PLUS Integrated Circuits Inc. aP23KWC8S - USB Writer User Guide

aP23KWC8S

USB Writer USER GUIDE

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The aP23KWC8S USB Writer is designed to support Aplus aP23xxx series Voice chips. It is suitable for:

- aP23682 (682 sec, 2 I/O chip) SOP8
- aP23341 (341 sec, 2 I/O chip) SOP8
- aP23170 (170 sec, 2 I/O chip) SOP8
- aP23085 (085 sec, 2 I/O chip) SOP8

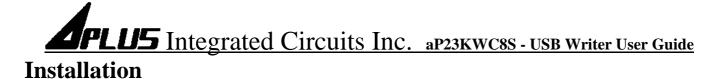
This development system serves three main functions:

Compiler – to create a dp2 file from user's Voice files **Writer** – to program the dp2 file into the aP23xx chip **Copier** – connect DC 5V adaptor for 1 to 1 programming

The **Compiler** is used to combine the edited voice files into the chip to form the desired Voice Group and to define the playback functions of each Voice Group by selecting different Options and Trigger Modes of each individual Voice Group.

The **Writer** is used to program the voice data into the aP23xxx devices that resulted from the Compiler Function. A Writer Board connected to the PC via USB port is required.

The **Copier** is using the compiled *.dp2 which loads to writer then disconnect the USB and connect the DC 5V for 1 pcs copying.



Hardware Installation

aP23KWC8S is a USB based writer programmer. It is intended to be used in Windows XP, Win7, Win8, Win10 computer.

Writer Board Connection

- 1) Connect USB cable from the writer board to the computer. The computer will display a new hardware is found message. The installation will begin automatically.
- 2) If there are too many USB devices are connected to your computer at the same time, the current supply from USB may not be sufficient to support the writer board.

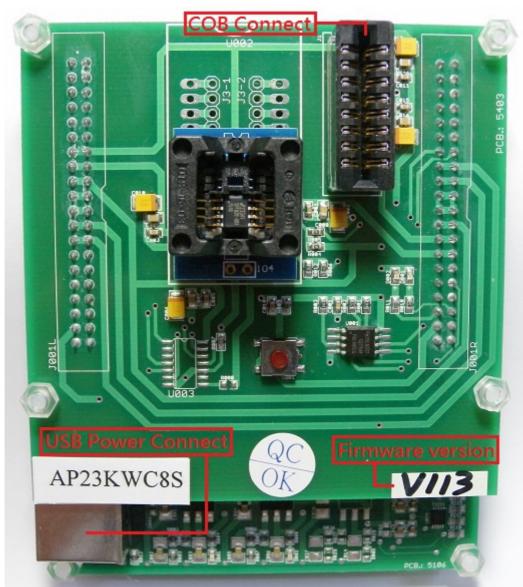


Fig. 1 The aP23KWC8S USB Writer Programmer Board

Running The Software

Double click the file **23KWComplier.exe** to launch the software.

• COMPILER :

Wave File High Volume 04.5V Out2 :LED- Flash LED- Flash	23KWCompiler-V2.5			- 🗆 X
aP89341K 1. ~ Key Mode 2. ~ Config DAC Debounce Voltage Output Option: Wave File High Volume 0.4.5V 0.4.5V 0.4.5V Out2 : LED- Flash LED- Flash 0.00000000000000000000000000000000000	Compiler Writer About	3.		Check Sum: 15.
Wave File 4. 4. 4. 4. Set LVD: Ø Off On Set LVD: Ø Off On Set UVD: Ø Off On Set Oscillator: XT Ext Ø Int Group edge Holdable Trig Stop-H Stop-H Out3:Stop-H Stop-H Output 9.	aP89341K 1. V Key Mode 2. V Config	DAC Debound	O65us	
4. Set Oscillator: □XT □Ext ☑Int Group edge Holdable Trig Stop Output 9. <t< td=""><td>Wave File</td><td>High Volume</td><td></td><td>LED- Flash LED- Flash 🗸</td></t<>	Wave File	High Volume		LED- Flash LED- Flash 🗸
Type : Compression 6. ULAW8 5. • PCM16 • Add-Wav • Add-Wav • • • • • • • • • • • • • • •	4.			Stop-H Stop-H V
Type : Compression 6. ULAWS 5. PCM16 PCM8 ADPCM4 7. Silence File Name Size Rate Type Use % VoiceFile Prog - Busy Table Use Table Start Type		Group edge	Holdable Trig	Stop Output
Image: Compression Add-Wav ULAWS 5. PCM16 PCM8 ADPCM4 7. Silence File Name Size Rate Type Use % VoiceFile Prog - Busy Table Use Table Start Type		9.		
	Outlaws 5. PCM16 PCM8 Add-Wav 7. Silence Silence Silence Add-Wav Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence Silence<!--</td--><td></td><td></td><td></td>			
8.		VoiceFile	Prog - Busy Table Use	Table Start Type
13. 14. 12. 11. Usage : 528 < 1048576		13.	14.	12.

COMPILER DESCRIPTION:

- 1. Select your required IC body.
 - --- aP23682-8pin , aP23341-8pin , aP23170-8pin , aP23085-8pin.
 - --- aP23682-16pin , aP23341-16pin , aP23170-16pin , aP23085-16pin.
 - ---- aP89682K , aP89341K , aP89170K , aP89085K.
- 2. Select your required trigger mode.
 - --- Key mode / CPU parallel mode / MP3 mode / SPI mode / I2C mode / aP89 mode / SBT mode.
- 3. Select voice output mode. --- DAC or PWM.
- 4. Show all your required voice files. (Only wav files acceptable). --- The [xxx.wav]: 8 bits or 16 bits mono xxx.wav.

- 5. Select the compression mode. --- ADPCM4 / ULAW8 / PCM8 / PCM16.
- 6. Select your required voice file [xxx.wav] folder.
- 7. Select if adding the silence. --- 1ms ~ 10000ms.
- 8. Loading the required *.wav files.
- 9. Setting your required voice sections and function mode.
- 10. Show your final voice list.
- 11. Compiler: After setting the voices & function, push the button to create xxx.txt & xxx.dp2 files.
- 12. Re-download & Re-editing [xxx.dp2] to setting and function.
- 13. Show the memory of your usage.
- 14. Show the IC body memory size.
- 15. Show Check Sum.

