

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-Po 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

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 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.

- **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



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

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 (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TPS658622AZQZR	LIFEBUY	BGA MICROSTAR JUNIOR	ZQZ	120	2500	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	-40 to 85	TPS658622A	
TPS658622AZQZT	LIFEBUY	BGA MICROSTAR JUNIOR	ZQZ	120	250	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	-40 to 85	TPS658622A	

(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) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

RoHS Exempt: TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

Green: TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of <=1000ppm threshold. Antimony trioxide based flame retardants must also meet the <=1000ppm threshold requirement.

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

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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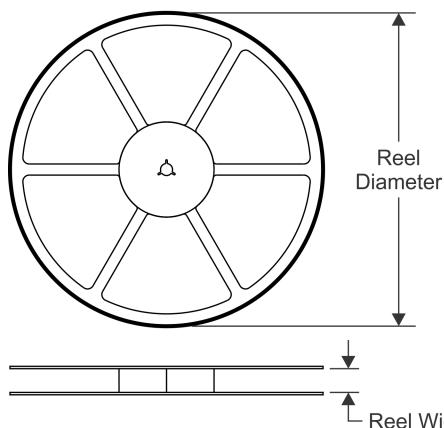
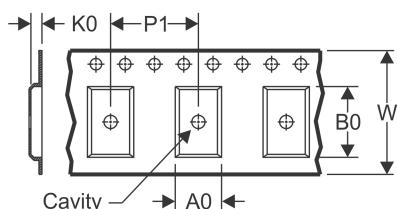


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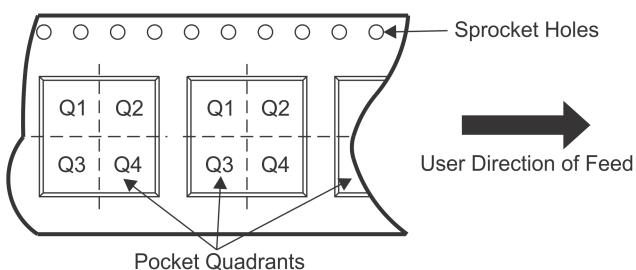
PACKAGE OPTION ADDENDUM

11-Jan-2020

In no event shall TI's liability arising out of such information exceed the total purchase price of the TI part(s) at issue in this document sold by TI to Customer on an annual basis.

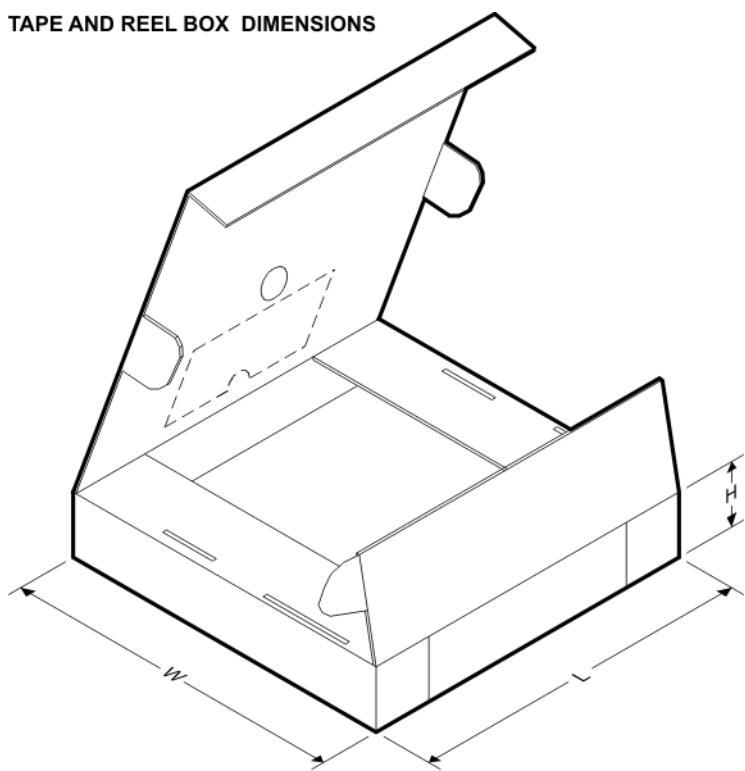
TAPE AND REEL INFORMATION
REEL DIMENSIONS

