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# DSP Microcomputer

# Preliminary Technical Data ADSP-21065L

## 1.0 Purpose

The purpose of this document is to provide package characteristics and data for the ADSP-21065L 196-ball mini BGA.

## 2.0 Package Data

The ADSP-21065L is packaged in a 196 ball, 15mm x 15mm plastic package.

### 2.1 Electrical Characteristics

The electrical characteristics found in the ADSP-21065L Final Data Sheet (Rev. 0, April, 1999) can be used for the ADSP-21065LKCA-240X. Note that these numbers are PRELIMINARY for this package only at this time.

### 2.2 Thermal Characteristics

TBD

### 2.3 Package Mechanics and Pin-list

Follows




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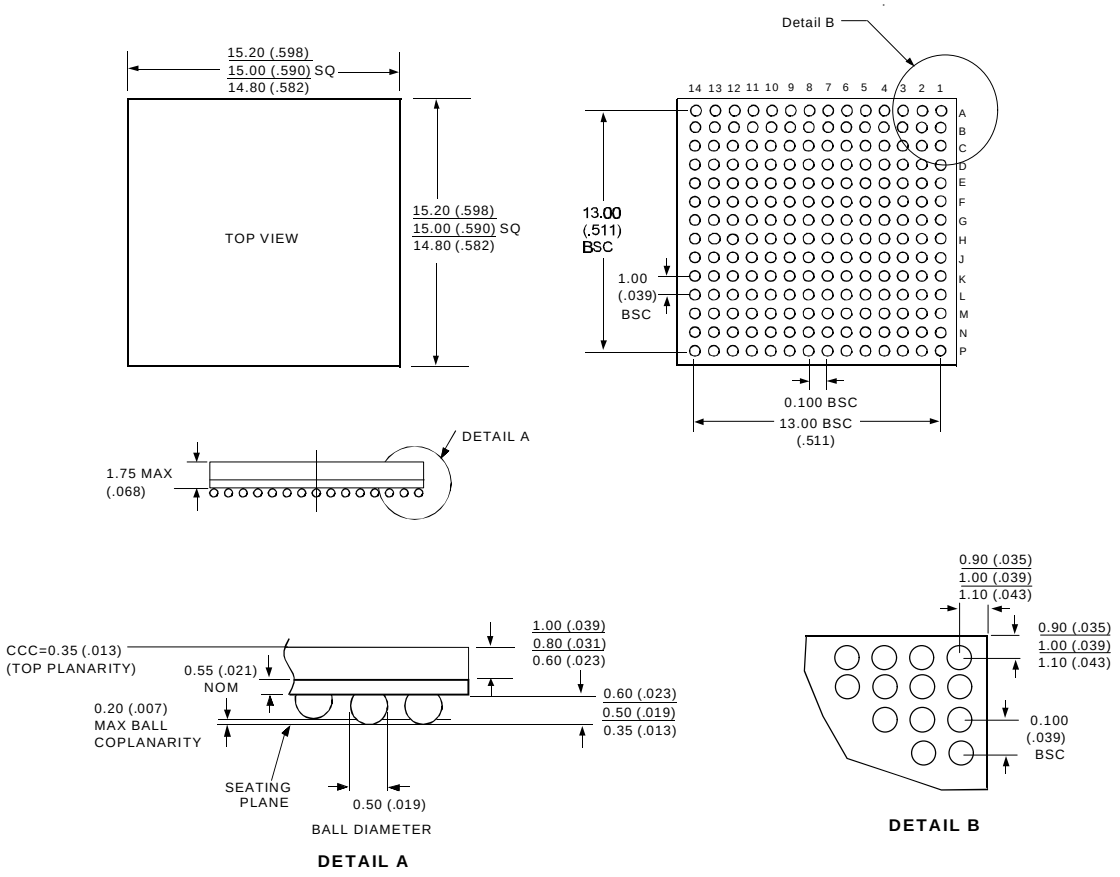
ADSP-2165L Mini-BGA Package Pinout

