

低输入、高效同步降压控制器

查询样片: [TPS40007-DIE](#)

特性

- 低输出电压
- **Predictive Gate Drive™** 用于实现更高效率的 **N** 通道金属氧化物半导体场效应晶体管 (**MOSFET**)
- 外部可调软启动和过流限制
- 频率电压模式控制
- 具有 **V_{OUT}** 预偏置的源出/灌入电压
- 热关断
- 内部引导加载二极管

应用范围

- 网络设备
- 电信设备
- 基站
- 服务器
- 数字信号处理器 (**DSP**) 电源
- 电源模块

描述

TPS40007-DIE 是一款用于低压、非隔离式同步降压稳压器的控制器。这个控制器驱动一个用于主降压开关的 **N** 通道 **MOSFET**，和一个用于同步整流器开关的 **N** 通道 **MOSFET**，从而实现极高效率的功率转换。此外，此器件使用 TI 已获专利的 **Predictive Gate Drive**（可预期栅极驱动）技术控制从主开关关闭到整流器打开，以及从整流器关闭到主开关打开的延迟，用这个方法最大限度地减少同步整流器内二极管损耗（包括传导和恢复时的损耗）。这些损耗的减少量是很可观的，并且增加了效率。对于一个指定的转换器功率水平，可使用较小的 **FET**，或者可减少散热片的数量，甚至无需散热。

可使用一个连接到器件上的单个电阻器来调节电流限制阈值。TPS40007-DIE 控制器执行一个闭环软启动功能。

ORDERING INFORMATION⁽¹⁾

PRODUCT	PACKAGE DESIGNATOR	PACKAGE	ORDERABLE PART NUMBER	PACKAGE QUANTITY
TPS40007	TD	Bare die in waffle pack ⁽²⁾	TPS40007TDA3	200
			TPS40007TDA2	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.

Predictive Gate Drive is a trademark of Texas Instruments.

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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English Data Sheet: [SLUSBS7](#)



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
15.5 mils.	Silicon with backgrind	Floating	PdNiCu	18200 nm

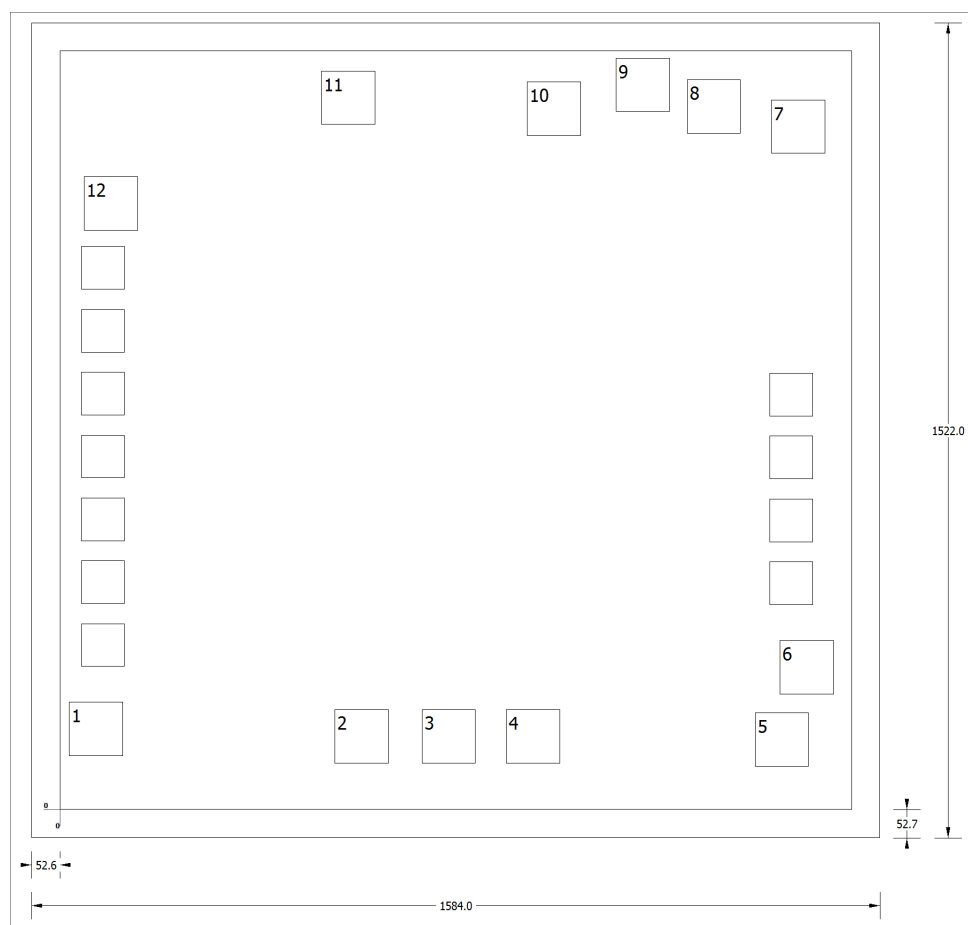


Table 1. Bond Pad Coordinates in Microns

DESCRIPTION	PAD NUMBER	X MIN	Y MIN	X MAX	Y MAX
ILIM	1	16.74	100.26	117.54	201.06
FB	2	513.45	86.49	614.25	187.29
COMP	3	675.54	86.49	776.34	187.29
SS/SD	4	832.77	86.49	933.57	187.29
GND	5	1297.62	80.37	1398.42	181.17
GND	6	1344.42	215.46	1445.22	316.26
LDRV	7	1328.04	1224.54	1428.84	1325.34
VDD	8	1170.63	1262.25	1271.43	1363.05
VDD	9	1037.88	1302.66	1138.68	1403.46
SW	10	872.46	1257.93	973.26	1358.73
HDRV	11	488.07	1278.63	588.87	1379.43
BOOT	12	45.27	1080.81	146.07	1181.61

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
TPS40007TDA2	ACTIVE			0	10	RoHS & Green	Call TI	N / A for Pkg Type	25 to 25		Samples
TPS40007TDA3	ACTIVE			0	100	RoHS & Green	Call TI	N / A for Pkg Type	25 to 25		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 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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