混合信号微控制器

特性

- 低电源电压范围: **1.8V** 至 **3.6V**
- 超低功耗
- **5** 种节能模式
- 从待机模式中超快速唤醒
- **16** 位精简指令集 **(RISC)** 架构
- 基本时钟模块配置
  - 带有四个校准频率且高达 **16MHz** 的内部频率
  - 内部超低功耗低频 **(LF)** 振荡器
  - **32kHz** 晶振
  - 外部数字时钟源
- 一个具有三个捕获/比较寄存器的 **16** 位 **Timer_A**
- 多达 **16** 个触感使能输入输出 **(I/O)** 引脚
- 支持串行外设接口 **(SPI)** 和 **I^2C** 的通用串行接口 **(USI)**
- 用于模拟的片载比较器
- 欠压检测器
- 串行板上编程，
  无需外部编程电压，
  利用安全熔丝实现可编程代码保护
- 具有两线制 **(Spy-Bi-Wire)** 接口的片上仿真逻辑电路

说明

德州仪器 （TI） MSP430™ 系列超低功率微控制器包含几个器件，这些器件特有针对多种应用的不同的外设集。这种架构与 5 种低功耗模式相组合，专为在便携式测量应用中延长电池使用寿命而优化。 该器件具有一个强大的 16 位 RISC CPU、16 位寄存器和有助于获得最大编码效率的常数发生器。

MSP430G2252 是一款超低功率混合信号微控制器，此处理器具有一个内置的 16 位定时器、和多达 16 个 I/O 触感使能引脚，以及使用通用串行通信接口的内置通信能力并带有一个多用途模拟比较器。 MSP430G2252 带有一个 10 位模数 (A/D) 转换器。 典型应用包括低成本传感器系统，此类系统负责捕获模拟信号、将之转换为数字值、随后对数据进行处理以进行显示或传送至主机系统。

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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.

ORDERING INFORMATION(1)

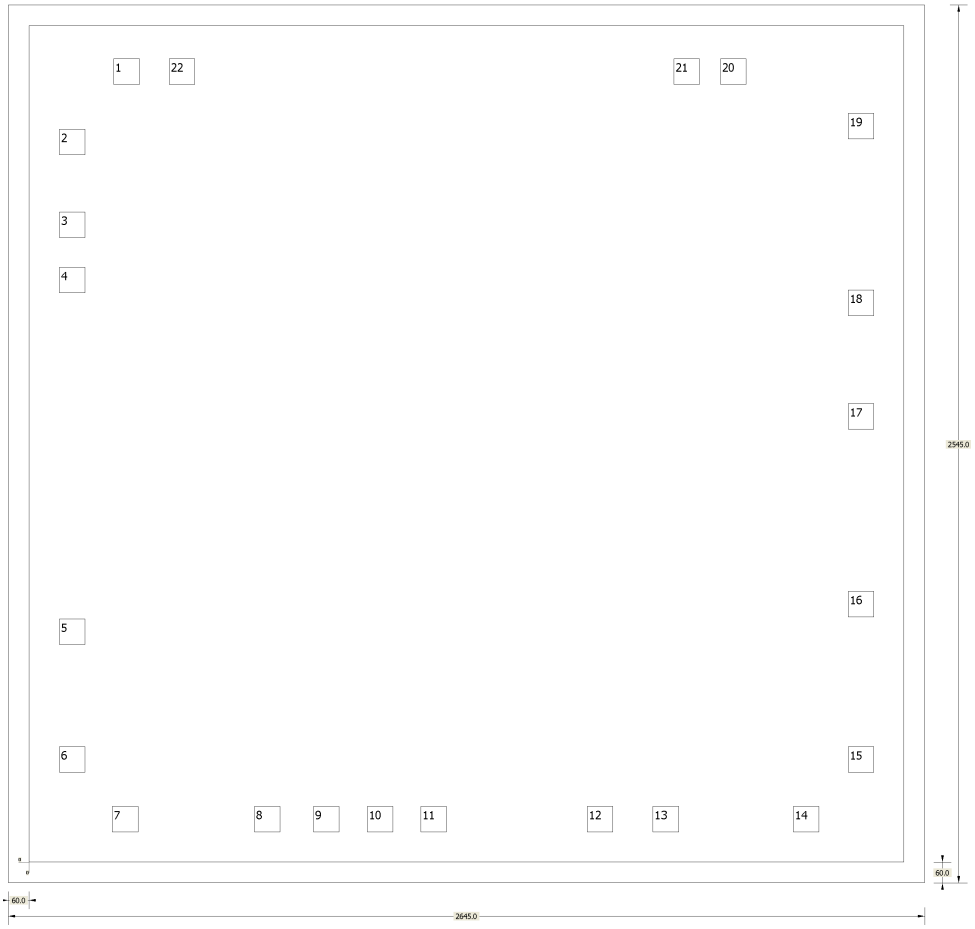
PRODUCT	PACKAGE DESIGNATOR	PACKAGE(2)	ORDERABLE PART NUMBER	PACKAGE QUANTITY
MSP430G2252	TD	Bare die in waffle pack	MSP430G2252TDA1	100
			MSP430G2252TDA2	10

