



FPF1203 / FPF1203L / FPF1204 / FPF12045

IntelliMAX™ Ultra-Small, Slew-Rate-Controlled Load Switch

Features

- 1.2 V to 5.5 V Input Voltage Operating Range
- Typical R_{ON}:
 - 45 mΩ at V_{IN}=5.5 V
 - 55 mΩ at V_{IN}=3.3 V
 - 90 mΩ at V_{IN}=1.8 V
 - 185 mΩ at V_{IN}=1.2 V
- Slew Rate Control with t_R:
 - FPF1203/FPF1203L/FPF1204: 100 μs
 - FPF12045: 2 μs
- Output Discharge Function on FPF1204 / 45
- Low <1.5 μA Quiescent Current
- ESD Protected: Above 7 kV HBM, 2 kV CDM
- GPIO / CMOS-Compatible Enable Circuitry
- 4-Bump, WLCSP 0.76 mm x 0.76 mm, 0.4 mm Pitch

Description

The FPF1203 / 03L / 04 / 45 are ultra-small integrated IntelliMAX™ load switches with integrated P-channel switch and analog control features. Integrated slew-rate control prevents inrush current and the resulting excessive voltage drop on the power rail. The input voltage range operates from 1.2 V to 5.5 V to provide power-disconnect capability for post-regulated power rails in portable and consumer products. The low shut-off current of 1 μA (maximum) allows power designs to meet standby and off-power drain specifications.

The FPF1203 / 03L / 04 / 45 are controlled by a logic input (ON pin) compatible with standard CMOS GPIO circuitry found on Field Programmable Gate Array (FPGA) embedded processors. The FPF1203 / 03L / 04 / 45 are available in 0.76 mm x 0.76 mm 4-bump WLCSP.

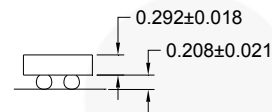
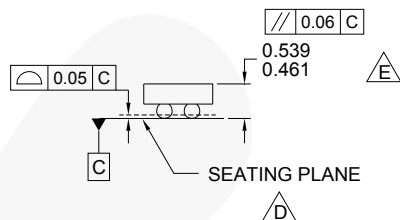
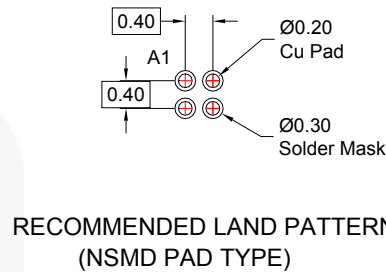
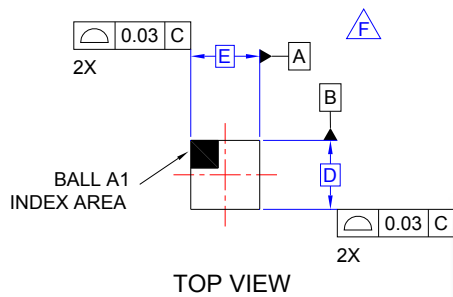
Applications

- Mobile Devices and Smart Phones
- Portable Media Devices
- Tablet PCs
- Advanced Notebook, UMPC, MID
- Portable Medical Devices
- GPS and Navigation Equipment

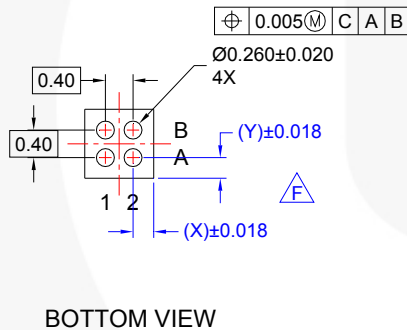
Ordering Information

Part Number	Top Mark	Switch (Typical) at 3.3V _{IN}	Output Discharge	ON Pin Activity	t _R	Package
FPF1203UCX	QL	55 mΩ	NA	Active HIGH	100 μs	4-Bump, Wafer-Level Chip-Scale Package (WLCSP), 0.76 mm x 0.76 mm, 0.4 mm Pitch
FPF1204UCX	QM	55 mΩ	65Ω	Active HIGH	100 μs	
FPF1204BUCX (Backside Laminate)	QM	55 mΩ	65Ω	Active HIGH	100 μs	
FPF12045UCX	NC	55 mΩ	65Ω	Active HIGH	2 μs	
FPF1203LUCX (Preliminary)	QP	55 mΩ	n/a	Active LOW	100 μs	

