

Advanced Power Management Unit

Check for Samples: [TPS658640](#)

1 INTRODUCTION

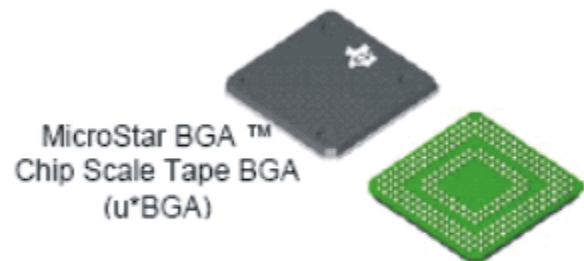
1.1 MAIN FEATURES

- **INTEGRATED POWER SUPPLIES**
 - 3 Programmable Step-Down converters
 - Software Controlled Enable/Forced PWM Mode
 - Automatic Power Saving Mode
 - Maximum 1.5A Outputs (SM0 and SM2)
 - Maximum 2.A Output (SM1)
 - 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 programmable)
 - 1 “Always On” With Output Voltages of 1.25V to 3.3V
 - 1 With Output Voltage of 1.7V–2.475V
- **DISPLAY SUPPORT FUNCTIONS**
 - 3 PWM Outputs With Programmable Frequency and Duty Cycle
 - Dual RGB LED Drivers
- **HOST INTERFACE**
 - I2C Bus
 - Interrupt Controller With Maskable Interrupts
 - GPIO Control (4)
- **SYSTEM MANAGEMENT**
 - Power Good Monitoring on all Supply Outputs
 - Software Reset Function
 - Hardware On/Off and Reboot Control

- Real Time Counter
- 11 Channel ADC With 3 Operating Modes
 - Single Conversion
 - Peak Detection
 - Averaging

1.2 APPLICATIONS

- Tablet PCs
- Netbooks
- SmartPhones
- Portable Navigation Devices
- Portable Media Players



1.3 DESCRIPTION

The TPS658640 provides an easy to use, fully integrated solution for handheld devices, integrating multiple regulated power supplies, system management and display functions in a small package. The I²C 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 ⁽¹⁾	Package Type	Package Drawing	Pins	Package Qty	Eco Plan ⁽²⁾	Lead/ Ball Finish	MSL Peak Temp ⁽³⁾	Samples (Requires Login)
TPS658640ZGUR	ACTIVE	BGA MICROSTAR	ZGU	169	1000	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	
TPS658640ZGUT	ACTIVE	BGA MICROSTAR	ZGU	169	250	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	
TPS658640ZQZR	ACTIVE	BGA MICROSTAR JUNIOR	ZQZ	120	2500	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	
TPS658640ZQZT	ACTIVE	BGA MICROSTAR JUNIOR	ZQZ	120	250	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	

⁽¹⁾ 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.

⁽²⁾ 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)

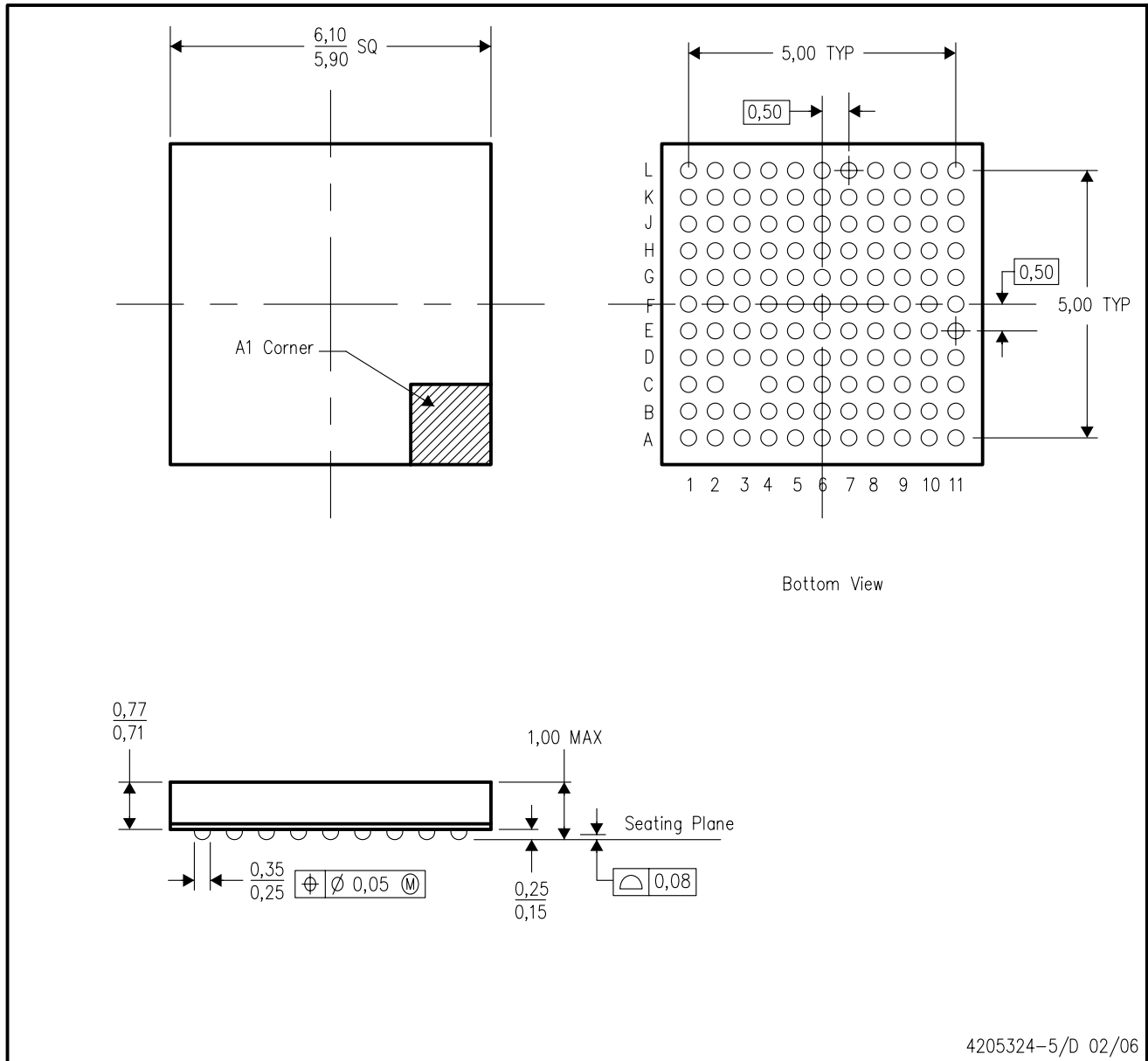
⁽³⁾ MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

