

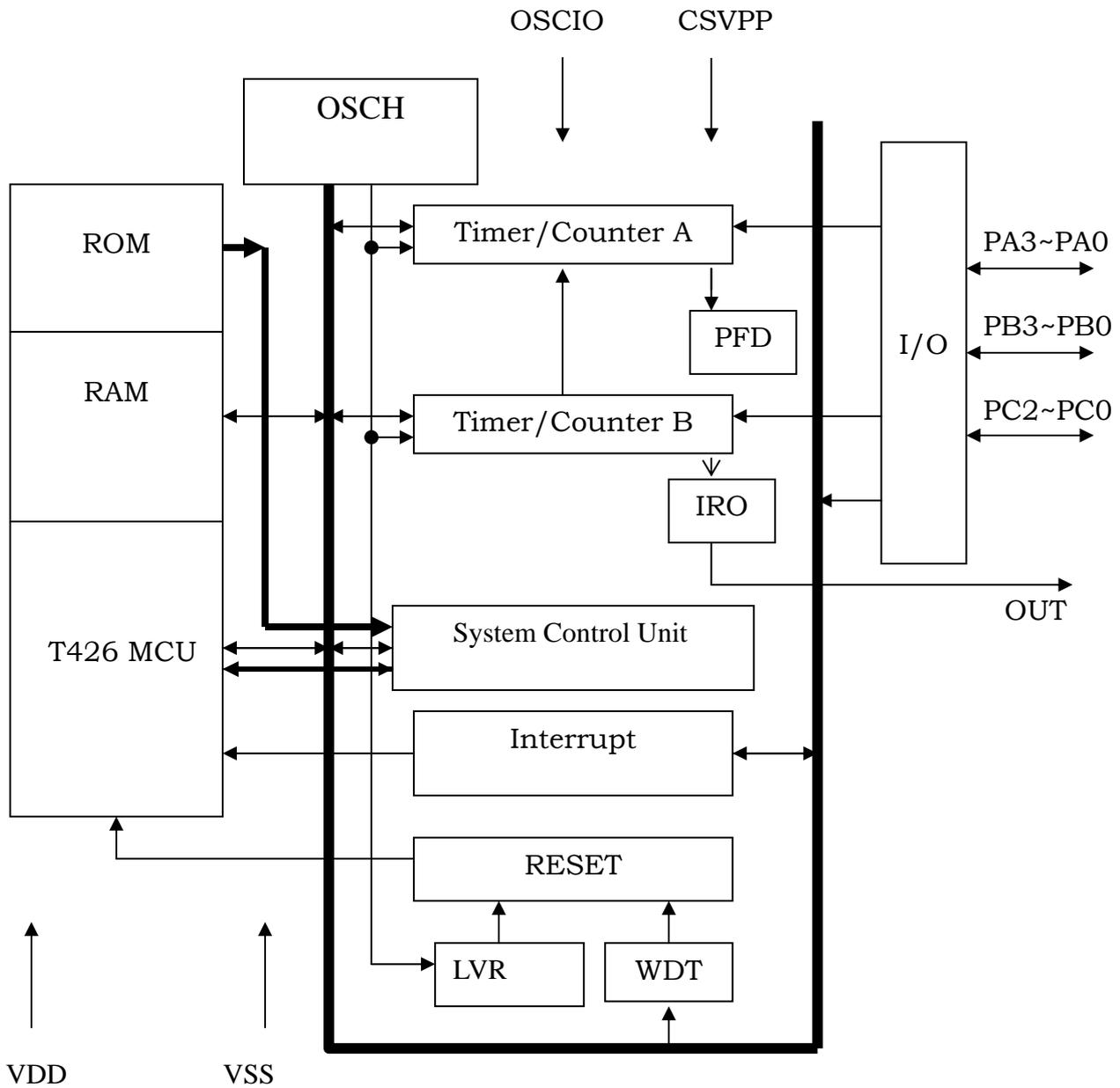
◆ General Description

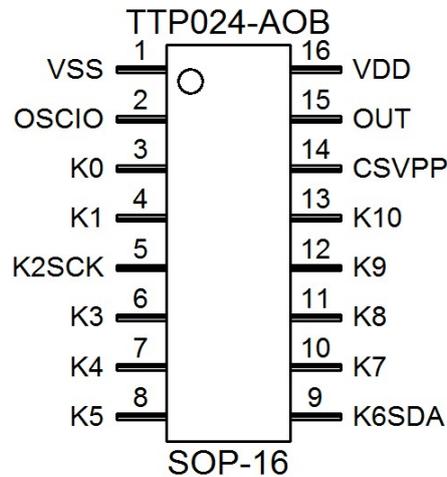
TTP024 is a high performance remote control transmitter with easy used 4-bits CPU base microcontroller , it is specially designed for use on infrared remote control applications . All protocols are available by Programming . The Timing & Format of Bit-A 、 Bit-B 、 Bit-C 、 Bit-D 、 Bit-0 、 Bit-1 , and theFrame Timing of Sequential Output can be programmable to meet the need of customer . The transmission code consists any type including “ Custom Code(Max. 32 Bits) ” 、 “ Custom Inverse Code(Max. 32 Bits) ” 、 “ Data Code(Max. 8 Bits) ” 、 “ Data Inverse code(Max. 8 Bits) ” 、 “ Bit-A ” 、 “ Bit-B ” 、 “ Bit-C ” 、 “ Bit-D ” 、 “ Bit-0 ” 、 “ Bit-1 ” 、 “ Toggle Bit ”

◆ Feature Description

- ◇ Tontek RISC 4-bit CPU core
- ◇ MTP structure
 - .2Kx16 ROM x1
 - .1Kx16 ROM x2
- ◇ Total 26 crucial instructions and two addressing mode
- ◇ Most instructions need 1 word and 1 machine cycle(2 system clocks) except read table instruction(RTB)
- ◇ advance CMOS process
- ◇ Working memory with 2K*16 program ROM and 64*4 SRAM
- ◇ 2-level stacks
- ◇ Low power consumption (VDD = 2.0V ~ 3.6V)
- ◇ PPM (Pulse Position Modulation) code method
- ◇ Build-in Internal Oscillator Frequency 455 KHz \pm 2%
- ◇ 16 Custom Code (16 Bits) can be programmable
- ◇ 66 Key Data Code (8 Bits) can be programmable
- ◇ LED Display
- ◇ Used or No-used the Transistor [By Programming]
- ◇ Carry (Duty) or No-Carry [By Programming]
- ◇ Transmission Code Format [By Programming]
- ◇ SOP-16 Package (150 mil)

◆ Block Diagram



