 700 MHz (see Standard Frequencies in the Ordering Information Table in page 6)
- Pullable Range Minimum of ± 100 ppm
- Frequency Stability of ± 50 ppm
- Control Voltage with Positive Slope
- Voltage Control Linearity of $\pm 10\%$
- Uses High Q Fundamental Mode Crystal
- Hermetically Sealed Ceramic SMD Package
- These Devices are Pb-Free and RoHS Compliant

Applications

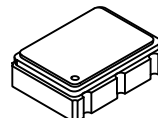
- Networking
- SONET
- 10 Gigabit Ethernet
- Networking Base Stations
- Broadcasting



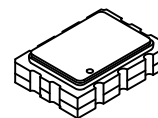
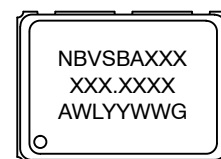
ON Semiconductor®

<http://onsemi.com>

MARKING DIAGRAM



6 PIN CLCC
LN SUFFIX
CASE 848AB



6 PIN CLCC
LU SUFFIX
CASE 848AC



NBVSBA011 = NBVSBA011 (± 50 ppm)
XXX.XXXX = Output Frequency (MHz)
A = Assembly Location
WL = Wafer Lot
YY = Year
WW = Work Week
G = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 6 of this data sheet.

NBVSBAXXX Series

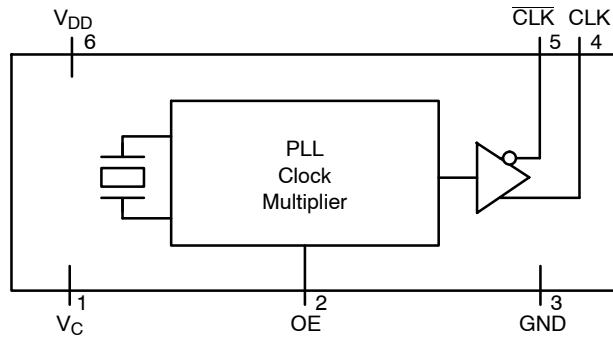


Figure 1. Simplified Logic Diagram

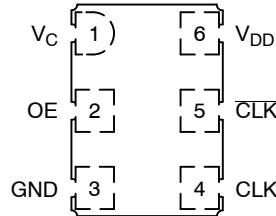


Figure 2. Pin Connections (Top View)

Table 1. PIN DESCRIPTION

| Pin No. | Symbol | I/O | Description |
|---------|-------------------------|-----------------------------|---|
| 1 | V_C (Note 1) | Analog Input | Analog control voltage input pin that adjusts output oscillation frequency. $f_0 = V_C = 1.65 \text{ V}$ |
| 2 | OE | LVTTTL/LVCMOS Control Input | Output Enable Pin. When left floating pin defaults to logic HIGH and output is active. See OE pin description Table 2. |
| 3 | GND | Power Supply | Ground at 0 V. Electrical and Case Ground. |
| 4 | CLK | LVPECL Output | Non-Inverted Clock Output. Typically loaded with 50 Ω receiver termination resistor to $V_{TT} = V_{DD} - 2 \text{ V}$. |
| 5 | $\overline{\text{CLK}}$ | LVPECL Output | Inverted Clock Output. Typically loaded with 50 Ω receiver termination resistor to $V_{TT} = V_{DD} - 2 \text{ V}$. |
| 6 | V_{DD} | Power Supply | Positive Power Supply Voltage. Voltage should not exceed 2.5 V $\pm 5\%$ and 3.3 V $\pm 10\%$. |

1. Control voltage has a positive slope with a linearity of $\pm 10\%$; $V_C = 1.65 \text{ V} \pm 1 \text{ V}$.

Table 2. OUTPUT ENABLE TRI-STATE FUNCTION

| OE Pin | Output Pins |
|------------|-------------|
| Open | Active |
| HIGH Level | Active |
| LOW Level | High Z |

Table 3. ATTRIBUTES

| Characteristic | Value |
|--|-----------------------------------|
| Internal Default State Resistor | 170 k Ω |
| ESD Protection | Human Body Model Machine Model |
| | 2 kV 200 V |
| Meets or Exceeds JEDEC Standard EIA/JESD78 IC Latchup Test | |

