

Appendix C Magic-III



Software Spec Sheet

- **Product** 4 bit 1 chip microcomputer

- **Type** Magic-III

- **Purpose** Infrared remote control encoder

- **Function** 8x8 key matrix scan

- **Features**
 - Program memory (On-chip ROM) : 1024 bytes
 - Data memory (On-chip RAM) : 32x4 bits
 - 43 types of instruction sets
 - 3 levels of subroutine nesting
 - 1 bit output port for a large current (Output signal)
 - Operating frequency : 300KHz to 1MHz
 - Instruction cycle : 13.1868 μ s ($f_{osc}=455KHz$)
 - CMOS process (Single 3V power supply)
 - Stand-by function (Through internal instruction)
 - Released stand-by mode by key input (Masked option)
 - Built in capacitor for ceramic oscillation circuit (Masked option)
 - Built in a watch dog timer (WDT)

1. Function

1) Stand-by

Oscillation is stop

D0~D5,D8,D9 is "L", D6~D7 is "H" → for SAA3010, uPD6122-001

D0~D3,D6~D9 is "L", D4~D5 is "H" → for uPD6122-002

2) Condition of stand-by mode

After reset

When scan strobe output is over, there is not any key input.

3) Release of stand-by mode

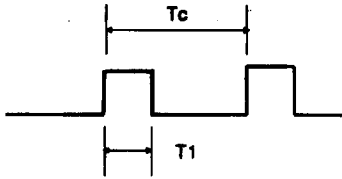
One of the key scan input (K0~3, R0~3) is change to "L" level

2. Output

1) NEC format

- Output waveform

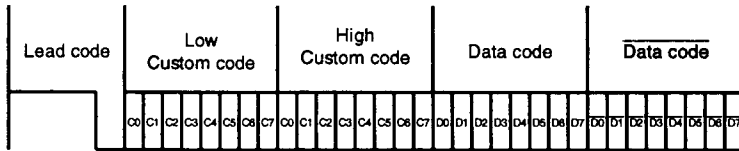
A single pulse, modulated with 37.917KHz signal at 455KHz



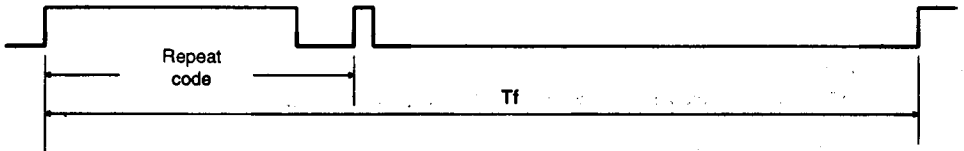
Carrier frequency
 $f_{CAR} = 1/T_c = f_{OSC}/12$
 Duty ratio = $T_1/T_c = 1/3$

