FlexSPIN® motor driver

Main applications

Industrial

ATM/ POS	• Multimotor equipment • Label printer • Ticketing
Sewing machine	
Factory automation	• CNC • Robotics • Pick and place
Stage lighting	
Medical devices	• Diagnostic equipments • Pumps
Security	• Surveillance camera
Vending machines	

Main applications

Computers and peripherals

- Printers

Consumer segment

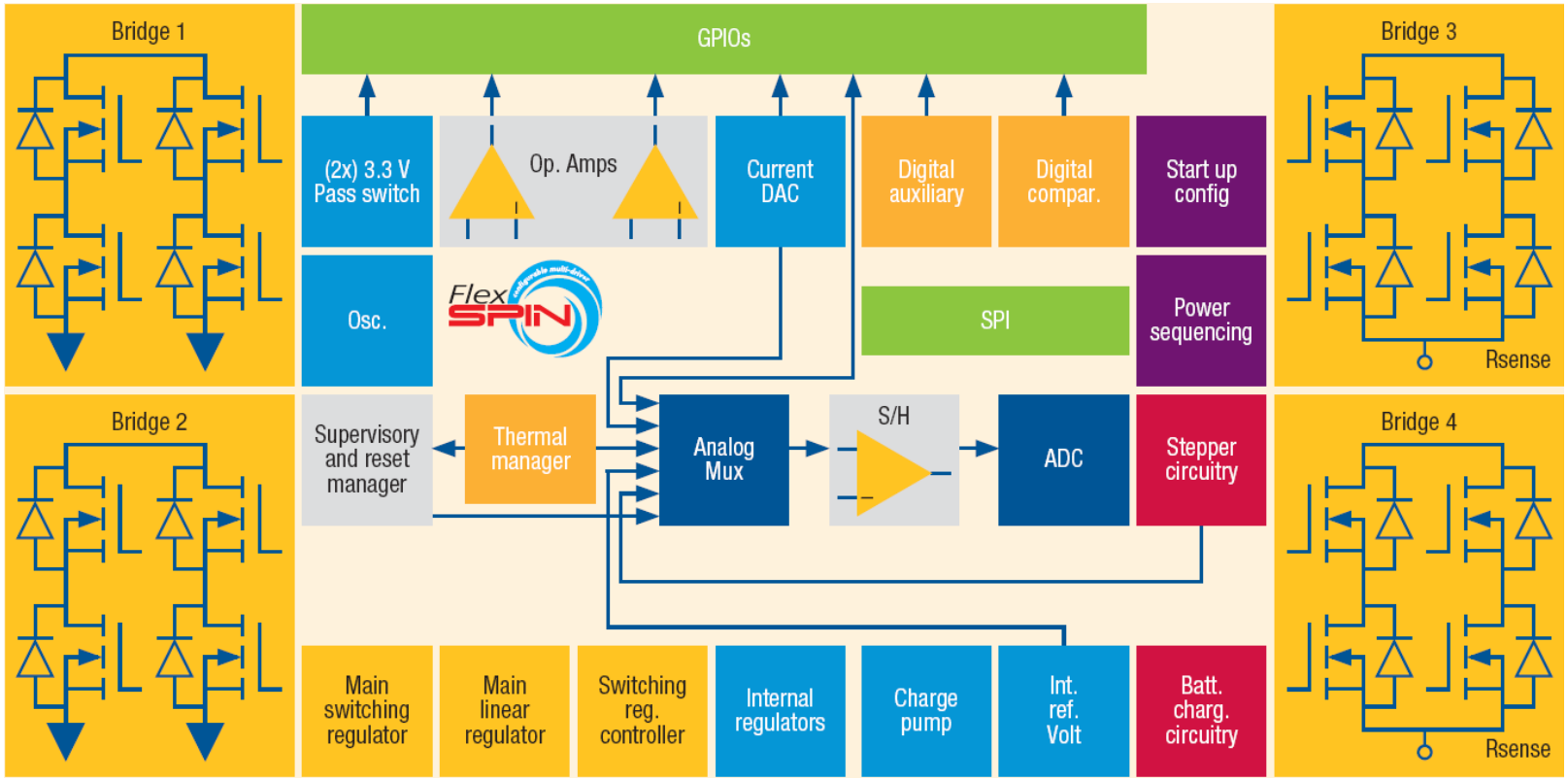
- Digital still cameras
- Game consoles
- Gambling machines
- Toys and Robotics

