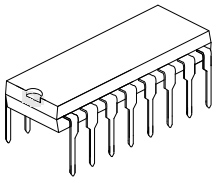
FAN REMOTE CONTROL ENCODER



DIP-16

■ DESCRIPTION

UTC RBA5104 is a remote control encoder mainly used for Fan remote control, air cleaner, humidifier, heater and other electrical home appliance remote control application. 2 bits custom code options and maximum 8 input channels offers great freedom in application. **UTC RBA5104** uses a special coding technique to increase noise immunity to a very great extent.

■ FEATURES

* Wide operation voltage: V_{CC}=2.0~4.0V
* Noise immunity technique
* 2 bits custom code
* 8 input channels maximum
* Uses 455kHz crystal oscillator
* Key-in oscillation, reduce static current dissipation.
* 38kHz carrier transmits output.
* LED indicates work state

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
RBA5104L-D16-T	RBA5104G-D16-T	DIP-16	Tube

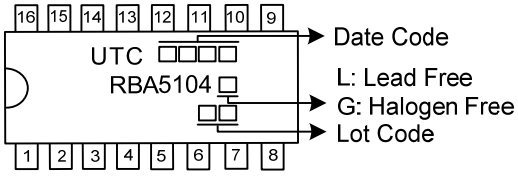
RBA5104G-D16-T

(1)Packing Type — (1) T: Tube

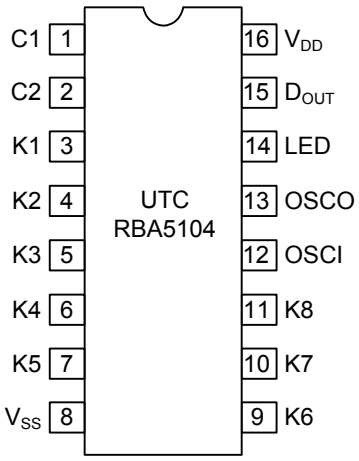
(2)Package Type — (2) D16: DIP-16

(3)Green Package — (3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



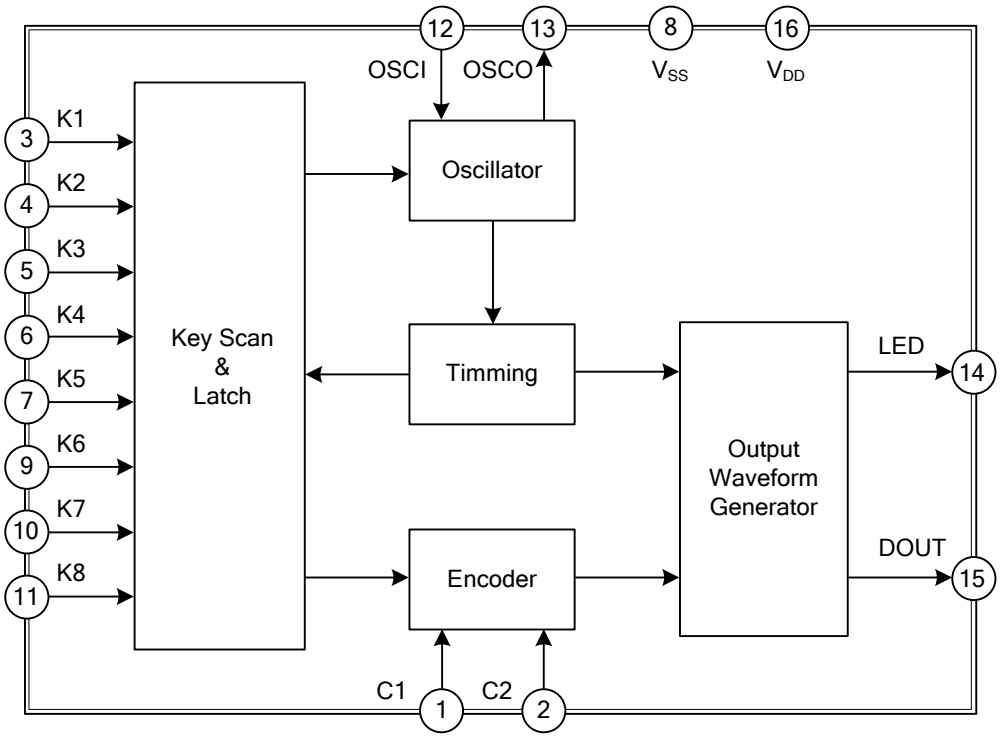
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1~2	C1, C2	Custom Code Option: Built In Pull-Up Resistor, Grounding Denote “0”, Floating Denote “1”.
3~7	K1~K5	Key Input Pins, Built In Pull-Up Resistor.
8	V_{SS}	Negative Power Supply.
9~11	K6~K8	Key Input Pins, Built In Pull-Up Resistor.
12	OSCI	455kHz Oscillator Input Pin.
13	OSCO	455kHz Oscillator Output Pin.
14	LED	LED Driver Output Indication
15	DOUT	Code Data Output (Contain 38kHz Carrier Signal)
16	V_{DD}	Positive Power Supply.

