



深圳市矽源特科技有限公司
ShenZhen ChipSoureTek Technology Co.,Ltd.

CST57005 2 I/O 單通道語音晶片

CST57005

產品規格書

2 I/O 單通道語音晶片



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CST57005產品概觀

CST57005 為全新世代高性價比的語音晶片，具有 9bits 高性能 PWM 語音引擎。並且具備 5 秒(6K/4bits)多樣化的型號選擇，簡易應用上無需添加任何外部元件，讓整體成本具有市場領先優勢。此外，本系列可一次性燒寫程序內容，提供人性化的編譯介面，無需寫程式代碼，簡化產品開發流程。

CST57005功能概述

- (1.) 工作電壓：1.6V~5.5V
- (2.) 語音引擎：9bits PWM
- (3.) 語音編碼：4~9 bits, 共 8 階壓縮率
- (4.) 最多支持 16 個群組(Group)和 256 個功能格(Step)
- (5.) 支持 DIO 控制模式(MCU mode)
- (6.) 支持單線控制模式(Serial mode)
- (7.) 支持低電量檢測(LVD)和低電壓復位(LVR)
- (8.) 不同的觸發型態選擇
 - ✧ Re-triggered / Irre-triggered.
 - ✧ Level / Edge
 - ✧ Hold / Un-hold.
 - ✧ Voice Repeat / One-time voice.
 - ✧ On / Off function.
 - ✧ De-bounce time : 50us or 10ms
- (9.) 可程式化輸出狀態
 - ✧ 可選擇固定頻率的閃爍方式
 - ✧ 可在語音內加入自定義的閃爍方式，包含漸明、漸暗效果(LED PWM)
 - ✧ 請參考 Wave editor 工具
- (10.) 多樣化播放速率選擇
 - ✧ 3.0KHz / 3.2KHz / 3.8KHz / 4KHz / 4.8KHz
 - ✧ 6.0KHz / 6.4KHz / 8KHz / 9.6KHz / 12KHz
 - ✧ 16KHz / 19.2KHz / 24KHz / 32KHz
- (11.) 簡易流程編成
 - ✧ 工作暫存器寫入
 - ✧ 工作暫存器累加
 - ✧ 工作暫存器比較分支