Key features

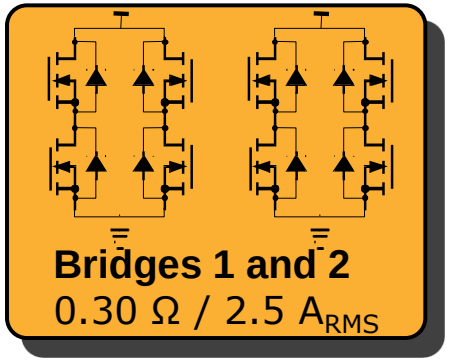
- Mixed-signal DMOS power technology
- 13 to 40 V operating voltage
- 4 full-bridge drivers. Each bridge configurable as:
  2 independent half bridges, 1 super half bridge, 2 power switches
- 3 to 5 embedded voltage regulators for full power supply management
- 16-bit SPI interface
- Full set of diagnostic and protection functions embedded

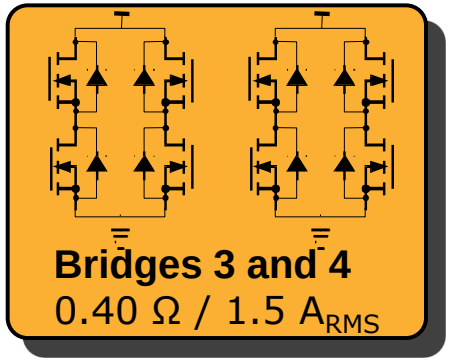
High level of configurability

- Through the serial interface it is possible to **configure** the power, digital and analog sections



4 configurable bridges





Bridge 1 and 2

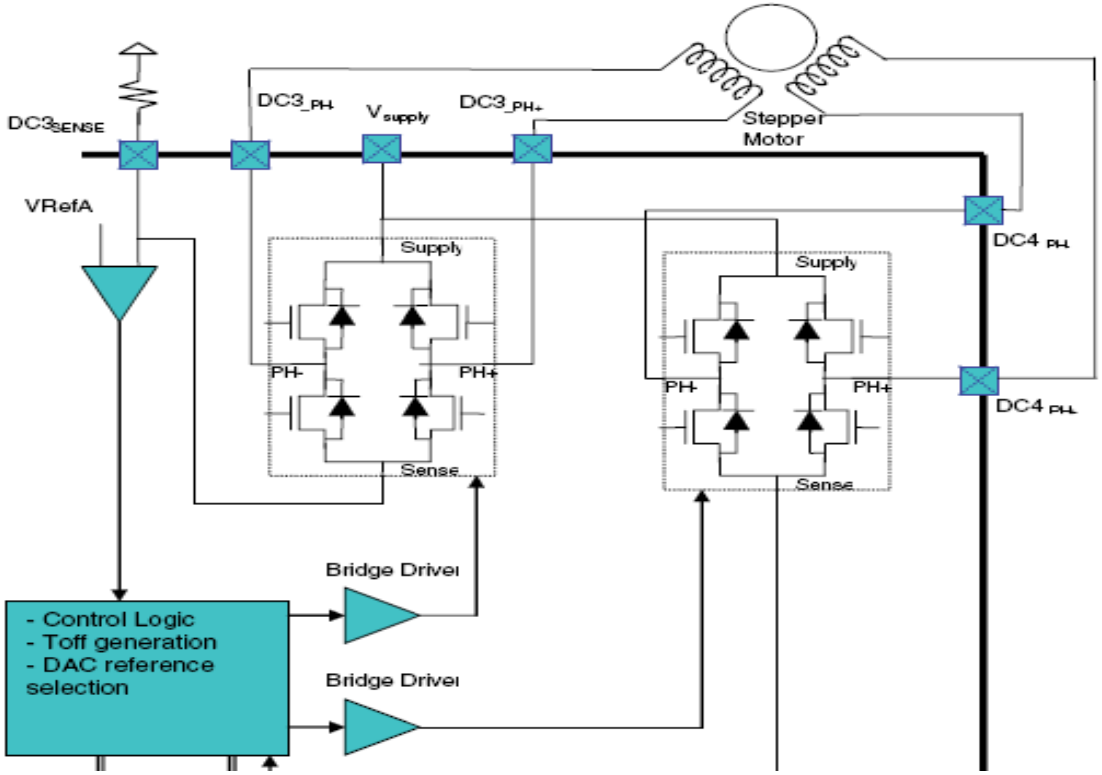
Bridge 3 and 4

Bridge 3 and 4

- 2 DC motor drivers
- 1 super DC (bridges in parallel)
- 4 independent half-bridges
- 2 super half-bridges
- 4 independent switches
- 2 super switches