- Configuration of Flame

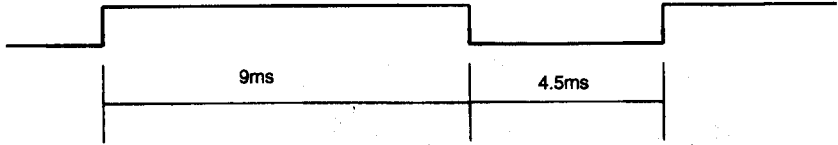
.1st flame



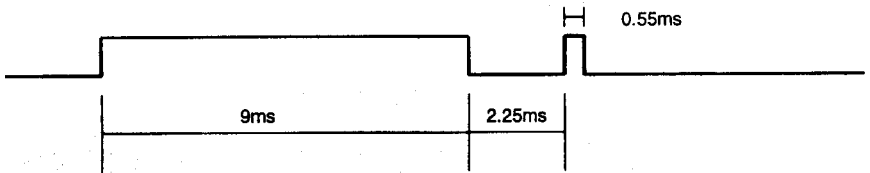
. Repeat flame



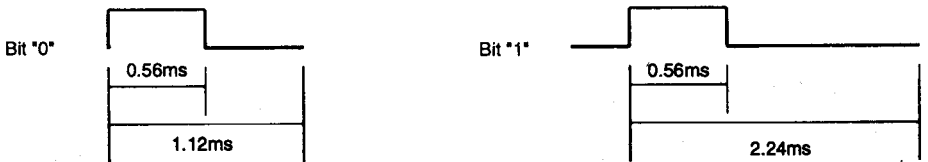
- Lead code



- Repeat code

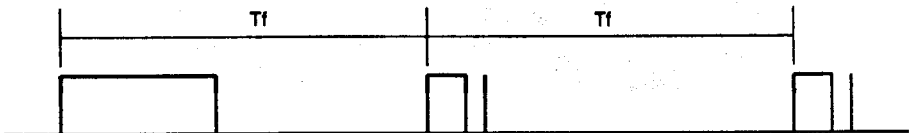


- Bit Description



- Flame Interval : Tf

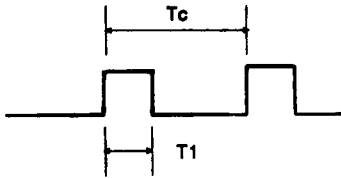
The transmitted waveform as long as a key is depressed



Tf=108ms @455KHz

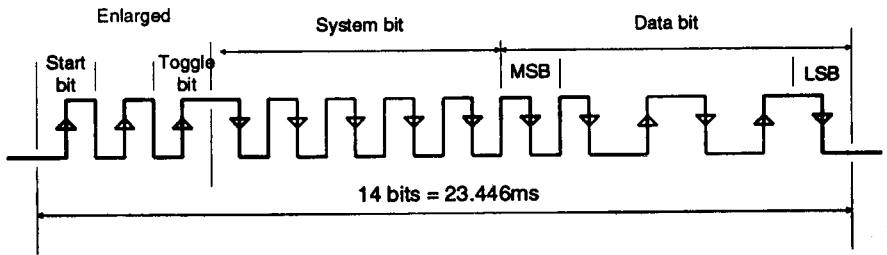
2) RC5 format

- A single pulse, modulated with 37.917KHz signal at 455KHz
- Configuration of Flame

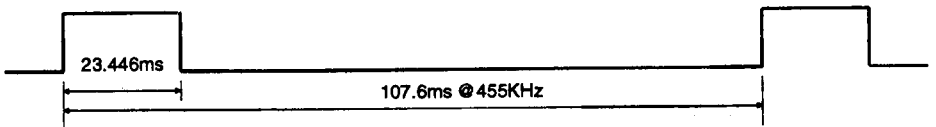
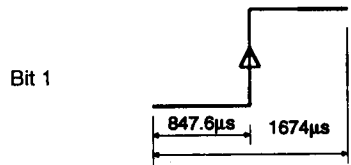
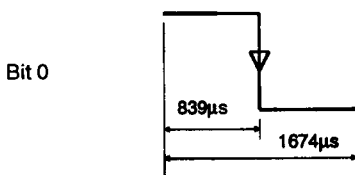


Carrier frequency
 $f_{CAR} = 1/T_c = f_{osc}/12$
 Duty ratio = $T_1/T_c = 1/3$

- Bit description



- Flame Interval : T_f
 The transmitted waveform as long as a key is depressed.