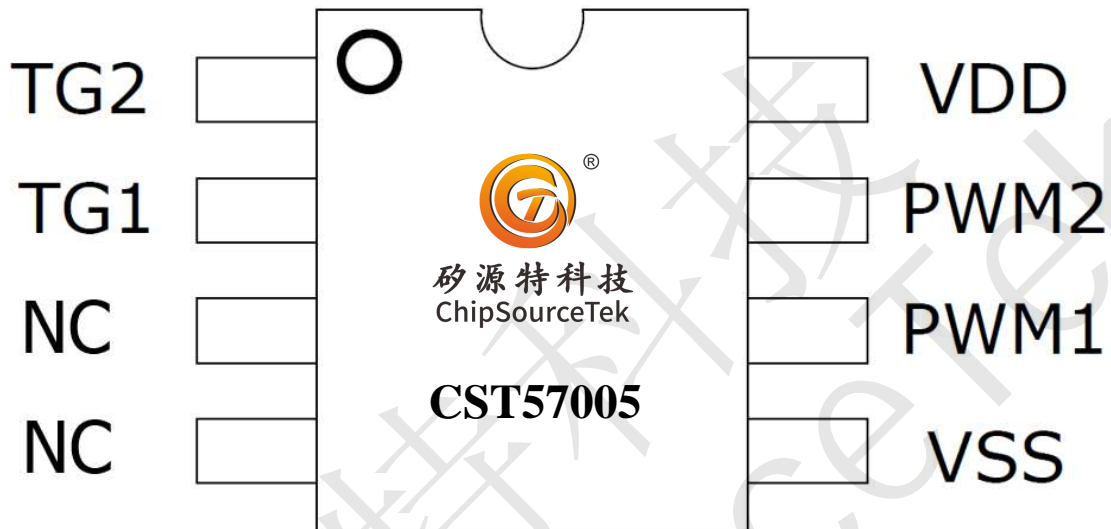
CST57005母體比較表

Body / 母體	Duration/預估秒數	IO counts /介面數
CST57005	5 " @6K/4bits	2



CST57005封裝腳位圖

CST57005 SOP8 - AA

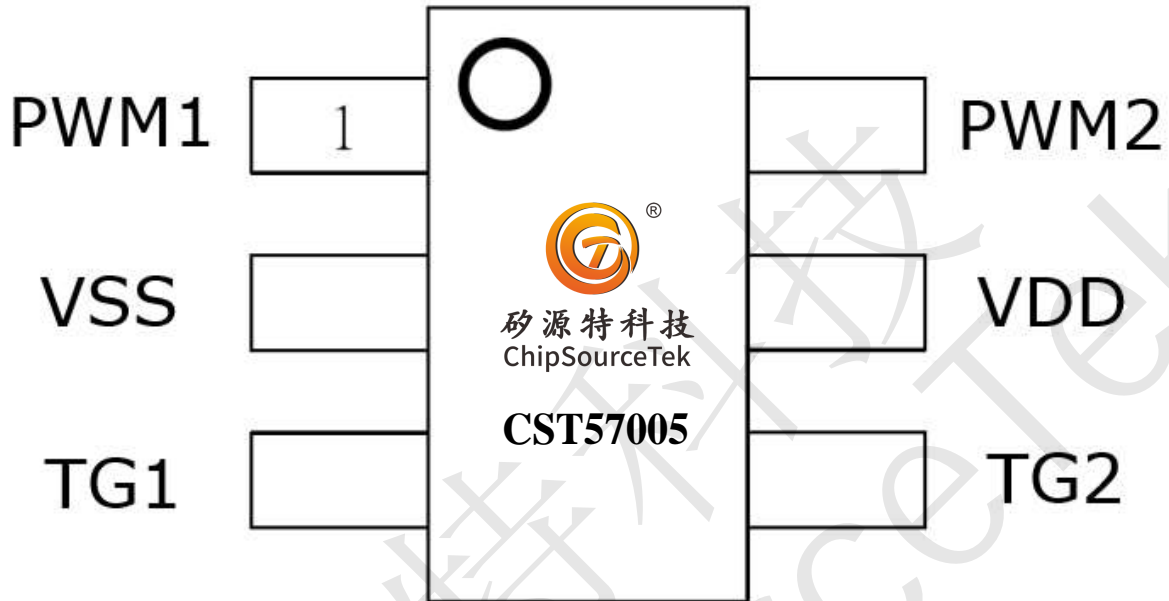


CST57005腳位說明

Pin Name	Write Pin	Description
VDD	VDD	電源供應腳
VSS	VSS	接地腳
PWM1	SCK	PWM
PWM2	PWM2	PWM
TG1	DIO	Tigger1 / LED PWM3
TG2	VPP	Tigger2



CST57005 SOT23-6



CST57005腳位說明

Pin Name	Write Pin	Description
VDD	VDD	電源供應腳
VSS	VSS	接地腳
PWM1	SCK	PWM
PWM2	PWM2	PWM
TG1	DIO	Tigger1 / LED PWM3
TG2	VPP	Tigger2