23KWCompil	er-V2.5								(<u> </u>	
Compiler Writer	About			22.			40			k Sum :
aP89341K Wave File	~ Ke	y Mode		Config	DAC PWM High Vol	Debounce 16ms (ume 20.) 65us (0 3V () 4.	21. Out1:8		sy-H 🕔
					Set LVD:	✓ Off	On <mark>17.</mark> Γ □ Ext ☑ Ir	18. Out3 : S	Stop-H Sto	p-H 🕔
					Group	edge	Holdable	Trig	Stop	Output
Type : Compress	sion PCI	м16	F	dd-Wav						
		PCM4		Silence						
File Name	Size	Rate	Туре	Use %						
					VoiceFile		Prog - Busy	Table Use	Table Start	Type
					Usage : 5	28 <	1048576 (0%)	LoadDp2	Compiler

au 23KWCompiler-V2.5			– 🗆 X
Compiler Writer About			Check Sum :
aP23341 - 8Pin v Key Mode v Config Wave File	SBT Key3 23. PowerOnPlay 24. SBT Loop 25. Set Volume 26.	tage Output Opti 3V 4.5V Int	
	Close	Trig	Stop Output
Type : Compression			
Compiler Writer About			- X
aP89341K ~ MP3 Mode ~ Config Wave File	PowerOnPlay	4.5V Out2:LED-F	H Busy-H ~ Flash LED-Flash ~
	Set Volume	Out3:Stop- Int	H Stop-H V
	● SBT : P / P 27. ○ SBT : P / S	Trig	Stop Output
uu 23KWCompiler-V2.5			- 🗆 X
Compiler Writer About			Check Sum :
aP89341K SPI Mode Config Wave File	PowerOnPlay	tage Output Opti 3V Out1 :Busy- 4.5V Out2 :LED-F	H Busy-H ~ Flash LED-Flash ~
	□ Set Volume	Int Out3 : Stop-	H Stop-H ~
	CPU Serial Option 28.		

- 16. Select required debounce time.
 - --- 65us or 16ms.
- 17. Select if using low voltage detect.--- Select ON if the IC voltage less than 2V will be reset.
- 18. Select if using the oscillator.
 - --- XT (X'tal=16MHz) / Rosc ext (68K ohm) / Rosc Int.
- 19. Select the output function for output1, output2, output3.
 - --- Busy-H, Busy-L.
 - --- LED Flash (LED high active), ~LED Flash (LED low active).
 - --- Stop-H, Stop-L.
 - --- Prog-BusyH, Prog-BusyL.
 - --- Load: For the play command [094h+D9~D0]; [D9~D0] total 10 bits indicate the voice address. Same the aP89341 prefetch-071h [no gap loop play].



- 20. Select PWM voice output volume. ---Select PWM high volume.
- 21. Select IC operating voltage at PWM (VOUT). --- Low Voltage: 3V, High Voltage: 4.5V.
- 22. IC body configures advanced function.
- 23. Select SBT pin swap. (for 8pin device only). --- Select (SBT as OUT1) or (SBT as KEY3).
 - --- SBT as OUT1: Busy-H/L, Stop-H/L, LED Flash (LED high active), ~LED Flash (LED low active), Prog-BusyH/L, Load.

S3 (pin7)	S2 (pin6)	Group	SBT = OUT1
0	1	SW1	Busy-H/L
1	0	SW2	Stop-H/L
1	1	SW3	LED

--- SBT as Key3:

SBT (pin5)	S3 (pin7)	S2 (pin6)	Group
0	0	1	SW1
0	1	0	SW2
0	1	1	SW3
1	0	0	SW4
1	0	1	SW5
1	1	0	SW6
1	1	1	SW7

24. Select power on play.

--- Power on play [sw0] group once.

- 25. Select SBT loop. (At SBT mode).
 - --- Enable: The SBT pin sequential trigger & loop play. --- Disable: The SBT pin sequential trigger & play once. *Note: Voice function (Trig Level) must select Level.
- 26. Select volume control function.

--- Select the volume control Level x16 / x8 / x4.

- 27. SBT pin act play/pause or play/stop function for MP3 mode.
- 28. Select if using pin S4 as data output pin.

--- The SPI mode or I2C mode of data output for 24 pin IC body and 16 pin IC body.

• WRITER :

	Writer Abou						— 🗆 Check Sum :	
roup	edge	Holdable	Trig	Stop	Output	2.		
5.		Prog - Busy	Table Use	Table Start	Type			
6. Blank	Check	7. ☑ Progran	8. n ⊠Ve	rify □S	9. ecurity 1. 0 %	10. Run	3. aP23682 - 8Pin 12. Load to Flash	1

WRITER DESCRIPTION:

- 1. Loading your programming file. (xxx.dp2)
- 2. Show setting and function after loading *.dp2 file.
- 3. Show your required IC body.
- 4. Show voice sections and function mode.
- 5. Show the content of your selected section of voice list.
- 6. Select to blank check IC is blank?
- 7. Select to execute programming.
- 8. Select to verify the data of your programming.



- 9. Select if you need security mechanism.
 *** (If do this, it can't be copied; it can't be Master IC.)
- 10. Execute your selected (6.) (7.) (8.) (9.).
- 11. Show the progress of "blank check", "program", "verify" and "load to flash".
- 12. Load to Flash: download the program file (xxx.dp2) to [1 to 1 copier] writer.

• About :



ABOUT DESCRIPTION:

- 1. Show software version.
- 2. Show website of Aplus Integrated Circuits Inc.
- 3. Detect writer firmware version.
- 4. Update writer firmware version.

• Example for Compiler :

