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December 2015

FAN53200
5 A, 2.4 MHz, Digitally Programmable TinyBuck® Regulator

Features

- Quiescent Current in PFM Mode: 60 µA (Typical)
- Digitally Programmable Output Voltage:
  - 0.6 -1.3875 V in 12.5 mV Steps
- Best-in-Class Load Transient
- Continuous Output Current Capability: 5 A
- 2.5 V to 5.5 V Input Voltage Range
- Programmable Slew Rate for Voltage Transitions
- Fixed-Frequency Operation: 2.4 MHz
- I^2C-Compatible Interface Up to 3.4 Mbps
- Internal Soft-Start
- Input Under-Voltage Lockout (UVLO)
- Thermal Shutdown and Overload Protection
- 20-Bump Wafer-Level Chip Scale Package (WLCSP)

Applications

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

Description

The FAN53200 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^2C interface capable of operating up to 3.4 Mbps.

Using a proprietary architecture with synchronous rectification, the FAN53200 is capable of delivering 5 A continuously at over 80% efficiency, while maintaining over 80% 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. Inductance up to 1.2 µH may be used with additional output capacitance.

At moderate and light loads, Pulse Frequency Modulation (PFM) is used to operate in Power-Save Mode with a typical quiescent current of 60 µA. At higher loads, the system automatically switches to fixed-frequency control, operating at 2.4 MHz. In Shutdown Mode, the supply current drops to 0.1 µA, reducing power consumption. PFM Mode can be disabled if constant frequency is desired. The FAN53200 is available in a 20-bump, 1.6 x 2.0 mm, WLCSP.

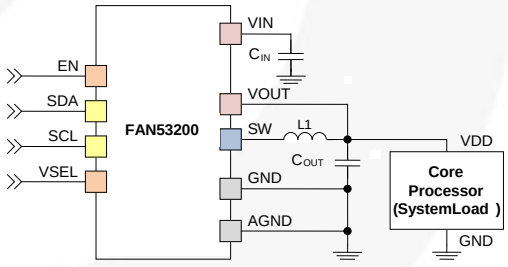

Figure 1. Typical Application

Ordering Information

Part Number	Power-Up Defaults		I^2C Slave Address	Device ID	Device Marketing	Package
	VSEL0	VSEL1				
FAN53200UC35X	OFF	1.15 V	C0	0000	B9	WLCSP-20
FAN53200UC44X	1.15V	0.85 V	C0	0000	CD	WLCSP-20

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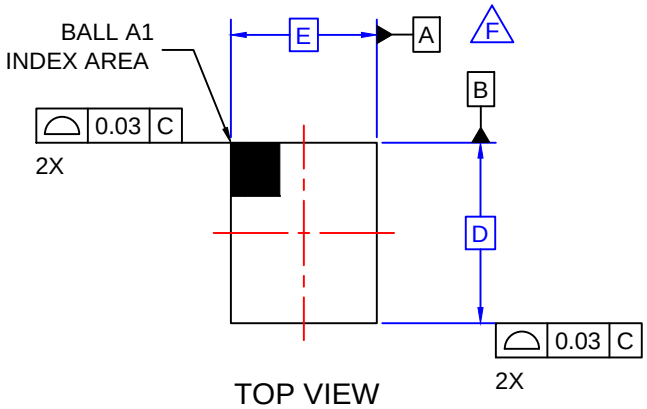
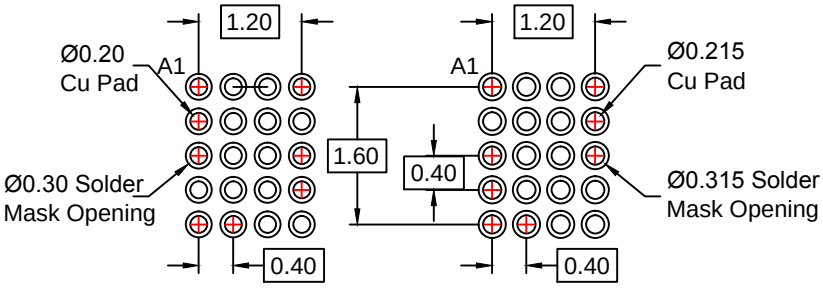
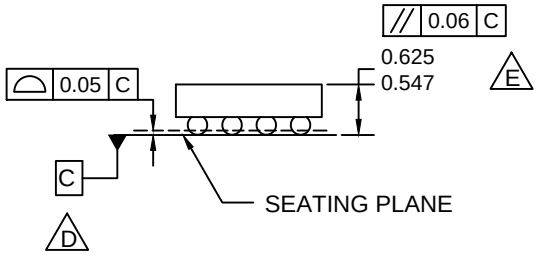
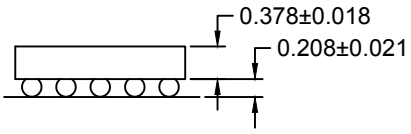


TOP VIEW

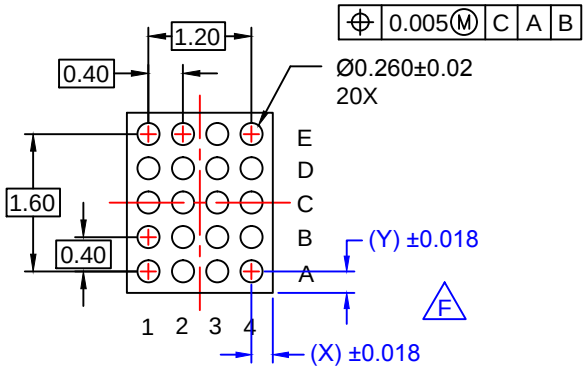


RECOMMENDED LAND PATTERN
(NSMD TYPE)





SIDE VIEWS



BOTTOM VIEW

NOTES:

A. NO JEDEC REGISTRATION APPLIES.
B. DIMENSIONS ARE IN MILLIMETERS.
C. DIMENSIONS AND TOLERANCE PER ASMEY14.5M, 2009.
D. DATUM C IS DEFINED BY THE SPHERICAL CROWNS OF THE BALLS.
E. PACKAGE NOMINAL HEIGHT IS 586 MICRONS ±39 MICRONS (547-625 MICRONS).
F. FOR DIMENSIONS D, E, X, AND Y SEE PRODUCT DATASHEET.
G. DRAWING FILNAME: MKT-UC020AArev4.

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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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