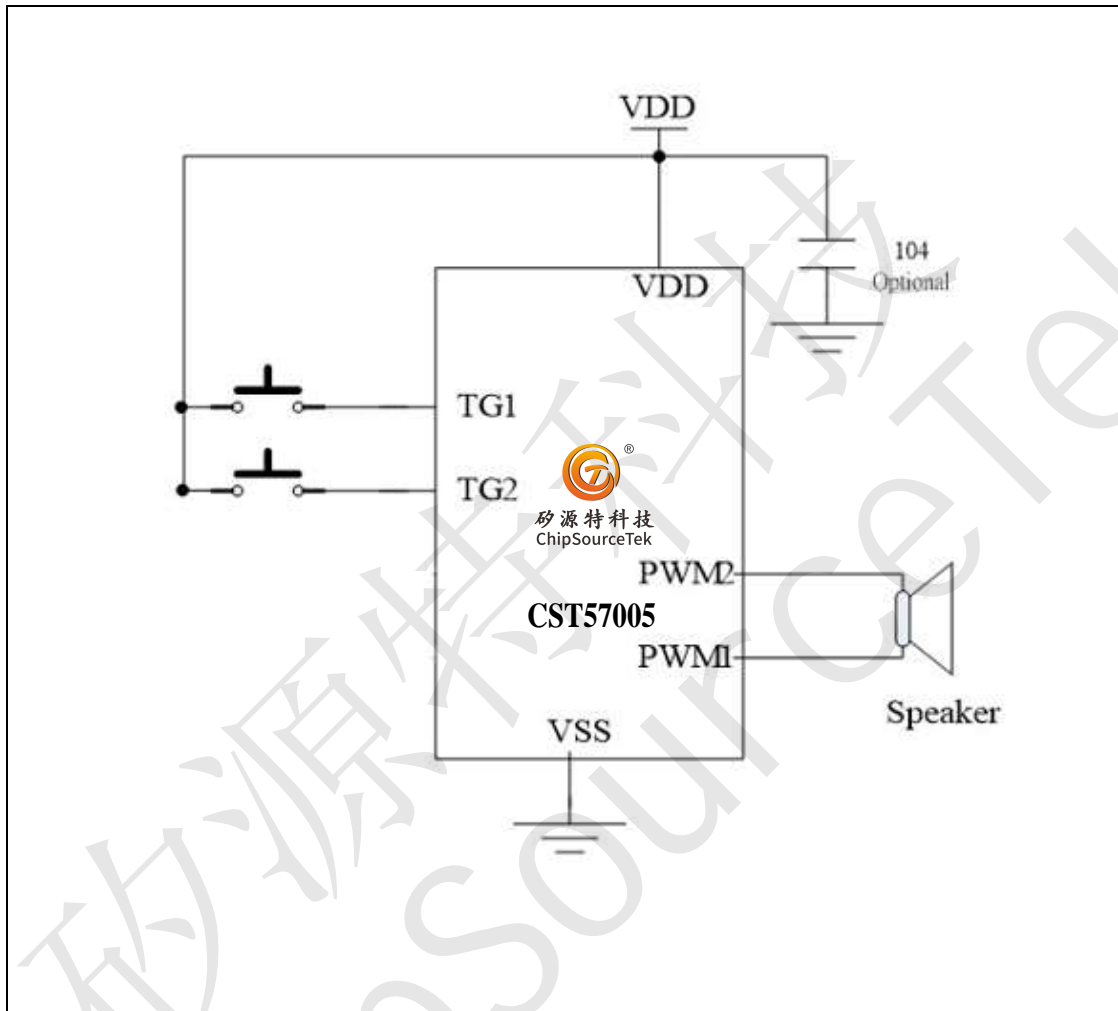


CST57005 Writer board slot location





CST57005應用線路圖

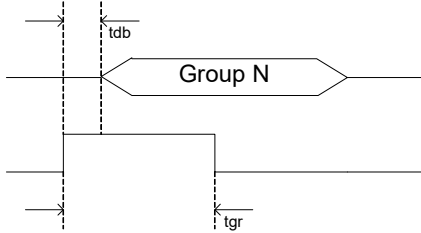




CST57005按鍵觸發模式

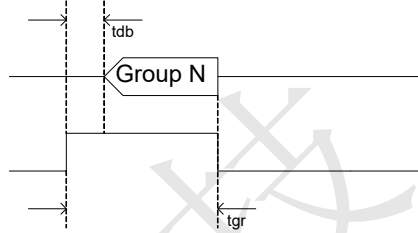
(a) Trigger Pulse Width < Group Length

Option Setting = Edge / Unhold



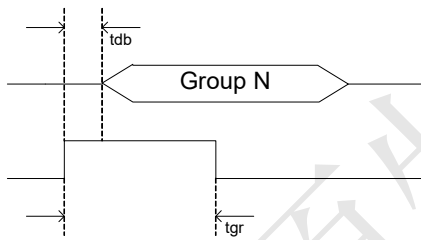
(b) Trigger Pulse Width < Group Length

Option Setting = Edge / Hold



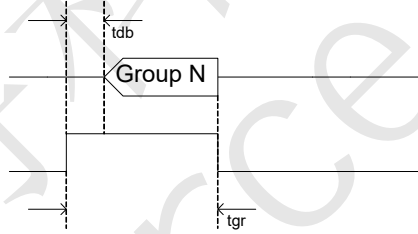
(c) Trigger Pulse Width < Group Length

