BA45F5450

Smoke IC推廣

日期：2021年12月15日

BA45F5450資源-1

▶MCU資源介紹

MCU model		BA45F5450
Op. Temperatrue		-40℃~85℃
Op. Voltage		2.2V~5.5V
Memory	ROM	8K x 16
	RAM	1024 x 8
	EEPROM	128 x 8
OSC	HIRC	2/4/8MHz
	LIRC	32KHz
I/O		9/13/17
EXT. INT.		2
Timer	Type	10-bit x 3
A/D		12-bit x 10 （7External+3Internal）
OPA		x2(Smoke AFE)
ISINK		x2(Smoke AFE)
PLT		--
Stack		8
Interface		UART/SPI/IIC
LVR/LVD		V
Package		20SOP/24SOP/28SOP

BA45F5450資源-2

Operating Current Characteristics

Ta=25°C

Symbol	Normal Operation	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
I_{DD}	SLOW Mode (LIRC)	3.3V	f_{SYS}=32kHz	—	10	20	μA
	FAST Mode (HIRC)	3.3V	f_{SYS}=2MHz	—	0.2	0.3	mA
		3.3V	f_{SYS}=4MHz	—	0.4	0.6	mA
		3.3V	f_{SYS}=8MHz	—	0.8	1.2	mA

Note: When using the characteristic table data, the following notes should be taken into consideration:

1. Any digital inputs are setup in a non-floating condition.

2. All measurements are taken under conditions of no load and with all peripherals in an off state.

3. There are no DC current paths.

4. All Operating Current values are measured using a continuous NOP instruction program loop.

Standby Current Characteristics

Ta=25°C, unless otherwise specified

Symbol	Standby Mode	Test Conditions		Min.	Typ.	Max.	Max. @85°C	Unit
		V_{DD}	Conditions					
I_{STB}	SLEEP Mode	3.3V	WDT on	—	1.5	3.0	3.6	μA
	IDLE0 Mode (LIRC)	3.3V	f_{SUB} on	—	3	5	6	μA
	IDLE1 Mode (HIRC)	3.3V	f_{SUB} on, f_{SYS}=2MHz	—	70	140	160	μA
		3.3V	f_{SUB} on, f_{SYS}=4MHz	—	110	220	240	μA
		3.3V	f_{SUB} on, f_{SYS}=8MHz	—	180	360	400	μA

Note: When using the characteristic table data, the following notes should be taken into consideration:

1. Any digital inputs are setup in a non-floating condition.

2. All measurements are taken under conditions of no load and with all peripherals in an off state.

3. There are no DC current paths.

4. All Standby Current values are taken after a HALT instruction execution thus stopping all instruction execution.

High Speed Internal Oscillator – HIRC – Frequency Accuracy

During the program writing operation the writer will trim the HIRC oscillator at a user selected HIRC frequency and user selected voltage of 3.3V.

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Temp.				
f_{HIRC}	2MHz Writer Trimmed HIRC Frequency	3.3V	25°C	-1%	2	+1%	MHz
			-20°C~60°C	-2%	2	+2%	
	4MHz Writer Trimmed HIRC Frequency	3.3V	25°C	-1%	4	+1%	MHz
	8MHz Writer Trimmed HIRC Frequency	3.3V	25°C	-1%	8	+1%	MHz

Note: 1. The 3.3V values for V_{DD} are provided as this is the fixed voltage at which the HIRC frequency is trimmed by the writer.