- 1 stepper motor driver
- 2 buck regulators (bridge 3)
- 1 super buck regulator (bridge 4)
- Battery charger (bridge 4)

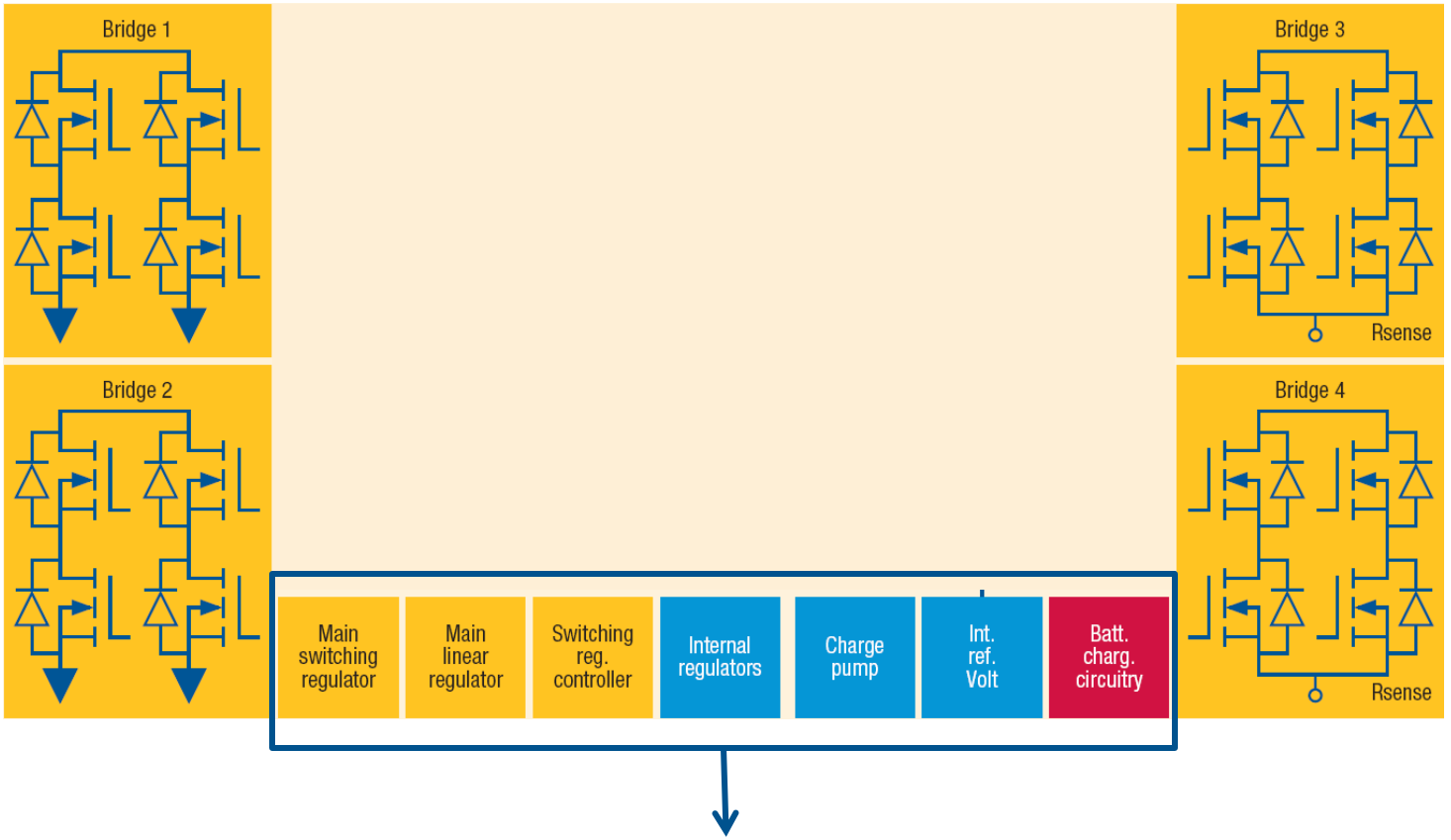
Fully integrated microstepping



16 µstepping resolution

PhXD AC [3:0]	Phase current ratio respect to I_{max}	
	(typ)	unit
0000	(Hi-Z)	
0001	9.8	% of I_{max}
0010	19.5	% of I_{max}
0011	29.0	% of I_{max}
0100	38.3	% of I_{max}
0101	47.1	% of I_{max}
0110	55.6	% of I_{max}
0111	63.4	% of I_{max}
1000	70.7	% of I_{max}
1001	77.3	% of I_{max}
1010	83.1	% of I_{max}
1011	88.2	% of I_{max}
1100	92.4	% of I_{max}
1101	95.7	% of I_{max}
1110	98.1	% of I_{max}
1111	I_{max}	

