

Introduction

BelaSigna[®] 300 AM is a DSP-based audio processor which is able to execute the AfterMaster HD algorithm within a system that also

BelaSigna 300 with AfterMaster HD

Figures and Data

Table 1. ABSOLUTE MAXIMUM RATINGS

| Parameter | Min | Max | Unit |
|--|------|-----|------|
| Voltage at any input pin | -0.3 | 2.0 | V |
| Operating supply voltage (Note 1) | 0.9 | 2.0 | V |
| Operating temperature range (Note 2) | -40 | 85 | °C |
| Storage temperature range | -55 | 85 | °C |
| Caution: Class 2 ESD Sensitivity, JESD22-A114-B (2000 V) | | | |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Functional operation only guaranteed below 0°C for digital core (VDDC) and system voltages above 1.0 V.
2. Parameters may exceed listed tolerances when out of the temperature range 0 to 50°C.

BelaSigna 300 with AfterMaster HD

Table

EL SPECIFICATIONS (continued)

| | Symbol | Conditions | Min | Typ | Max | Units | Screened |
|--------------|---------------------------|------------|-------|-------|-------|-------|----------|
| POWER | | | | | | | |
| | | OR) | | | | | |
| POR st | VDDC _{STARTUP} | | 0.775 | 0.803 | 0.837 | V | |
| POR sh | VDDC _{SHUTDOWN} | | 0.755 | 0.784 | 0.821 | V | |
| POR hy | POR _{HYSTERESIS} | | 13.8 | 19.1 | 22.0 | mV | |

T_{PORi3b21P}.907075307 62.6457 636.085 636.0945 T_{m0} T()_P.907075307 62.619071 refBT8 0 5 8 440.7307 651.41m583 T_{m0} f427.465 707.528

BelaSigna 300 with AfterMaster HD

Environmental Characteristics

All BelaSigna 300 AM packages are Pb-free, RoHS-compliant and Green.

BelaSigna 300 AM parts are qualified against standards outlined in the following sections.

All BelaSigna 300 AM package options are Green (RoHS-compliant). Contact ON Semiconductor for supporting documentation.

WLCSP Package Option

The solder ball composition for the WLCSP package is SAC266.

Table 3. WLCSP PACKAGE-LEVEL QUALIFICATION

| Packaging Level | |
|---------------------------------------|-------------------------------|
| Moisture sensitivity level | JEDEC Level 1 |
| Thermal cycling test (TCT) | -55°C to 150°C for 500 cycles |
| Highly accelerated stress test (HAST) | 85°C / 85% RH for 1000 hours |
| High temperature stress test (HTST) | 150°C for 1000 hours |

Table 4. WLCSP BOARD-LEVEL QUALIFICATION

| Board Level | |
|-------------|---|
| Temperature | -40°C to 125°C for 2500 cycles with no failures |

Mechanical Information and Circuit Design Guidelines

BelaSigna 300 AM is available in a 2.68 x 3.63 mm ultra-miniature wafer-level chip scale package (WLCSP)

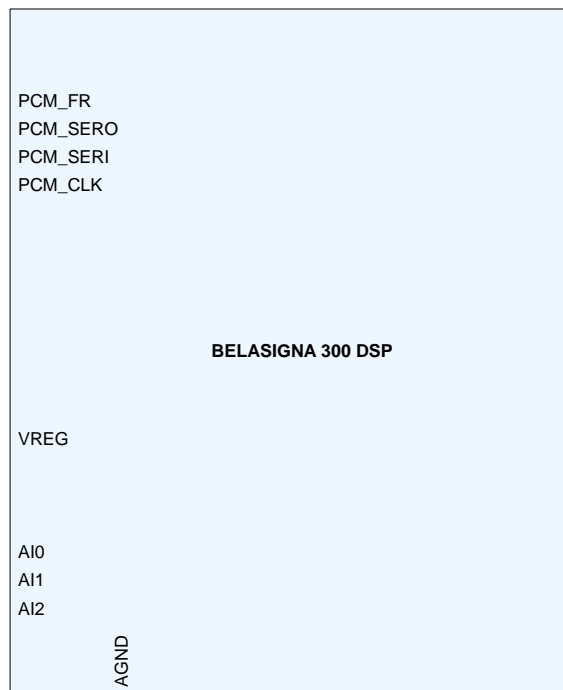


Figure 1. BelaSigna 300 with AfterMaster Layout Schematic

BelaSigna 300 with AfterMaster HD

WLCSP Pin Out

A total of 35 active pins are present on the BelaSigna 300 AM WLCSP package. They are organized in a staggered array. A description of these pins is given in Table 5.