2. The minimum and maximum tolerance values provided in the table are only for the frequency at which the writer trims the HIRC oscillator. After trimming at this chosen specific frequency any change in HIRC oscillator frequency using the oscillator register control bits by the application program will give a frequency tolerance to within ±20%.
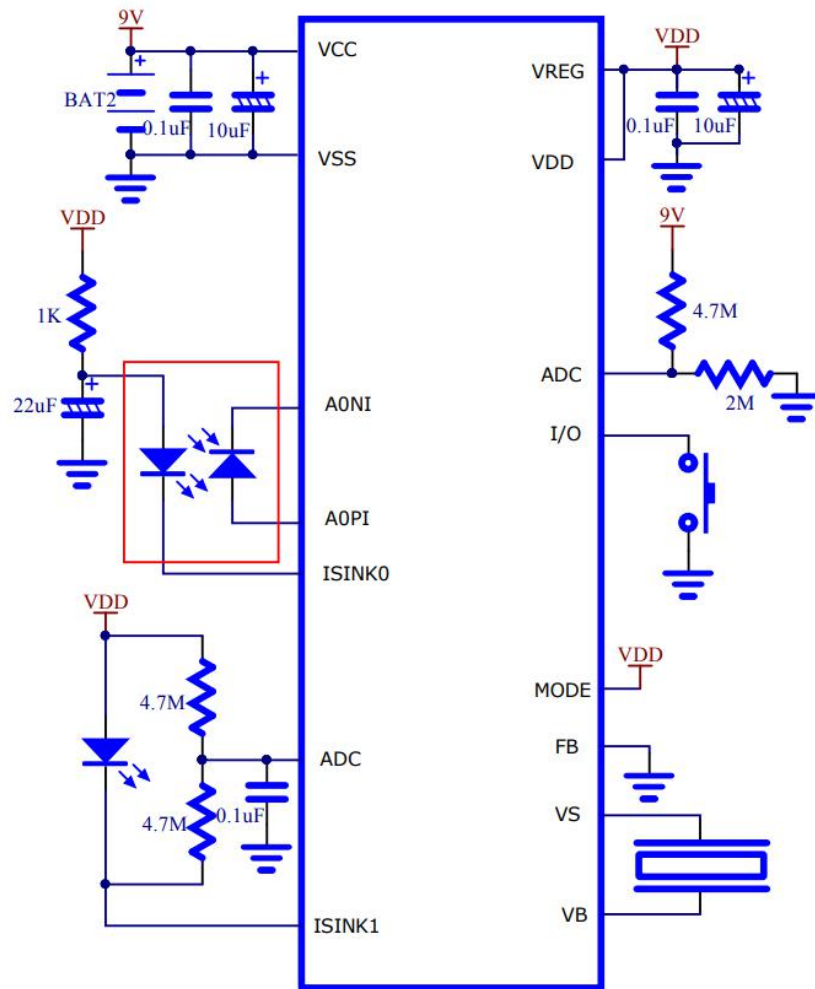
Sink Current Generator Electrical Characteristics

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{DD}	Conditions				
I_{SINK0}	Sink Current for ISINK0 Pin	—	Ta=-40°C~85°C, V_{SINK0}=1.0V~3.3V, ISGDATA0[4:0]=00000B	41	50	59	mA
		—	Ta=-40°C~85°C, V_{SINK0}=1.0V~3.3V, ISGDATA0[4:0]=11111B	295	360	425	
I_{SINK1}	Sink Current for ISINK1 Pin	—	Ta=-40°C~85°C, V_{SINK1}=1.0V~3.3V, ISGDATA1[4:0]=00000B	41	50	59	mA
		—	Ta=-40°C~85°C, V_{SINK1}=1.0V~3.3V, ISGDATA1[4:0]=11111B	168	205	242	