Voltage supply management



- FlexSPIN generates all the internal voltages reference
- Moreover it includes:
  - 1 Voltage switching regulator
  - 1 Voltage linear regulator
  - 1 External FET driver (with switching control loop)

Additional voltage supply

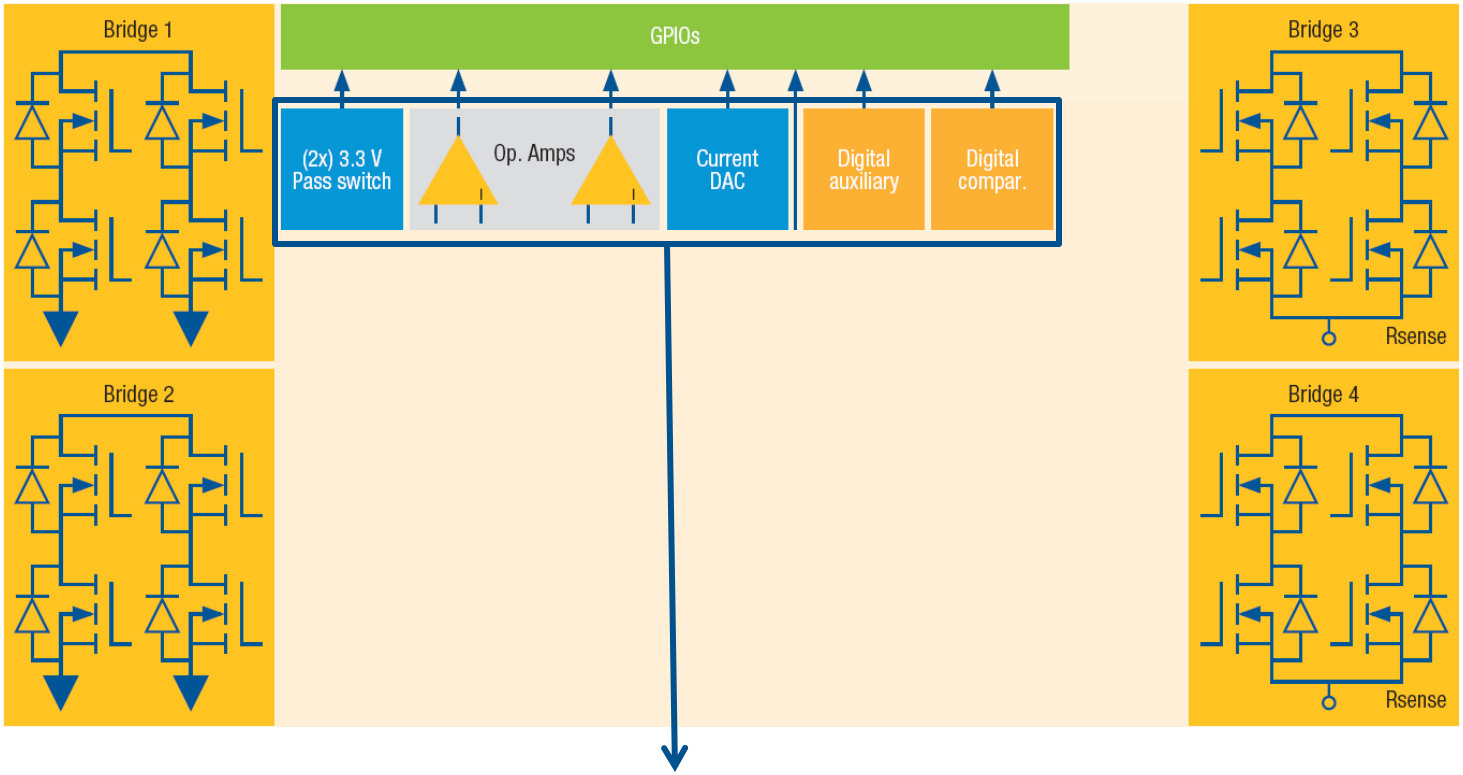
The **bridge 3** can be **configured** as:

