

產品規格書

接口單通道語音晶片

V53005/010/020/040/080

Preliminary

產品概觀

V53 系列為全新世代高性價比的語音晶片，具有 9bits 高性能 PWM/DAC 語音引擎。並且具備有 5~80 秒(6K/4bits)多樣化的型號選擇，並內置有高精準度起振器，毋需外部起振元件，外接元件少，讓應用開發整體成本具有市場領先的優勢。

功能概觀

語音引擎：9bits PWM. / 9bits DAO(部分型號無 DAO 功能)

可編輯階數：3800 階

可編輯群組數：63 組(最大)

開機執行群組：1 組

可放聲音 度：5(V53005)/10(V53010)/20(V53020) /40(V53040) /
80(V53080)4bits@6K-Playrate

四組可設定接口

- TG1 帶序列模式 般輸入接口。
- TG2 可設定為低準位觸發復位接口。
- TG2 帶序列模式 般輸入接口。
- TG3 般接口，可程式化為音量調整接口(部分型號)。
- TG4 般接口 (部分型號)。

可程式化接口觸發型態

- Re-triggered / Irre-triggered.
- Level / Edge.
- Hold / Un-hold.
- Voice Repeat / One-time voice.
- On/Off function.

選表式聲音壓縮編碼引擎

- 4bits / 5bits / 8bits / 9bits

內置單片機觸發模式 SPI 接口

內置 RC 震盪起振迴路，無須外部電路

寬工作電壓：2.0~5.0V

工作溫度：-20°C ~ 60°C (不計工作頻率飄移)

簡易編程功能

- 工作寄存器寫入
- 工作寄存器進位
- 工作寄存器比較分支

可程式化輸出狀態

- 待機準位
- 工作高準位
- 工作低準位
- 輸出頻閃

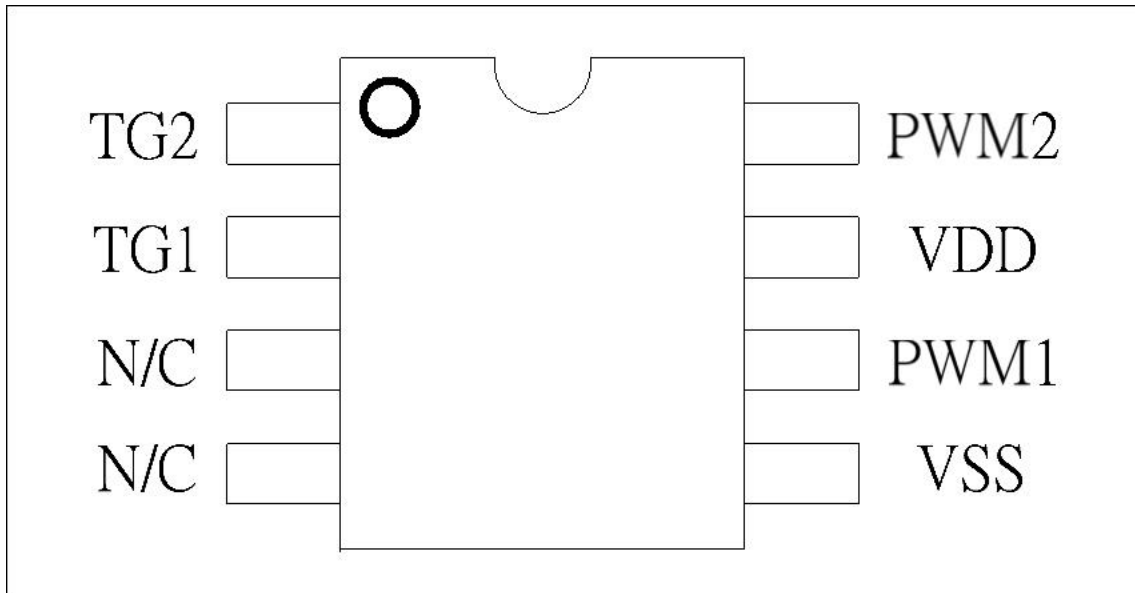
多樣化播放速率選擇

- 3.1K / 3.2K / 3.3K / 3.5K / 3.7K / 3.8K
- 4.0K / 4.2K / 4.4K / 4.6K / 4.8K
- 5.0K / 5.3K / 5.6K
- 6.0K / 6.4K / 6.8K
- 7.4K / 8.0K / 8.7K / 9.6K / 10.6K / 12.0K
- 13.7K / 16.0K / 19.2K / 24.0K / 32.0K