應用電路-他激式蜂鳴器

應用電路 - 自激式蜂鳴器
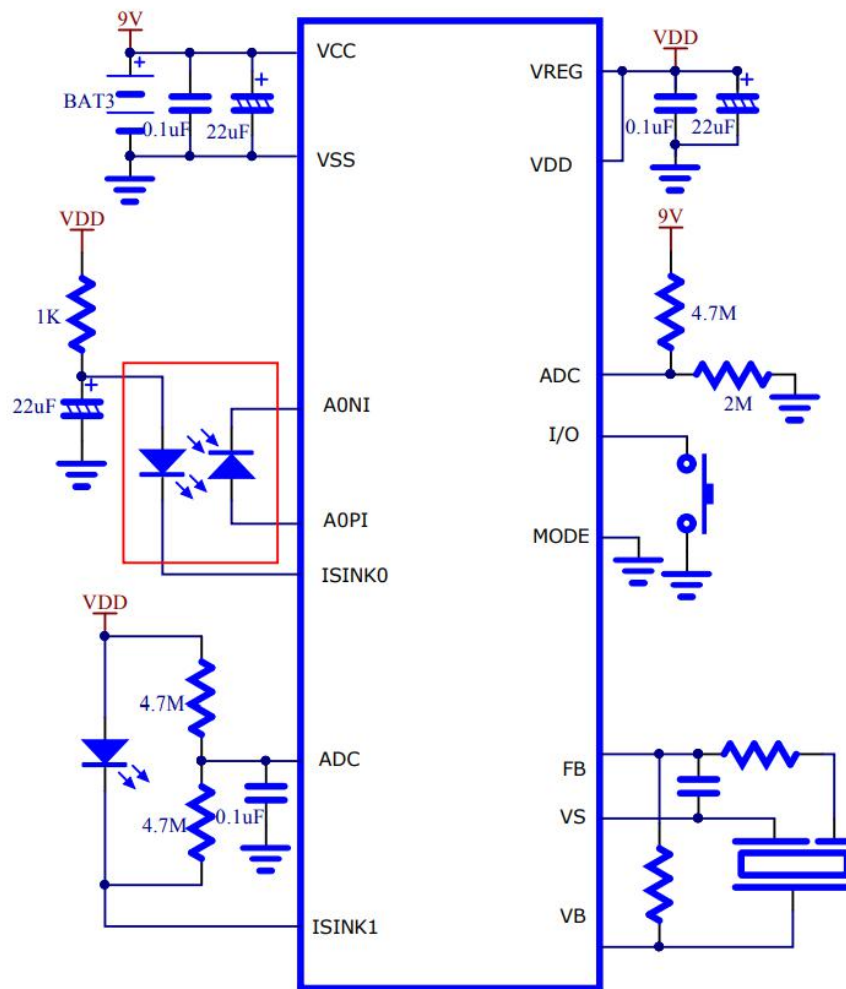
> Smoke AFE

R1=SDA0PGA[5:0]*100KΩ
(Min:0KΩ Max:6300KΩ)