| BALL # | NAME | BALL# | NAME | BALL # | NAME | BALL # | NAME | BALL # | NAME |
|---|---|---|---|---|---|---|---|---|---|
| A1 | NC1 | B1 | DR0A | C1 | TCLK0 | D1 | RCLK1 | E1 | TFS1 |
| A2 | NC2 | B2 | RFS0 | C2 | RCLK0 | D2 | TFS0 | E2 | DT0B |
| A3 | FLAG2 | B3 | $\overline{\text{IRQ0}}$ | C3 | $\overline{\text{IRQ2}}$ | D3 | DR0B | E3 | DT0A |
| A4 | ADDR0 | B4 | FLAG0 | C4 | FLAG3 | D4 | $\overline{\text{IRQ1}}$ | E4 | RFS1 |
| A5 | ADDR3 | B5 | ADDR2 | C5 | ADDR1 | D5 | FLAG1 | E5 | VDD |
| A6 | ADDR6 | B6 | ADDR5 | C6 | ADDR4 | D6 | VDD | E6 | GND |
| A7 | ADDR7 | B7 | ADDR9 | C7 | ADDR10 | D7 | VDD | E7 | GND |
| A8 | ADDR8 | B8 | ADDR12 | C8 | ADDR13 | D8 | VDD | E8 | GND |
| A9 | ADDR11 | B9 | ADDR15 | C9 | ADDR16 | D9 | VDD | E9 | GND |
| A10 | ADDR14 | B10 | ADDR19 | C10 | ADDR20 | D10 | VDD | E10 | VDD |
| A11 | ADDR17 | B11 | ADDR21 | C11 | ADDR22 | D11 | $\overline{\text{BMS}}$ | E11 | ID0 |
| A12 | ADDR18 | B12 | ADDR23 | C12 | $\overline{\text{RESET}}$ | D12 | TMS | E12 | TDI |
| A13 | NC8 | B13 | GND | C13 | BSEL | D13 | $\overline{\text{TRST}}$ | E13 | ID1 |
| A14 | NC7 | B14 | TCK | C14 | TDO | D14 | $\overline{\text{EMU}}$ | E14 | FLAG4 |
| F1 | TCLK1 | G1 | PWM_ EVENT1 | H1 | PWM_ EVENT0 | J1 | CLKIN | K1 | $\overline{\text{DMAR1}}$ |
| F2 | DR1B | G2 | DT1B | H2 | $\overline{\text{BR1}}$ | J2 | XTAL | K2 | SDCLK0 |
| F3 | DR1A | G3 | DT1A | H3 | $\overline{\text{BR2}}$ | J3 | SDCLK1 | K3 | $\overline{\text{HBR}}$ |
| F4 | VDD | G4 | VDD | H4 | VDD | J4 | VDD | K4 | $\overline{\text{SDWE}}$ |
| F5 | GND | G5 | GND | H5 | GND | J5 | GND | K5 | VDD |
| F6 | GND | G6 | GND | H6 | GND | J6 | GND | K6 | GND |
| F7 | GND | G7 | GND | H7 | GND | J7 | GND | K7 | GND |
| F8 | GND | G8 | GND | H8 | GND | J8 | GND | K8 | GND |
| F9 | GND | G9 | GND | H9 | GND | J9 | GND | K9 | GND |
| F10 | GND | G10 | GND | H10 | GND | J10 | GND | K10 | VDD |
| F11 | VDD | G11 | VDD | H11 | VDD | J11 | VDD | K11 | DATA19 |
| F12 | FLAG6 | G12 | DATA31 | H12 | DATA28 | J12 | DATA24 | K12 | DATA21 |
| F13 | FLAG5 | G13 | DATA30 | H13 | DATA27 | J13 | DATA25 | K13 | DATA20 |
| F14 | FLAG7 | G14 | DATA29 | H14 | DATA26 | J14 | DATA23 | K14 | DATA22 |
| L1 | $\overline{\text{DMAR2}}$ | M1 | $\overline{\text{RAS}}$ | N1 | DQM | P1 | NC3 | | |
| L2 | $\overline{\text{CAS}}$ | M2 | SDCKE | N2 | $\overline{\text{HBG}}$ | P2 | NC4 | | |
| L3 | SDA10 | M3 | $\overline{\text{DMAG1}}$ | N3 | BMSTR | P3 | GND | | |
| L4 | $\overline{\text{DMAG2}}$ | M4 | $\overline{\text{CS}}$ | N4 | $\overline{\text{SBTS}}$ | P4 | $\overline{\text{WR}}$ | | |
| L5 | VDD | M5 | $\overline{\text{RD}}$ | N5 | REDY | P5 | $\overline{\text{SW}}$ | | |
| L6 | VDD | M6 | $\overline{\text{CPA}}$ | N6 | GND | P6 | $\overline{\text{MS0}}$ | | |
| L7 | VDD | M7 | ACK | N7 | $\overline{\text{MS1}}$ | P7 | $\overline{\text{MS2}}$ | | |
| L8 | VDD | M8 | FLAG10 | N8 | FLAG11 | P8 | $\overline{\text{MS3}}$ | | |
| L9 | VDD | M9 | DATA2 | N9 | DATA1 | P9 | FLAG9 | | |
| L10 | DATA8 | M10 | DATA5 | N10 | DATA4 | P10 | FLAG8 | | |
| L11 | DATA13 | M11 | DATA9 | N11 | DATA7 | P11 | DATA0 | | |
| L12 | DATA16 | M12 | DATA12 | N12 | DATA10 | P12 | DATA3 | | |
| L13 | DATA17 | M13 | DATA14 | N13 | DATA11 | P13 | DATA6 | | |
| L14 | DATA18 | M14 | DATA15 | N14 | NC6 | P14 | NC5 | | |

## Package Outline Dimensions

## 196–Ball mini-PBGA

Dimensions shown in mm and (inches)




**NOTE 1**
THE ACTUAL POSITION OF THE BALL POPULATION IS WITHIN 0.150 (0.006) OF ITS IDEAL POSITION RELITIVE TO THE PACKAGE EDGES. THE ACTUAL POSITION OF EACH BALL IS WITHIN 0.05 (0.002) OF ITS IDEAL POSITION RELATIVE TO THE BALL POPULATION.

**NOTE 2**
ALL MEASUREMENTS ARE PROVIDED IN METRIC AND (ENGLISH) UNITS. BECAUSE THIS IS A METRIC PACKAGE, THE ENGLISH MEASUREMENTS ARE PROVIDED AS A COURTESY. ANALOG DEVICES STRONGLY RECOMMENDS THAT YOU DESIGN WITH THE METRIC MEASUREMENTS ONLY. THE SOLDER BALL MATRIX OF THIS PACKAGE IS 14 X 14

## Ordering Guide

The following ordering guide shows all available speed grades and package options for the ADSP-21065L mini BGA. For complete information on these processors visit our web site at http://www.analog.com/dsp.

| Part Number | Case Temperature Range | Instruction Rate | On-chip SRAM | Operating Voltage | Package Option |
|---|---|---|---|---|---|
| ADSP-21065LKCA-240X | 0–85°C | 60MHz | 544-Kbit | 3.3V | 196 mini BGA |