FAN5646 Programmable Indicator "Soft" LED Blinker with TinyWire™ Single-Wire Interface

Features

FAIRCHILD

SEMICONDUCTOR

- LED "Soft" Blink: with Logarithmic Fade Up and Fade Down for Power Savings
- Follow or Repeat Pattern Mode for Blinking when Applications Processor is Powered Down
- Default Pattern Optionally Modified using TinyWire™ Single-Wire Digital Control for:
 - LED Current Rise / Fall Time
 - t_{ON} and t_{OFF} for Up to Two Pulses
- High-Side Constant Current LED Driver:
 - 20mA Maximum Output Current
 - 80mV Drop-out at 20mA IOUT
 - External R_{SET} (SC70 only) or Internal Current Programming
- 35µA Operating Quiescent Current
- Short-Circuit, Under-Voltage, and Thermal Protections
- Wide Input Range: 2.7 to 5.5V
- 4-Bump WLCSP, 0.4mm pitch or 5-Lead SC70 (EIAJ SC88)

Applications

- Cell Phone
- Pocket PCs and Digital Cameras

Ordering Information

Bluetooth[®] Headsets PMP and MP3 players

Description

The FAN5646 is a flexible and compact solution for a blinking or "breathing" LED indicator. The internal programmable blink algorithm eliminates any need for continual system processor control. This means longer battery life for a hand-held system because the system processor is not awakened from sleep mode to blink an LED.

Very low dropout of 80mV allows driving an LED without any inductors or switch capacitors. LED blink rate, rise and fall time, and CTRL line behavior can be programmed by a TinyWire™ single-wire digital interface. The on-time and time between pulses can be set for up to two different pulse widths.

The default for FAN5646 option 01 is "follow" mode, where the LED turns on with the programmed rise time, then stays on as long as CTRL remains HIGH. When CTRL falls, the LED turns off at the programmed fall time. For option 00; when CTRL is HIGH continuously, the LED repeats the programmed pattern.

The FAN5646 is available in a four-pin wafer-level chip-scale package with 0.4mm pitch or a five-lead SC70 package.





-					
Part Number	Option	Follow Bit Default	Temperature Range	Package	Packing
FAN5646UC00X	00	0	-40 to 85°C	WLCSP-4, 0.4mm Pitch	Tape and Reel
FAN5646S700X	00	0	-40 to 85°C	5-Lead SC70, EIAJ SC88	Tape and Reel
FAN5646UC01X	01	1	-40 to 85°C	WLCSP-4, 0.4mm Pitch	Tape and Reel
FAN5646S701X	01	1	-40 to 85°C	5-Lead SC70, EIAJ SC88	Tape and Reel

 ${\it Bluetooth} \ensuremath{\mathbb{R}}$ is a registered trademark of ${\it Bluetooth} \ensuremath{\, SIG}$, Inc.

Important: Contact a Fairchild Semiconductor sales representative for additional performance information and specifications.

FAN5646

© 2009 Fairchild Semiconductor Corporation FAN5646 • Rev. 1.0.2



Product	D	EXY		
FAN5646UC	0.820mm	0.820mm	0.210mm	0.210mm

Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications do not expand the terms of Fairchild's worldwide terms and conditions, specifically the warranty therein, which covers Fairchild products.

Always visit Fairchild Semiconductor's online packaging area for the most recent package drawings: <u>http://www.fairchildsemi.com/packaging/</u>. **FAN5646**

I

Programmable Indicator "Soft" LED Blinker with TinyWire™ Interface







TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

F-PFS™ AccuPower™ Auto-SPM™ FRFET Global Power Resourcesm AX-CAP** Build it Now™ Green FPS™ CorePLUS™ Green FPS™ e-Series™ CorePOWER™ Gmax™ **GTO™** CROSSVOLT" IntelliMAX[™] CTI TM **ISOPLANAR™** Current Transfer Logic™ DEUXPEED[®] MegaBuck™ Dual Cool™ MICROCOUPLER™ EcoSPARK® MicroFET™ EfficientMax™ MicroPak™ ESBCT# MicroPak2™ MillerDrive™ MotionMax™ Fairchild® Motion-SPM™ Fairchild Semiconductor® mWSaver™ FACT Quiet Series™ OptoHiT™ FACT[®] FAST[®] OPTOLOGIC® **OPTOPLANAR®** FastvCore™ FETBench™ ElashWriter®* PDP SPM

Power-SPM™ PowerTrench[®] PowerXS™ QFET QSTM. Quiet Series™ SmartMax™ SPM[®] **STEALTH™** SuperFET[®] SuperSOT™3 SuperSOTM-6 SuperSOT™8 SupreMOS[®] SyncFET* Sync-Lock™

Programmable Active Droop™ RapidConfigure™ Saving our world, 1mW/W/kW at a time™ SignalWise™ SMART STARTM GENERAL

Tranchise TinyBoost™ TinyBuck™ TinyCalc™ TinyLogic® TINYOPTOM TinvPower™ TinyPWM™ TinγWire™ TriFault Detect™ TRUECURRENT*** uSerDes™

The Power Franchise®

The Right Technology for Your Success™



Ultra FRFET™ UniFET™ VCXTM VisualMax™ XSTM

* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

DISCLAIMER

FPSTM

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN, FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein

- 1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user
- 2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

ANTI-COUNTERFEITING POLICY

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, www.fairchildsemi.com, under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild Distributions are genuine parts. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors

PRODUCT STATUS DEFINITIONS

Datasheet Identification	Product Status	Definition Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.		
Advance Information	Formative / In Design			
Preliminary	First Production	Datasheet contains preliminary data, supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.		
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.		

Rev. 152