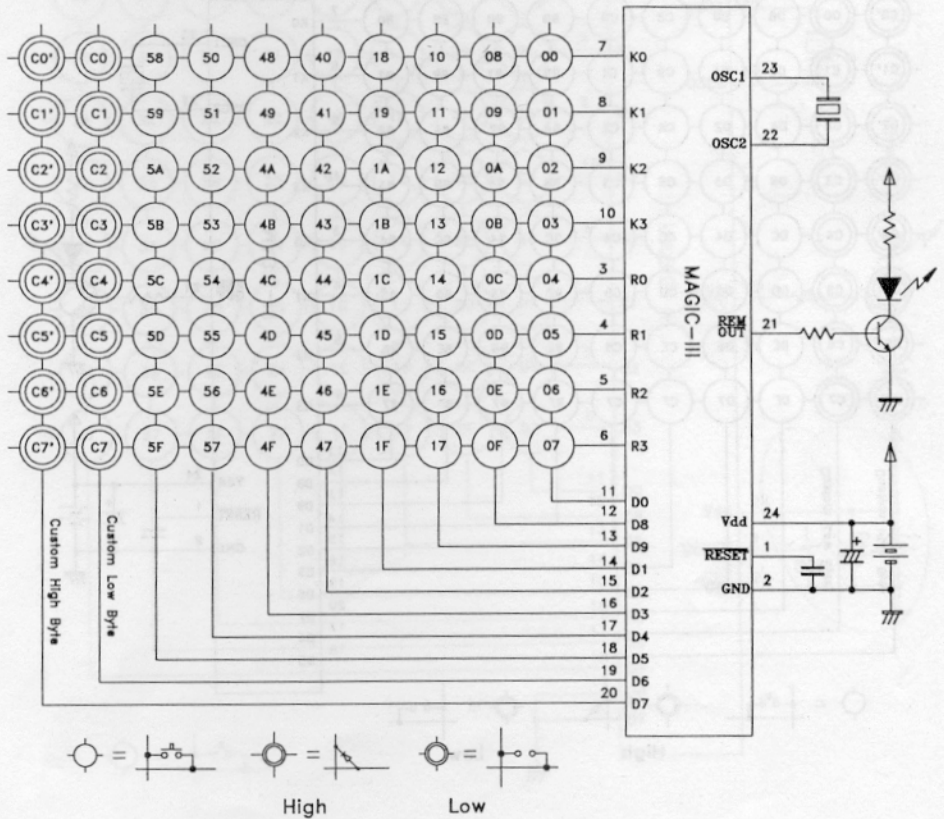


3. Pin Descriptions

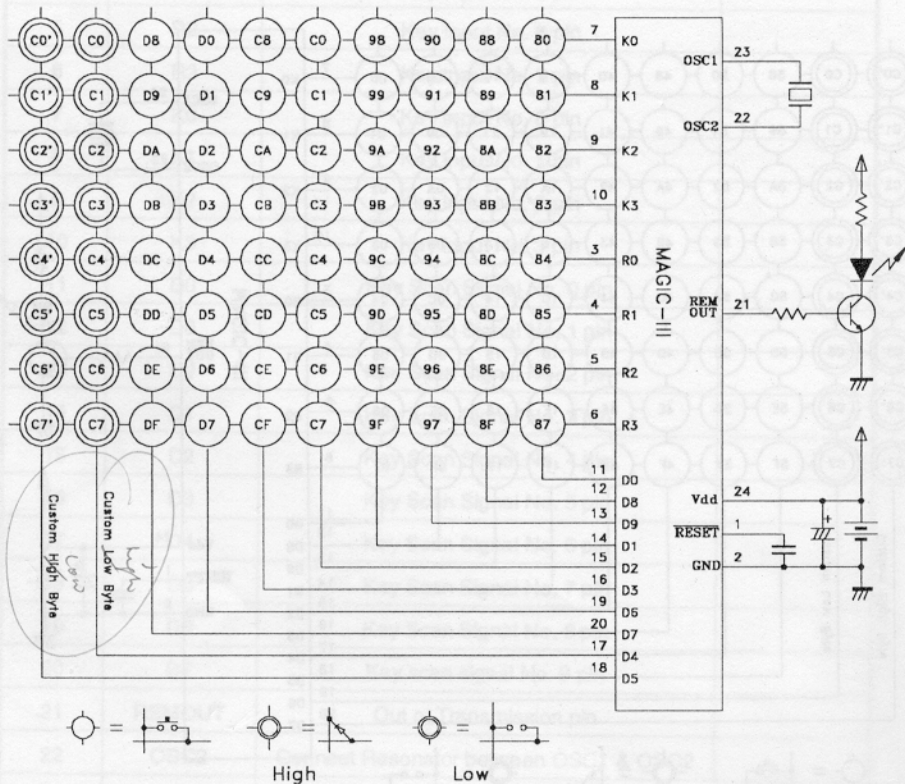
Pin No.	Pin	Function	Remark
1	RESET	Reset by input of "L"	
2	GND	Reference voltage for all inputs & outputs 0V	
3	R0	Key Input No. 4 pin	
4	R1	Key Input No. 5 pin	
5	R2	Key Input No. 6 pin	
6	R3	Key Input No. 7 pin	
7	K0	Key Input No. 0 pin	
8	K1	Key Input No. 1 pin	
9	K2	Key Input No. 2 pin	
10	K3	Key Input No. 3 pin	
11	D0	Key Scan Signal No. 0 pin	
12	D8	Key Scan Signal No. 1 pin	
13	D9	Key Scan Signal No. 2 pin	
14	D1	Key Scan Signal No. 3 pin	
15	D2	Key Scan Signal No. 4 pin	
16	D3	Key Scan Signal No. 5 pin	
17	D4	Key Scan Signal No. 6 pin	
18	D5	Key Scan Signal No. 7 pin	
19	D6	Key Scan Signal No. 8 pin	
20	D7	Key scan signal No. 9 pin	
21	REMOUT	Out of Transmission pin	
22	OSC2	Connect Resonator between OSC1 & OSC2	
23	OSC1	Connect Resonator between OSC1 & OSC2	
24	VDD	Connect 3V power source	