2. For additional Moisture Sensitivity information, refer to Application Note AND8003/D.

NBVSBXXX Series

Table 4. MAXIMUM RATINGS

| Symbol | Parameter | Condition 1 | Condition 2 | Rating | Units |
|------------------|---------------------------------------|------------------|--|-------------|-------|
| V _{DD} | Positive Power Supply | GND = 0 V | | 4.6 | V |
| V _{IN} | Control Input (V _C and OE) | | V _{IN} ≤ V _{DD} + 200 mV V _{IN} ≥ GND - 200 mV | | V |
| I _{out} | LVPECL Output Current | Continuous Surge | | 25 50 | mA |
| T _A | Operating Temperature Range | | | -40 to +85 | °C |
| T _{stg} | Storage Temperature Range | | | -55 to +120 | °C |
| T _{sol} | Wave Solder | See Figure 4 | | 260 | °C |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Table 5. DC CHARACTERISTICS (V_{DD} = 2.5 V ± 5%; 3.3 V ± 10%, GND = 0 V, T_A = -40°C to +85°C) (Note 3)

| Symbol | Characteristic | Conditions | Min. | Typ. | Max. | Units |
|--------------------|--------------------------|------------|-----------------------|------|-----------------------|-------|
| I _{DD} | Power Supply Current | | | 90 | 110 | mA |
| V _{IH} | Input HIGH Voltage | OE | 2000 | | V _{DD} | mV |
| V _{IL} | Input LOW Voltage | OE | GND - 200 | | 800 | mV |
| I _{IH} | Input HIGH Current | OE | -100 | | +100 | μA |
| I _{IL} | Input LOW Current | OE | -100 | | +100 | μA |
| V _{OH} | Output HIGH Voltage | | V _{DD} -1195 | | V _{DD} -945 | mV |
| V _{OL} | Output LOW Voltage | | V _{DD} -1945 | | V _{DD} -1600 | mV |
| V _{OUTPP} | Output Voltage Amplitude | | | 700 | | mV |

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

3. Measurement taken with outputs terminated with 50 Ω to V_{DD} - 2.0 V. See Figure 3.

NBVSBAXXX Series

Table 6. AC CHARACTERISTICS ($V_{DD} = 2.5 \pm 5\%$, $V_{DD} = 3.3 \pm 10\%$, $GND = 0\text{ V}$, $T_A = -40^\circ\text{C}$ to $+85^\circ\text{C}$)

| Symbol | Characteristic | Conditions | Min. | Typ. | Max. | Units |
|--------------------------------|--|----------------------------------|-----------|--------|----------|-------|
| f _{CLKOUT} | Output Clock Frequency | NBVSBA011 | | 122.88 | | MHz |
| | | NBVSBA027 | | 148.50 | | |
| | | NBVSBA018 | | 155.52 | | |
| | | NBVSBA017 | | 156.25 | | |
| | | NBVSBA015 | | 200.00 | | |
| | | NBVSBA024 | | 622.08 | | |
| | | NBVSBA026 | | 644.53 | | |
| | | NBVSBA041 | | 693.48 | | |
| | NBVSBA037 | | 707.35 | | | |
| Δf | Frequency Stability | (Note 5) | | | ± 50 | ppm |
| t _{jitter} (ϕ) | RMS Phase Jitter | 12 kHz to 20 MHz | | 0.5 | 0.9 | ps |
| t _{jitter} | Cycle to Cycle, RMS | 1000 Cycles | | 2 | 8 | ps |
| | Cycle to Cycle, Peak-to-Peak | 1000 Cycles | | 10 | 30 | ps |
| | Period, RMS | 10,000 Cycles | | 1 | 4 | ps |
| | Period, Peak-to-Peak | 10,000 Cycles | | 6 | 20 | ps |
| t _{OE/OD} | Output Enable/Disable Time | | | | 200 | ns |
| F _P | Crystal Pullability (Note 4) | $0 \leq V_C \leq 3.3\text{ V}$ | ± 100 | | | ppm |
| V _{C(bw)} | Control Voltage Bandwidth | - 3 dB | 20 | | | KHz |
| t _{DUTY_CYCLE} | Output Clock Duty Cycle (Measured at Cross Point) | | 45 | 50 | 55 | % |
| t _R | Output Rise Time (20% and 80%) | | | 245 | 400 | ps |
| t _F | Output Fall Time (80% and 20%) | | | 245 | 400 | ps |
| t _{start} | Start-up Time | | | 1 | 5 | ms |
| | Aging | 1 st Year | | | 3 | ppm |
| | | Every Year After 1 st | | | 1 | |

NOTE: Device will meet the specifications after thermal equilibrium has been established when mounted in a test socket or printed circuit board with maintained transverse airflow greater than 500 lfpm. Electrical parameters are guaranteed only over the declared operating temperature range. Functional operation of the device exceeding these conditions is not implied. Device specification limit values are applied individually under normal operating conditions and not valid simultaneously.

