

## TPS62480 2.4-V to 5.5-V, 6-A, 2-Phase Step-Down Converter

### 1 Features

- Dual Phase Current Mode Topology
- Input Voltage Range 2.4 to 5.5 V
- Output Voltage Range 0.6 to 5.5 V
- Output Current of 6 A
- Typical Quiescent Current of 23  $\mu$ A
- Peak Current Difference <15%
- Output Voltage Accuracy of  $\pm$ 1% (PWM Mode)
- Output Voltage Select
- Phase Shifted Operation
- Automatic Power Save Modes
- Forced PWM Mode
- Adjustable Soft Start
- Power Good / Thermal Good Outputs
- Undervoltage Lockout
- Overcurrent and Short-Circuit Protection
- Overtemperature Protection
- 3 x 2.5 mm HotRod™ Package

### 2 Applications

- Low Profile Point-of-Load Supply
- Solid State Drives
- Ultra Portable/Tablet/Embedded PC
- Optical Modules, CMOS Cameras

### 3 Description

The TPS62480 is a synchronous dual phase step-down DC-DC converter for low profile point-of-load power supplies. The input voltage range of 2.4 to 5.5 V enables operation from typical 3.3-V or 5-V interface supplies as well as from backup circuits dropping down as low as 2.4 V. The output current is up to 6 A continuously provided by two phases of 3 A each, allowing the use of low-profile external components. Both the rails are running out of phase, reducing pulse current noise significantly.

The TPS62480 provides an automatically entered power save mode to maintain high efficiency down to very-light loads. This incorporates an automatic phase adding and shedding feature using both or only one phase according to the actual load.

The device features a Power Good signal and an adjustable soft start. Also, the device features a Thermal Good signal to detect excessive internal temperature. TPS62480 is able to operate in 100% duty cycle mode. The output voltage can be changed to a preselected value by VSEL pin.

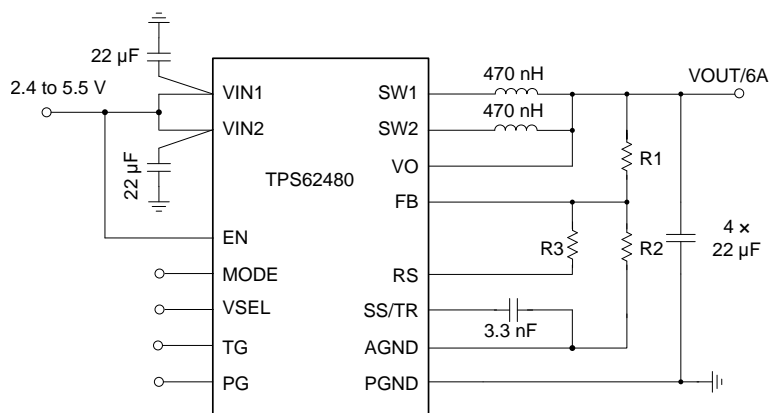
The TPS62480 is packaged in a small 3 x 2.5 mm HotRod™ package (RCN).

#### Device Information<sup>(1)</sup>

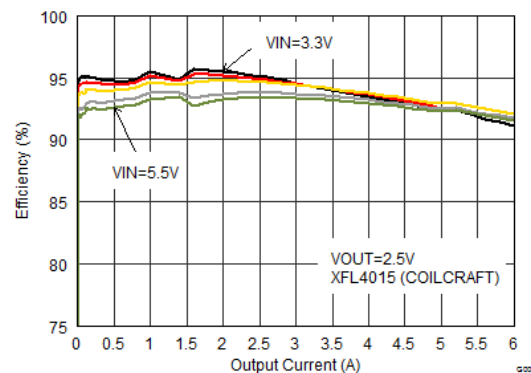
PART NUMBER	PACKAGE	BODY SIZE (NOM)
TPS62480	VSON (16)	3.00 x 2.50 mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

Typical Application Schematic



Efficiency vs Output Current



## 4 Device and Documentation Support

### 4.1 Community Resources

The following links connect to TI community resources. Linked contents are provided "AS IS" by the respective contributors. They do not constitute TI specifications and do not necessarily reflect TI's views; see TI's [Terms of Use](#).

**TI E2E™ Online Community** *TI's Engineer-to-Engineer (E2E) Community*. Created to foster collaboration among engineers. At [e2e.ti.com](http://e2e.ti.com), you can ask questions, share knowledge, explore ideas and help solve problems with fellow engineers.

**Design Support** *TI's Design Support* Quickly find helpful E2E forums along with design support tools and contact information for technical support.

### 4.2 Trademarks

HotRod, E2E are trademarks of Texas Instruments.  
All other trademarks are the property of their respective owners.

### 4.3 Electrostatic Discharge Caution



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.

### 4.4 Glossary

[SLYZ022](#) — *TI Glossary*.

This glossary lists and explains terms, acronyms, and definitions.

## 5 Mechanical, Packaging, and Orderable Information

The following pages include mechanical, packaging, and orderable information. This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the left-hand navigation.

**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
TPS62480RNCR	PREVIEW	VQFN	RNC	16	3000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	X62480	
TPS62480RNCT	PREVIEW	VQFN	RNC	16	250	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-1-260C-UNLIM	-40 to 125	X62480	

(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.

**OBSELETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(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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