第一級OP將接收到的信息進行濾波

偏壓

R3=SDA1PGA7~SDA1PGA6
00：10KΩ
01：20KΩ
10：30KΩ
11：40KΩ

第二級OP將有效信息進行放大

最後得到的信號可直接輸出到A/D

R2=SDA1PGA[5:0]*100KΩ
(Min:0KΩ Max:6300KΩ)
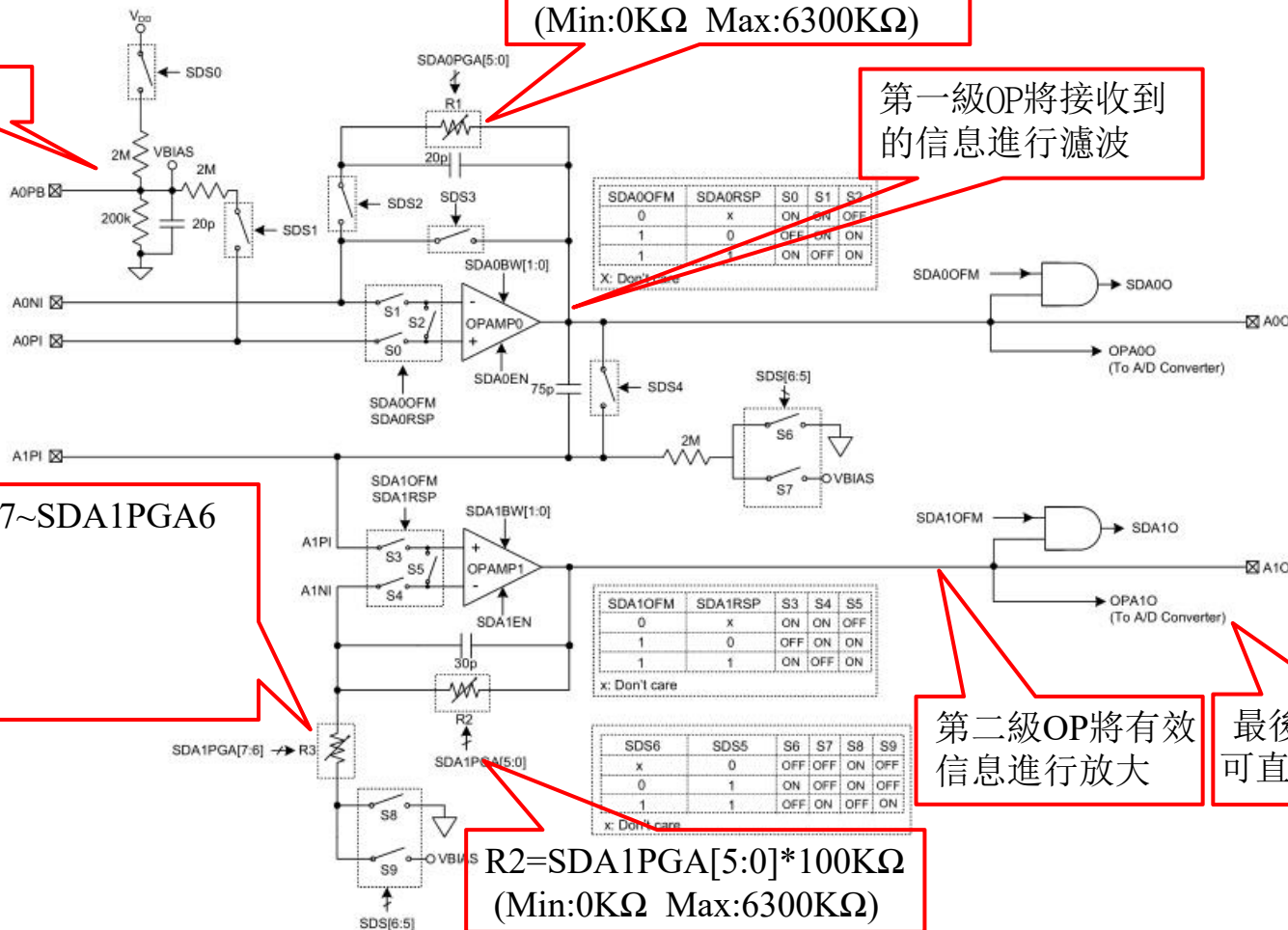