Table 5. WLCSP PAD DESCRIPTIONS

| Pad Index | BelaSigna 300 AM Pad Name | Description | I/O | A/D |
|-----------|---------------------------|-------------|-----|-----|
| A1 | | | | |

BelaSigna 300 with AfterMaster HD

WLCSP Assembly / Design Notes

For PCB manufacture with BelaSigna 300 AM WLCSP, ON Semiconductor recommends solder-on-pad (SoP) surface finish. With SoP, the solder mask opening should be non-solder mask-defined (NSMD) and copper pad geometry will be dictated by the PCB vendor's design requirements.

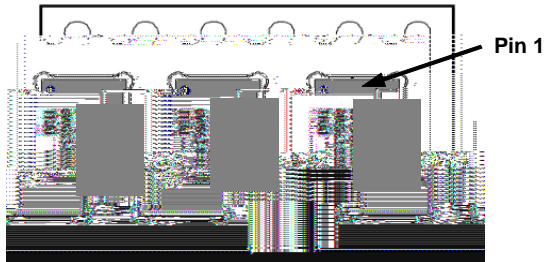
BelaSigna 300 with AfterMaster HD

Assembly Information

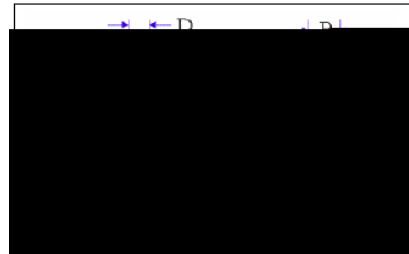
CARRIER DETAILS

2.6 x 3.8 mm WLCSP

ON Semiconductor offers tape and reel packing for BelaSigna 300 AM WLCSP. The packing consists of a pocketed carrier tape, a cover tape, and a molded anti-static polystyrene reel. The carrier and cover tape create an ESD safe environment, protecting the components from physical and electrostatic damage during shipping and handling.

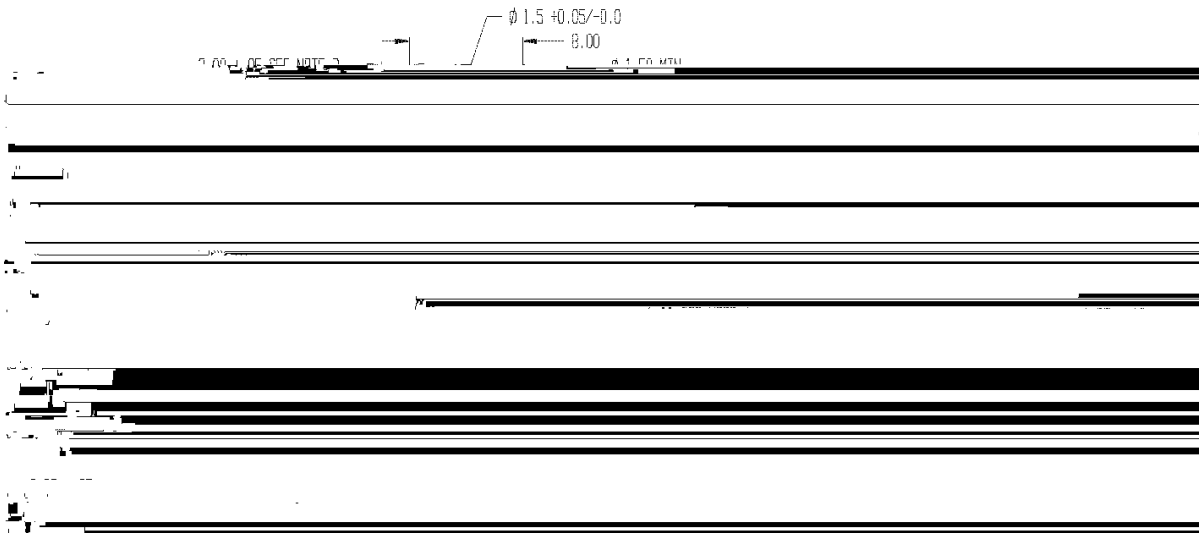


Quantity per Reel: 2500 units
Pin 1 Orientation: Upper Left, Bumps down
Tape Brand / Width: Advantek / 12 mm
Pocket Pitch: 8 mm
P/N: BCB043
Cover Tape: 3M 2666 PSA 9.3 mm



A = 13 inches
B = 12 mm
C = 4 inches
D = 13 mm
Reel Brand / Width: Advantek Lokreel® / 13 in

Figure 2. Package Orientation on Tape for WLCSP Package Option



10 sprockets hole pitch cumulative tolerance ± 0.1 .
Camber in compliance with EIA 763.
Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Figure 3. WLCSP Carrier Tape Drawing

Sample Shipping Label

Figure 4. Sample Shipping Label



WLCSP35, 3.63x2.68
CASE 567AG
ISSUE C

DATE 20 OCT 2022

ASME Y14.5M, 1994.

CROWNS OF THE SOLDER BALLS.

0.244 0.269

3.63

RECOMMENDED
MOUNTING FOOTPRINT

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