4. Gain transfer is positive with a rate of 130 ppm/V.

5. Parameter guarantees 10 years of aging. Includes initial stability at 25°C, shock, vibration and first year aging.

NBVSBAXXX Series

Table 7. PHASE NOISE PERFORMANCE

| Parameter | Characteristic | Condition | 011 | 027 | 018 | 017 | 015 | Units |
|----------------|--------------------------------|----------------|------------|------------|------------|------------|------------|--------|
| | | | 122.88 MHz | 148.50 MHz | 155.52 MHz | 156.25 MHz | 200.00 MHz | |
| Φ_{NOISE} | Output Phase-Noise Performance | 100 Hz offset | -90 | -90 | -90 | -90 | -87 | dBc/Hz |
| | | 1 kHz offset | -118 | -118 | -116 | -116 | -114 | dBc/Hz |
| | | 10 kHz offset | -127 | -127 | -126 | -126 | -125 | dBc/Hz |
| | | 100 kHz offset | -127 | -127 | -126 | -126 | -125 | dBc/Hz |
| | | 1 MHz offset | -134 | -134 | -134 | -134 | -132 | dBc/Hz |
| | | 10 MHz offset | -160 | -160 | -160 | -160 | -158 | dBc/Hz |

Table 8. PHASE NOISE PERFORMANCE (continued)

| Parameter | Characteristic | Condition | 024 | 026 | 041 | 037 | Units |
|----------------|--------------------------------|----------------|------------|------------|------------|------------|--------|
| | | | 622.08 MHz | 644.53 MHz | 693.48 MHz | 707.35 MHz | |
| Φ_{NOISE} | Output Phase-Noise Performance | 100 Hz offset | -80 | -86 | -78 | -78 | dBc/Hz |
| | | 1 kHz offset | -106 | -107 | -105 | -105 | dBc/Hz |
| | | 10 kHz offset | -117 | -116 | -115 | -115 | dBc/Hz |
| | | 100 kHz offset | -117 | -116 | -115 | -115 | dBc/Hz |
| | | 1 MHz offset | -122 | -125 | -124 | -124 | dBc/Hz |
| | | 10 MHz offset | -150 | -150 | -149 | -149 | dBc/Hz |

Table 9. RELIABILITY COMPLIANCE

| Parameter | Standard | Method |
|----------------------------|-------------|---------------------------------------|
| Shock | Mechanical | MIL-STD-833, Method 2002, Condition B |
| Solderability | Mechanical | MIL-STD-833, Method 2003 |
| Vibration | Mechanical | MIL-STD-833, Method 2007, Condition A |
| Solvent Resistance | Mechanical | MIL-STD-202, Method 215 |
| Thermal Shock | Environment | MIL-STD-833, Method 1011, Condition A |
| Moisture Level Sensitivity | Environment | MSL1 260°C per IPC/JEDEC J-STD-020D |

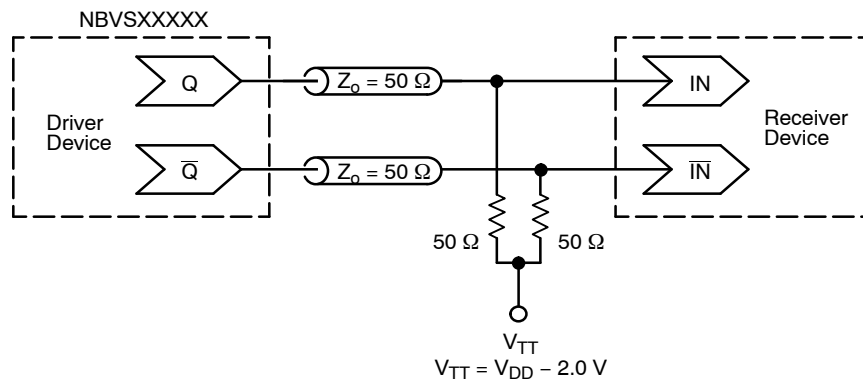


Figure 3. Typical Termination for Output Driver and Device Evaluation
(See Application Note AND8020/D – Termination of ECL Logic Devices.)