Body overview	母體比較表	
Body / 母體	Duration/預估秒數	IO counts / 接口數
V53005	5" @6K/4bits	2
V53010	10" @6K/4bits	2
V53020	20" @6K/4bits	2
V53040	40" @6K/4bits	4
V53080	80" @6K/4bits	4

封装脚位图

V53/005/010/020-SOP8

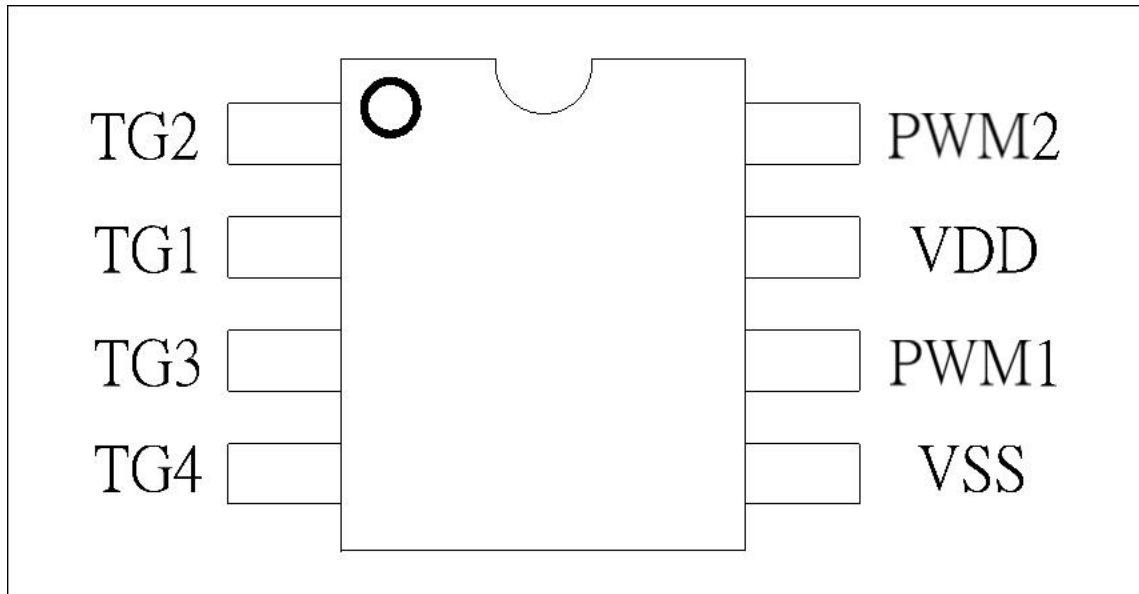


脚位说明

Pin Name	MCU Mode	Description
VDD	VDD	电源供应脚
VDDL	VDDL	LDO 输出供应脚
VSS	VSS	接地脚
PWM1	PWM1	PWM 脚
PWM2	PWM2	PWM 脚/DAO 输出脚
TG1	DIO	TG1 / SPI DI pin
TG2	SCK	TG2 / Low active RESET / SPI SCK pin

封裝腳位圖

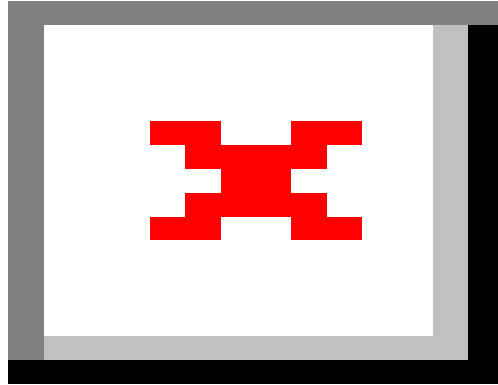
V53/040/080-SOP8



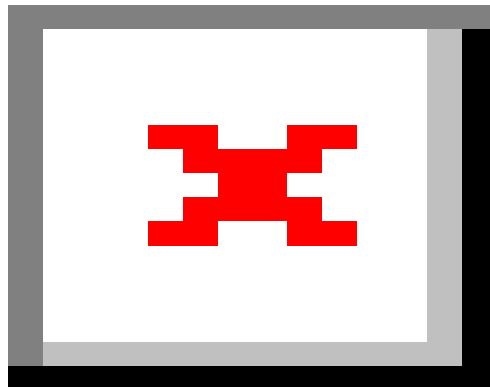
腳位說明

Pin Name	MCU Mode	Description
VDD	VDD	電源供應腳
VDDL	VDDL	LDO 輸出供應腳
VSS	VSS	接地腳
PWM1	PWM1	PWM 腳
PWM2	PWM2	PWM 腳/DAO 輸出腳
TG1	DI	TG1 / SPI DI pin
TG2	SCK	TG2 / Low active RESET / SPI SCK pin
TG3	DO	TG3 / SPI DO pin
TG4	CSb	TG4 / CSb

