

Advanced Power Management Unit

Check for Samples: [TPS658622B](#)

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 1-A 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 1.5-A Outputs (SM0, SM2)
 - Maximum 2-A Output (SM1)
 - 11 Programmable General-Purpose LDOs
 - 7 With Output Voltages of 1.25 V to 3.3 V
 - 2 With Output Voltages of 0.725 V to 1.5 V or 1.25 V to 2.586 V (Factory Configurable)
 - 1 Always On With Output Voltages of 1.25 V to 3.3 V
 - 1 With Output Voltage of 1.7 V to 2.475 V
- **DISPLAY SUPPORT FUNCTIONS**
 - 4 PWM Outputs With Programmable Frequency and Duty Cycle
 - Dual RGB LED Drivers
 - Constant-Current WLED Driver
 - 26.5 V (Max.) at 25 mA
 - Overvoltage 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. 18-V Overvoltage Protection
 - Power-Good Monitoring on All Supply Outputs
 - Software Reset Function
 - Hardware On/Off and Reboot Control
 - Momentary Power Loss (MPL) Handling
 - AUTOBOOT Feature
 - 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 Overview

The TPS658622B 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 6-mm × 6-mm 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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To request a full data sheet, please send an email to:
nvidia_contact@list.ti.com.

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)
TPS658622BZQZR	ACTIVE	BGA MICROSTAR JUNIOR	ZQZ	120	2500	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	Purchase Samples
TPS658622BZQZT	ACTIVE	BGA MICROSTAR JUNIOR	ZQZ	120	250	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	Contact TI Distributor or Sales Office

⁽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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TAPE AND REEL INFORMATION



QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
TPS658622BZQZT	BGA MICROSTAR JUNIOR	ZQZ	120	250	330.0	16.4	6.3	6.3	1.5	12.0	16.0	Q1

TAPE AND REEL BOX DIMENSIONS

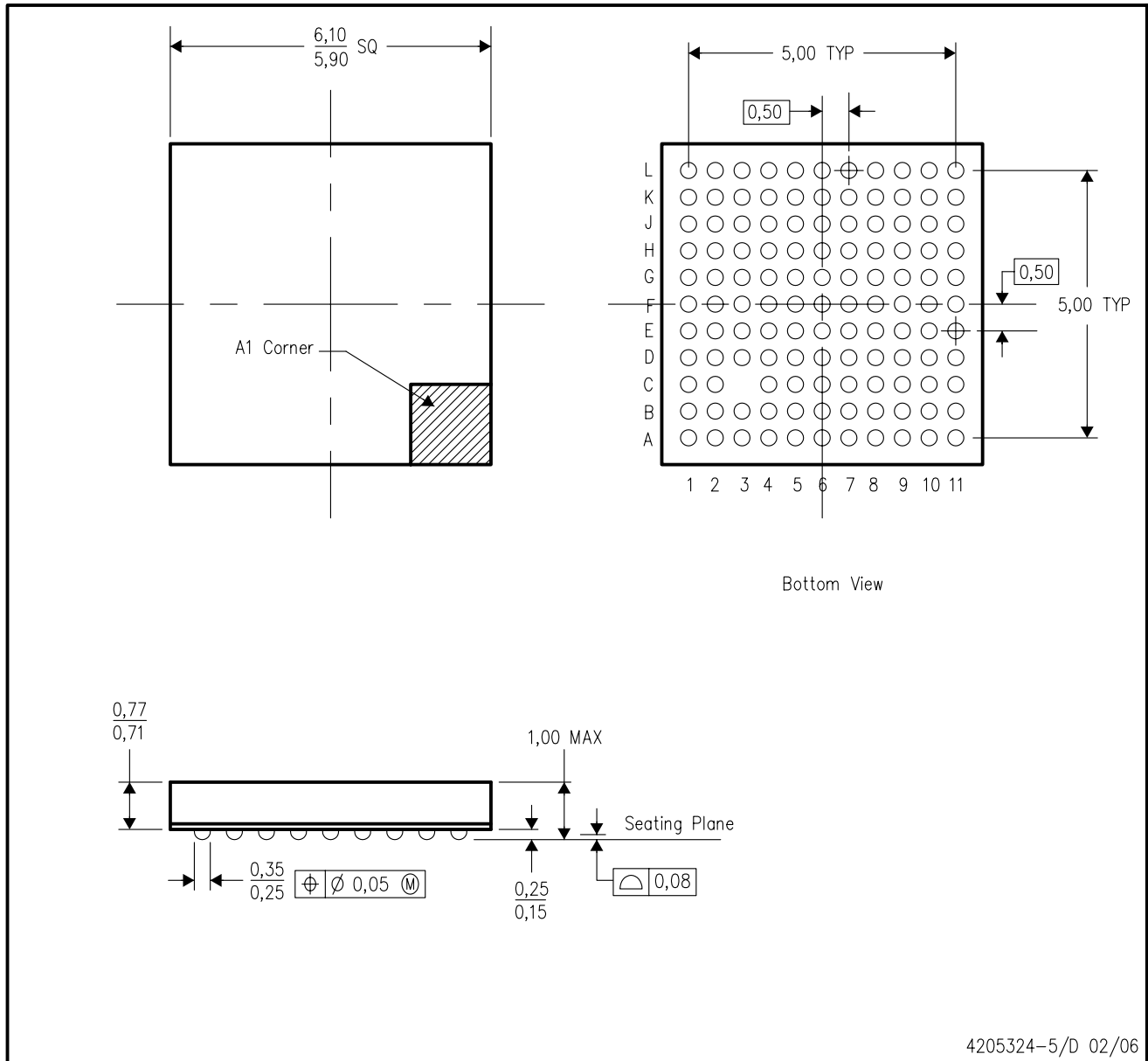


*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
TPS658622BZQZT	BGA MICROSTAR JUNIOR	ZQZ	120	250	333.2	345.9	28.6

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.

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