compiler Writer Abuit Check Sum : aP23682 - 8Pin Key Mode Config DAC Debounce Output Option: Wave File boku.wav Ithigh Volume Ithigh Volume Ithigh Volume Ithigh Volume boku.wav CHECK SUM : Check Sum : Ithigh Volume Ithigh Volume Ithigh Volume Super 16A.wav Ithigh Volume Ithigh Volume Ithigh Volume Ithigh Volume Super 16A.wav Ithigh Volume Ithigh Volume Ithigh Volume Ithigh Volume Super 16A.wav Ithigh Volume Ithigh Volume Ithigh Volume Ithigh Volume Tripe : Compression Ithigh Volume Ithigh Volume Ithigh Volume Ithigh Volume OPCM8 AbpCM4 Silence Ithigh Volume Ithigh Volume Ithigh Volume File Name Size Rate Type Use % A A Set UVB: A Ithigh Volume Ithigh Volume Ithigh Volume Ithigh Volume OutAw8 AbpCM4 Silence Ithigh Volume A Ithigh Volume Ithigh Volume Ithigh Volume </th <th>23KWCompile</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Ch</th> <th>eck Sum :</th>	23KWCompile										Ch	eck Sum :
Wave He Set LVD: ○ Off □ On MUSIC 02.wav Set LVD: ○ Off □ On Super 16A.wav h Train 01.wav Int Image: Compression Image: Compression O ULAW8 Image: Compression O ULAW8 O PCM16 Add-Wav File Name Size Rate Type Use % ABT_Builder ANVR AutoWriter-APP Builder_Project China_Customer China_Customer China_Customer China_Customer China_Customer China_Customer China_Customer China_Customer	aP23682 - 8F		Mode	b	Config		DAC PWM	● 16ms ○	65us 💿 3	W d		
MUSIC 02.wav Super 16A.wav Train 01.wav Train 01.wav Type : Compression O ULAW8 ● PCM16 O ULAW8 ● PCM16 O LAW8 PCM8 O ADPCM4 File Name Size Rate Type Size Rate Type Size Rate Type Use % Add-Wav Silence File Name Size Rate Type Comp	boku.wav CHILD.wav					Se	et LVD:	<mark>⊘off □</mark> 0)n	Int		
Type : Compression O ULAW8 O PCM8 O ADPCM4 File Name Size Rate Type Use % A Wave ABT_Builder AUtoWriter-APP Builder_Project China_Customer China_Customer China_Customer China_Customer China_Customer China_Customer China_Customer China_Customer China_Customer Schina_Customer Schina_Cus	Super 16A.wav	h					iroup	edge			Stop	
File Name Size Rate Type Use % wave wave ABT_Builder AUtoWriter-APP Builder_Project China_Customer Chk_dll cus wav	O ULAW8	PCM:			d-Wav				NGCSCON			
	File Name	Size	Rate	Туре	Use %			> AB1	wave [_Builder R oWriter-APF der_Project na_Custome c_dll	er g	取消	

- 1. Select the IC body is [aP23682 8Pin].
- 2. Select [Key Mode] to be our trigger mode.
- 3. Select the voice output is [PWM].
- 4. IC operating voltage at 3V.
- 5. Select PWM high volume.
- 6. Click Add-Wav to pick your required folder.
- 7. After confirming the folder, click the button.
- 8. All way files in the folder will be listed here.

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ompilor www									Cher	k Sum :
ompiler Writer aP23682 - 8Pi		/ Mode	~	Config	DAC PWM	Debounce 16ms			Option:	.K Sum .
Wave File					High Volu	ıme	√ 04.	5V		
boku.wav					Set LVD:	<mark>⊘ Off</mark> □	On			
CHILD.wav							Ext 🛛 Ir	t.		
MUSIC 02.wav	h					-			-	1
Super 16A.wav	_				Group	edge	Holdable	Trig	Stop	Output
Train 01.wav										
				_						
Type : Compressio		10	Ac	dd-Wav	· ·					
OULAW8 j	0		k e							
DOMO										
PCM8		CM4	- 5	lience					8	
Fil Silence Time		1	Ok I	Use %	 					
Fil Silence Time		0 mS)		Use % 2 4	VoiceFile		Prog - Busy	Table Use	Table Start	Туре
Fil Silence Time bc Cł 20 MI	e (1 ~ 1000	0 mS)	ok I	Use % 2	VoiceFile		Prog - Busy	Table Use	Table Start	Туре
Fil Silence Time bc Ct 20 MI Super 16A.wav	e (1 ~ 1000 mS	0 mS)	Ok I ancel	Use % 2 4 3	VoiceFile		Prog - Busy	Table Use	Table Start	Туре
Fil Silence Time	e (1 ~ 10000 mS 512296	0 mS) C 16000	Ok I ancel PCM8	Use % 2 4 3 12	VoiceFile		Prog - Busy	Table Use	Table Start	Туре
Fil Silence Time bc Cł 20 Super 16A.wav Train 01.wav Silence : 20mS	e (1 ~ 1000) mS 512296 46618	0 mS) C 16000 12000	Ok I ancel PCM8 PCM8	Use % 2 4 3 12 2	VoiceFile		Prog - Busy	Table Use	Table Start	Type
Fil Silence Time bc Cf 20 MI Super 16A.wav Train 01.wav	e (1 ~ 1000) mS 512296 46618	0 mS) C 16000 12000	Ok I ancel PCM8 PCM8	Use % 2 4 3 12 2	VoiceFile		Prog - Busy	Table Use	Table Start	Type
Fil Silence Time bc Cł 20 Super 16A.wav Train 01.wav Silence : 20mS	e (1 ~ 1000) mS 512296 46618	0 mS) C 16000 12000	Ok I ancel PCM8 PCM8	Use % 2 4 3 12 2	VoiceFile		Prog - Busy	Table Use	Table Start	Type
Fil Silence Time bc Cł 20 Super 16A.wav Train 01.wav Silence : 20mS	e (1 ~ 1000) mS 512296 46618	0 mS) C 16000 12000	Ok I ancel PCM8 PCM8	Use % 2 4 3 12 2	VoiceFile		Prog - Busy	Table Use	Table Start	Type
Fil Silence Time bc Cł 20 Super 16A.wav Train 01.wav Silence : 20mS	e (1 ~ 1000) mS 512296 46618	0 mS) C 16000 12000	Ok I ancel PCM8 PCM8	Use % 2 4 3 12 2	VoiceFile		Prog - Busy	Table Use	Table Start	Type
Fil Silence Time bc Cł 20 Super 16A.wav Train 01.wav Silence : 20mS	e (1 ~ 1000) mS 512296 46618	0 mS) C 16000 12000	Ok I ancel PCM8 PCM8	Use % 2 4 3 12 2	VoiceFile	i-1	Prog - Busy	Table Use	Table Start	Type

- 9. Show all your required *.wav files. Double click wav files you required in h, they will be showed in i.
- 9-1.If you once required multiple wav files to be showed in i. (Mouse left button as begin item after mouse right button as end item and click Add-Multi Wav at the same time).
- 9-2.It will show the memory size you has been used.
 - (Please note the data size you loaded can't exceed the body's memory).
 - *** Please note the data size you loaded can't exceed the body's memory. If so, there are some ways to solve this problem:
 - 1). Change it to a bigger memory size body. ex: aP23085-8Pin to aP23341-8Pin.
 - 2). Compressed the wav files to decrease the memory size. ex: from PCM16 to PCM8.
 - 3). Delete some required voice files.
- 10. If way file is too big, we can choose compressing files to decrease their sizes.
 - (UALW8 compress wav file to 8bits, PCM8 compress wav file to 8bits,

ADPCM compress wav file to 4bits).