應用線路圖



LDO Off with TG2-RESET

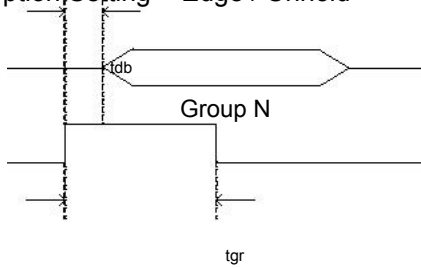


LDO On

Trigger Timing

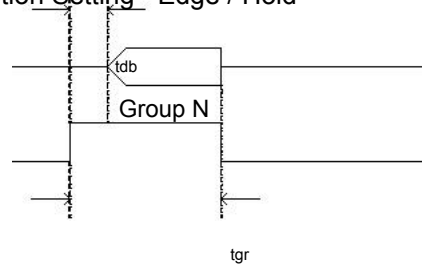
(a) Trigger Pulse Width < Group Length

Option Setting = Edge / Unhold



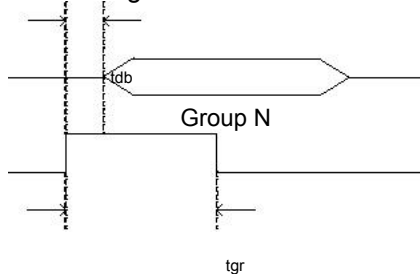
(b) Trigger Pulse Width < Group Length

Option Setting = Edge / Hold



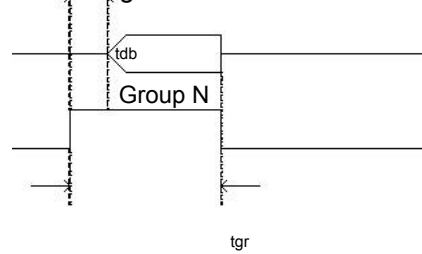
(c) Trigger Pulse Width < Group Length

Option Setting = Level / Unhold



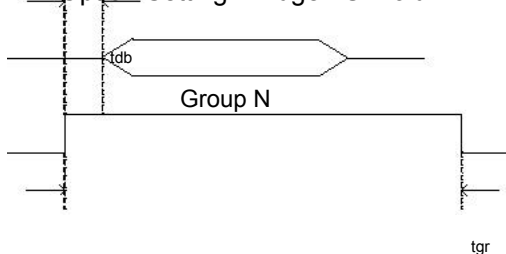
(d) Trigger Pulse Width < Group Length

Option Setting = Level / Hold



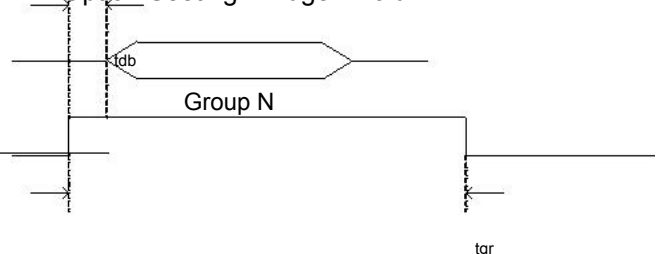
(e) Trigger Pulse Width > Group Length

Option Setting = Edge / Unhold



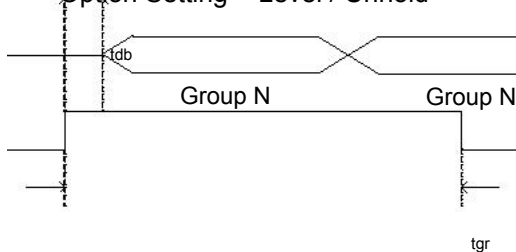
(f) Trigger Pulse Width > Group Length

Option Setting = Edge / Hold



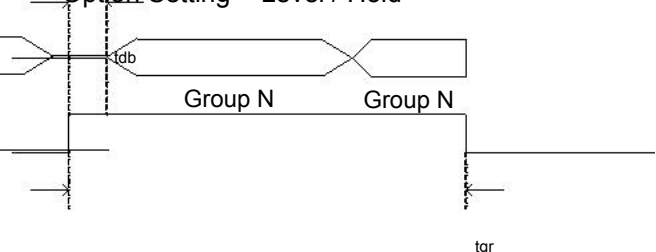
(g) Trigger Pulse Width > Group Length

Option Setting = Level / Unhold

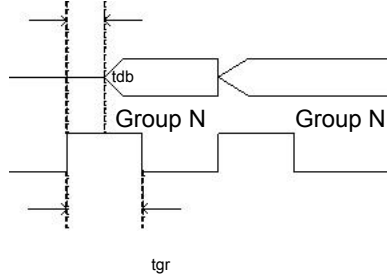


(h) Trigger Pulse Width > Group Length

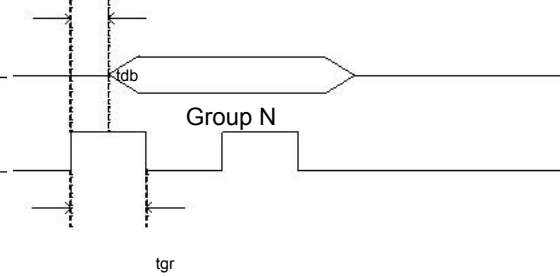
Option Setting = Level / Hold



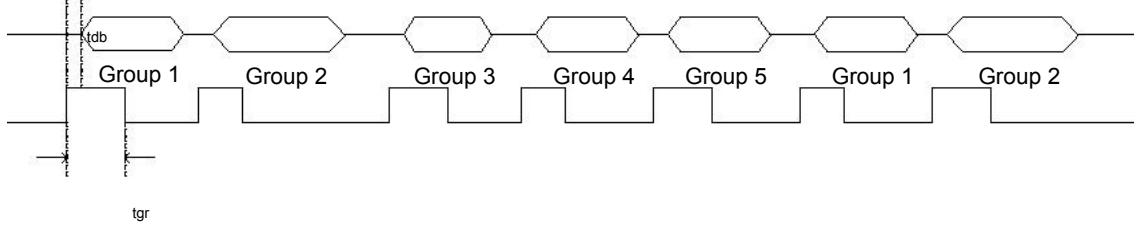
