



# FPF2411 — IntelliMAX™ 6 V / 6 A-Rated Bi-Directional Switch with Slew Rate Control and RCB

## Features

- Capability: 6 V
- Low  $R_{ON}$ 
  - 10 mΩ at 5 V at PWRA or PWRB (Typ.)
  - 12 mΩ at 3.8 V at PWRA or PWRB (Typ.)
- Maximum Current Capability: 6 A (Bi-Directional)
- Ultra-Low  $I_Q$ : <1 μA
- Active LOW Control Pin
- 2 ms Long Slew Rate
- Reverse Current Blocking (RCB) during OFF
- Robust ESD Capability:
  - 5 kV HBM, 2 kV CDM
  - 15 kV Air Discharge
  - 8 kV Contact Discharge Under IEC 61000-4-2

## Description

The FPF2411 is a 6 V / 6 A-rated bi-directional load switch, consisting of a slew-rate-controlled, low-on-resistance, P-channel MOSFET switch with protection features. The slew-rate-controlled turn-on characteristic prevents inrush current and the resulting excessive voltage droop on the input power rails. The input voltage range operates from 2.3 V to 5.5 V.

Bi-directional switching allows reverse current from  $V_{OUT}$  to  $V_{IN}$ . The switching is controlled by active-LOW logic input the ONB pin. The FPF2411 is capable of interfacing directly with low-voltage control signal General-Purpose Input / Output (GPIO).

The FPF2411 is available in 12-bump, 1.235 mm x 1.625 mm Wafer-Level Chip-Scale Package (WLCSP) with 0.4 mm pitch.

## Applications

- Smartphone / Tablet PC
- Mobile Devices
- Portable Media Devices

## Ordering Information

Part Number	Top Mark	$R_{ON}$ (Typ.) at 3.8 V <sub>IN</sub>	Output Discharge	ONB Pin Functionality	Package
FPF2411BUCX_F130	QR	12 mΩ	No	Active LOW	12-Ball Wafer-Level Chip-Scale Package (WLCSP), 3 x 4 Array, 0.4 mm Pitch, 250 μm Ball