Physical Dimensions



SIDE VIEWS



BOTTOM VIEW

NOTES:

- A. NO JEDEC REGISTRATION APPLIES.
- B. DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS AND TOLERANCE PER ASME Y14.5M, 1994.
- D. DATUM C IS DEFINED BY THE SPHERICAL CROWNS OF THE BALLS.
- E. PACKAGE NOMINAL HEIGHT IS 500 MICRONS ±39 MICRONS (461-539 MICRONS).
- F. FOR DIMENSIONS D, E, X, AND Y SEE PRODUCT DATASHEET.
- G. DRAWING FILNAME: MKT-UC004AFrev1.

Figure 24. 4-Bump, 0.76 x 0.76 mm, Wafer-Level Chip-Scale Packaging

Product-Specific Dimensions

Product	D	E	X	Y
FPF1203UCX	760 μm ± 30 μm	760 μm ± 30 μm	0.180 mm ± 0.018 μm	0.180 mm ± 0.018 μm
FPF1204UCX	760 μm ± 30 μm	760 μm ± 30 μm	0.180 mm ± 0.018 μm	0.180 mm ± 0.018 μm
FPF1204BUCX	760 μm ± 30 μm	760 μm ± 30 μm	0.180 mm ± 0.018 μm	0.180 mm ± 0.018 μm
FPF12045UCX	760 μm ± 30 μm	760 μm ± 30 μm	0.180 mm ± 0.018 μm	0.180 mm ± 0.018 μm
FPF1203LUCX	760 μm ± 30 μm	760 μm ± 30 μm	0.180 mm ± 0.018 μm	0.180 mm ± 0.018 μm


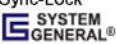
Package drawings are provided as a service to customers considering Fairchild components. Drawings may change in any manner without notice. Please note the revision and/or date on the drawing and contact a Fairchild Semiconductor representative to verify or obtain the most recent revision. Package specifications 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:
<http://www.fairchildsemi.com/packaging/>



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.

- | | | | |
|--|--|---|---|
| 2Cool™ | F-PFS™ | PowerTrench® | The Power Franchise® |
| AccuPower™ | FRFET® | PowerXS™ | the power franchise |
| AX-CAP™* | Global Power Resource™ | Programmable Active Droop™ | TinyBoost™ |
| BitSiC™ | GreenBridge™ | QFET® | TinyBuck™ |
| Build it Now™ | Green FPS™ | QS™ | TinyCalc™ |
| CorePLUS™ | Green FPS™ e-Series™ | Quiet Series™ | TinyLogic® |
| CorePOWER™ | Gmax™ | RapidConfigure™ | TINYOPTO™ |
| CROSSVOLT™ | GTO™ |  ™ | TinyPower™ |
| CTL™ | IntelliMAX™ | Saving our world, 1mW/W/kW at a time™ | TinyPWM™ |
| Current Transfer Logic™ | ISOPLANAR™ | SignalWise™ | TinyWire™ |
| DEUXPEED® | Making Small Speakers Sound Louder and Better™ | SmartMax™ | TranSiC™ |
| Dual Cool™ | MegaBuck™ | SMART START™ | TriFault Detect™ |
| EcoSPARK® | MICROCOUPLER™ | Solutions for Your Success™ | TRUECURRENT®* |
| EfficientMax™ | MicroFET™ | SPM® | µSerDes™ |
| ESBC™ | MicroPak™ | STEALTH™ |  ™ |
|  Fairchild® | MicroPak2™ | SuperFET® | UHC® |
| Fairchild Semiconductor® | MillerDrive™ | SuperSOT™-3 | Ultra FRFET™ |
| FACT Quiet Series™ | MotionMax™ | SuperSOT™-6 | UniFET™ |
| FACT® | mWSaver™ | SuperSOT™-8 | VCX™ |
| FAST® | OptoHiT™ | SupreMOS® | VisualMax™ |
| FastvCore™ | OPTOLOGIC® | SyncFET™ | VoltagePlus™ |
| FETBench™ | OPTOPLANAR® | Sync-Lock™ | XS™ |
| FlashWriter®* | |  ™ | |
| FPS™ | | | |

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

DISCLAIMER

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 listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. 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

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
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. I62