(i) Option Setting = Retrigger



(j) Option Setting = Irretrigger



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



Trigger Voice Combination Example	
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

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

$$= 8"$$

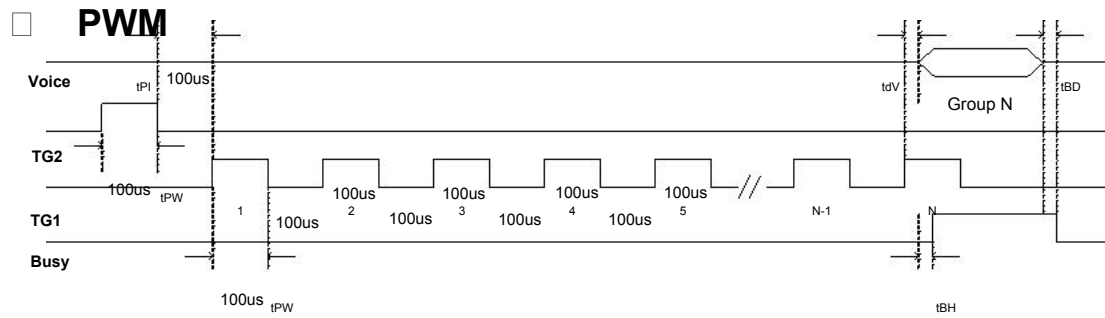
Total duration = 8" (40"-8" = 32" space are free , can add more Voice File, If body=V53040)

Serial Mode Timing

TG1=Edge/Unhold/Retrigger

TG2=Reset PIN

※Tool: Controller Trigger



DC Characteristics						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
V_{OP}	Operating Voltage		2.0		5.0	V
I_{sb}	Standby current	LDO On				μ A
		LDO OFF				μ A
I_{OP}	Operating Current	VDD=3V / No Load				μ A
I	Output drive Current					mA
I^{OD}	Output sink Current					mA
I_{ODP}^{OS}	PWM output drive Current					mA
I_{OSP}^{OS}	PWM output sink Current					mA

Revision History

Version	Date	Page	Item	Detail
0.01				Initial Version
0.02				Modify some error
0.03				Add further body information Add V53010 package information
0.04				Add Chinese description (Traditional)
0.05				Modify package diagram