- *** Please note if your original voice is 16bits wav file which need to be compressed to 8 bits, We suggest you choose ULAW would be better.
- 11. If you want to add mute voice, click Silence button to set the silence time.
- 12. If need silence 20ms. Key in 20 (unit ms) then click OK button.

ompiler Writ	er About						m			ck Sum :
aP23682 -	8Pin v Ke	y Mode		~ Config	□ DAC ☑ PWM	Debounce 16ms () 65us	-	Option:	
Wave File					High Vol	ume	0 04.5	DV .		
boku.wav					Set LVD:	⊘ Off □				
CHILD.wav						ator: X		q		
MUSIC 02.wa	v								1	1
Super 16A.wa	v				Group	edge	Holdable	Trig	Stop	Output
Train 01.wav										
Type : Compre			,	Add-Wav						
O ULAW8		116	,	luu-wav				- 12		
PCM8		CM4		Silence						
File Name	Size	Rate	Туре	Use %	1					
boku.wav	35650	12000	PCM8	2						
CHILD.wav	91676	12000	PCM8	4	VoiceFile		Prog - Busy	Table Use	Table Start	Туре
MUSIC 02.wa	v 73004	12000	PCM8	3						
Super 16A.wa	v 512296	16000	PCM8	12						
Train 01.wav	46618	12000	PCM8	2						
Silence : 20m	6 0	16000	Silence	0						
									12	

www.23KWCompiler-V2.5					_		×
Compiler Writer About		_			Cheo	ck Sum :	
aP23682 - 8Pin 🗸 Key Mode	~ Config	SBT Out1	tage 3V	Output Option Out1 : Busy- H		sy-H	~
Wave File		PowerOnPlay	4.5V	u			
boku.wav		SBT Loop t		_			
CHILD.wav		Set Volume	Int				
MUSIC 02.wav				Trig	Stop	Outpu	t
Super 16A.wav Train 01.wav				mg	5100	Carpa	
Train 01.WeV							
Type : Compression		Close					
Type : compression	VelW-PPV						

23KWCompile	er-V2.5						_		×
Compiler Writer	About						Check	Sum :	
aP89170K	~ SF	PI Mode		✓ Config	PowerOnPlay	tage Output Option: 3V Out1:Busy-H 4.5V	Busy	-H	~
Wave File					PowerOnPlay	Out2 :LED- Flas	h LED-	Flash	~
boku.wav					v	Volume Warp : 🗌 Disable 🗹 Enable	Load		~
CHILD.wav					Set Volume	Vol Level : 8 🗸 Vol Default : 8			
MUSIC 02.wav Super 16A.wav								Outpu	t
Train 01.wav					w	Set V-1			
					CPU Serial Op	otion SPI - 4 wire : Pin S4 as DO			
	• 100-100				Close	I2C - 3 wire : Pin S4 as DO			
Type : Compressi		M16		Add-Wav		PULL-TYPE	-		
-	-			Cilence		Internal PULL-UP		123	
PCM8	() AL	PCM4		Silence		○ No internal PULL-UP			
File Name	Size	Rate	Туре	Use %		Set w-1	-		
boku.wav	35650	12000	PCM8	7					

- 13. Select the signal timing. (16ms or 65us).
- 14. IC operating voltage at 3V.
- 15. Select PWM high volume.
- 16. Select set Low Voltage Detect when voltage less than 2V IC will be reset.
- 17. Select set Oscillator from Crystal mode(X'tal=16MHz), External Rosc mode(68K), Internal Rosc mode. (if selecting Crystal mode, It must set at pin M0 & pin M1).
- 18. SBT pin swap other I/O pin function. ex : SBT pin swap to OUT1 as output use.
- 19. Disable the power on play function. It does not immediately play [SW0] once.
- 20. When trigger in "SBT mode".

If enable the [SBT Loop]: It will one key sequential trigger and keep loop play in every group. If disable the [SBT Loop]: It will one key sequential trigger and play one time in every group. (*** Note: Trig Level must select Level).

- 21. Output Option: Setup the out1, out2, out3.Can select the Busy-H, Busy-L, Stop-H, Stop-L,LED Flash (LED high active), ~LED Flash(LED low active),Prog-BusyH, Prog-BusyL, Load.
- 22. [Set volume] control function.
 - ---Select the volume control Level x16 / x8 / x4.
 - ---The volume control key by the [M1] and [M0] key.

Volume Warp: Volume level increase to the max then begin from the level 1. Select disable: Pin M0: volume Level [+ 1]. ex: Level x8, $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 8 \rightarrow 8 \rightarrow ...$

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Pin M1: volume Level [- 1]. ex: Level x8, $8 \rightarrow 7 \rightarrow 6 \rightarrow 5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 1 \rightarrow 1 \rightarrow \dots$ Select enable: Pin M0: volume Level [+ 1]. ex: Level x8, $1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 6 \rightarrow 7 \rightarrow 8 \rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow \dots$ Pin M1: volume Level [- 1]. ex: Level x8, $8 \rightarrow 7 \rightarrow 6 \rightarrow 5 \rightarrow 4 \rightarrow 3 \rightarrow 2 \rightarrow 1 \rightarrow 8 \rightarrow 7 \rightarrow 6 \rightarrow 5 \rightarrow \dots$

