Badge Control Module

Features

- Quality engineering
- Dedicated SAO power control pin
  - SAO 1.69bis compatible
- 3.3V pin voltage
  - Do **not** use 5V logic on pins
- CPU
  - 240MHz 32-bit MCU
- Memory
  - 520kB SRAM
  - 4MB QSPI flash
- Wireless
  - 802.11 b/g/n
- Serial communication interfaces
  - 2x UART
  - I^2C
  - Morse code
- Analog to digital converter
  - 12-bit 4 channels
- Digital to analog converter
  - 8-bit 2 channels
- HHV{badge1_Thx_4_RTFM}
- Full-color display
  - 1.14 inch
  - 135x240 resolution
- Drives all the LEDs
- Encryption module
  - XOR encryption
- IO and Packaging
  - 7 Programmable IO
  - 12 pin package

Description

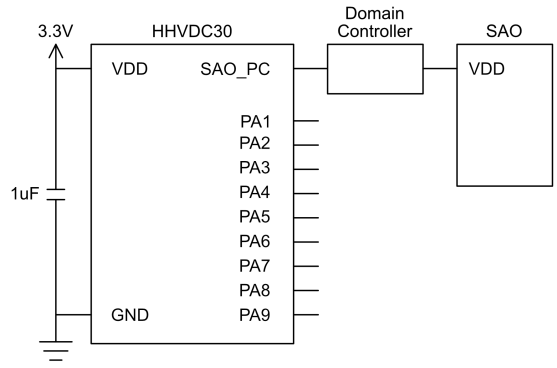
The HHVDC30 is a cutting-edge design, developed specifically for controlling and driving electronic conference badges. It is capable of driving all the LEDs, to ensure badges are as blinding as ever.

A game-changing feature added the HHVDC30 is Secondary Add-On (SAO) power control pin. Specifically designed for the SAO 1.69bis protocol, the SAO power control feature helps ensure conference badges will only support select SAOs; reducing the market opportunities for counterfeits and “indie” SAOs, and increasing conference SWAG sales.

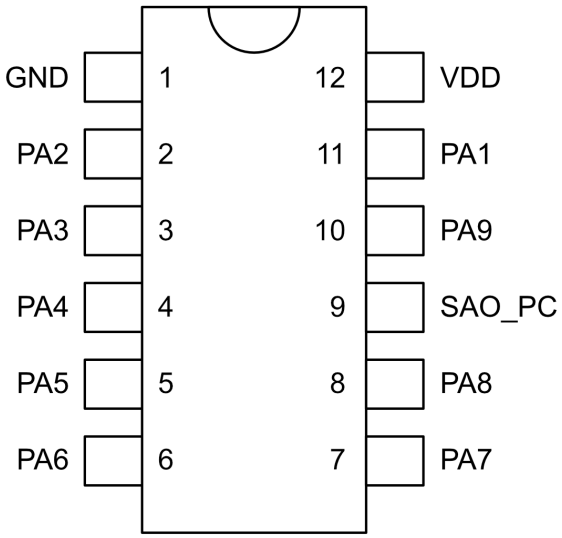
Applications

- Conference badges
- Security badges
- Local meetup event badges
- Family Cookout badges
- BADGES!

Application Circuit



Pin Configuration and Functions



PIN		I/O	Description	ADC	DAC	I2C	UART
No.	Name						
11	PA1	IO	General purpose IO			I2C0 SDA	
2	PA2	IO	General purpose IO				
3	PA3	I	Dedicated input	ADC0_CH0			UART0 RX
4	PA4	O	Dedicated output	ADC0_CH1			UART0 TX
5	PA5	IO	General purpose IO	ADC0_CH2			
6	PA6	IO	General purpose IO				
7	PA7	IO	General purpose IO		DAC0		UART1 RX
8	PA8	IO	General purpose IO	ADC0_CH3	DAC1		UART1 TX
10	PA9	IO	General purpose IO			I2C0 SCL	
9	SAO_PC	O	SAO power control pin				
1	GND	—	Ground				
12	VDD	—	Input power supply (2.3V~3.3V)				

Recommended Voltages

		Min	Typical	Max	Unit
V_{IN}	Input voltage	2.3	3.3	3.6	V
V_{SAO}	SAO output voltage	-	3.3	-	V

DC Characteristics

		Min	Typical	Max	Unit
C_{IN}	Pin capacitance	-	2	-	pF
V_{IH}	High-level input voltage	$0.75 \times V_{DD}$	3.3	$V_{DD} + 0.3$	V
V_{IL}	Low-level input voltage	-0.3	V_{IN}	$0.25 \times V_{DD}$	V
I_{IH}	High-level input current	-	-	50	nA
I_{IL}	Low-level input current	-	-	50	nA
V_{OH}	High-level output voltage	$0.8 \times V_{DD}$	-	-	V
V_{OL}	Low-level output voltage	-	-	$0.1 \times V_{DD}$	V
I_{OH}	High-level source current	-	20	-	mA
I_{OL}	Low-level sink current	-	28	-	mA
V_{SPCH}	SAO power control high output voltage	$0.8 \times V_{DD}$	-	-	V
V_{SPCL}	SAO power control low output voltage	-	-	$0.1 \times V_{DD}$	V
R_{PU}	Resistance of internal pull-up resistor		45		kΩ
R_{PD}	Resistance of internal pull-down resistor		45		kΩ

SAO Power Control

An industry changing feature of this module is the Secondary Add-On (SAO) Power Control pin. This functionality allows a badge designer to lock down use of the SAO port to select SAOs. It is up to the badge designer to select a method of verification or DRM, but communication methods specified in the SAO 1.69bis protocol are supported by the HHVDC30.

Packaging Information

Device Part Number	Status	Package Type	Pins	Op Temp (° C)	Device Marking
HHVDC30	PRE	DIP	12	-10 to 125	HHVDC30

Ordering Information

This module is currently in pre-production. Please reach out to an HHV Volunteer if you would like order samples.

Revision History

Date	Version	Release notes
2022.08	V1.0	• Initial release