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April 2016

FAN5451x

3.2 A Dual Input, Switch Mode Charger with Power Path

Features

- Fully Integrated, High-Efficiency Charger for Single-Cell Li-Ion and Li-Polymer Battery Packs
- Power Path Circuit ensures Fast System Startup with a Dead Battery
- 95% Charge Efficiency
- Charge Current Programmable up to 3.2 A
- 10 mV Float Voltage Accuracy
- $\pm 5\%$ Charge Current Regulation Accuracy
- 5 V, 1.5 A Boost Mode for USB OTG
- 22 V DC Withstand Voltage on VBUS
- 13.25 V Maximum Input Operating Voltage
- -2 V Input Reverse Polarity Protection

Benefits

- Secondary Input for Wireless Charging
- Dynamic Input Voltage Control (DIVC) for Operation with Weak Adapters
- USB BC1.2 Compatible
- Programmable 10 mA LDO
- Programmable Safety Timer with Reset Control
- Pin Configurable Ship Mode prevents Battery Discharge to System Load
- Pin or Software Configurable Hardware Reset for Quick System Restart
- Battery Temperature Sensing Ensures Safe-To-Charge Operation (JEITA)
- Thermal Shutdown and Programmable Thermal Regulation
- High-Speed I²C Interface (3.4 Mb/s) with Fast Mode Plus Compatibility

Applications

- Smart Phones
- Tablets
- e-Books
- Li Ion Powered Devices

Description

The FAN5451x family of chargers includes an I²C controlled 3.2 A USB-compliant switch-mode charger.

To facilitate fast system startup, the IC includes an optimized Power Path circuit which also accurately measures battery currents during charging and provides low impedance during discharge.

The charging parameters and operating modes are programmable through an I²C Interface. Charge status is reported back to the host through the I²C port and the /STAT pin.

The FAN5451x provides battery charging in three modes: Pre-Charge (IPP), Constant Current (CC) and Constant Voltage (CV). The charger can automatically restart the charge cycle when the battery falls below a restart voltage threshold. If the input source is removed, the IC enters a high-impedance mode, blocking battery current from leaking to either input.

The FAN5451x is available in a 63-bump, 0.4 mm pitch WLCSP package.