- two switching regulators
- one switching regulator with high current cap

The **bridge 4** can be **configured** as:

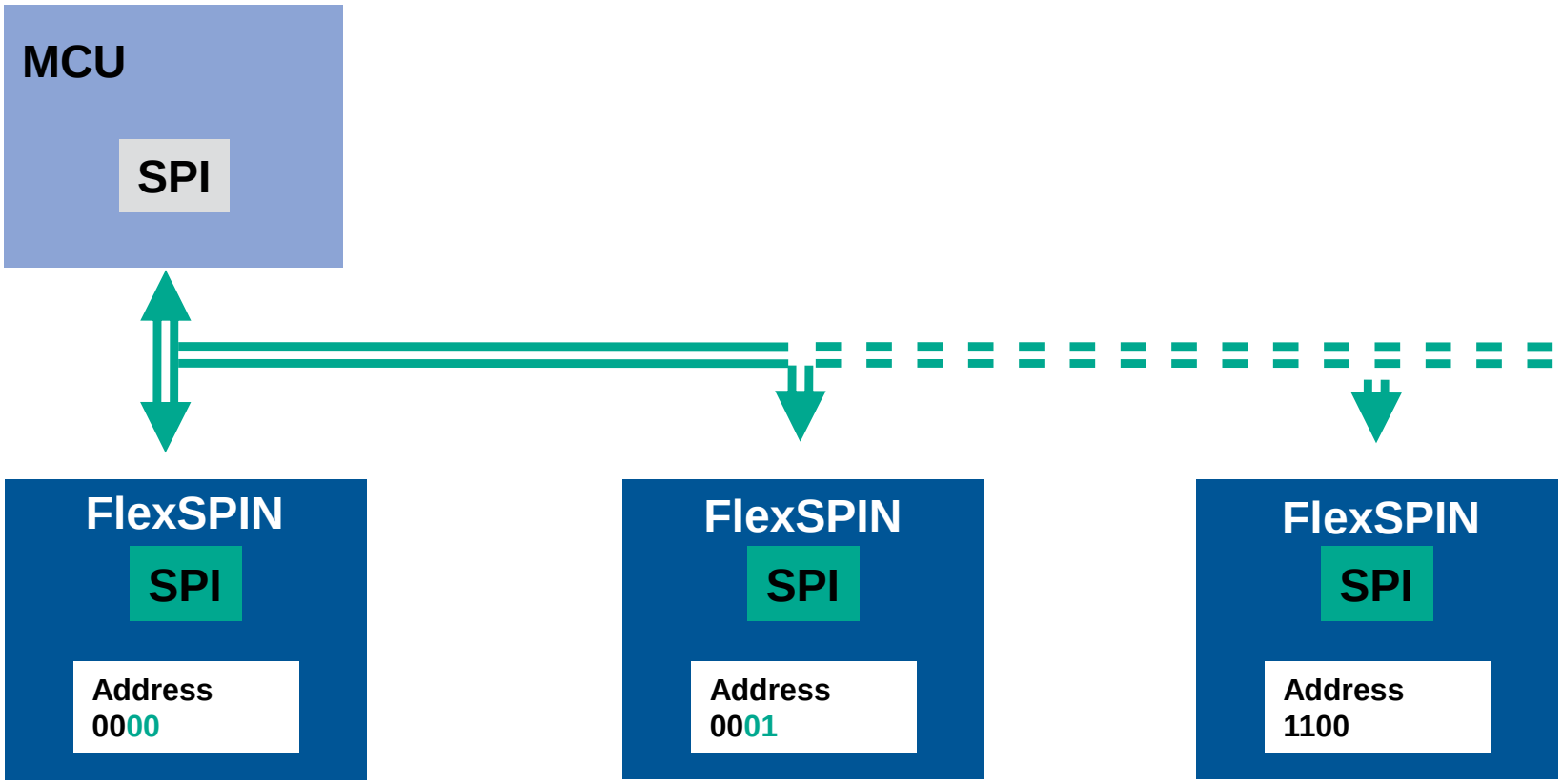
- one switching regulator
- one switching regulator with high current capability
- battery charger

FlexSPIN…that's very high flexibility



OpAmps, digital comparator, current DAC, pass switches can be *configured* defining gains, reference voltage, current levels etc..

Multi-motor driver configurable via SPI



FlexSPIN eases your design

Microcontroller board: EVAL-IBU-STR7

FlexSPIN evaluation board: EVAL6460

Further information and full design support available at:

www.st.com/flexspin