Advanced Power Management Unit

Check for Samples: TPS658622A

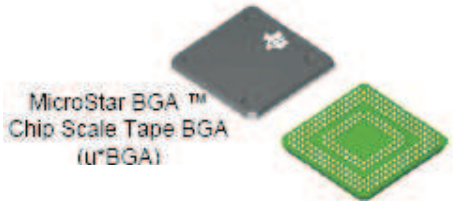
1 Introduction

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**
  - **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 TPS658622A 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 I^2C 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.

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)
TPS658622AZQZR	ACTIVE	BGA MICROSTAR JUNIOR	ZQZ	120	2500	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	
TPS658622AZQZT	ACTIVE	BGA MICROSTAR JUNIOR	ZQZ	120	250	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	

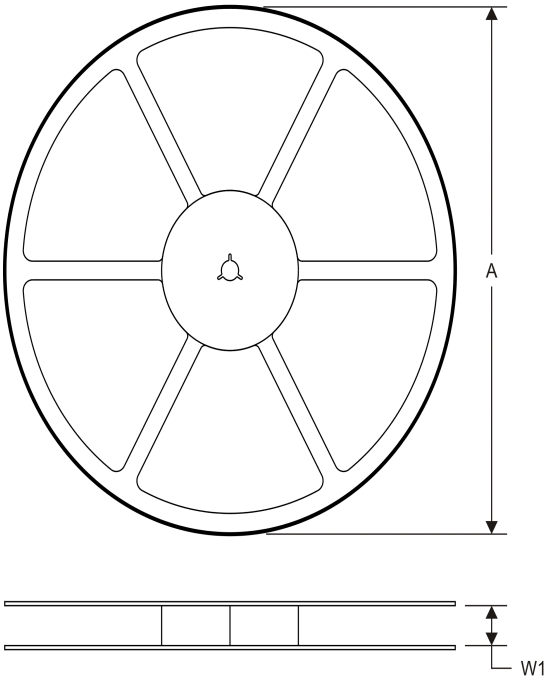
(1) The marketing status values are defined as follows:
ACTIVE: Product device recommended for new designs.
LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.
NRND: Not recommended for new designs. Device is in production to support existing customers, 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)

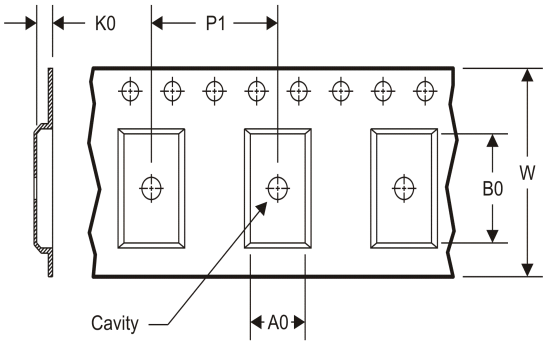
(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



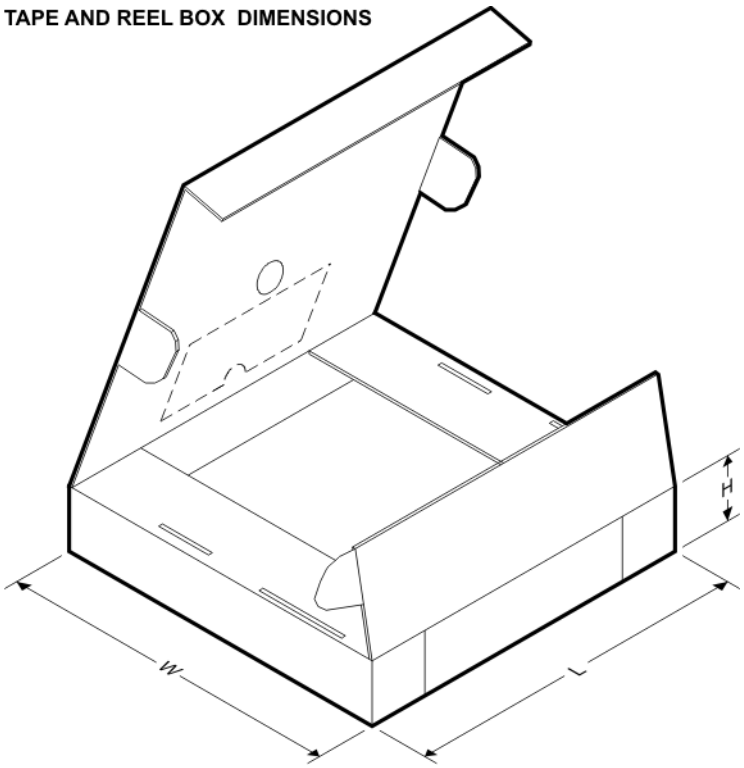
A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