## Application Diagrams

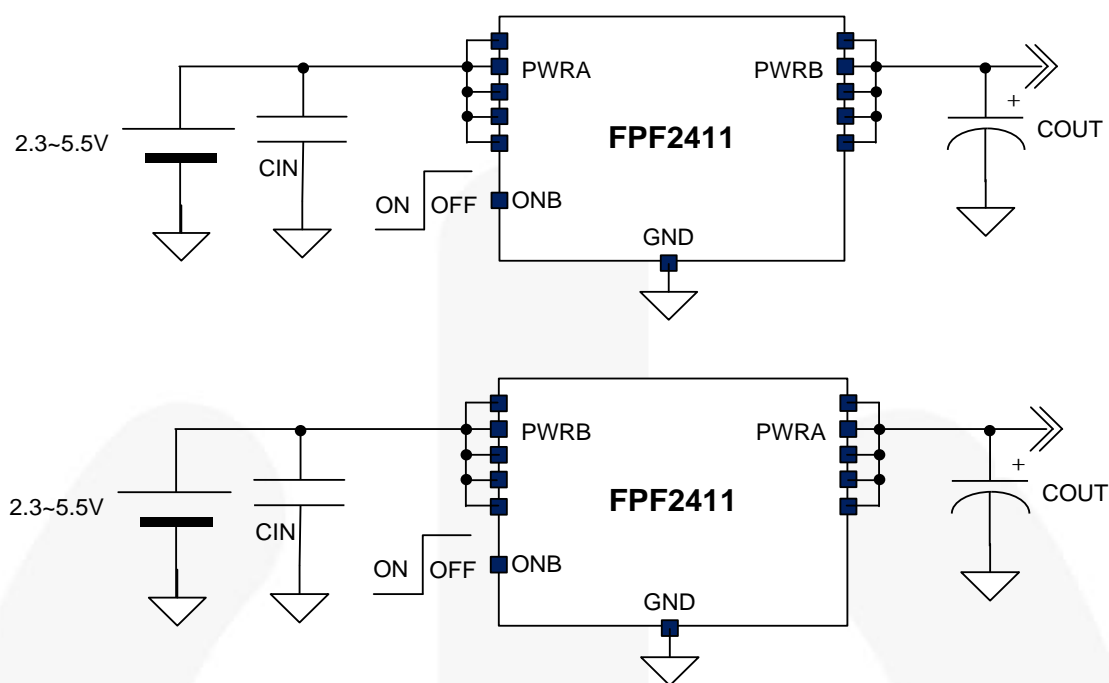


Figure 1. High-Level Application Diagrams

## Block Diagrams

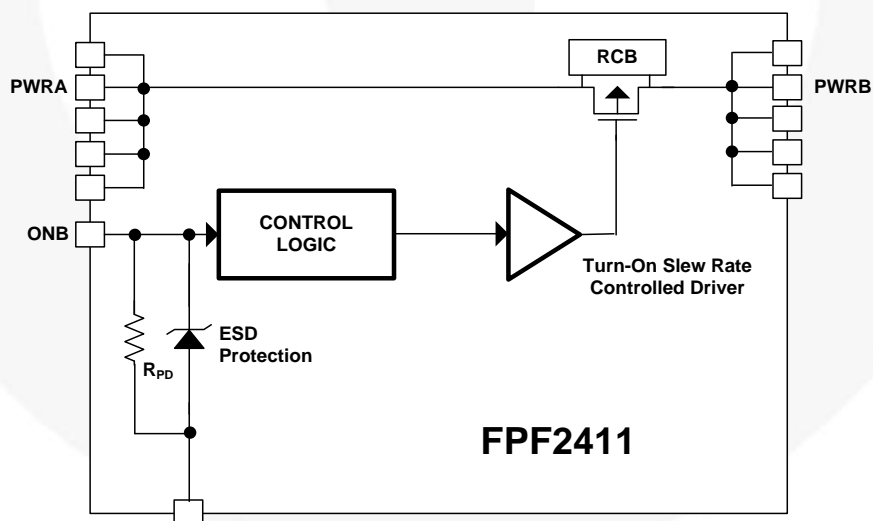


Figure 2. Block Diagram

## Pin Configuration

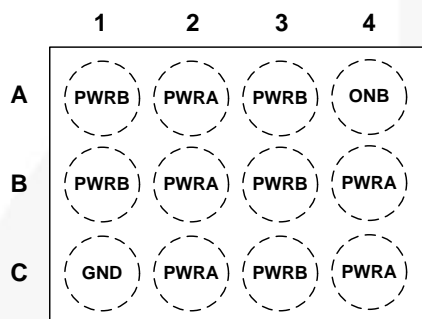
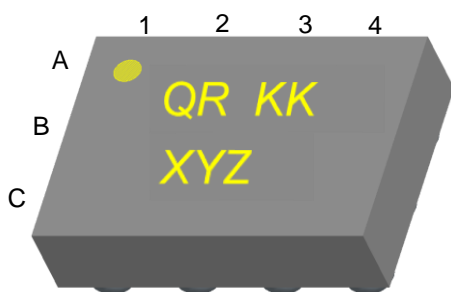


Figure 4. Top View

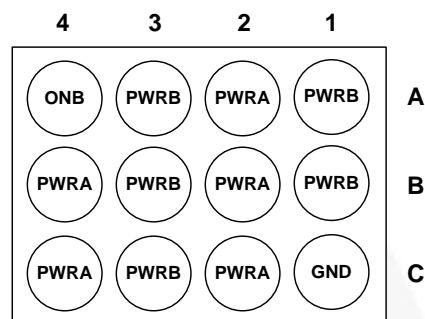
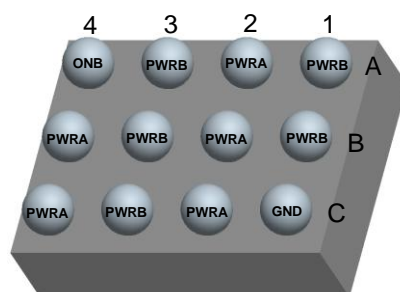


Figure 5. Bottom View

## Pin Descriptions

Pin #	Name	Description
A2, B2, B4, C2, C4	PWRA	Power Input / Output: Bi-directional power path
A1, A3, B1, B3, C3	PWRB	Power Input / Output: Bi-directional power path
C1	GND	Ground
A4	ONB	ON/OFF Control Input: Active LOW.

