HIGH-EFFICIENCY, SOT23 STEP-DOWN, DC-DC CONVERTER

FEATURES

- **High Efficiency Synchronous Step-Down Converter With up to 95% Efficiency**
- **2.5-V to 6-V Input Voltage Range**
- **Adjustable Output Voltage Range**
- **Fixed Output Voltage Options Available**
- **Output Current**
- **Fixed Frequency PWM Operation**
- **Highest Efficiency Over Wide Load Current Range Due to Power Save Mode**
- **Quiescent Current**
- **Soft Start**
- **100% Duty Cycle Low-Dropout Operation**
- **Dynamic Output-Voltage Positioning**

APPLICATIONS

- **PDAs and Pocket PC**
- **Cellular Phones, Smart Phones**
- **Low Power DSP Supply**
- **Digital Cameras**
- **Portable Media Players**
- **Portable Equipment**

DESCRIPTION

The TPS62203 is a high-efficiency synchronous step-down converter ideally suited for portable systems powered by 1-cell Li-Ion or 3-cell NiMH/NiCd batteries. The device is also suitable to operate at a standard voltage rail.

The device is ideal to power low voltage DSPs and processors used in PDAs, pocket PCs, and smart phones. Under nominal load current, the device operates with a fixed switching frequency. At light load currents, the part enters the power save mode operation and the switching frequency is reduced; therefore, it achieves the highest efficiency over the entire load current range. The TPS62203 needs only three small external components. An advanced fast response voltage mode control scheme achieves superior line and load regulation with small ceramic input and output capacitors.

ORDERING INFORMATION(1)

PRODUCT	PACKAGE DESIGNATOR	PACKAGE	ORDERABLE PART NUMBER	PACKAGE QUANTITY
TPS62203	TD	Bare die in waffle pack(2)	TPS62203TDE1	252
			TPS62203TDE2	10

(1) For the most current package and ordering information, see the Package Option Addendum at the end of this document, or see the TI web site at www.ti.com.

(2) Processing is per the Texas Instruments commercial production baseline and is in compliance with the Texas Instruments Quality Control System in effect at the time of manufacture. Electrical screening consists of DC parametric and functional testing at room temperature only. Unless otherwise specified by Texas Instruments AC performance and performance over temperature is not warranted. Visual Inspection is performed in accordance with MIL-STD-883 Test Method 2010 Condition B at 75X minimum.

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.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of the Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

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This integrated circuit can be damaged by ESD. Texas Instruments recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

BARE DIE INFORMATION

DIE THICKNESS	BACKSIDE FINISH	BACKSIDE POTENTIAL	BOND PAD METALLIZATION COMPOSITION	BOND PAD THICKNESS
11 mils.	Silicon with backgrind	Ground	Al5Cu	650 nm

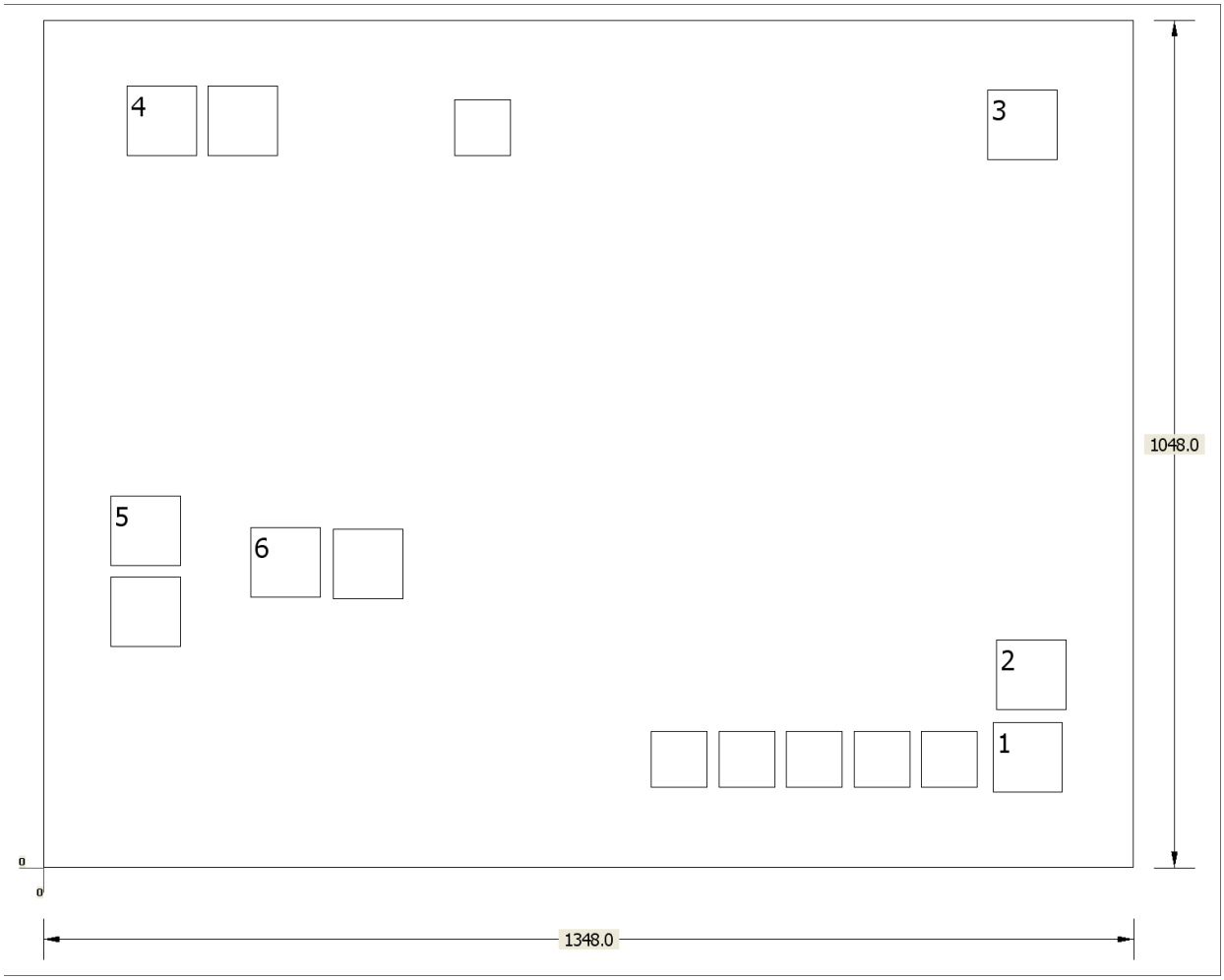


Table 1. Bond Pad Coordinates in Microns(1)

DESCRIPTION	PAD NUMBER	X MIN	Y MIN	X MAX	Y MAX
FB	1	1173.51	92.97	1260.45	179.91
GND	2	1178.19	194.94	1265.13	281.88
EN	3	1167.21	874.62	1254.15	961.56
VI	4	102.87	880.38	189.81	967.32
GND	5	82.98	373.32	169.92	460.26
SW	6	256.05	334.08	342.99	421.02

(1) Substrate GND.

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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
TPS62203TDE1	ACTIVE			0	252	TBD	Call TI	N / A for Pkg Type	-40 to 85		Samples
TPS62203TDE2	ACTIVE			0	10	TBD	Call TI	N / A for Pkg Type	-40 to 85		Samples

(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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