Advanced Power Management Unit

Check for Samples: TPS658621C

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 2.0A 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 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

- **Netbooks**
- **Portable Navigation Devices**
- **Portable Media Players**

1.3 DESCRIPTION

The TPS658621C 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 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 (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TPS658621CZGUR	OBSOLETE	BGA MICROSTAR	ZGU	169		TBD	Call TI	Call TI	-40 to 85	TPS658621C	
TPS658621CZGUT	ACTIVE	BGA MICROSTAR	ZGU	169	250	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	-40 to 85	TPS658621C	Samples
TPS658621CZQZR	ACTIVE	BGA MICROSTAR JUNIOR	ZQZ	120	2500	Green (RoHS & no Sb/Br)	SNAGCU	Level-3-260C-168 HR	-40 to 85	TPS658621C	Samples
TPS658621CZQZT	OBSOLETE	BGA MICROSTAR JUNIOR	ZQZ	120		TBD	Call TI	Call TI	-40 to 85	TPS658621C	

(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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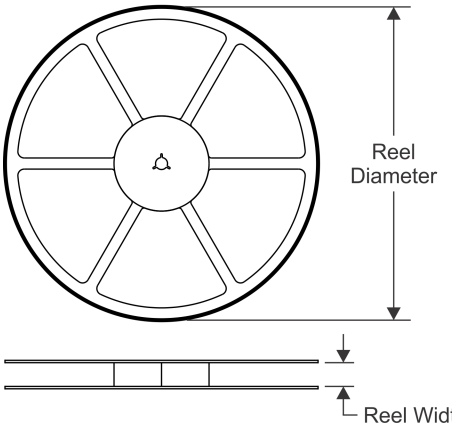
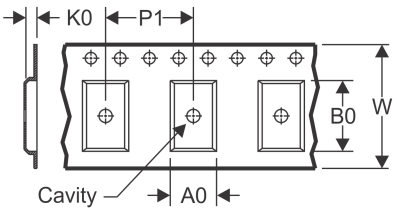
TAPE AND REEL INFORMATION

REEL DIMENSIONS

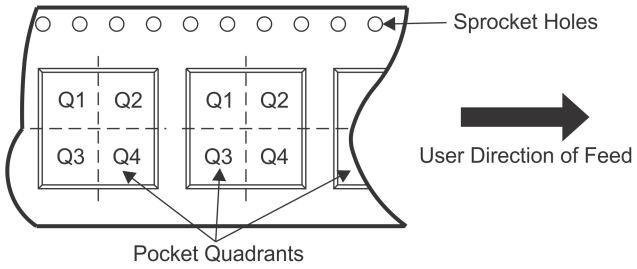


TAPE DIMENSIONS



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

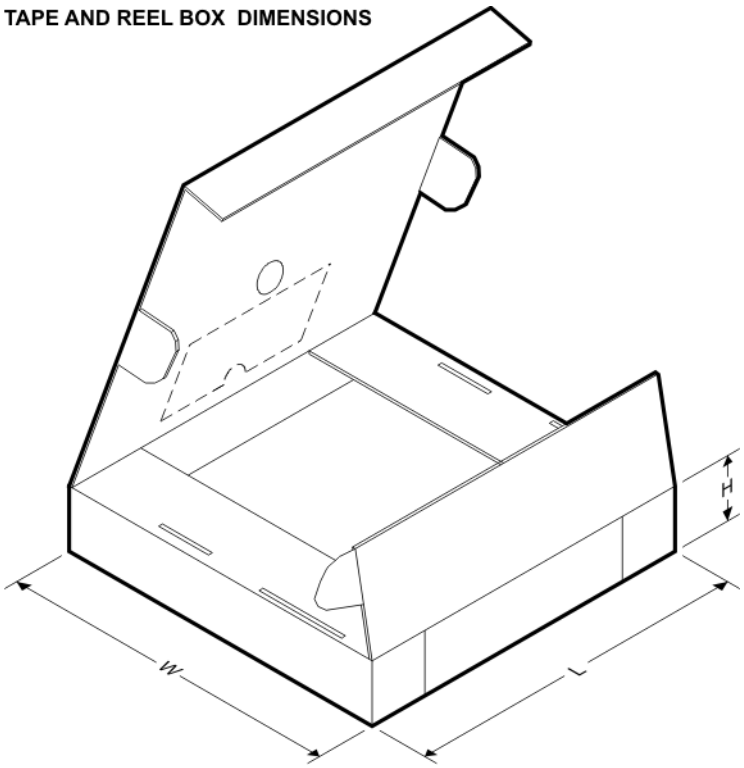
QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