NBVSBAxxx Series

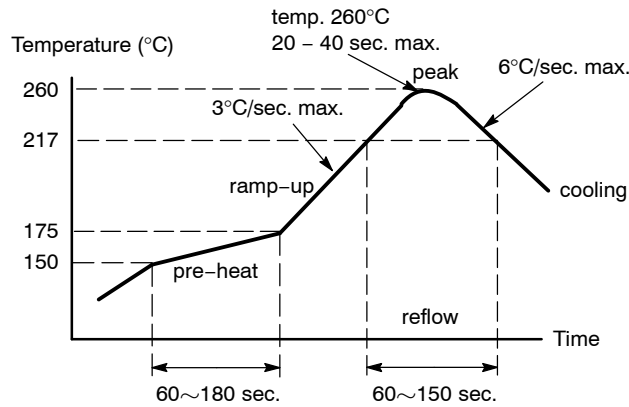


Figure 4. Recommended Reflow Soldering Profile

Table 10. ORDERING INFORMATION

| Device | Output Frequency (MHz) | Package | Shipping [†] |
|---------------------------|------------------------|-----------------|-----------------------|
| 5.0 x 7.0 x 1.8 mm | | | |
| NBVSBA011LN1TAG | 122.88 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA027LN1TAG | 148.50 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA018LN1TAG | 155.52 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA017LN1TAG | 156.25 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA015LN1TAG | 200.00 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA024LN1TAG | 622.08 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA026LN1TAG | 644.53 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA037LN1TAG | 707.35 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA041LN1TAG | 693.48 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| 5.0 x 7.0 x 1.8 mm | | | |
| NBVSBA011LNHTAG | 122.88 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA027LNHTAG | 148.50 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA018LNHTAG | 155.52 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA017LNHTAG | 156.25 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA015LNHTAG | 200.00 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA024LNHTAG | 622.08 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA026LNHTAG | 644.53 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA037LNHTAG | 707.35 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| NBVSBA041LNHTAG | 693.48 | CLCC-6, Pb-Free | 100 / Tape & Reel |
| 3.2 x 5.0 x 1.2 mm | | | |
| NBVSBA011LU1TAG* | 122.88 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA027LU1TAG* | 148.50 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA018LU1TAG* | 155.52 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA017LU1TAG* | 156.25 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA015LU1TAG* | 200.00 | CLCC-6, Pb-Free | 1000 / Tape & Reel |

NBVSBA000 Series

Table 10. ORDERING INFORMATION

| Device | Output Frequency (MHz) | Package | Shipping† |
|---------------------------|------------------------|-----------------|--------------------|
| 3.2 x 5.0 x 1.2 mm | | | |
| NBVSBA024LU1TAG* | 622.08 | CLCC-6, Pb-Free | 1000 / Tape & Reel |
| NBVSBA026LU1TAG* | 644.53 | CLCC-6, Pb-Free | 1000 / Tape & Reel |

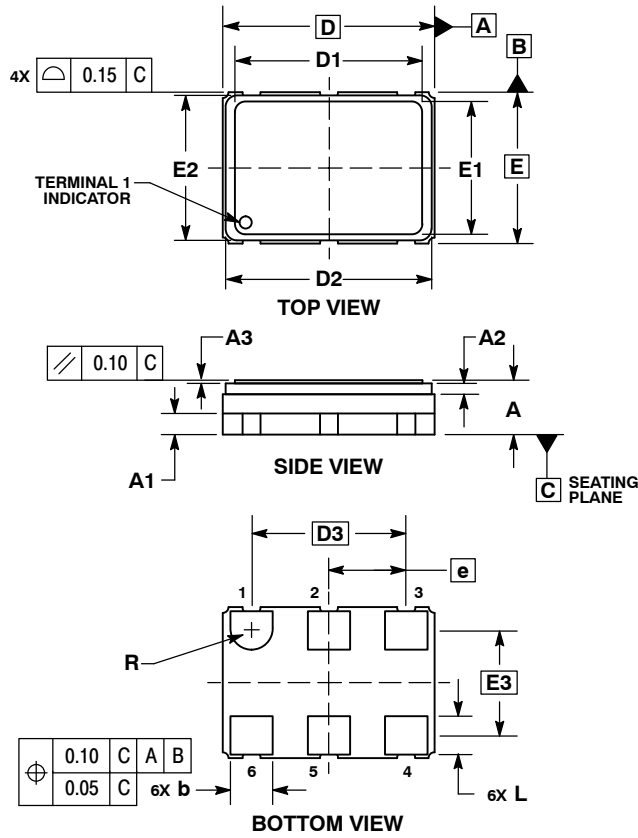
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and Reel Packaging Specification Brochure, BRD8011/D.