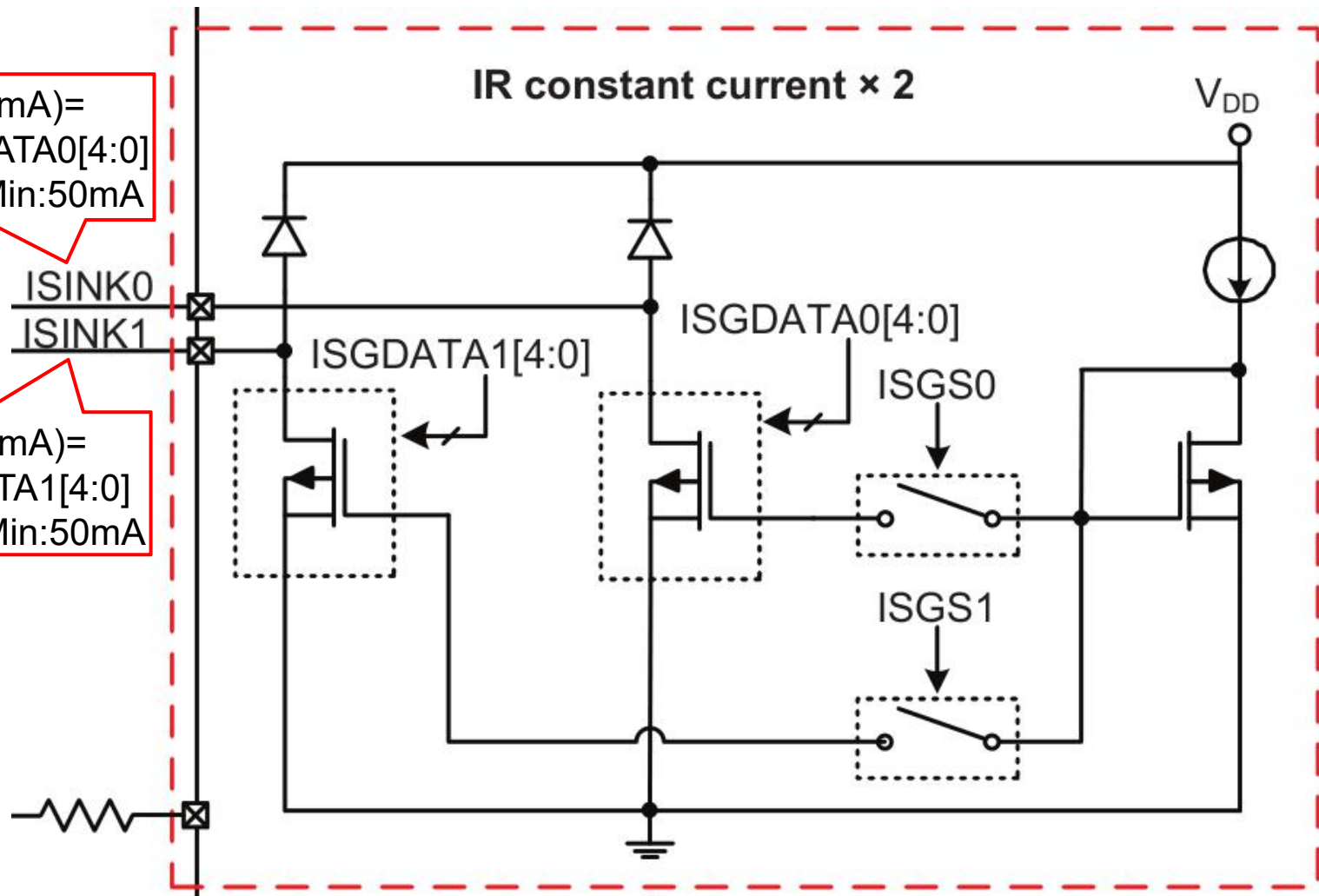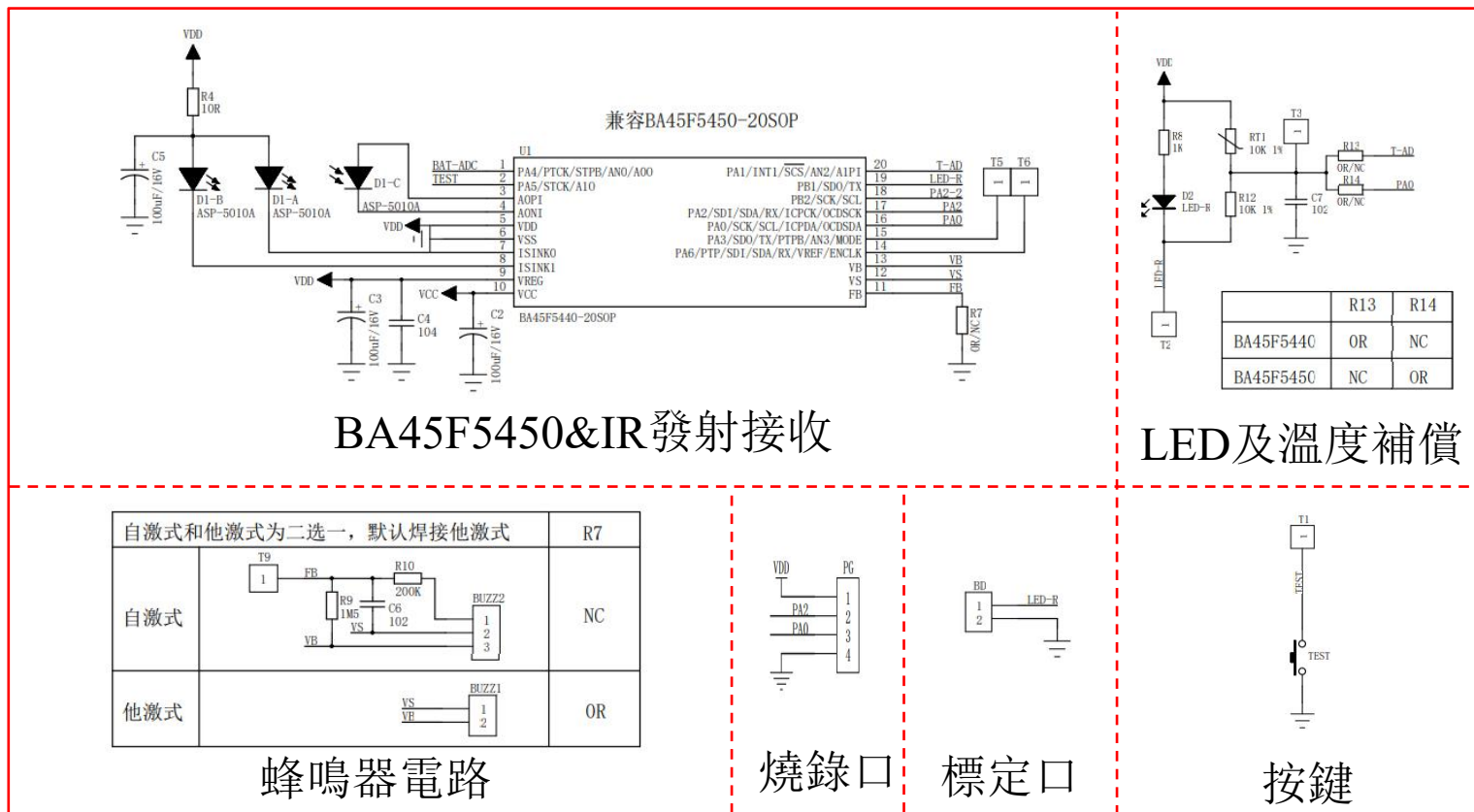
➤Sink Current Generator