◆ Package Configuration

◆ Pin Description

PIN No. SOP-16	PIN Name	I/O	Description
1	VSS	P	Negative Power Supply
2	OSCIO	IO	Input Only for Test & Output can be used LED Display
3	K0/PA0	IO	Key-Scan/Custom code Setting
4	K1/PA1	IO	Key-Scan/Custom code Setting
5	K2/PA2/CLK	IO	Key-Scan/Custom code Setting & Programming CLK
6	K3/PA3	IO	Key-Scan/Custom code Setting
7	K4/PB0	IO	Key-Scan/Custom code Setting
8	K5/PB1	IO	Key-Scan/Custom code Setting
9	K6/PB2/SDA	IO	Key-Scan/Custom code Setting & Programming Data
10	K7/PB3	IO	Key-Scan/Custom code Setting
11	K8/PC0	IO	Key-Scan/Custom code Setting
12	K9/PC1	IO	Key-Scan/Custom code Setting
13	K10/PC2	IO	Key-Scan/Custom code Setting
14	CSVPP	I	Custom Code Setting by Application Programming High-Voltage Input
15	OUT	O	Serial Data Output
16	VDD	P	Positive power supply

◆ Absolute Maximum Ratings

Item Description	Symbol	Ratings	Unit
Supply voltage	VDD	2.0 ~ 3.6	V
Operating temperature	Topr	-10 ~ 50	°C
Storage temperature	Tstg	-50 ~ 125	°C

◆ Electronic Characteristics(VDD=3V@25°C)

Item	Symbol Condition		Min.	Typ.	Max.	Unit
Supply voltage	VDD		2.0	3.0	3.6	V
Stand-by current (Oscillator OFF)	ISB	VDD = 3.0 V	—	1.0	2.5	uA
Driving current (OUT)	IOH1	VDD = 3.0 V (VO = 1.5 V)	—	- 7	—	mA
Sinking current (OUT)	IOL1	VDD = 3.0 V (VO = 0.3 V)	—	200	—	mA
Driving current (K0D0 ~ K10CLK)	IOH2	VDD = 3.0 V (VO = 1.5 V)	—	- 70	—	uA
Sinking current (K0D0 ~ K10CLK)	IOL2	VDD = 3.0 V (VO = 1.5 V)	—	3	—	mA
Sinking current (OSCIO)	IOL3	VDD = 3.0 V (VO = 1.5 V)	3	—	—	mA
Internal Oscillator Frequency(455KHz)	Fosc		445.9 (-2%)	455.0	464.1 (+2%)	KHz