Option Setting = Level / Unhold



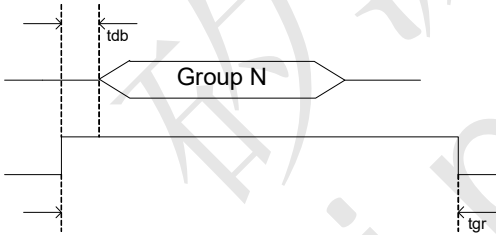
(d) Trigger Pulse Width < Group Length

Option Setting = Level / Hold



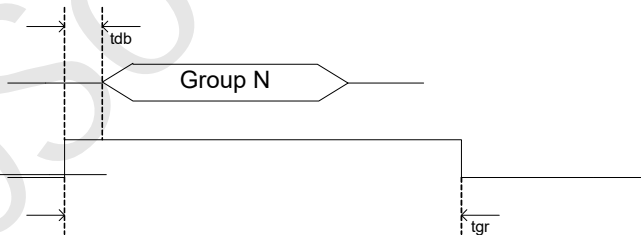
(e) Trigger Pulse Width > Group Length

Option Setting = Edge / Unhold



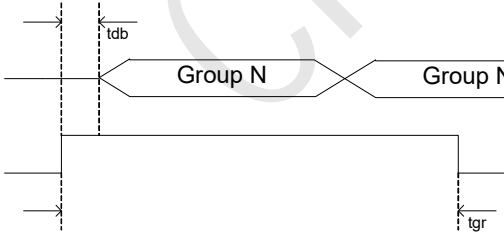
(f) Trigger Pulse Width > Group Length

Option Setting = Edge / Hold



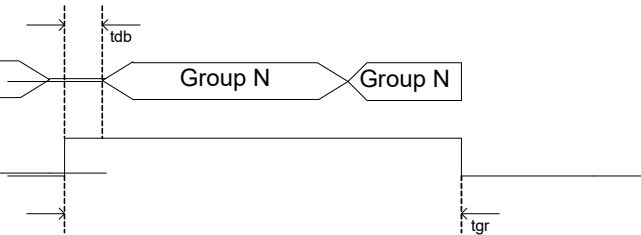
(g) Trigger Pulse Width > Group Length

Option Setting = Level / Unhold