TAPE AND REEL INFORMATION

*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
TPS658622AZQZR	BGA MICROSTAR JUNIOR	ZQZ	120	2500	330.0	16.4	6.3	6.3	1.5	12.0	16.0	Q1
TPS658622AZQZR	BGA MICROSTAR JUNIOR	ZQZ	120	2500	330.0	16.4	6.3	6.3	1.5	12.0	16.0	Q1
TPS658622AZQZT	BGA MICROSTAR JUNIOR	ZQZ	120	250	330.0	16.4	6.3	6.3	1.5	12.0	16.0	Q1
TPS658622AZQZT	BGA MICROSTAR JUNIOR	ZQZ	120	250	330.0	16.4	6.3	6.3	1.5	12.0	16.0	Q1

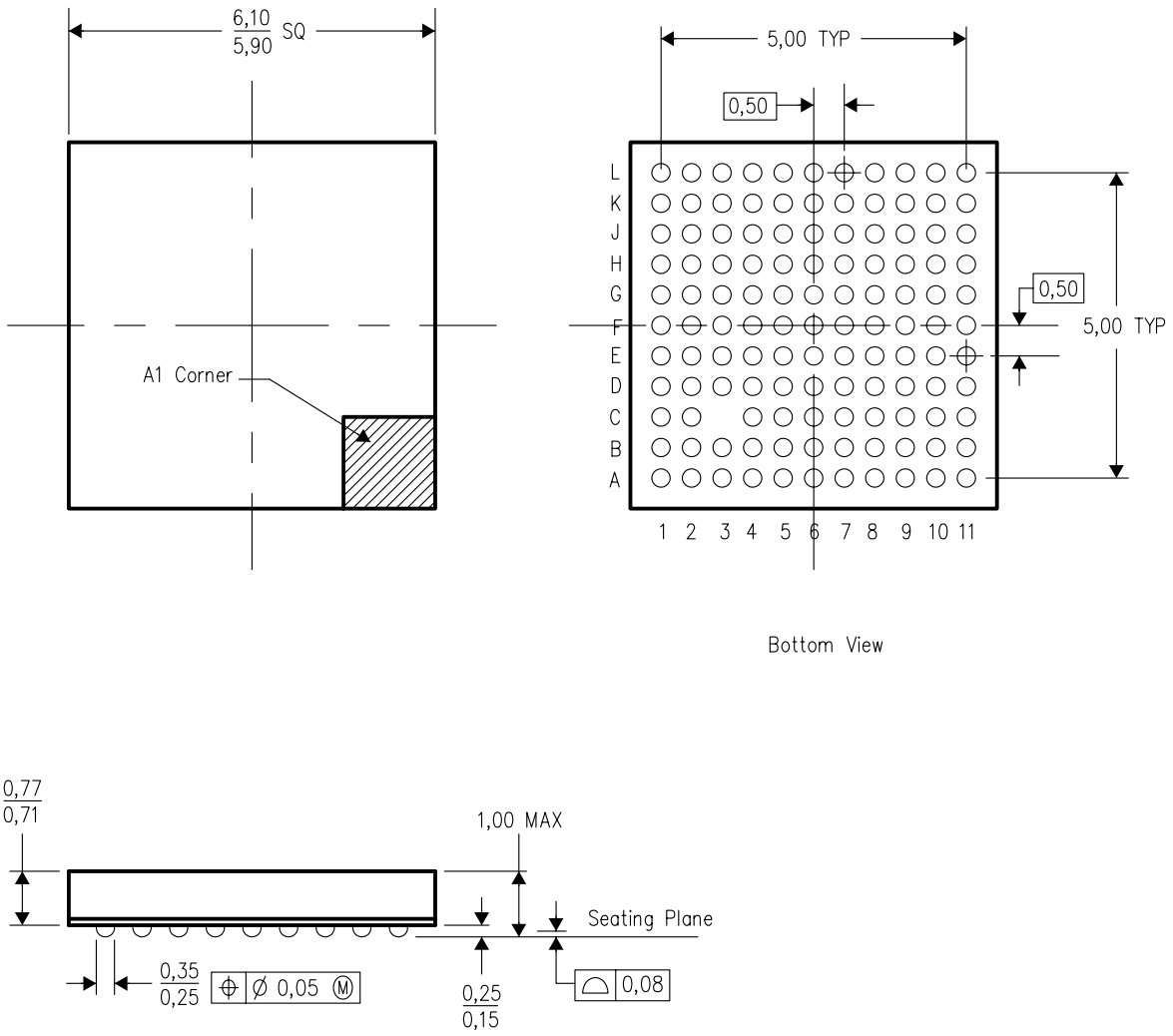
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
TPS658622AZQZR	BGA MICROSTAR JUNIOR	ZQZ	120	2500	336.6	336.6	31.8
TPS658622AZQZR	BGA MICROSTAR JUNIOR	ZQZ	120	2500	336.6	336.6	28.6
TPS658622AZQZT	BGA MICROSTAR JUNIOR	ZQZ	120	250	336.6	336.6	28.6
TPS658622AZQZT	BGA MICROSTAR JUNIOR	ZQZ	120	250	336.6	336.6	31.8

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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