◆ Setting Custom Code(CC0 ~ CC15)

- ◇ CSVPP is connected to one of K0 ~ K10 that selects 1 of 11 Custom Code
 - Data(16 Bits) of “ Custom Code ” setting by Programming ◦

CSVPP =	K0	K1	K2	K3SCK	K4	K5	K6SDA	K7	K8	K9	K10
Custom	CC0	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10
Custom0-H	CC0-H	CC1-H	CC2-H	CC3-H	CC4-H	CC5-H	CC6-H	CC7-H	CC8-H	CC9-H	CC10-H
Custom0-L	CC0-L	CC1-L	CC2-L	CC3-L	CC4-L	CC5-L	CC6-L	CC7-L	CC8-L	CC9-L	CC10-L
Custom1-H	CC1-H	CC1-H	CC3-H	CC3-H	CC5-H	CC5-H	CC7-H	CC7-H	CC9-H	CC9-H	CC11-H
Custom1-L	CC1-L	CC1-L	CC3-L	CC3-L	CC5-L	CC5-L	CC7-L	CC7-L	CC9-L	CC9-L	CC11-L

- ◇ CSVPP is connected to VDD or NC , Each Key selects 1 of 8 Custom Code respectively
 - Data(16 Bits) of “ Custom Code ” setting by Programming ◦

CSVPP =	VDD 或 NC							
Custom	CC8	CC9	CC10	CC11	CC12	CC13	CC14	CC15
Custom0-H	CC8-H	CC9-H	CC10-H	CC11-H	CC12-H	CC13-H	CC14-H	CC15-H
Custom0-L	CC8-L	CC9-L	CC10-L	CC11-L	CC12-L	CC13-L	CC14-L	CC15-L
Custom1-H	CC9-H	CC9-H	CC11-H	CC11-H	CC13-H	CC13-H	CC15-H	CC15-H
Custom1-L	CC9-L	CC9-L	CC11-L	CC11-L	CC13-L	CC13-L	CC15-L	CC15-L

◆ Setting Output Data of Custom Code

- ◇ Output of “ Custom Code ” : (Select Output 1 ~ 32 Bits)
 - High-Byte & Low-Byte be used
 - High-Byte(Custom0-H & Custom1-H) : Select Output 1 ~ 8 Bits or No-used
 - Low-Byte(Custom0-L & Custom1-L) : Select Output 1 ~ 8 Bits or No-used
 - Output Data of Each Byte must be “ Bit-0 ” → “ Bit-7 ”

Custom	CSVPP == K0 [CC0 == \$F3A5 & CC1 == \$3F5A]							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Custom0-H [\$F3]	1	1	0	0	1	1	1	1
Custom0-L [\$A5]	1	0	1	0	0	1	0	1
Custom1-H [\$3F]	1	1	1	1	1	1	0	0
Custom1-L [\$5A]	0	1	0	1	1	0	1	0

Example : Custom0-H Select 6 Bits & Custom0-L Select 7 Bits ,
 Custom1-H Select 5 Bits & Custom1-L Select 6 Bits ,
 Custom Code : Select 24 Bits

Custom	CSVPP == K0 [CC0 == \$F3A5 & CC1 == \$3F5A]							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Custom0-H [\$33]	1	1	0	0	1	1		
Custom0-L [\$25]	1	0	1	0	0	1	0	
Custom1-H [\$1F]	1	1	1	1	1			
Custom1-L [\$1A]	0	1	0	1	1	0		

- ◇ Output of “ Custom Inverse Code ” : (Select Output 1 ~ 32 Bits)
 - By inverting the “ Custom Code(16 Bits) ”
 - High-Byte inverting & Low-Byte inverting be used
 - High-Byte(Custom0B-H & Custom1B-H) : Select Output 1 ~ 8 Bits or No-used
 - Low-Byte(Custom0B-L & Custom1B-L) : Select Output 1 ~ 8 Bits or No-used
- Example : Custom Code == \$F3A5 then the Inverse Code == \$0C5A
- Output Data of Each Byte must be “ Bit-0 ” → “ Bit-7 ”

