



## 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

### Applications

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

### Description

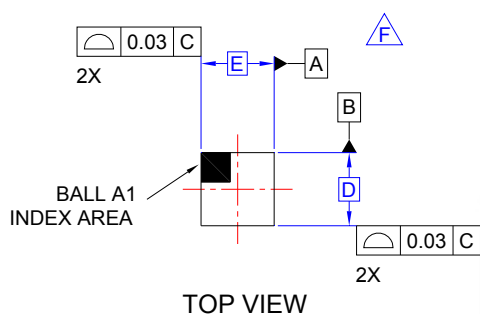
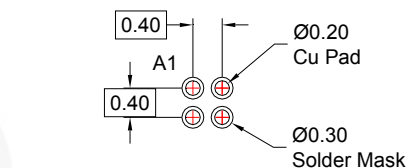
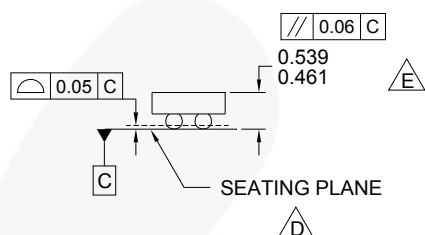
The FPF1203 / 03L / 04 / 45 are ultra-small integrated IntelliMAX™ load switches with integrated P-channel switch and analog control features. Integrated slew-rate control prevents inrush current and the resulting excessive voltage drop on the power rail. The input voltage range operates from 1.2 V to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

The FPF120x are controlled by a logic input (ON pin) compatible with standard CMOS GPIO circuitry found on Field Programmable Gate Array (FPGA) embedded processors. The FPF120x are available in 0.76 mm x 0.76 mm 4-bump WLCSP.

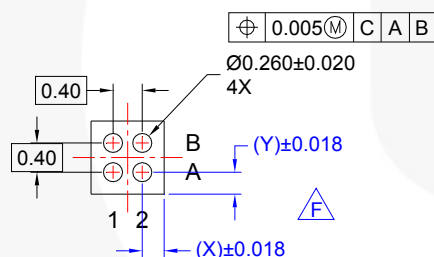
### Ordering Information

| Part Number                     | Top Mark | Switch (Typical) at 3.3V <sub>IN</sub> | 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 |
| FPF1203LUCX                     | QP       | 55 mΩ                                  | NA               | Active LOW      | 100 μs |                                                                                 |
| 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   |                                                                                 |

## 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 Dimensions

| D                                    | E                                    | X                                | Y                                |
|--------------------------------------|--------------------------------------|----------------------------------|----------------------------------|
| 760 $\mu\text{m} \pm 30 \mu\text{m}$ | 760 $\mu\text{m} \pm 30 \mu\text{m}$ | 0.180 mm $\pm 0.018 \mu\text{m}$ | 0.180 mm $\pm 0.018 \mu\text{m}$ |

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.

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| AccuPower™               | F-PFS™                                         | PowerXS™                              | SYSTEM GENERAL®  |
| AX-CAP®*                 | FRFET®                                         | Programmable Active Droop™            | TinyBoost™       |
| BitSiC™                  | Global Power Resource™                         | QFET®                                 | TinyBuck™        |
| Build it Now™            | GreenBridge™                                   | QS™                                   | TinyCalc™        |
| CorePLUS™                | Green FPS™                                     | Quiet Series™                         | TinyLogic®       |
| CorePOWER™               | Green FPS™ e-Series™                           | RapidConfigure™                       | TINYOPTO™        |
| CROSSVOLT™               | Gmax™                                          | Saving our world, 1mW/W/kW at a time™ | TinyPower™       |
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| Current Transfer Logic™  | IntelliMAX™                                    | SMART™                                | TinyWire™        |
| DEUXPEED®                | ISOPANAR™                                      | SMART START™                          | TranSiC™         |
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| EcoSPARK®                | MegaBuck™                                      | SPM®                                  | TRUECURRENT®*    |
| EfficientMax™            | MICROCOUPLER™                                  | STEALTH™                              | µSerDes™         |
| ESBC™                    | MicroFET™                                      | SuperFET®                             | UHC®             |
| F <sup>®</sup>           | MicroPak™                                      | SuperSOT™-3                           | Ultra FRFET™     |
| Fairchild®               | MicroPak2™                                     | SuperSOT™-6                           | UniFET™          |
| Fairchild Semiconductor® | MillerDrive™                                   | SuperSOT™-8                           | VCX™             |
| FACT Quiet Series™       | MotionMax™                                     | SupreMOS®                             | VisualMax™       |
| FACT®                    | mWSaver™                                       | SyncFET™                              | VoltagePlus™     |
| FAST®                    | OptoHiT™                                       |                                       | XS™              |
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| FETBench™                | OPTOPLANAR®                                    |                                       |                  |

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|--------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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