# WLCSP Packing - Embossed Tape FPF2411BUCX Pin1 at 1 o'clock Rev0

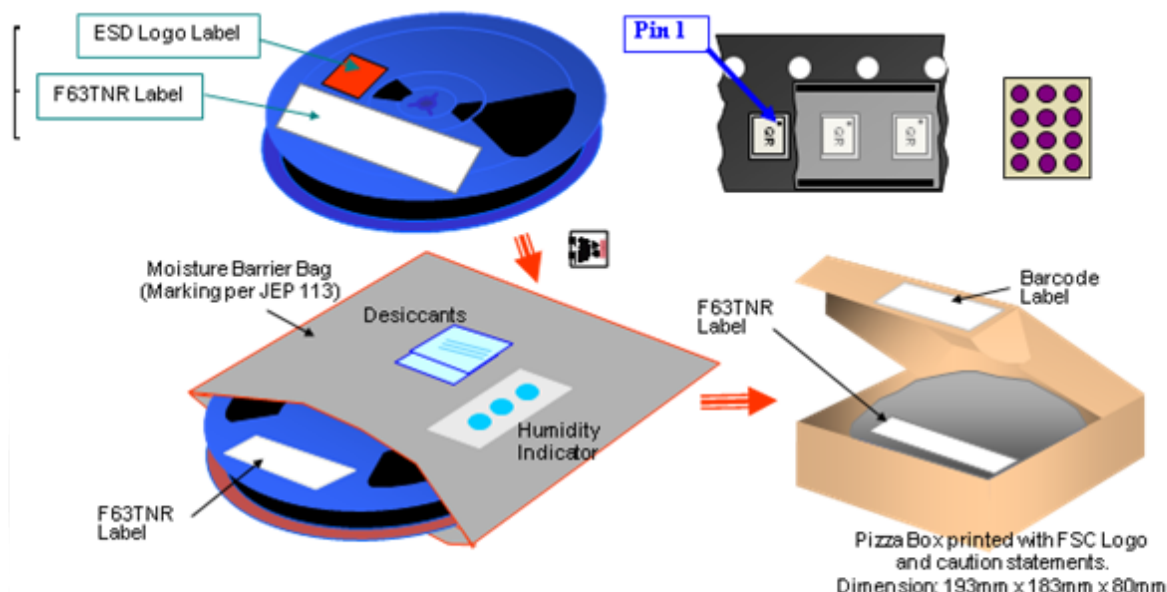


## Packing Description:

WLCSP products are classified under Moisture Sensitive Level 1 and are packed in moisture barrier bag for added protection.

The carrier tape is made from dissipative polystyrene or polycarbonate resin. The cover tape is a multilayer film primarily composed of polyester film, adhesive layer, heat activated sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3000 units per 178 mm diameter reel. Up to three reels are packed in each intermediate box. The reels is made of polystyrene plastic (anti-static coated or intrinsic).

These full reels are individually barcode labeled and placed inside a pizza box made of recyclable corrugated brown paper with a Fairchild logo printing. The reel is packed single reel in the pizza box. And these pizza boxes are placed inside a barcode labeled shipping box which comes in different sizes depending on the number of parts shipped.