*Consult factory for availability.

NBVSBAXX Series

PACKAGE DIMENSIONS

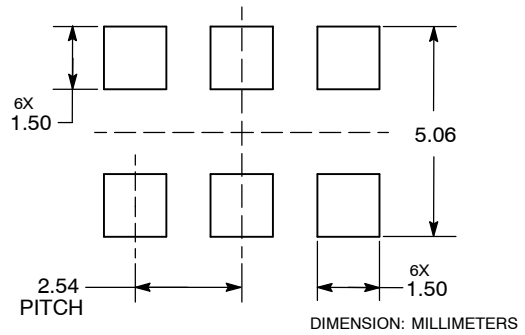
6 PIN CLCC, 7x5, 2.54P
CASE 848AB-01
ISSUE O



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: MILLIMETERS.

| DIM | MILLIMETERS | | |
|-----|-------------|------|------|
| | MIN | NOM | MAX |
| A | 1.70 | 1.80 | 1.90 |
| A1 | 0.70 REF | | |
| A2 | 0.36 REF | | |
| A3 | 0.08 | 0.10 | 0.12 |
| b | 1.30 | 1.40 | 1.50 |
| D | 7.00 BSC | | |
| D1 | 6.17 | 6.20 | 6.23 |
| D2 | 6.66 | 6.81 | 6.96 |
| D3 | 5.08 BSC | | |
| E | 5.00 BSC | | |
| E1 | 4.37 | 4.40 | 4.43 |
| E2 | 4.65 | 4.80 | 4.95 |
| E3 | 3.49 BSC | | |
| e | 2.54 BSC | | |
| L | 1.17 | 1.27 | 1.37 |
| R | 0.70 REF | | |

SOLDERING FOOTPRINT*

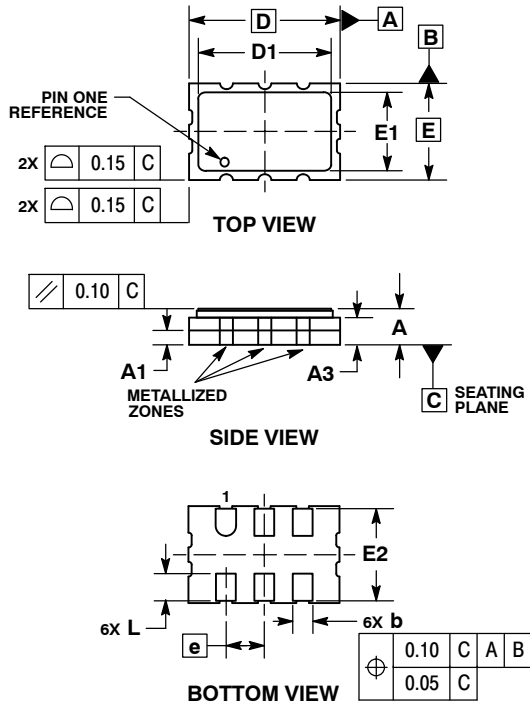


*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

NBVSBA011 Series

PACKAGE DIMENSIONS

6 PIN CLCC, 5x3.2, 1.27P
CASE 848AC-01
ISSUE O

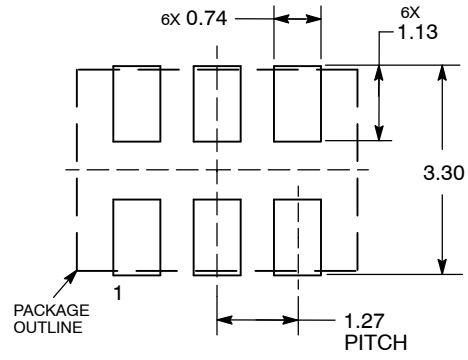


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.

| DIM | MILLIMETERS | |
|-----|-------------|------|
| | MIN | MAX |
| A | 1.05 | 1.35 |
| A1 | 0.35 | 0.65 |
| A3 | 0.90 REF | |
| b | 0.50 | 0.80 |
| D | 5.00 BSC | |
| D1 | 4.25 | 4.55 |
| E | 3.20 BSC | |
| E1 | 2.45 | 2.75 |
| E2 | 2.90 | 3.20 |
| e | 1.27 BSC | |
| L | 0.75 | 1.05 |

SOLDERING FOOTPRINT*



DIMENSION: MILLIMETERS

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor and are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: www.onsemi.com
Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local Sales Representative