

## Advanced Power Management Unit

Check for Samples: [TPS658621A](#)

### 1 INTRODUCTION

#### 1.1 MAIN FEATURES

- **BATTERY CHARGER**
  - Complete Charge Management Solution for a Single Cell Li-Ion/Li-Pol Cell With Dynamic Power Management and Thermal Foldback.
  - Maximum 1A charge current
  - Programmable Adapter and USB Charge Operation
- **INTEGRATED POWER SUPPLIES**
  - 3 Programmable Step-Down converters
    - Software Controlled Enable/Forced PWM Mode
    - Automatic Power Saving Mode
    - Maximum 1.2A Outputs
  - 11 Programmable General Purpose LDOs
    - 7 With Output Voltages of 1.25V to 3.3V
    - 2 With Output Voltages of 0.725V to 1.5V or 1.25V to 2.586V (factory configurable)
    - 1 “Always On” With Output Voltages of 1.25V to 3.3V
    - 1 With Output Voltage of 1.70V–2.475V
- **DISPLAY SUPPORT FUNCTIONS**
  - 4 PWM Outputs With Programmable Frequency and Duty Cycle
  - Dual RGB LED Drivers
  - Constant Current WLED Driver
    - 26.5V (max) at 25mA
    - Over-Voltage Protection
    - Programmable Current Level and Brightness Control
- **HOST INTERFACE**
  - Interrupt Controller With Maskable Interrupts
  - External ADC Triggering and Step-Down Converter Mode Control
- **SYSTEM MANAGEMENT**
  - Dual Input Power Path
    - USB Current Limiting
    - Max 18V Over-Voltage Protection
  - Power Good Monitoring on all Supply Outputs
  - Software Reset Function
  - Hardware On/Off and Reboot Control
  - 11 Channel ADC With 3 Operating Modes
    - Single Conversion
    - Peak Detection
    - Averaging

#### 1.2 APPLICATIONS

- Smart Phones
- Portable Navigation Devices
- Portable Media Players



#### 1.3 DESCRIPTION

The TPS658621A provides an easy to use, fully integrated solution for handheld devices, integrating charge management, multiple regulated power supplies, system management and display functions in a small 6x6 package. The I<sup>2</sup>C interface enables control of a wide range of subsystem parameters. Internal registers have a complete set of status information, enabling easy diagnostics and host-controlled handling of fault conditions.



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**PACKAGING INFORMATION**

| Orderable Device | Status <sup>(1)</sup> | Package Type     | Package Drawing | Pins | Package Qty | Eco Plan <sup>(2)</sup>    | Lead/<br>Ball Finish | MSL Peak Temp <sup>(3)</sup> | Samples<br>(Requires Login)      |
|------------------|-----------------------|------------------|-----------------|------|-------------|----------------------------|----------------------|------------------------------|----------------------------------|
| TPS658621AZGUR   | ACTIVE                | BGA<br>MICROSTAR | ZGU             | 169  | 1000        | Green (RoHS<br>& no Sb/Br) | SNAGCU               | Level-3-260C-168 HR          | <a href="#">Purchase Samples</a> |
| TPS658621AZGUT   | ACTIVE                | BGA<br>MICROSTAR | ZGU             | 169  | 250         | Green (RoHS<br>& no Sb/Br) | SNAGCU               | Level-3-260C-168 HR          | <a href="#">Purchase Samples</a> |