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

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

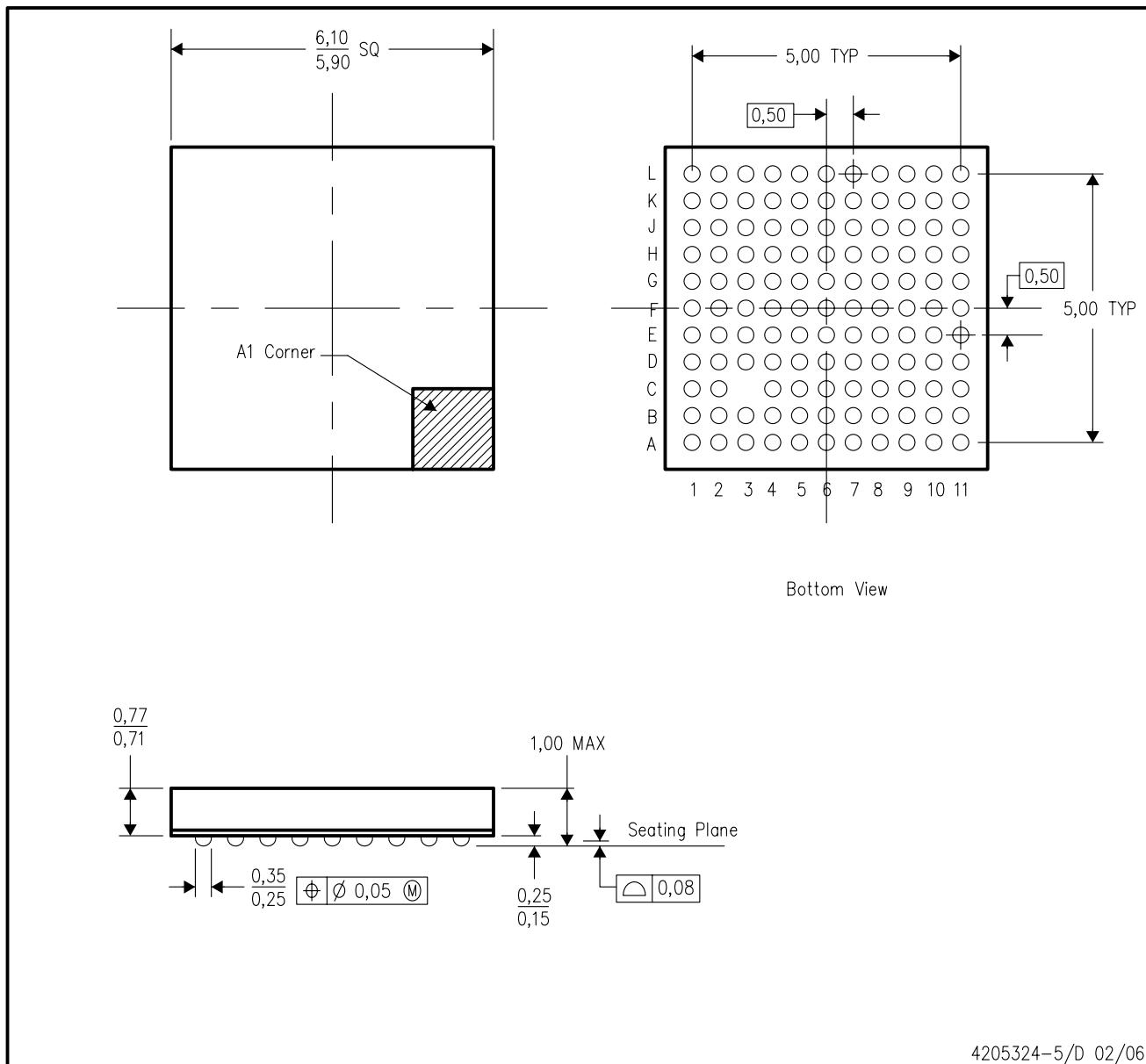
TAPE AND REEL BOX DIMENSIONS


*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
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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