Magic II b Specification

Software Specification Sheet

- Product 4 bit microcomputer
- Type Magic Iib
- Purpose Infrared remote control encoder
- Function 8 x 6 key matrix scan
- Features
  - Program memory (On-Chip ROM) : 1024 bytes
  - Data memory (On-chip RAM): 32 x 4 bits
  - 43 types of instruction sets
  - 3 levels of subroutine nesting
  - 1 bit output port for a large current (output singal)
  - Operating frequency: 300KHz to 1MHz
  - Instruction cycle: 13.1868us (fOSC=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)
  - Double action key is not supported

1. Function

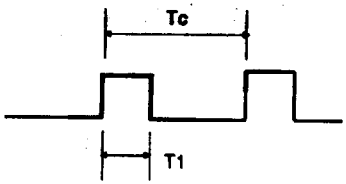
1.) Stand-by
Output of D0-D3 is “L”
Oscillation is stop.
Output of D4-D5 is held to “H”

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 – K3, R0-R3) is change to “L” level.

2. Output waveform for M50560-003P

A single pulse, modulated with 37.91KHz signal at 455KHz

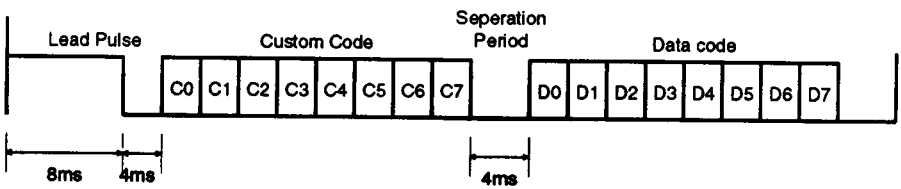


Carrier frequency

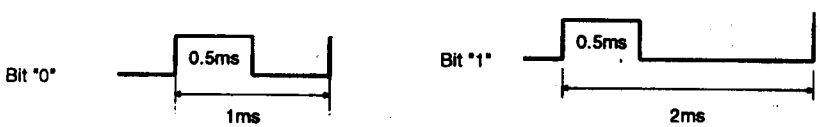
$f_{CAR} = 1/Tc = f_{OSC}/12$

Duty ratio = T1/Tc = 1/3

Configuration of flame

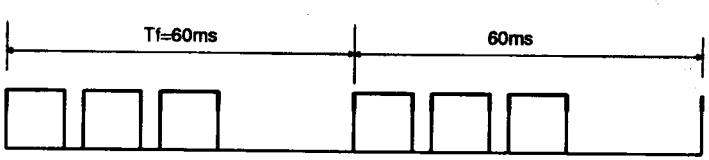


Bit description



Flame Interval : Tf

The transmitted waveform as long as a key is depressed



3. Pin Descriptions

Pin No.	Pin	Function	Remark
1	K0	Key Input No. 0 pin	
2	K1	Key Input No. 1 pin	
3	K2	Key Input No. 2 pin	
4	K3	Key Input No. 3 pin	
5	D0	Key Scan Signal No. 0 pin	
6	D1	Key Scan Signal No. 1 pin	
7	D2	Key Scan Signal No. 2 pin	
8	D3	Key Scan Signal No. 3 pin	
9	D4	Custom code input pin	
10	D5	Key Scan signal No. 4 pin	
11	REMOUT	Out of Transmission pin	
12	OSC2	Connect Ceramic Resonator between OSC1 & OSC2	
13	OSC1	Connect Ceramic Resonator between OSC1 & OSC2	
14	V_{DD}	Connect 3V power source	
15	$\overline{\text{RESET}}$	Reset by input of "L"	
16	GND	Reference voltage for all inputs & outputs 0V	
17	R0	Key Input No. 4 pin	
18	R1	Key Input No. 5 pin	
19	R2	Key Input No. 6 pin	
20	R3	Key Input No. 7 pin	

4. Truth Table

Key No	Key Data(hex) of Diode Select (D5 D6 D7)								Key No	Key Data(hex) of Diode Select (D5 D6 D7)							
	000	100	010	110	001	101	011	111		000	100	010	110	001	101	011	111
1	00	20	40	60	80	A0	C0	E0	25	18	38	58	78	98	B8	D8	F8
2	01	21	41	61	81	A1	C1	E1	26	19	39	59	79	99	B9	D9	F9
3	02	22	42	62	82	A2	C2	E2	27	1A	3A	5A	7A	9A	BA	DA	FA
4	03	23	43	63	83	A3	C3	E3	28	1B	3B	5B	7B	9B	BB	DB	FB
5	04	24	44	64	84	A4	C4	E4	29	1C	3C	5C	7C	9C	BC	DC	FC
6	05	25	45	65	85	A5	C5	E5	30	1D	3D	5D	7D	9D	BD	DD	FD
7	06	26	46	66	86	A6	C6	E6	31	1E	3E	5E	7E	9E	BE	DE	FE
8	07	27	47	67	87	A7	C7	E7	32	1F	3F	5F	7F	9F	BF	DF	FF
9	08	28	48	68	88	A8	C8	E8	33	20	40	60	80	A0	C0	E0	00
10	09	29	49	69	89	A9	C9	E9	34	21	41	61	81	A1	C1	E1	01
11	0A	2A	4A	6A	8A	AA	CA	EA	35	22	42	62	82	A2	C2	E2	02
12	0B	2B	4B	6B	8B	AB	CB	EB	36	23	43	63	83	A3	C3	E3	03
13	0C	2C	4C	6C	8C	AC	CC	EC	37	34	54	74	94	B4	D4	F4	14
14	0D	2D	4D	6D	8D	AD	CD	ED	38	35	55	75	95	B5	D5	F5	15
15	0E	2E	4E	6E	8E	AE	CE	EE	39	36	56	76	96	B6	D6	F6	16
16	0F	2F	4F	6F	8F	AF	CF	EF	40	37	57	77	97	B7	D7	F7	17
17	10	30	50	70	90	B0	D0	F0	41	58	78	98	B8	D8	F8	18	38
18	11	31	51	71	91	B1	D1	F1	42	59	79	9A	B9	D9	F9	19	39
19	12	32	52	72	92	B2	D2	F2	43	5A	7A	9B	BA	DA	FA	1A	3A
20	13	33	53	73	93	B3	D3	F3	44	5B	7B	9C	BB	DB	FB	1B	3B
21	14	34	54	74	94	B4	D4	F4	45	9C	BC	DC	FC	1C	3C	5C	7C
22	15	35	55	75	95	B5	D5	F5	46	9D	BD	DD	FD	1D	3D	5D	7D
23	16	36	56	76	96	B6	D6	F6	47	9E	BE	DE	FE	1E	3E	5E	7E
24	17	37	57	77	97	B7	D7	F7	48	9F	BF	DF	FF	1F	3F	5F	7F

5. Circuit Diagram

Mitsubish for M50560-003P