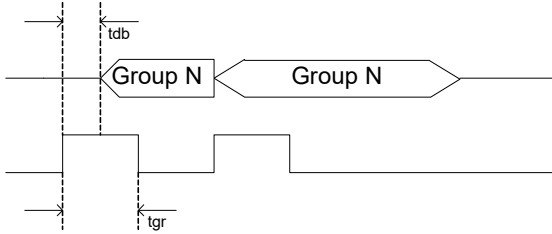
(h) Trigger Pulse Width > Group Length

Option Setting = Level / Hold

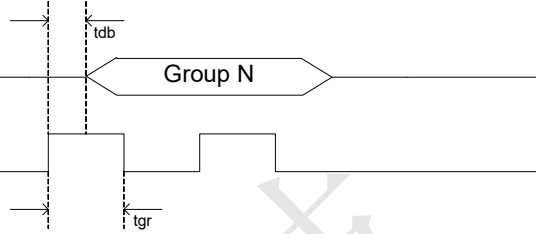




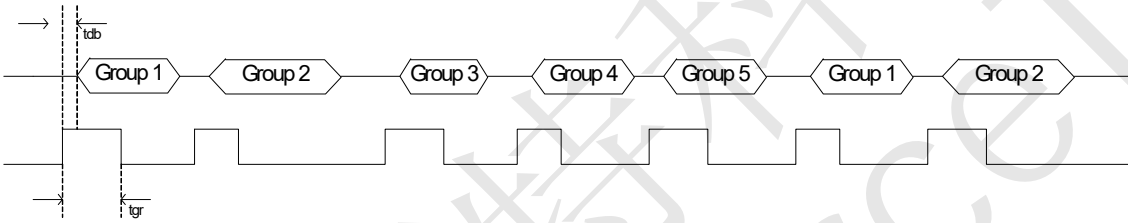
(i) Option Setting = Retrigger



(j) Option Setting = Irretrigger



(k) TG1 = Sequential Trigger & From Group1~Group5





CST57005觸發語音組合案例

Voice File	Description
Voice File A	Hello (1.5")
Voice File B	Good Morning (3")
Voice File C	John (1")
Voice File D	Tom (1")
Voice File E	Mary (1.5")