Current value(mA)=
50+10*ISGDATA0[4:0]
Max:360mA Min:50mA

Current value(mA)=
50+5*ISGDATA1[4:0]
Max:205mA Min:50mA

原理圖

▷Demo原理圖

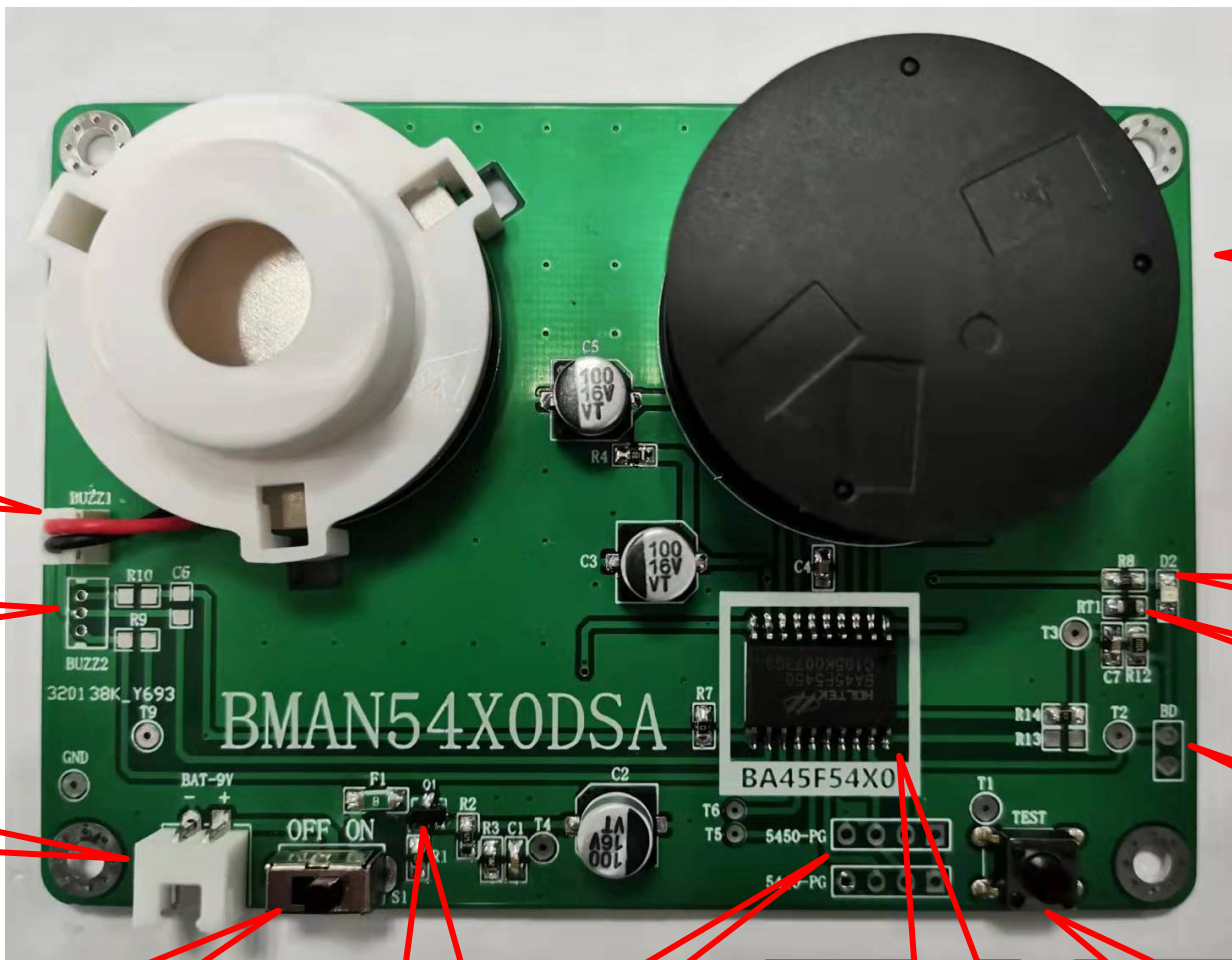BA45F5450&IR發射接收 — LED及溫度補償

蜂鳴器電路 — 燒錄口 — 標定口 — 按鍵

➤ Demo器件介紹

他激式
蜂鳴器端子

自激式
蜂鳴器端子

電源
端子

電源開關 防反接電路 燒录口 BA45F5450 測試按鍵

迷宮腔
(红外对管)

LED指示

温度检测

标定口

注：DEMO 样板不定时
更新，我司不另行通知，
购买请以实物为准。

DEMO實現功能

➢主要功能

◆若沒有標定，則上電後紅燈常亮。標定方式：上電前短接BD端口和GND。若標定過，上電後紅燈閃一次。

◆標定模式：紅燈1s閃爍一次；標定成功進入常態，不成功紅燈常亮。

◆常態模式：紅燈40s閃爍一次。

◆報警模式：間接響3聲後停1s，之後迴圈。

◆故障檢測：LED閃2次，40s迴圈一次。

◆具有溫度補償功能

Note：以上功能為code"SOFTWARE-DM20210802-BA45F5450-独立感烟报警器-C-V1.0-A1"所實現，後續若有增加功　能或代碼完善則響應的code版本號會升級

優勢

➢ BA45F5450 Smoke Detector 優勢

◆ Smoke Detector AFE集成2個OP，極大的方便了信號的處理。

◆ 信號的放大倍率可由軟件調節。

◆ 內部集成兩路2路IR constant current,電流可以通過軟件調節；

INK0的範圍為（Min:50mA,Max:360mA）；

INK1的範圍為（Min:50mA,Max:205mA）。

◆ 外圍元器件極少，可降低成本。

◆ 內部 LDO 能確保提供恒定的電源電壓給互連子系統。

◆ 內部集成蜂鳴器驅動電路，可直接驅動蜂鳴器。

END