Custom	CSVPP == K0 [CC0 == \$F3A5 & CC1 == \$3F5A]							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Custom0-H [\$F3]	1	1	0	0	1	1	1	1
Custom0-L [\$A5]	1	0	1	0	0	1	0	1
Custom1-H [\$3F]	1	1	1	1	1	1	0	0
Custom1-L [\$5A]	0	1	0	1	1	0	1	0

Custom-B	CSVPP == K0 [CC0-B == \$0C5A & CC1-B == \$C0A5]							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Custom0B-H [\$0C]	0	0	1	1	0	0	0	0
Custom0B-L [\$5A]	0	1	0	1	1	0	1	0
Custom1B-H [\$C0]	0	0	0	0	0	0	1	1
Custom1B-L [\$A5]	1	0	1	0	0	1	0	1

Example : Custom0B-H Select 6 Bits & Custom0B-L Select 7 Bits ,
 Custom1B-H Select 5 Bits & Custom1B-L Select 6 Bits ,
 Custom Code inverting : Select 24 Bits

Custom-B	CSVPP == K0 [CC0-B == \$0C5A & CC1-B == \$C0A5]							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Custom0B-H [\$0C]	0	0	1	1	0	0		
Custom0B-L [\$5A]	0	1	0	1	1	0	1	
Custom1B-H [\$00]	0	0	0	0	0			
Custom1B-L [\$25]	1	0	1	0	0	1		

◆ Setting Data Code(66 Keys)

T-Matrix 66 Keys is compose of K0 ~ K10 and VSS(KL1 ~ KL66) ,
Data(8 Bits) of “ Data Code ” setting by Programming ◦

	K10 (Pin-13)	K9 (Pin-12)	K8 (Pin-11)	K7 (Pin-10)	K6SDA (Pin-9)	K5 (Pin-8)	K4 (Pin-7)	K3SCK (Pin-6)	K2 (Pin-5)	K1 (Pin-4)	K0 (Pin-3)
K1 (Pin-4)											KL1
K2 (Pin-5)										KL12	KL2
K3SCK (Pin-6)									KL22	KL13	KL3
K4 (Pin-7)								KL31	KL23	KL14	KL4
K5 (Pin-8)							KL39	KL32	KL24	KL15	KL5
K6SDA (Pin-9)						KL46	KL40	KL33	KL25	KL16	KL6
K7 (Pin-10)					KL52	KL47	KL41	KL34	KL26	KL17	KL7
K8 (Pin-11)				KL57	KL53	KL48	KL42	KL35	KL27	KL18	KL8
K9 (Pin-12)			KL61	KL58	KL54	KL49	KL43	KL36	KL28	KL19	KL9
K10 (Pin-13)		KL64	KL62	KL59	KL55	KL50	KL44	KL37	KL29	KL20	KL10
VSS (Pin-1)	KL66	KL65	KL63	KL60	KL56	KL51	KL45	KL38	KL30	KL21	KL11

◆ Setting Output Data of Data Code

◇ Output of “ Data Code ” : (Select Output 1 ~ 8 Bits)

- Data Code(Data) : Select Output 1 ~ 8 Bits or No-used
- Output Data of “ Data Code ” must be “ Bit-0 ” → “ Bit-7 ”

Data Code	Data(8 Bits) of the Data Code == \$9A							
Data	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
	0	1	0	1	1	0	0	1

Example : Output Data of “ Data Code ” Select 7 Bits

Data Code	Output(7 Bits) == \$1A						
Data	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6
	0	1	0	1	1	0	0

◇ Output of “ Data Inverse Code ” : (Select Output 1 ~ 8 Bits)

- By inverting the “ Data Code(8 Bits) ”
- Data Inverse Code(DataB) : Select Output 1 ~ 8 Bits or No-used

Example : Data Code == \$9A , Data Inverse Code == \$65

Data Code	Data(8 Bits) of the Inverse Code == \$65							
DataB	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
	1	0	1	0	0	1	1	0

◆ Output Data of Data Code , 2 Mode be Selecting

◇ Mode-1 : (Data 、 DataB be used)

- Output of Data Code is **unconcerned with Custom Code**(16 Bits)
- Output Data(8 Bits) of Data Code be used by Programming
Example : Data Code == \$5A , Data Inverse Code == \$A5
Output Data of Both Select 7 Bits

Data Code	Data Code == \$5A & Data Inverse Code == \$A5 Output of Data(7 Bits) = \$5A & Output of DataB(7 Bits) = \$25							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Data	0	1	0	1	1	0	1	0
Output	0	1	0	1	1	0	1	
DataB	1	0	1	0	0	1	0	1
Output	1	0	1	0	0	1	0	