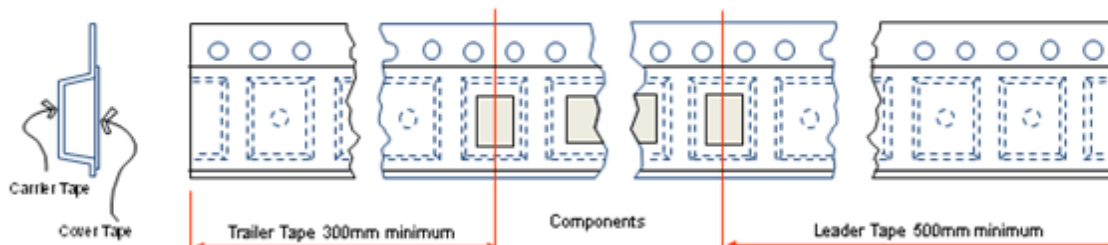
## ESD Logo Label sample



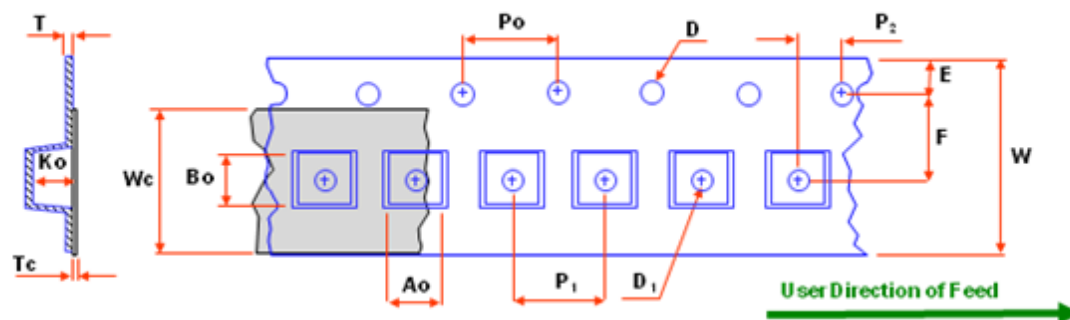
## F63TNR Label sample



## Tape Leader and Trailer Configuration



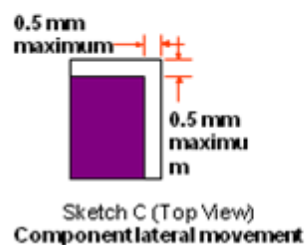
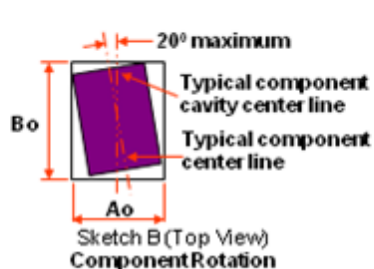
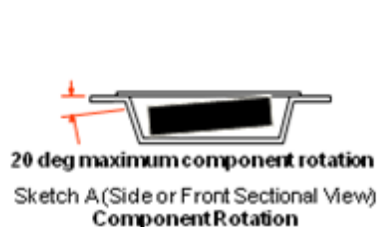
## WLCSP Embossed Tape Dimension



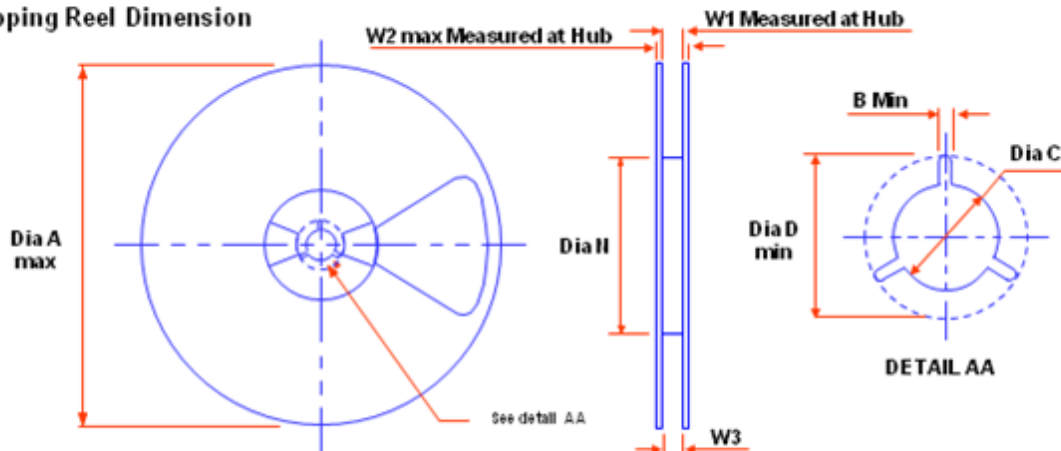
Dimensions are in millimeters

Package	Ao +/-0.05	Bo +/-0.05	D +0.10	D1 min.	E +/-0.1	F +/-0.1	Ko +/-0.05	P1 TYP	P0 TYP	P2 +/-0.05	T TYP	Tc +/-0.005	W +/-0.3	Wc TYP
FPF2411UCX	1.55	1.95	1.50	0.5	1.75	3.5	0.75	4	4	2.0	0.25	0.06	8	5.3

Notes: Ao, Bo, and Ko dimensions are determined with respect to the EIA/JEDEC RS-481 rotational and lateral movement requirements (see sketches A, B, and C).