23. When set SPI Mode or I2C Mode, the pin S4 is for data output (DO) using.

ompiler Writer	About									eck Sum :
aP23682 - 8Pi	n v Key	/ Mode		~ Config	DAC PWM	Debounce 16ms		Out1:Bu		Busy-H
Wave File					High Volu	ime	√ 04.5	DV .		
boku.wav					Set LVD:	⊘off □	On			
CHILD.wav						ator:		+		
MUSIC 02.wav									1	1
Super 16A.wav					Group	edge	Holdable	Trig	Stop	Output
Train 01.wav					SW1 X	Edge	Unholdable	Retrigger	Enable	Panel-A
					SW2	Edge	Unholdable	Retrigger	Enable	
						Trig Level	Hold	Trigger	Stop	
Type : Compressio	n				(OLevel	Unholdable	O Non-Retri	igger O D	isable
ULAW8	ОРСМ	16	A	Add-Wav		Edge	⊖ Holdable	Retrigger	۰E	inable
PCM8	0.000									
PCMo		CM4		Silence						
	Size	CM4 Rate	Туре	Silence Use %	5	SW 2	2 y	0	K Ca	ancel
File Name					S	SW 2	2 <u>y</u>	0	K Ca	ancel
File Name boku.wav	Size	Rate	Туре	Use %	VoiceFile	SW 2	2		K Ca	
File Name boku.wav CHILD.wav	Size 35650	Rate 12000	Type PCM8	Use %		SW 2	2 Prog - Busy	O Table Use		
File Name boku.wav CHILD.wav MUSIC 02.wav	Size 35650 91676	Rate 12000 12000	Type PCM8 PCM8	Use % 2 4	VoiceFile		Prog - Busy	Table Use	Table Start	: Type
File Name boku.wav CHILD.wav MUSIC 02.wav Super 16A.wav	Size 35650 91676 73004	Rate 12000 12000 12000	Type PCM8 PCM8 PCM8	Use % 2 4 3	VoiceFile boku.wav	,	Prog - Busy	Table Use	Table Start	Type PCM8
File Name boku.wav CHILD.wav MUSIC 02.wav Super 16A.wav	Size 35650 91676 73004 512296	Rate 12000 12000 12000 16000	Type PCM8 PCM8 PCM8 PCM8	Use % 2 4 3 12	VoiceFile boku.wav CHILD.wav	,	Prog - Busy 1 1	Table Use 0 0 0	Table Start	Type PCM8 PCM8 PCM8 PCM8
File Name boku.wav CHILD.wav MUSIC 02.wav Super 16A.wav Train 01.wav	Size 35650 91676 73004 512296	Rate 12000 12000 12000 16000	Type PCM8 PCM8 PCM8 PCM8	Use % 2 4 3 12	VoiceFile boku.wav CHILD.wav	,	Prog - Busy 1 1	Table Use 0 0 0 Up	Table Start	Type PCM8 PCM8
File Name boku.wav CHILD.wav MUSIC 02.wav Super 16A.wav Train 01.wav	Size 35650 91676 73004 512296	Rate 12000 12000 12000 16000	Type PCM8 PCM8 PCM8 PCM8	Use % 2 4 3 12	VoiceFile boku.wav CHILD.wav	,	Prog - Busy 1 1	Table Use 0 0 0	Table Start	Type PCM8 PCM8 PCM8 PCM8
File Name boku.wav CHILD.wav MUSIC 02.wav Super 16A.wav Train 01.wav	Size 35650 91676 73004 512296	Rate 12000 12000 12000 16000	Type PCM8 PCM8 PCM8 PCM8	Use % 2 4 3 12	VoiceFile boku.wav CHILD.wav	,	Prog - Busy 1 1	Table Use 0 0 0 Up	Table Start	Type PCM8 PCM8 PCM8 PCM8
File Name boku.wav CHILD.wav MUSIC 02.wav Super 16A.wav Train 01.wav	Size 35650 91676 73004 512296	Rate 12000 12000 12000 16000	Type PCM8 PCM8 PCM8 PCM8	Use % 2 4 3 12	VoiceFile boku.wav CHILD.wav	,	Prog - Busy 1 1	Table Use 0 0 0 Up Down Insert	Table Start	Type PCM8 PCM8 PCM8 PCM8
File Name boku.wav CHILD.wav MUSIC 02.wav Super 16A.wav Train 01.wav	Size 35650 91676 73004 512296	Rate 12000 12000 12000 16000	Type PCM8 PCM8 PCM8 PCM8	Use % 2 4 3 12	VoiceFile boku.wav CHILD.wav	,	Prog - Busy 1 1	Table Use 0 0 0 Up Down	Table Start	Type PCM8 PCM8 PCM8 PCM8

- 24. Double click Panel-A for your setting the function of each Group.
- 25. Key in group number.
- 26. SW means group. ex : Select the second group and double click the wav files you required in (i) then Panel-B will show them.

The mouse moves to Panel-B then enter right key for your adjusting the order of the wav files or insert or delete them.

ompiler Writ	er About										Chec	k Sum :
aP23682 -	8Pin ~	Key	Mode		~ Config	□ DAC □ PWM	Debounce 16ms) 65us	3V Out	tput Optio 1 : Busy- H		sy- H
Wave File						High Volu	me	~ 0	T. 3V			
boku.wav						Set LVD:	Øoff □	On				
CHILD.wav								T Ext 🖂	Int			
MUSIC 02.wa	v									-		1
Super 16A.wa	v					Group	edge	Holdable	Trig		Stop	Output
Train 01.wav						SW1 SW2	Edge	Unholdabl			Enable	
						SW2 SW3	Edge Edge	Unholdabl Unholdabl			Ac	d
						5005	Luge	Chinologo	_ z-1	jei	M	ulti-Add
Type : Compr	ession							SW-Begin: 2	2-1	Ok		
ULAW8	(PCM	16		Add-Wav							elete z
PCM8	(-M4		Silence			SW-End:	3	Cancel	Pla	ау
OT CINO	`				Silence			Trig Level			Ste	ор
File Name	Siz	e	Rate	Type	Use %		_	OLevel	Edge			
boku.wav	35	650	12000	PCM8	2	-		Hold				
CHILD.way		676	12000	PCM8		VoiceFile		Unholdable	e 🔿 Holda	ble	le Start	Type
MUSIC 02.wa	v 73	004	12000	PCM8	3	boku.wav		Trigger	2.3		ic otare	PCM8
Super 16A.wa	v 51	2296	16000	PCM8	12	CHILD.way	,	○ Non-Retrig	iger 🖲 Retrig)ger		PCM8
Train 01.wav	46	618	12000	PCM8	2	MUSIC 02.	wav	Stop	0			PCM8
								○ Disable	Enabl	e		
										в		A
										-		

27. If the mouse move to Panel-A and enter right key, it will show there are additional function for add, multi-add, delete, play and stop.

Add: add single group. Multi-Add: add multi-groups at one time (z-1). Delete: delete the group. Play: play all voices of the group. Stop: stop the voice playback.

- 28. Finish compiling, click compiler button.
- 29. Generate Check Sum number.
- 30. Loading finished compiled .dp2 file.