◇ Mode-2 : (Data-C0 、 DataB-C0 、 Data-C1 、 DataB-C1 be used)

- Output Data of Data Code **depends on Custom Code**(16 Bits) , it is **unconcerned with Output Format of Custom Code**
- Custom Code : When High-Byte & Low-Byte are the same Bit , that Bits are the same Data then the Data Code Bit is changeless(X) ; and Bits are the different Data then the Data Code Bit is inverted
- Example :
Custom Code[**CC0 == \$25E6 & CC1 == \$526E**]

Custom	CSVPP == K0 [CC0 == \$25E6 & CC1 == \$526E]							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Custom0-H [\$25]	1	0	1	0	0	1	0	0
Custom0-L [\$E6]	0	1	1	0	0	1	1	1
Change	Invert	Invert	X	X	X	X	Invert	Invert
Custom1-H [\$52]	0	1	0	0	1	0	1	0
Custom1-L [\$6E]	0	1	1	1	0	1	1	0
Change	X	X	Invert	Invert	Invert	Invert	X	X

Data	CSVPP == K0 [CC0 == \$25E6 & CC1 == \$526E & Data==\$5A]							
	Bit-0	Bit-1	Bit-2	Bit-3	Bit-4	Bit-5	Bit-6	Bit-7
Data [\$5A]	0	1	0	1	1	0	1	0
Change [CC0]	Invert	Invert	X	X	X	X	Invert	Invert
Data-C0[\$99]	1	0	0	1	1	0	0	1
Data [\$5A]	0	1	0	1	1	0	1	0
Change [CC1]	X	X	Invert	Invert	Invert	Invert	X	X
Data-C1[\$66]	0	1	1	0	0	1	1	0

- DataB(8 Bits) must be inverted Data(8 Bits)
- DataB-C0(8 Bits) must be inverted Data-C0(8 Bits)
- DataB-C1(8 Bits) must be inverted Data-C1(8 Bits)

◆ Transmission Code Format

Tontek supplies customer with Software (Excel) and Hardware (Writer) Excel Diagram(Software) :

Operation | Data | Custom |

Ver 1.0 (2014/7/28)

CC0	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11	CC12	CC13	CC14	CC15
BC00															

Carry (duty)	Bit-0 (ms)	Bit-A (ms)	Bit-C (ms)
H L	H L	H L	H L
1 2	0.58 0.554	8.993 4.51	8.993 4.51

Bit-1 (ms)	Bit-B (ms)	Bit-D (ms)
H L	H L	H L
0.58 1.688	8.993 2.242	8.993 2.242

System: LED 455KHz, Out Pin Carry, BJT Add-on

Bit-A	C0_L	C0_H	D	DB	Bit-0	Jump	Bit-B	Bit-0	Jump
H L	8-Bit	8-Bit	8-Bit	8-Bit	H L	State 8	H L	H L	State 8
8.993 4.51					0.58 0.554		8.993 2.242	0.58 0.554	

Operation | Data | Custom |

Ver 1.0 (2014/7/28)

CC0	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11	CC12	CC13	CC14	CC15
BC00															

Carry (duty)	Bit-0 (ms)	Bit-A (ms)	Bit-C (ms)
H L	H L	H L	H L
1 2	0.58 0.554	8.993 4.51	8.993 4.51

Bit-1 (ms)	Bit-B (ms)	Bit-D (ms)
H L	H L	H L
0.58 1.688	8.993 2.242	8.993 2.242

System: LED 455KHz, Out Pin Carry, BJT Add-on

Bit-A	C0_L	C0_H	D	DB	Bit-0	Jump	Bit-B	Bit-0	Jump
H L	8-Bit	8-Bit	8-Bit	8-Bit	H L	State 8	H L	H L	State 8
8.993 4.51					0.58 0.554		8.993 2.242	0.58 0.554	

Operation | Data | Custom |

Ver 1.0 (2014/7/28)

CC0	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10	CC11	CC12	CC13	CC14	CC15
BC00															

Carry (duty)	Bit-0 (ms)	Bit-A (ms)	Bit-C (ms)
H L	H L	H L	H L
1 2	0.58 0.554	8.993 4.51	8.993 4.51