Group1 = Step1 + Step 2

Group 2 = Step3 + Step 4 + Step 5

Group 3 = Step 6 + Step 7

Group1 = Hello John

Group 2= Hello Tom Good Morning

Group 3 = Good Morning Mary

Step1 = Voice File A

Step 2 = Voice File C

Step 3 = Voice File A

Step 4 = Voice File D

Step 5 = Voice File B

Step 6 = Voice File B

Step 7 = Voice File E

Total use 3 Group , 7 Steps

Voice duration= Hello + Good Morning + John + Tom + Mary

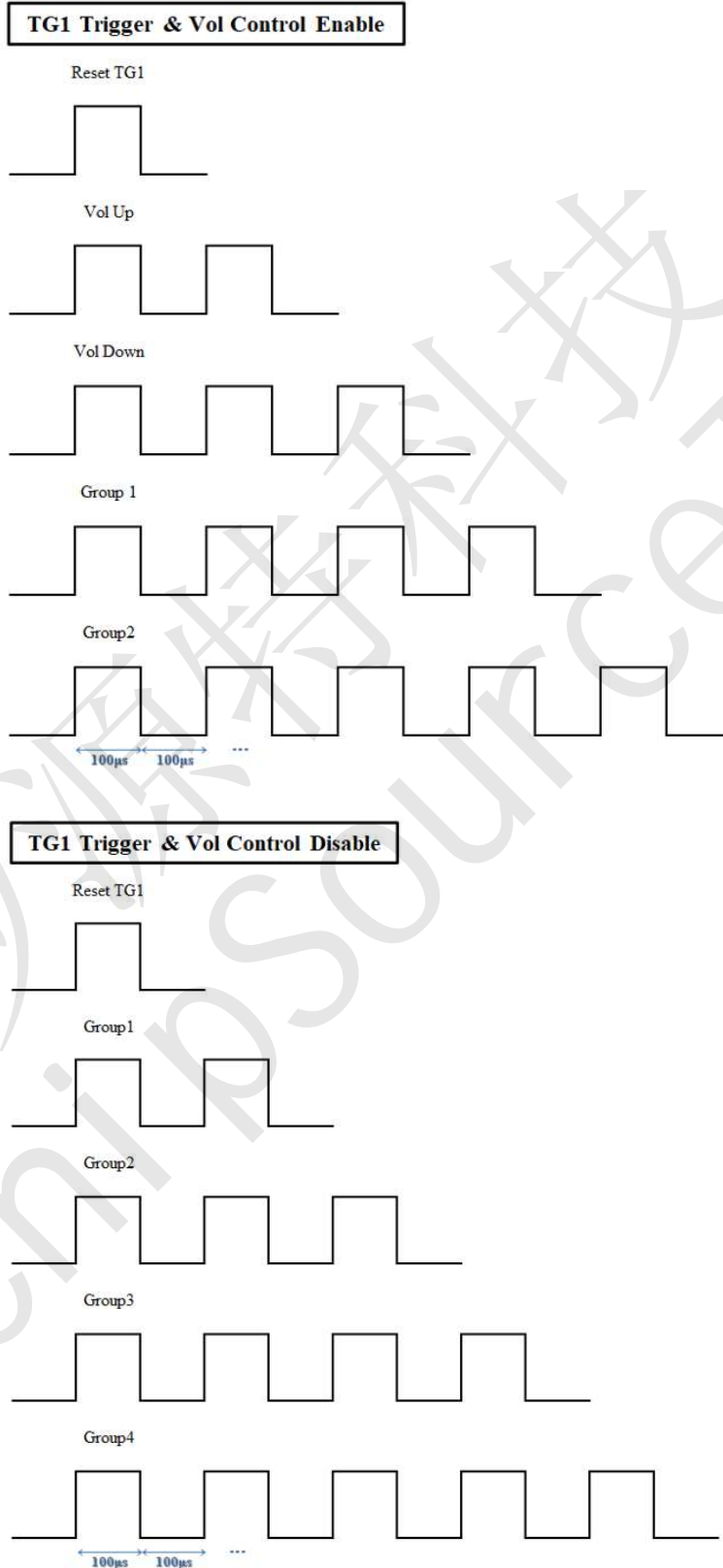
= 1.5" + 3" + 1" + 1" + 1.5"

= 8"

Total duration = 8" (80"-8" = 72" space is free , can add more Voice File, If body=V58080)