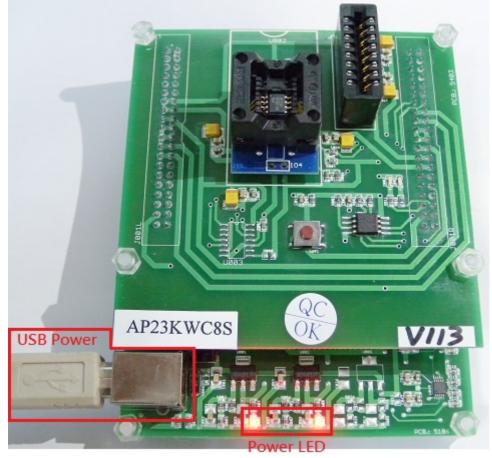
ompiler Writer	in our c									Cned	k Sum :
aP23682 - 8Pir	n ∽ Key	/ Mode		Config	DAC PWM	Debounce 16ms () 65us	Voltage ③ 3V	Output C Out1 : Bu		sy-H
Wave File					High Volu	ime	~	○ 4.5V			
					Set LVD:	<mark>⊘ Off</mark> []On				
					Set Oscill	ator: 🗆 X	T 🗌 Ext	🗸 Int			
					Group	edge	Hold	lable	Trig	Stop	Output
						E	ile is not e	evist		×	
							ine is not i				
Type : Compression	-					_		D-\ A\	vave\boku.wav vave\CHILD.wav		
ULAW8	● РСМ	16	A	dd-Wav				D:\A\wa			
				Silence							
	() ABI			Sherice							
File Name	Size	Rate	Туре	Use %					確	定	
boku.wav	0	0	PCM8	0							
CHILD.wav	0	0	PCM8	0	VoiceFile		Prog - B	usy	Table Use	Table Start	Туре
MUSIC 02.wav	73004	12000	PCM8	3							
Super 16A.wav	512296	16000	PCM8	12							
Train 01.wav	46618	12000	PCM8	2							
Panel-C		Play									
		Stop	C-1								
			_								
		Remove									
		Remove	e All								
		Modify	Path								
					Usage : 3		209715		3%) La	padDp2	Compiler

- 31. Reloading .dp2 file if the voice file (*.wav) is not exist.
- 32. The mouse moves to Panel-C then enter right key for your modifying the path of the wav files.

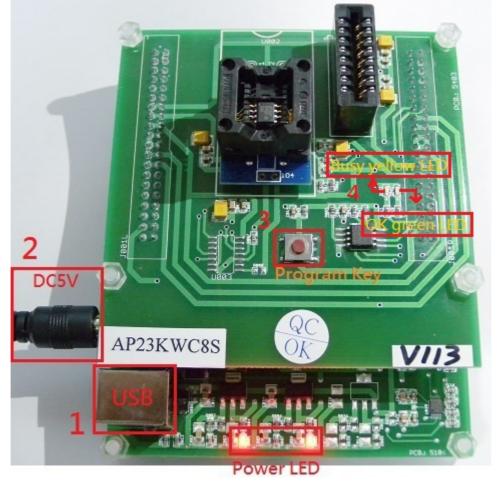
APLUS Integrated Circuits Inc. aP23KWC8S - USB Writer User Guide How to write the program file [xxx.dp2] to IC :

mpiler	Writer Ab	put				Check Sum : C1
Group	edge	Holdable	Trig	Stop	Output	D:\A\demo\demo1.dp2
SW1	Edge	Unholdable	Retrigger	Enable		Key Mode
W2	Edge	Unholdable	Retrigger	Enable		Use: PWM , Low Voltage : 3V
SW3	Edge	Unholdable	Retrigger	Enable		VOUT [PWM] - Level 6
						Power On Play: Disable
	c					Use: Rosc Int
	-					LVD: Off
						SBT as Out1 b
						OutPut1: Busy- H Execute Blank Check
						Blank Ckeck Success
						- Execute Program
				•	•	Program Finish
VoiceFile		Prog - Busy	Table Use	Table Start	Туре	Execute Verify
oku.wav		1	0	0	PCM8	Verify Success
CHILD.wa		1	0	0	PCM8	
IUSIC 02	2.wav	1	0	0	PCM8	
						_
	d	2	22			
	u					_
						_
						_
	e					
-						
	Chack	🗹 Progra	m ⊠Ve	rify ⊡Se	ecurity	aP23682 - 8Pin
Blan	K CHECK					
	K CHECK					Run g a

- a. Click [Load] button to load the program file [xxx.dp2] file. After loading, it will show Check Sum 、b、c、d message.
- e. Select Blank Check to check if this IC is blank.
 Select Program to execute programming.
 Select Verify to execute verification.
 Select Security to execute IC security mechanism.
 ***(To avoid the data to be copied and it can't be a master IC).
- f. Click Run button to execute all your selected items in e column. (It'll show (e.) progress & (b) message).



g. Click [Load to Flash] button to download .dp2 file to Writer.

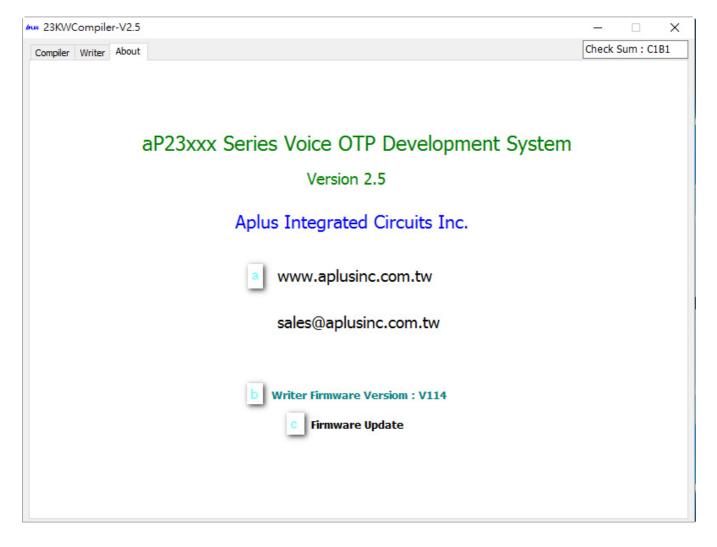


When writer is able to be a 1 to 1 copier. *** (You must do g. step at first)

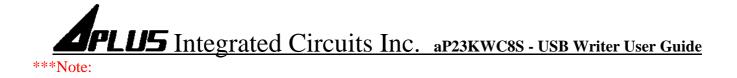
- 1. Disconnect USB.
- 2. Connect 5V adapter.
- 3. Push program key to execute programming.
- 4. When programming, yellow LED flash. When programming finished, green LED light. When programming failed , no LED light.