Bit-1 (ms)	Bit-B (ms)	Bit-D (ms)
H L	H L	H L
0.58 1.688	8.993 2.242	8.993 2.242

System: LED 455KHz, Out Pin Carry, BJT Add-on

Bit-A	C0_L	C0_H	D	DB	Bit-0	Jump	Bit-B	Bit-0	Jump
H L	8-Bit	8-Bit	8-Bit	8-Bit	H L	State 8	H L	H L	State 8
8.993 4.51					0.58 0.554		8.993 2.242	0.58 0.554	

◆ Setting the Transmission Code Format

- ◇ Setting the Timing of Bit-A 、 Bit-B 、 Bit-C 、 Bit-D 、 Bit-0 and Bit-1
 - Bit-A 、 Bit-B 、 Bit-C 、 Bit-D 、 Bit-0 and Bit-1 are the same Timing & Form
 - Output Timing by TA 、 TB are the same Timing & Form
 - Timing of TA 、 TB : Min. time is 2 unit , Max. time is 511 unit
unit time(26.4 us) is 12 CLK[455 KHz]
 - Form of TA 、 TB : Select H-level(H) or L-level(L) respectively
 - Example : 6122 Form(TA + TB)

Bit-A(Lead)	: H(=9.00 ms) + L(=4.50 ms)
Bit-B(Repeat)	: H(=9.00 ms) + L(=2.25 ms)
Bit-0	: H(=0.56 ms) + L(=0.56 ms)
Bit-1	: H(=0.56 ms) + L(=1.68 ms)

- ◇ Setting One Frame of the Transmission Code
 - Max. time of one Frame is 269.8 ms
 - Example : 6122 Form is 108 ms

- ◇ Setting Form of the Transmission Code by State Machine
 - State Machine has **16** State to program
 - Each State has **25** Form to program :
 - “ Bit-A ” 、 “ Bit-B ” 、 “ Bit-C ” 、 “ Bit-D ” 、
 - “ Bit-0 ” 、 “ Bit-1 ” 、 “ Custom0-H ” 、 “ Custom0-L ” 、
 - “ Custom0B-H ” 、 “ Custom0B-L ” 、 “ Custom1-H ” 、
 - “ Custom1-L ” 、 “ Custom1B-H ” 、 “ Custom1B-L ” 、
 - “ Data ” 、 “ DataB ” 、 “ Data-C0 ” 、 “ DataB-C0 ” 、
 - “ Data-C1 ” 、 “ DataB-C1 ” 、 “ Jump ” 、 “ Goto ” 、
 - “ TG-AB ” 、 “ TG-CD ” 、 “ TG-01 ”
 - “ Jump ” : Hold-Key Transmits this Frame then transmits next Frame ,
Release-Key Transmits this Frame then ends transmission
 - “ Goto ” : Hold-Key or Release-Key Transmits this Frame
then transmits next Frame
 - Toggle(TG-AB & TG-CD & TG-01) :

TG-AB	: Bit-A	↔	Bit-B
TG-CD	: Bit-C	↔	Bit-D
TG-01	: Bit-0	↔	Bit-1

- ◇ Used or No-used the Transistor By Programming
- ◇ Output Form Carry or No-Carry By Programming
- ◇ Output Form Carry & Duty By Programming
 - Carry H-level Width : 1 ~ 127CK(CK==3.64MHz)[0.2747 ~ 34.8901us]
 - Carry L-level Width : 1 ~ 127CK(CK==3.64MHz)[0.2747 ~ 34.8901us]
 - Carry Frequency : 1.82MHz ~ 14.33KHz
- ◇ LED Display
 - Output Display : System Frequency == 455KHz
 - Output Display : Output Form By No-Carry

◆ Select the Transmission Code Format

◇ Single Format : (State Machine has **16 States** to program)

- Example : 6122 Form[Jump be used]

State	1	2	3	4	5	6	7	8
	Bit-A	Custom0-H	Custom0-L	Data	DataB	Bit-0	Jump	
Form	Lead	8 BIT	8 BIT	8 BIT	8 BIT	End Bit	State 9	
State	9	10	11	12	13	14	15	16
	Bit-B	Bit-0	Jump					
Form	Repeat	End Bit	State 9					

- Example : 0773 Form-A[Jump & Goto be used]

State	1	2	3	4	5	6	7	8
	Custom0-L	Data	Bit-1	Bit-0	Bit-0	Goto		
Form	5 BIT	8 BIT			End Bit	State 9		
State	9	10	11	12	13	14	15	16
	Custom0-L	DataB	Bit-0	Bit-1	Bit-0	Jump		
Form	5 BIT	8 BIT			End Bit	State 1		

- Example : 0773 Form-B[Jump & Goto be used]