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ZQZ (S-PBGA-N120)

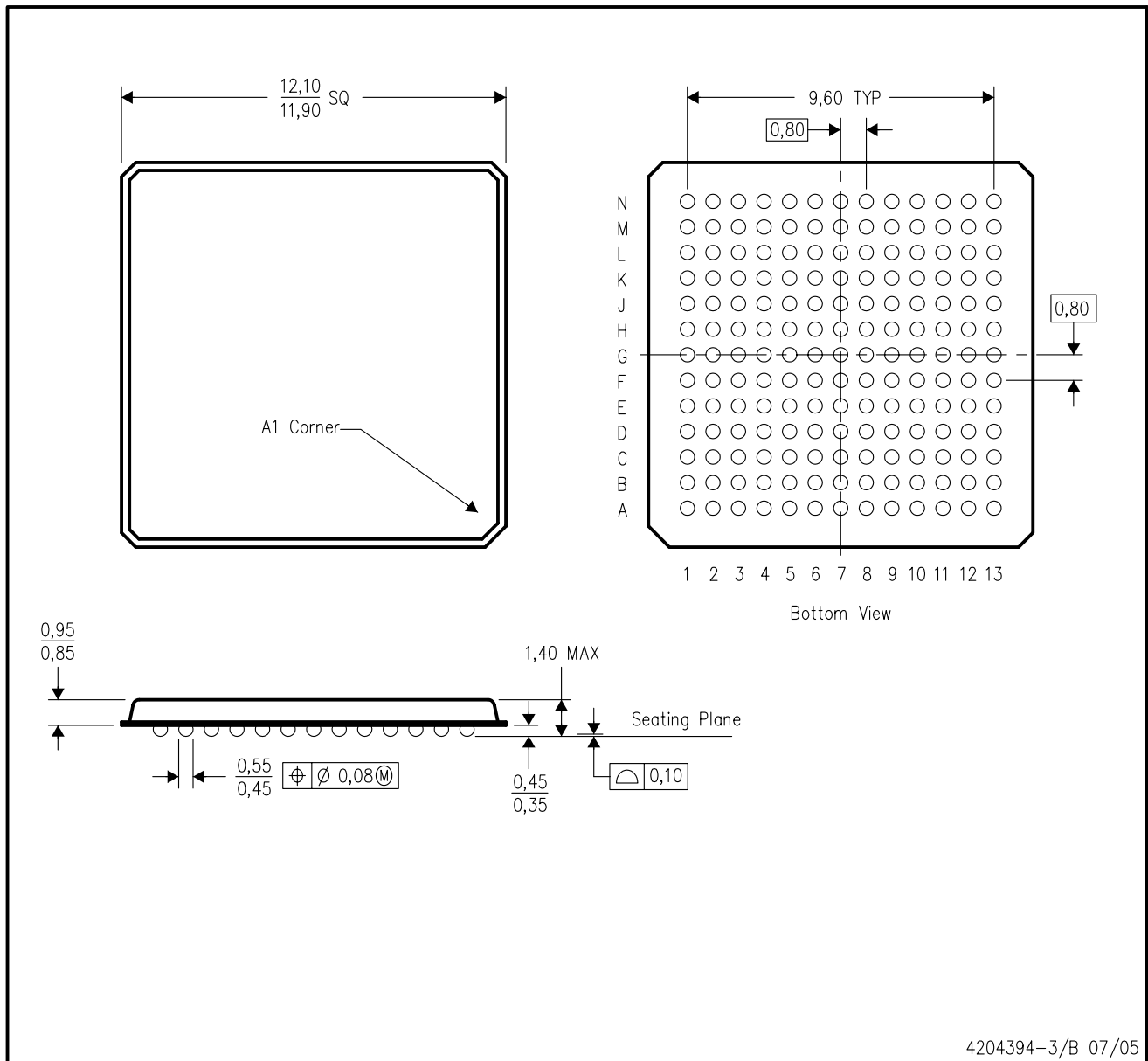
PLASTIC BALL GRID ARRAY



- NOTES:
- A. All linear dimensions are in millimeters.
 - B. This drawing is subject to change without notice.
 - C. Falls within JEDEC MO-225
 - D. This package is lead-free.

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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