• Example for About :



- a. Double click the <u>www.aplusinc.com.tw</u> will connect website Aplus Integrate Circuits Inc.
- b. Double click the Writer Firmware Version will show writer firmware version.
- c. Double click the Firmware Update will load firmware file.



Writer and Copier only support the (*.dp2) file from 23KWCompiler version V2.4 or up.

- Q1: How to update the latest firmware version.
- Q2: How to convert (*.dat) format to (*.dp2) format.
- Q3: How to convert V2.1 & V2.2 & V2.3 (*.dp2) to V2.4 or up (*.dp2) format.

Ans1:

	mpiler-V2.5)
mpiler V	Vriter About					Check Sum :	
Group	edge	Holdable	Trig	Stop	Output	C:\Users\RD\Desktop\test_file\v2_3-dac.dp2 Writer Disconnect	-
			Writer In	nformation	×		
oiceFile	P	rog - Busy		Writer dis	iconnect 確定		

a. Writer must be connected PC after load (*.dp2) file.

b. If Writer doesn't connect PC, it will show Writer disconnect message.

ompiler V	Vriter	About						Check Sum :	
Group	edge		Holdable	Trig	Stop	Output	C:\Users\RD\Desktop\te	st_file\v2_3-dac.dp2	~
VoiceFile		Pr	og - Busy	Firmware Up		atest version firm	_		
	Cha		7 0				· · · · · · · · · · · · · · · · · · ·		~
⊿ Blank	Chee	ck 🛛	2 Progran	n ⊡Ver	ify □S	Security	Run	aP23682 - 8Pin to Flash Load	~ 1

- c. If Writer connects PC, it will show Update the latest version firmware message.
- d. Please click OK button.

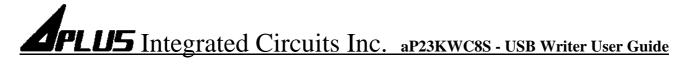
	Mriter About							×
Group	edge	Holdable	Trig	Stop	Output	Get Img file (AP24XX_USE Execute Update Firmware Update Firmware Finish Please replug in Usb Write		^
VoiceFile		Prog - Busy	Table Use	Firmware Upda Update Firmv Please replug	ate ware Finish! g in Usb Writer 確定	_		
⊠ Blank	Check	✓ Program		erify 🗆 Sec			-022602 00:-	~
	Спеск		n 🗠 ve	enry 🗆 Sec	0 %	Run	aP23682 - 8Pin Flash Load	~

e. After finishing firmware update, click OK button and replug in Usb Writer.





f. You can see About page to check Writer Firmware Version.



Ans2:

Ins	23KWCompiler-V2.5					<u> </u>	
C	ompiler Writer About					Check Su	m :
ł	Group edge	Holdable T	rig Stop	Output			^
•••• 開啟							>
← → ∽ ↑ 📙 > 本様	镌 > 桌面 > test_file				ٽ ~	搜尋 test_file	م
組合管理 ▼ 新増資料水	¥.						
🕹 Downloads 🖈 ^	名稱	^	修改日期	類型	大小		
🛄 桌面 🛛 🖈	₩ v1_2-dac.dat		2016/4/28 上	午 1 DAT 檔案	1,024	KB	
🔮 文件 🛛 🖈	₩ v1_2-pwm.dat			午 1 DAT 檔案	1,024		
■ 圖片 🖌 🖈	₩ v2_3-dac.dp2		2016/4/28上	午1 DP2 檔案	1,025	KB	
demo	🕪 v2_3-pwm.dp2		2016/4/28上	午1 DP2 檔案	1,025	KB	
pic							
test_file							
TestGoGo							
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🕹 Downloads							
🏥 文件							
▶ 音樂							
重 桌面							
	FE (ND) A D do to					data filas (t.d. 2.t.d.	•
借菜冶	稱(N): v1_2-dac.dat				~	data files (*.dp2;*.da	it) ~
						開啟(O)	取消

a. At Writer page click Load button and select (*.dat) file.

41ua 23KW	Compile	er-V2.5						- 🗆	\times
Compiler	Writer	About						Check Sum :	
Group	edg	2	Holdable	Trig	Stop	Output	C:\Users\RD\Desktop\test_file\v1	_2-dac.dat	^
-					8				
				.*dat to .*dp	2		×		
VoiceFil	e	Pr	og - Busy	(*.d	lat) file forma	t will be chan	ged to (*.dp2) format		
							確定		
									\sim
🗹 Blar	n <mark>k C</mark> he	ck 🛛	☐ Program	✓ Verify	/ 🗆 Sec	urity	aP2	23682 - 8Pin	~
							Run		
						0 %	Load to Flash	Load	

- b. It will show (*.dat) file format will be changed to (*.dp2) format message.
- c. Click OK button.

	leus	23KWCor	mpiler-V2.5							<u> </u>		\times
	C	Compiler W	riter About							Ch	eck Sum :	
		Group	edge	Holdable	Trig	Stop	Output	C:\(Users\RD\Desktop\test	_file\v1_2-da	ac.dat	^
///												×
← → ~ ↑	本機	→ 桌面	> test_file						✓ ⑦	test_file		P
組合管理 ▼ 新増資	料夾											?
 ☆件 ☆件 ▲ → demo pic test_file TestGoGo ▲ OneDrive ▲ ★機 Downloads ☆ (#) 音楽 ▲ ▲ 第 ■ ■ ■ 		名稿 1960 v2_3- 1960 v2_3-	·dac.dp2 ·pwm.dp2	^		修改日期 2016/4/28 上午 2016/4/28 上午			大小 1,025 KB 1,025 KB			
檔案名稱(N): 🔽	2-ne	ew-dac										~
存檔類型(T): dat	a fil	es (*.dp2)										~
∧ 陽藏資料夾										存檔(S)	取消	

d. Now save (*.dat) file as (*.dp2) file. The (*.dp2) can be used as the data for program and verify only. The (*.dp2) file don't include sufficient information for re-load to the compiler.