(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.

BARE DIE INFORMATION

DIE THICKNESS	BACKSIDE FINISH	BACKSIDE POTENTIAL	BOND PAD METALLIZATION COMPOSITION	BOND PAD THICKNESS
11 mils.	Silicon with backgrind	Floating	AlCu (0.5%)	800 nm



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Table 1. Bond Pad Coordinates in Microns(1)

DESCRIPTION	PAD NUMBER	X MIN	Y MIN	X MAX	Y MAX
DVCC	1	244	2253.65	319	2328.65
P1.0/TA0CLK/ACLK/A0/CA0	2	87.4	2050.15	162.4	2125.15
P1.1/TA0.0/A1/CA1	3	87.4	1810.15	162.4	1885.15
P1.2/TA0.1/A2/CA2	4	87.4	1650.15	162.4	1725.15
P1.3/ADC10CLK/CAOUT/VREF-/VEREF-/A3/CA3	5	87.4	630.15	162.4	705.15
P1.4/TA0.2/SMCLK/A4/VREF+/VEREF+/CA4/TCK	6	87.4	260.15	162.4	335.15
P1.5/TA0.0/SCLK/A5/CA5/TMS	7	240.15	87.4	315.15	162.4
P2.0	8	650.15	87.4	725.15	162.4
P2.1	9	820.15	87.4	895.15	162.4
P2.2	10	976.15	87.4	1051.15	162.4
P2.3	11	1130.15	87.4	1205.15	162.4
P2.4	12	1610.15	87.4	1685.15	162.4
P2.5	13	1800.15	87.4	1875.15	162.4
P1.6/TA0.1/SDO/SCL/A6/CA6/TDI/TCLK	14	2204.85	87.4	2279.85	162.4
P1.7/SDI/SDA/CAOUT/A7/CA7/TDO/TDI	15	2362.6	260.15	2437.6	335.15
RST BAR/NMI/SBWTDIO	16	2362.6	710.15	2437.6	785.15
TEST/SBWTCK	17	2362.6	1254.8	2437.6	1329.8
XOUT/P2.7	18	2362.6	1583.85	2437.6	1658.85
XIN/P2.6/TA0.1	19	2362.6	2096.15	2437.6	2171.15
DVSS	20	1994.8	2253.65	2069.8	2328.65
DVSS	21	1859.8	2253.65	1934.8	2328.65
DVCC	22	404	2253.65	479	2328.65

(1) Substrate is floating.

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PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead finish/ Ball material (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
MSP430G2252TDA1	LIFEBUY			0	100	RoHS & Green	Call TI	N / A for Pkg Type	25 to 25		
MSP430G2252TDA2	LIFEBUY			0	10	RoHS & Green	Call TI	N / A for Pkg Type	25 to 25		

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

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