State	1	2	3	4	5	6	7	8
	Custom0-L	Data	<u>Custom0-H</u>	Bit-0	Goto			
Form	5 BIT	8 BIT	2 BIT	End Bit	State 9			
State	9	10	11	12	13	14	15	16
	Custom0-L	DataB	<u>Custom0B-H</u>	Bit-0	Jump			
Form	5 BIT	8 BIT	2 BIT	End Bit	State 1			

- State Machine has **16 States** to program by the need of customer
Example : 0773 Form-A or 0773 Form-B

◇ Twin Formats : (State Machine has **16 States** or **8 States** to program)

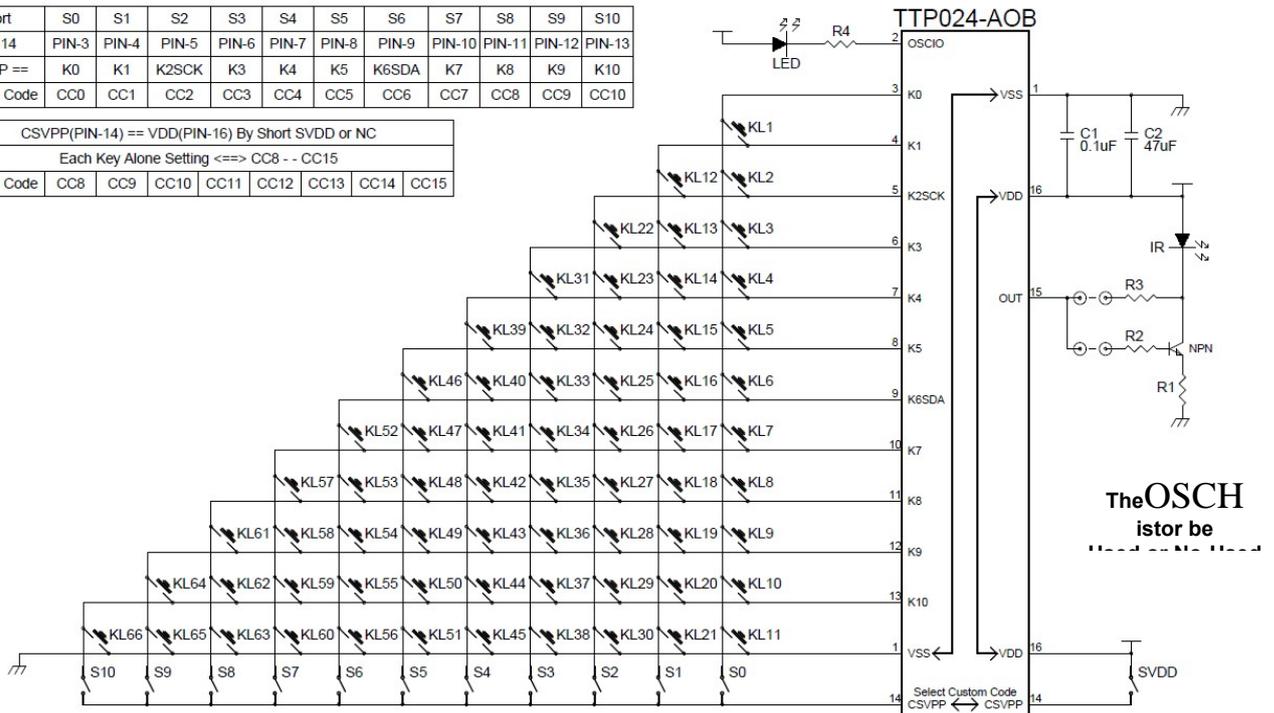
- Select Twin Formats by programming
- The Bit-A 、 Bit-B 、 Bit-C 、 Bit-D 、 Bit-0 、 Bit-1 、 Frame are the same Form ; CSVPP is connected to one of K0 ~ K10 that selects 1 of 11 Custom Code
- CSVPP is connected to VDD or NC , Each Key can select 1 of 8 Custom Code respectively and setting the state

CSVPP ==	VDD 或 NC							
Custom	CC8	CC9	CC10	CC11	CC12	CC13	CC14	CC15
Select	State 1 ~ 16				State 9 ~ 16			

◆ Application Circuit [SOP-16 for 66-Key]