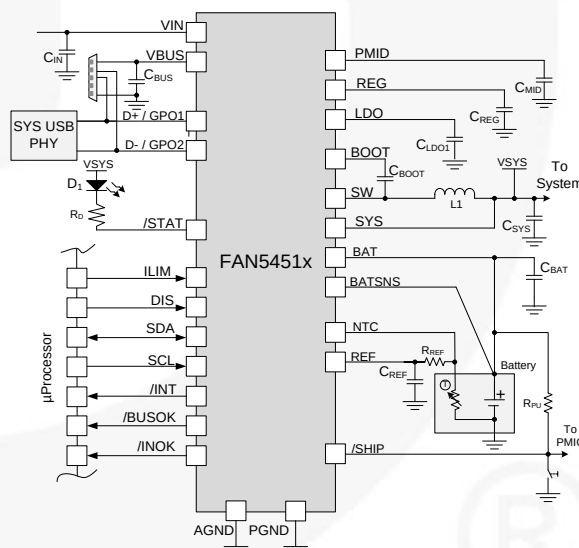
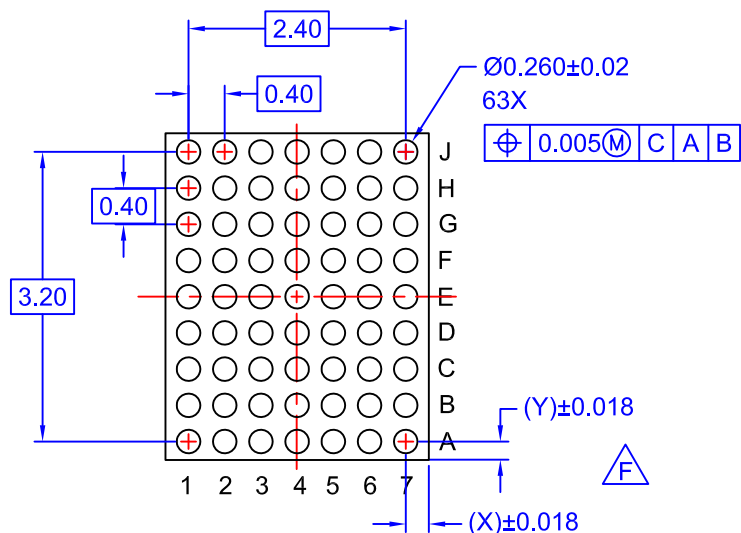
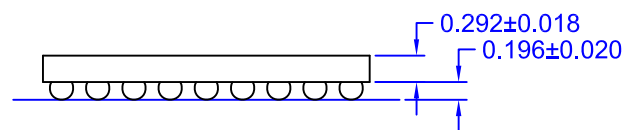
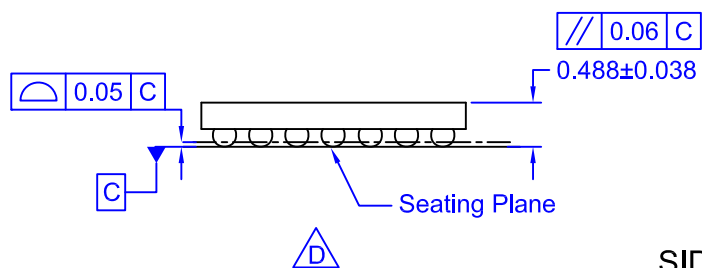
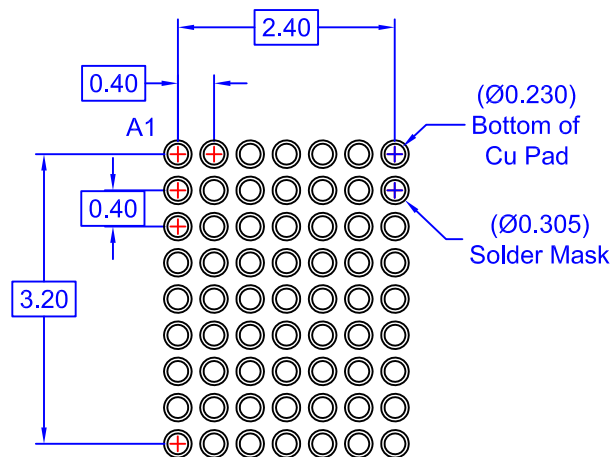
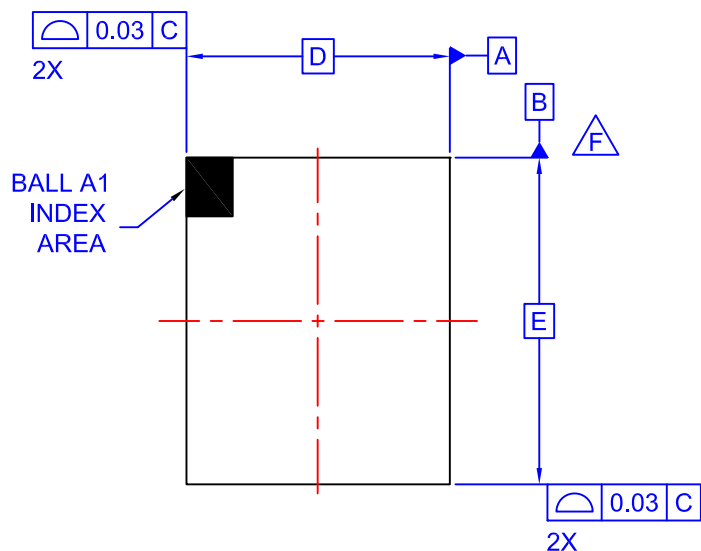


Figure 1. Typical Application



NOTES

- NO JEDEC REGISTRATION APPLIES.
- DIMENSIONS ARE IN MILLIMETERS.
- DIMENSIONS AND TOLERANCE PER ASMEY14.5M, 2009.
- $\triangle D$. DATUM C IS DEFINED BY THE SPHERICAL CROWNS OF THE BALLS.
- $\triangle E$. PACKAGE NOMINAL HEIGHT IS 488 ± 38 MICRONS (450-526 MICRONS).
- $\triangle F$. FOR DIMENSIONS D, E, X, AND Y SEE PRODUCT DATASHEET.
- DRAWING FILNAME: MKT-UC063AA REV1.

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