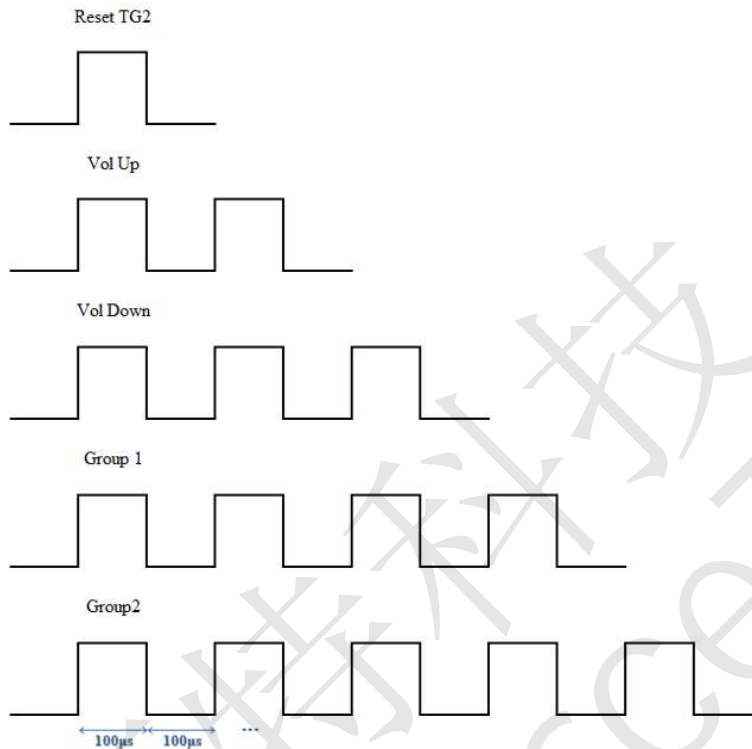


CST57005 Pulse Mode Signal

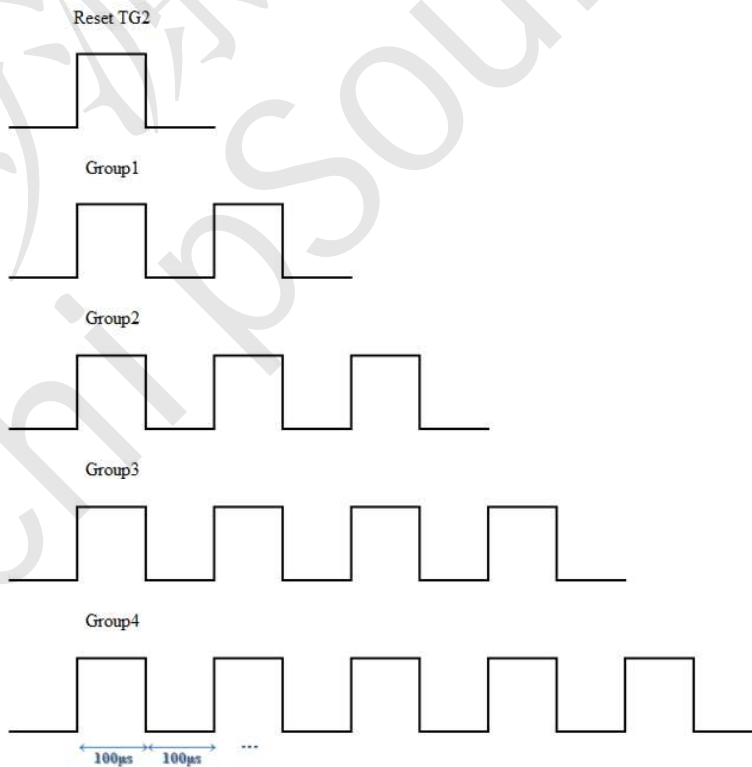




TG2 Trigger & Vol Control Enable



TG2 Trigger & Vol Control Disable





CST57005直流特性

Symbol	Parameter	Min	Typ	Max	Unit	Condition
VDD	Operating Voltage	1.6		5.5	V	1.536MHz
I _{sb}	Standby current			5	uA	VDD = 3.0V
				5	uA	VDD = 4.5V
I _{OP}	Operating Current		0.6		mA	VDD = 3.0V , No Load
			0.8		mA	VDD = 4.5V , No Load
I _{IH}	Input Current		2		uA	VDD=3.0V , 1.5M Pull-low
			5		uA	VDD=3.0V , 270K Pull-low
I _{OH}	Output drive Current		5		mA	VDD=3.0V TG voltage = 2.7V
I _{OL}	Output sink Current		7		mA	VDD=3V TG voltage = 0.3V
I _{POH}	PWM output current		43		mA	VDD=3.0V , V _{OH} = 2.7V
I _{POL}			60		mA	VDD=3.0V , V _{OL} = 0.3V
V _{IH}	Input high level		2		V	VDD=3.0V
V _{IL}	Input low level		1		V	VDD=3.0V
ΔF/F	Frequency deviation by voltage drop	-1		1	%	$\frac{F_{max}(5.0V) - F_{min}(2.0V)}{F_{max}(5.0V)}$



CST57005封裝資訊 (Package Information)

Size Symbols	Min (mm)	Max (mm)	Size Symbols	Min (mm)	Max (mm)
A	4.80	5.00	C3	0.05	0.20
A1	0.356	0.456	C4	0.203	0.233
A2	1.27TYP		D	1.05TYP	
A3	0.345TYP		D1	0.40	0.80
B	3.80	4.00	R1	0.20TYP	
B1	5.80	6.20	R2	0.20TYP	
B2	5.00TYP		θ 1	17° TYP4	
C	1.30	1.60	θ 2	13° TYP4	
C1	0.55	0.65	θ 3	0° ~ 8°	
C2	0.55	0.65	θ 4	4° ~ 12°	

