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# FAN53528

## 3.0 A, 2.4 MHz, Digitally Programmable Buck Regulator

### Features

- Fixed-Frequency Operation: 2.4 MHz
- Best-in-Class Load Transient
- Continuous Output Current Capability: 3.0 A
- 2.5 V to 5.5 V Input Voltage Range
- Digitally Programmable Output Voltage:
  - 0.35 V to 1.14375 V in 6.25 mV Steps
- Programmable Slew Rate for Voltage Transitions
- I<sup>2</sup>C-Compatible Interface Up to 3.4 Mbps
- PFM Mode for High Efficiency in Light-Load
- Quiescent Current in PFM Mode: 50  $\mu$ A (Typical)
- Input Under-Voltage Lockout (UVLO)
- Thermal Shutdown and Overload Protection
- 15-Bump Wafer-Level Chip Scale Package (WLCSP)

### Applications

- Application, Graphic, and DSP Processors
  - ARM™, Tegra™, OMAP™, NovaThor™, ARMADA™, Krait™, etc.
- Hard Disk Drives, LPDDR3, LPDDR4
- Tablets, Netbooks, Ultra-Mobile PCs
- Smart Phones
- Gaming Devices

### Description

The FAN53528 is a step-down switching voltage regulator that delivers a digitally programmable output from an input voltage supply of 2.5 V to 5.5 V. The output voltage is programmed through an I<sup>2</sup>C interface capable of operating up to 3.4 MHz.

Using a proprietary architecture with synchronous rectification, the FAN53528 is capable of delivering 3.0 A continuous at over 80% efficiency, maintaining that efficiency at load currents as low as 10 mA. The regulator operates at a nominal fixed frequency of 2.4 MHz, which reduces the value of the external components. Additional output capacitance can be added to improve regulation during load transients without affecting stability.

At moderate and light loads, Pulse Frequency Modulation (PFM) is used to operate in Power-Save Mode with a typical quiescent current of 50  $\mu$ A at room temperature. Even with such a low quiescent current, the part exhibits excellent transient response during large load swings. At higher loads, the system automatically switches to fixed-frequency control, operating at 2.4 MHz. In Shutdown Mode, the supply current drops below 1  $\mu$ A, reducing power consumption. PFM Mode can be disabled if fixed frequency is desired. The FAN53528 is available in a 15-bump, 1.310 mm x 2.015 mm, 0.4 mm ball pitch WLCSP.

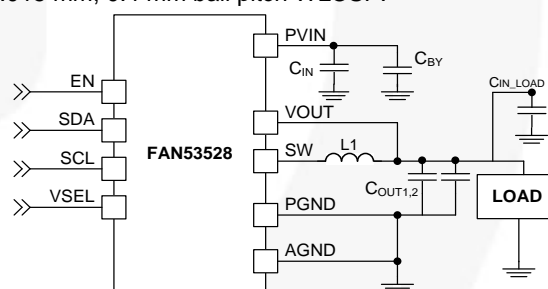


Figure 1. Typical Application

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### Ordering Information

Part Number	Power-Up Defaults		EN Delay	Temperature Range	Package	Packing Method	Device Marking
	VSEL0	VSEL1					
FAN53528BUC08X	0.4	0.6	No	-40 to 85°C	WLCSP	Tape & Reel	FX
FAN53528DUC40X	0.6	0.9	No				FY
FAN53528GUC48X	0.65	0.7	No				FZ
FAN53528EUC48X	0.65	0.7	5ms				FW



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| AttitudeEngine™  | FRFET®   |  ® | TinyBoost®  |
| Awinda®  | Global Power Resource™                         | Power Supply WebDesigner™   | TinyBuck®   |
| AX-CAP®*   | GreenBridge™                                   | PowerTrench®  | TinyCalc™   |
| BitSiC™  | Green FPS™                                     | PowerXS™  | TinyLogic®  |
| Build it Now™  | Green FPS™ e-Series™                           | Programmable Active Droop™  | TINYOPTO™   |
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| DEUXPEED®  | MegaBuck™                                      | Saving our world, 1mW/W/kW at a time™   | TRUECURRENT®*   |
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| EcoSPARK®  | MicroFET™                                      | SmartMax™   |  SerDes™         |
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|  | OPTOLOGIC®                                     | Sync-Lock™  |   |

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No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

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