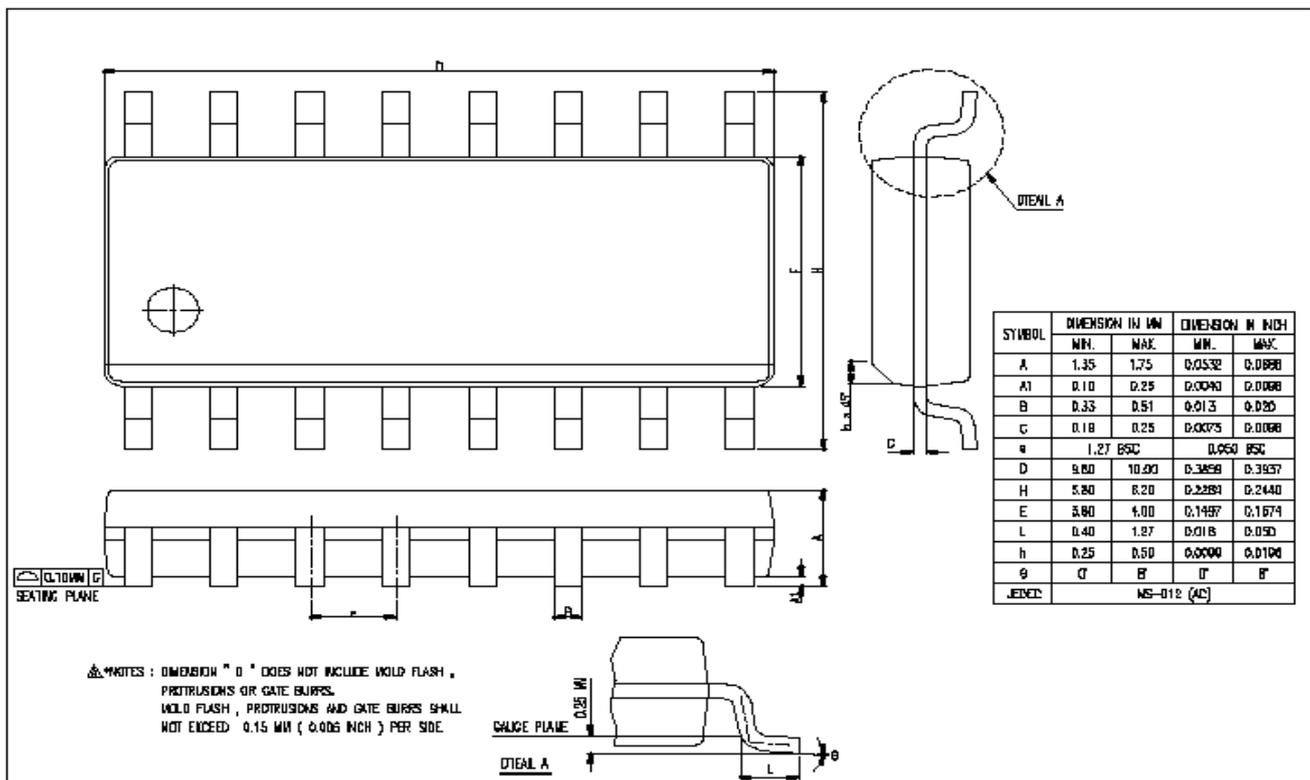
Short	S0	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
PIN-14	PIN-3	PIN-4	PIN-5	PIN-6	PIN-7	PIN-8	PIN-9	PIN-10	PIN-11	PIN-12	PIN-13
CSVPP ==	K0	K1	K2SCK	K3	K4	K5	K6SDA	K7	K8	K9	K10
Custom Code	CC0	CC1	CC2	CC3	CC4	CC5	CC6	CC7	CC8	CC9	CC10

CSVPP(PIN-14) == VDD(PIN-16) By Short SVDD or NC								
Each Key Alone Setting <==> CC8 - CC15								
Custom Code	CC8	CC9	CC10	CC11	CC12	CC13	CC14	CC15



- Note :**
1. Application Circuit Reference Only , Refer to real operating
 2. The Capacitor (C1 and C2) must be near to IC's Power pin [VDD and VSS]
 3. The IC's Power must be near to Power-Supply by Power-Line Routing [PCB]
 4. The value of Resistance(R1~R4) be adjusted by oneself , Refer to real operating [By The mission distance and The LED brightness]

◆ SOP-16(150 mil) Outline



Ordering Information**TTP024**

Package Type	Chip Type	Wafer Type
TTP024-AOB(SOP-16)	No support	TDP024

◆ REVISE HISTORY

1. 2014/07/28
-Original Version : Ver 1.0
2. 2014/10/10
-Modify Page.3 Pin Description