4. Circuit Diagram

NEC 16bit for uPD6122-001



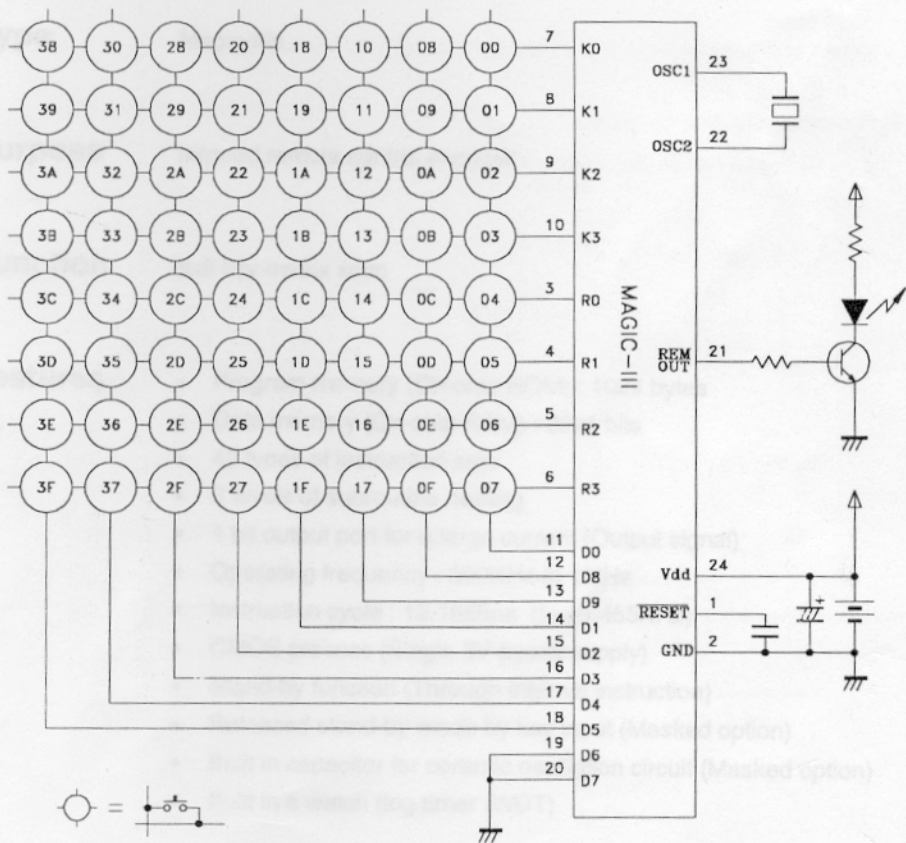
NEC 16bit for uPD6122-002



Philips for SAA3010 (TV Application only)

Software Spec Sheet

Product



Masked option
Masked option
Masked option