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless other specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{DD}	-0.3 ~ 6.0	V
Input/Output Voltage	V_{IN}	V_{SS}-0.3V ~ V_{DD}+0.3V	V
Power Dissipation	P_D	500	mW
Operating Temperature	T_{OPR}	-10 ~ +70	°C
Storage Temperature	T_{STG}	-40 ~+125	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ DC ELECTRICAL CHARACTERISTICS (V_{DD}=3V, T_A=25°C, unless other specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{DD}		2.0	3.0	4.0	V
Static Power Dissipation	I_{SB}	no load, oscillation is stopped, C1=C2=1		0.1		μA
		no load, oscillation is stopped, C1=C2=0		1.8		μA
DOUT Output High Current	I_{OH}	V_{OH}=2.7V		2.5		mA
DOUT Output Low Current	I_{OL}	V_{OL}=0.3V		-0.74		mA
High Input Voltage	V_{IH}		0.7V_{DD}		V_{DD}	V
Low Input Voltage	V_{IL}		0		0.3V_{DD}	V
LED High Output Current	I_{OH}	V_{OH}=2.7V		2.5	10	mA
LED Low Output Current	I_{OL}	V_{OL}=0.3V		-1.0		mA
Oscillation Frequency	f_{OSC}			455		kHz
Pull-up resistor at C1, C2	R_C	V_{IN}=0V		4		MΩ
Pull-up resistor at K1~K8	R_i	V_{IN}=0V		250		KΩ

■ FUNCTION DESCRIPTIONS

1. Key inputs K1~K8

In static mode, key inputs K1~K8 are set as high level through pull-up resistor and there is no current flows in circuit. When one key is pressed, corresponding code is transmitted.

2. Customer code C1, C2

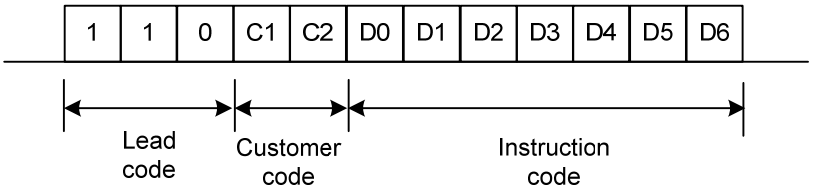
In static mode, C1 and C2 are internal pulled as high level. Four different customer code combination are available by the two bits. For these two bits, "1" indicates corresponding pin is grounded while "0" indicates floating or connected to V_{DD}.

3. Code format A frame consists of:

a. Lead code——110

b. Customer code——C1C2

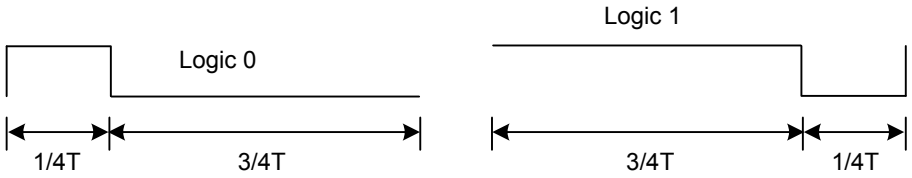
c.Instruction code——7 bits key code



d. Logic 0: 1/4T high level, 3/4T low level; Logic 1: 3/4T high level, 1/4T Low level.

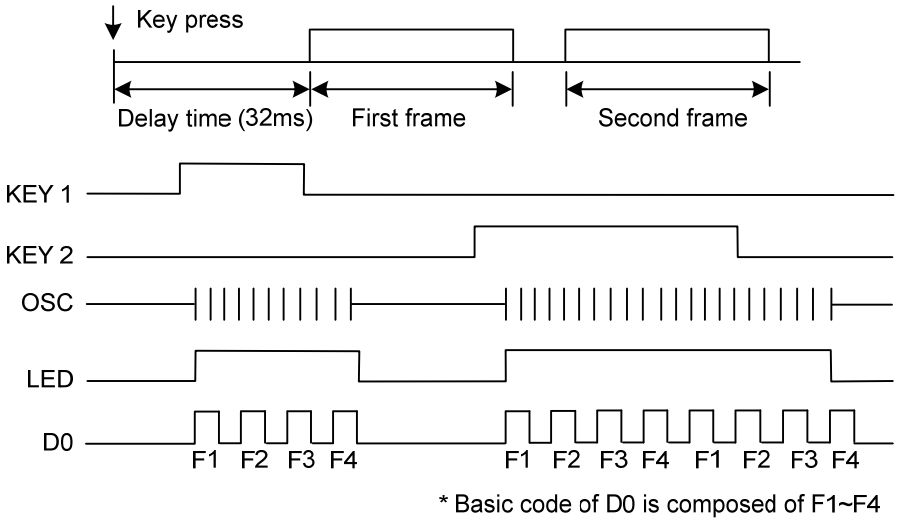
e.Code cyclic time T=1.6879ms

f.Intern\val between two frame: 4T



4. Data out

Data code is output at Dout. When one key is pressed, high level is output at pin LED and data (four frames at least) is output at Dout after 32ms delay. Data is continuously output if the key is kept pressed and there is 4 code interval between frames.



* Basic code of D0 is composed of F1~F4

■ FUNCTION DESCRIPTIONS (Cont.)

5. Oscillator

Internal oscillator integrates advanced key-press start power saving function. The oscillator is in sleep mode when there is no key pressed and there is no current; it only works when key is pressed. This is for power saving. 455 KHz oscillator is connected to pins OSCI and OSCO for using.

6. Key code table

Key No.	Instruction code						
	D0	D1	D2	D3	D4	D5	D6
K1	0	0	0	0	0	0	1
K2	0	0	0	0	0	1	0
K3	0	0	0	0	1	0	0
K4	0	0	0	1	0	0	0
K5	0	0	1	0	0	0	0
K6	0	1	0	0	0	0	0
K7	1	0	0	0	0	1	1
K8	1	0	0	0	1	1	0

■ TYPICAL APPLICATION CIRCUIT