*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
TPS658621CZQZR	BGA MICROSTAR JUNIOR	ZQZ	120	2500	330.0	16.4	6.3	6.3	1.5	12.0	16.0	Q1

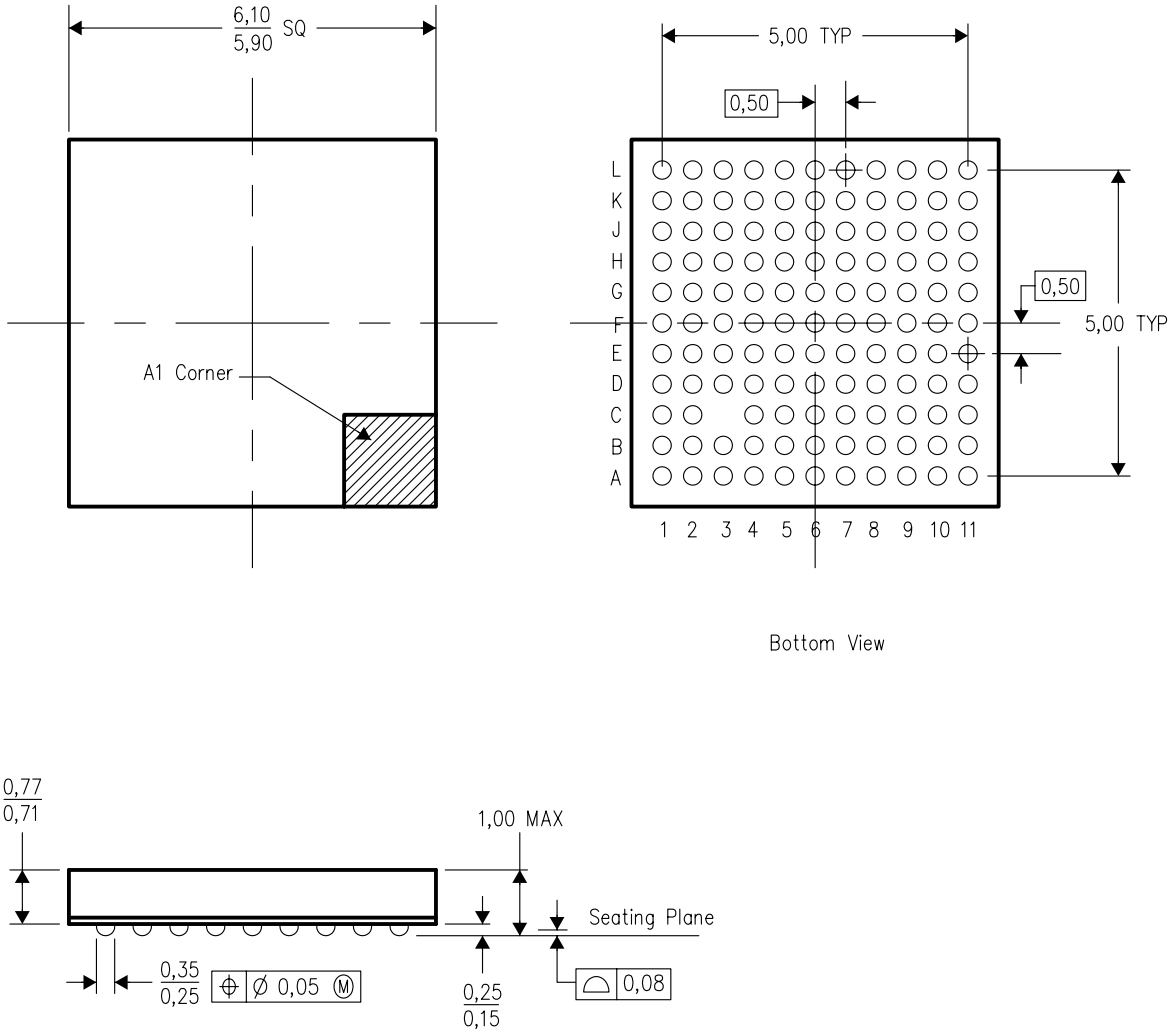
TAPE AND REEL BOX DIMENSIONS



*All dimensions are nominal

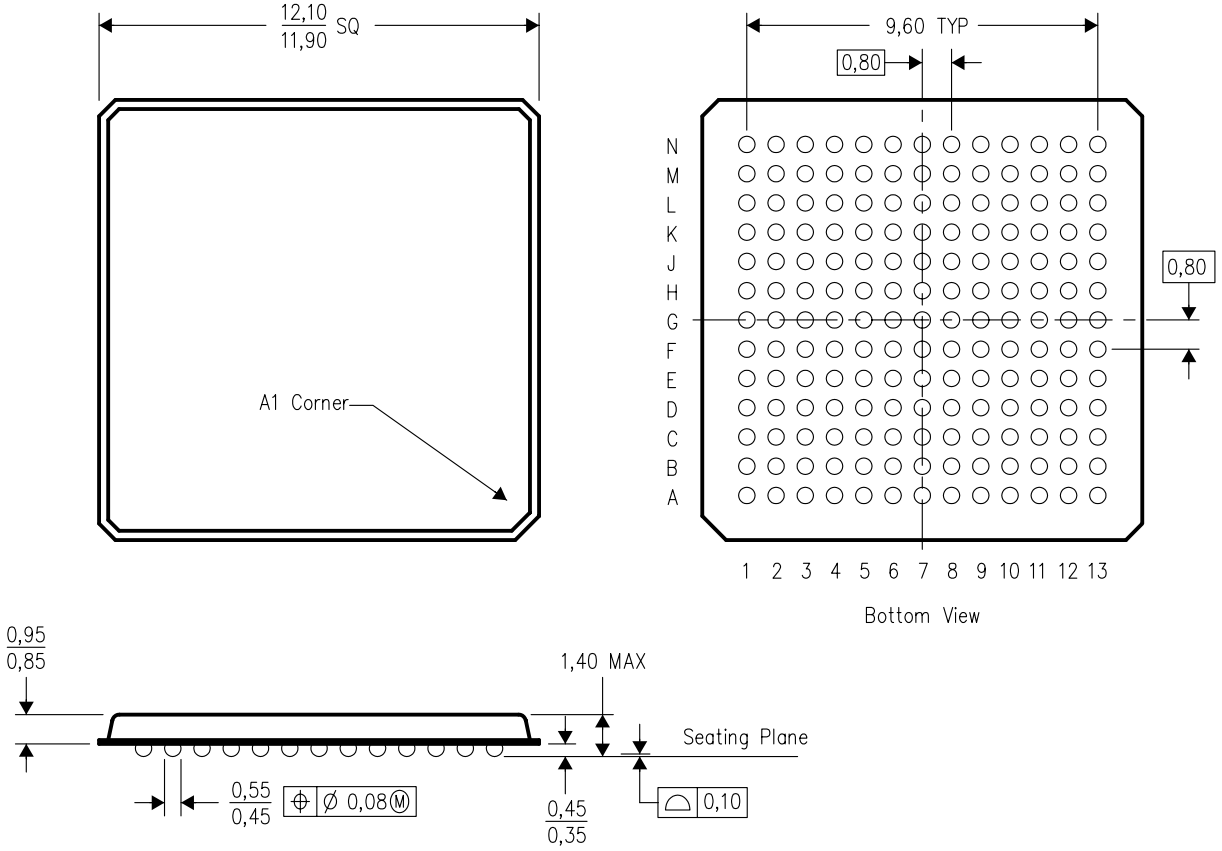
Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
TPS658621CZQZR	BGA MICROSTAR JUNIOR	ZQZ	120	2500	336.6	336.6	31.8

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.

ZGU (S–PBGA–N169) PLASTIC BALL GRID ARRAY



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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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