<sup>(1)</sup> The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

<sup>(2)</sup> Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

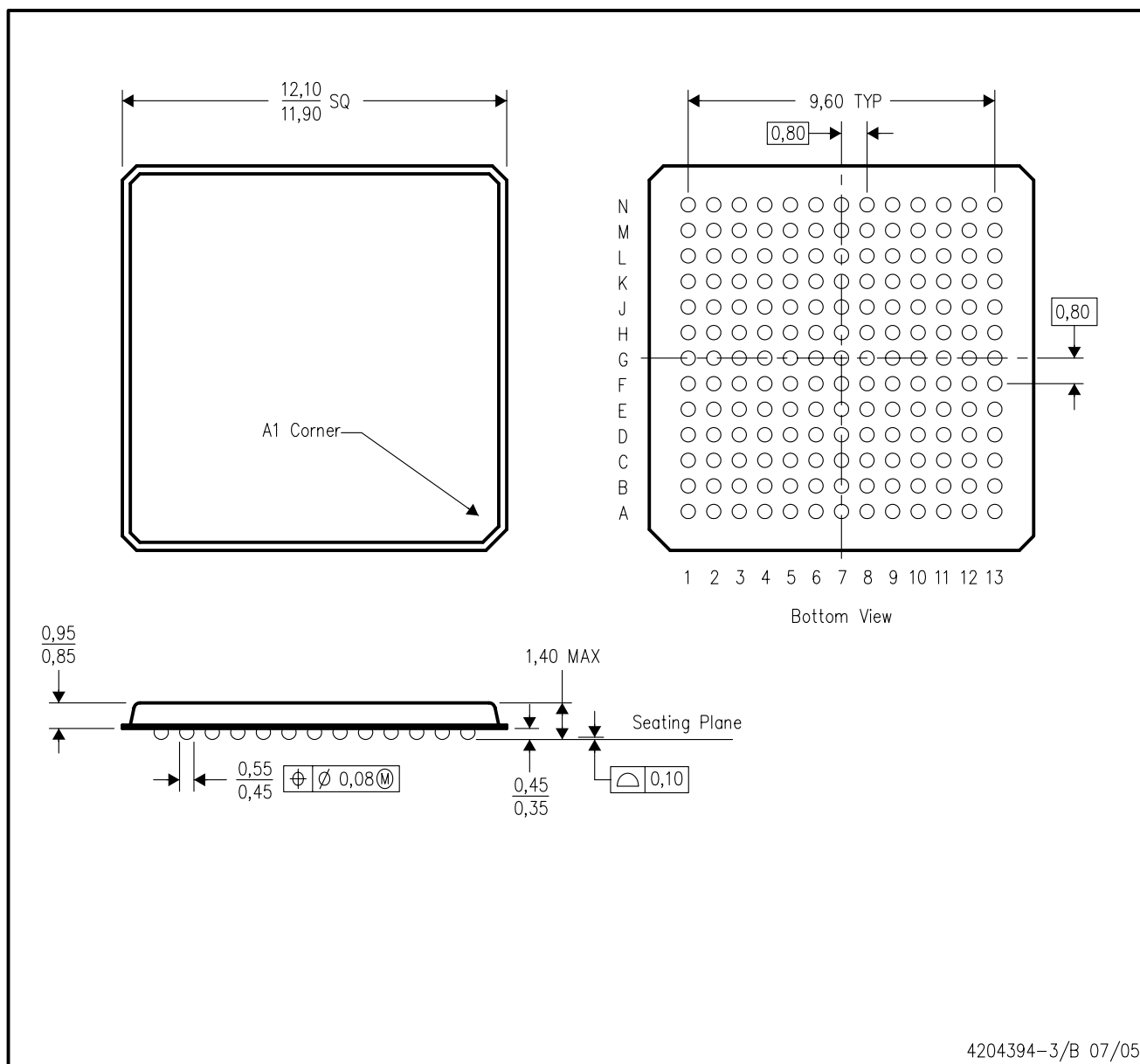
<sup>(3)</sup> MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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ZGU (S-PBGA-N169)

## PLASTIC BALL GRID ARRAY



- NOTES:
- A. All linear dimensions are in millimeters.
  - B. This drawing is subject to change without notice.
  - C. Micro Star BGA configuration
  - D. This is a lead-free solder ball design.

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### Applications

|                               |                                                                                          |
|-------------------------------|------------------------------------------------------------------------------------------|
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