Ans3:

4nu# 23KW(Compiler-V2.5					- 0	\times
Compiler	Writer About					Check Sum :	
Group	edge	Holdable	Trig	Stop	Output	C:\Users\RD\Desktop\test_file\v2_3-pwm.dp2	^
						_	
						_	
						—	
	1-	r CheckSum					
VoiceFile	2 14	r CheckSum	Information			×	
-			The checksur	n will be mod	fied for new ve	version compiler	
		-				確定	
		-					
							~
-							
⊠ Blan	nk Check	Program	n 🗹 Ver	ifv 🗆 S	ecurity	aP23682 - 8Pin ~	
				.,			
					0.0/	Run Load to Flash	
					0 %	Load to Flash Load	

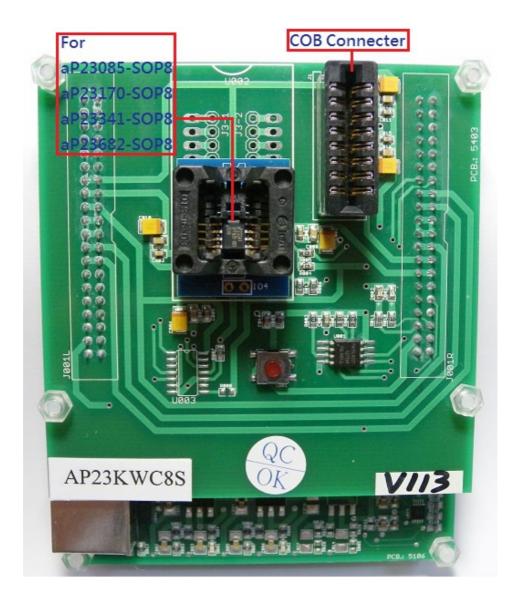
- a. At Writer page click Load button.
- b. Because the check sum rule has been modified after version V2.4, the check sum maybe different from the original one.

Complet Write About Check Sum :	\times			1100 - 0						ompiler-V2.5		te te	
Are 另存新編		Check Sum :								Writer About	Compiler W		
 ★ → ◇ ↑ ▲ → 本機 → 桌面 → test_file 20 授尋 test_file 2016/4/28 上午1… 2016/4/28 上午1… DP2 檔案 1,025 K8 4 Mol v1_2-new-dac.dp2 2016/4/28 上午1… DP2 檔案 1,025 K8 1,025 K8	^	_3-pwm.dp2	test_file\v2_	ers\RD\Desktop\te	C:\Use	Output	Stop	Trig	Holdable	edge	Group		
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● 文件 ▲ 名稱 修改日期 類型 大小 ● 回片 ● ● ○	م ر	t_file	搜尋 test	ٽ ~					ile	桌面 → test_f	→本機 > 桌	→ · ↑ .	← ·
Image: Speed of the spee	- (:== :==									資料夾	管理 🔹 新増]	組合
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										dp2)	lata files (*.d	存檔類型(T): d	
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▲ 陽藏資料夾 存福(S) 取)	取消	(S)	存檔									藏容對太	. (Bi

c. Now save (*.dp2) file as version V2.5 (*.dp2) file. The (*.dp2) include sufficient information for re-load to the compiler.

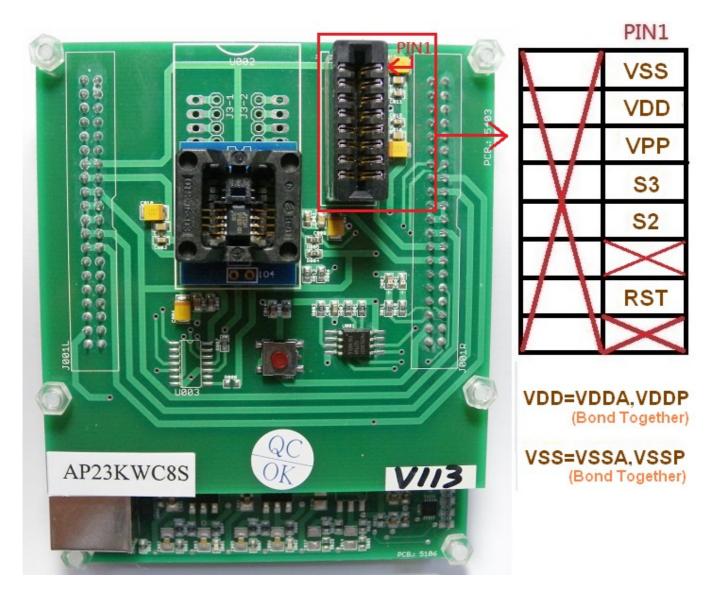
Inserting Devices into the Programmer

- DIP package devices
- Device should be inserted align to the bottom of the 8-pin textool socket.
- If you want to program COB, insert it to the COB Connecter



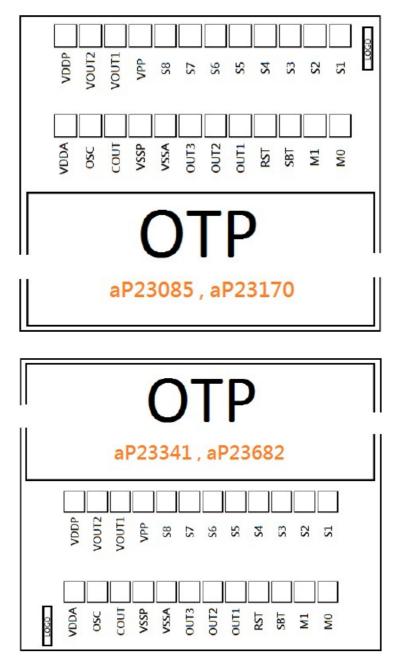
COB Information

AP23xxx_Writer Programmable I/O pin





DIE DIAGRAM:



Programmable pin :

VDD(VDDP \vdda) \vdda) \vddav VSS(vssa \vddav vssp) \vddav VPP \vddav S2 \vddav S3 \vddav RST

Notes:

- 1. Between VPP and GND should add $10 \text{K}\Omega$ resistor.
- 2. VDDA and VDDP should be connected to the Positive Power Supply.
- 3. VSSA and VSSP should be connected to the ground.
- 4. Substrate should be connected to the ground.

*PCB dimension for Slot : 2.28cm x 0.15cm COB pad pitch : 2.54mm

2015/04/10

aP23KWC8S User Guide.

2015/05/20

Dat file become dp2 file.

2015/07/17

Add \rightarrow Device map & Check Sum

2015/09/18

Add→Low voltage reset & CPU serial option. Modify→Trigger mode & Silence time & Usage memory size & Execute Run component control.

2016/02/01

Add→ Auto detect writer firmware version. Add→ MP3 mode Play/Pause & Play/Stop option.

2016/02/24

Add→Q&A.

2016/05/06

Add \rightarrow Select IC operating voltage.

Add \rightarrow PWM voice output volume option.

Modify \rightarrow Change LVR to LVD.