## Shipping Reel Dimension



Dimensions are in millimeters

Tape Width	Dia A max	Dim B min	Dia C +.5/-2	Dia D min	Dim N min	Dim W1 +2/-0	Dim W2 max	Dim W3 (LSL - USL)
8	178	1.5	13	20.2	55	8.4	14.4	7.9~10.4

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## Physical Dimensions

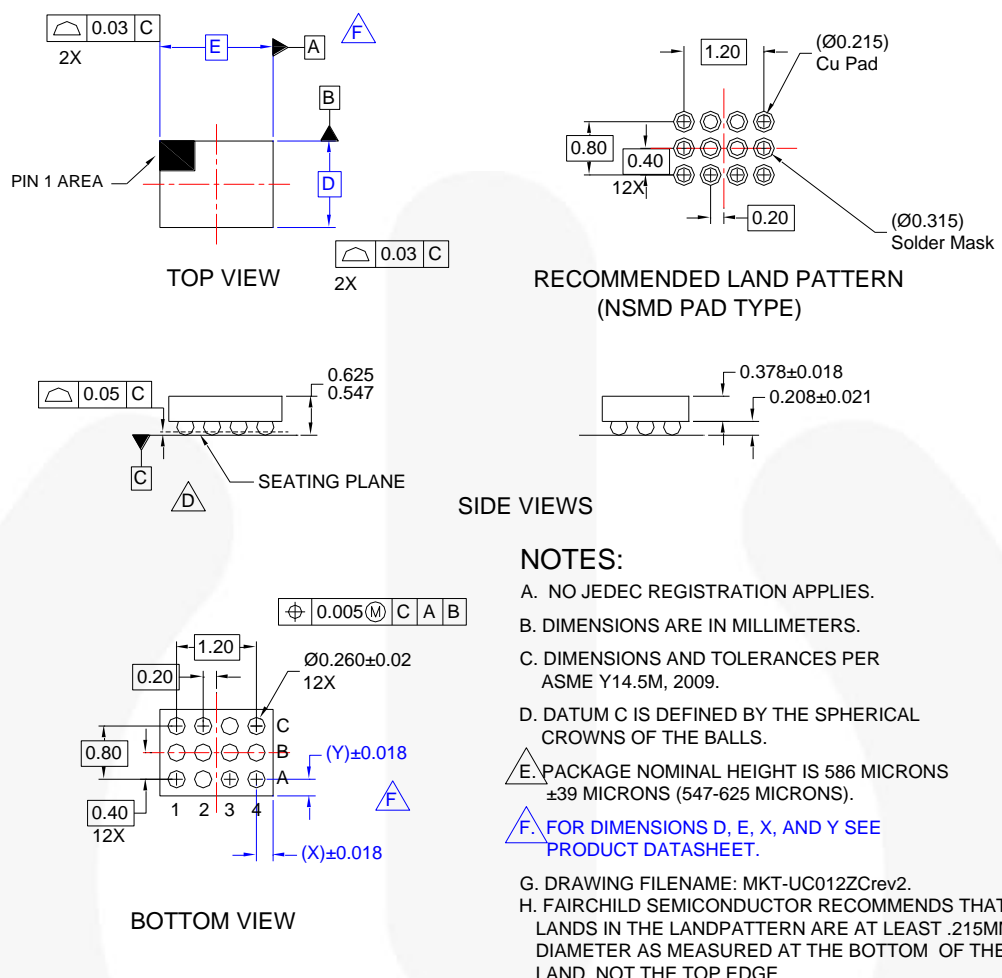


Figure 17. 12-Ball, 3x4 Array, 0.4 mm Pitch, 250 µm Ball, Wafer-Level Chip-Scale Package (WLCSP)

## Nominal Values

Bump Pitch	Overall Package Height	Silicon Thickness	Solder Bump Height	Solder Bump Diameter
0.4 mm	0.586 mm	0.378 mm	0.208 mm	0.260 mm

## Product-Specific Dimensions

Product	D	E	X	Y
FPF2411BUCX_F130	1.235 mm	1.625 mm	0.2125 mm	0.2175 mm

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