DATA SHEET

RAA218
I2C remote12 keys keyboard

Product specification

2002 Apr 13

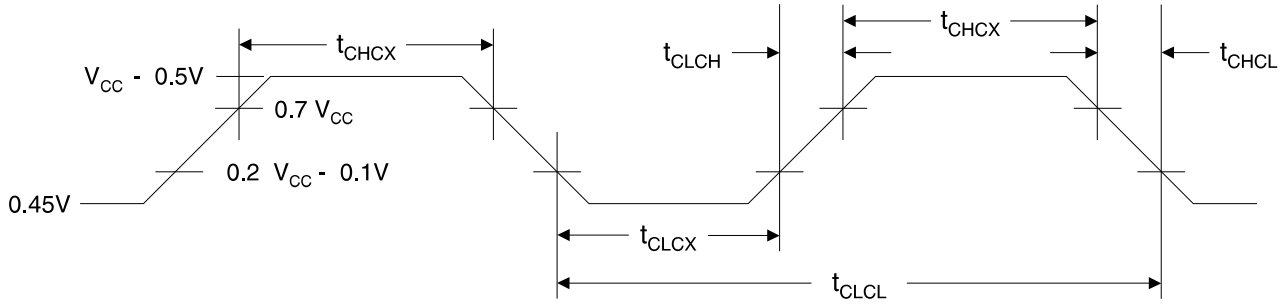
D.C. Characteristics

T_A = -40°C to 85°C, V_{CC} = 2.7 V to 6.0 V (unless otherwise noted)

Symbol	Parameter	Condition	Min	Max	Units
V_{IL}	Input Low Voltage		-0.5	0.2 V_{CC}-0.1	V
V_{IH}	Input High Voltage	(Except XTAL1, RST)	0.2 V_{CC}+0.9	V_{CC}+0.5	V
V_{IH1}	Input High Voltage	(XTAL1, RST)	0.7 V_{CC}	V_{CC}+0.5	V
V_{OL}	Output Low Voltage(1) (Ports 1, 3)	I_{OL} = 20 mA, V_{CC} = 5 V I_{OL} = 10 mA, V_{CC} = 2.7 V		0.5	V
V_{OH}	Output High Voltage (Ports 1, 3)	I_{OH} = -80 µA, V_{CC} = 5 V ± 10%	2.4		V
		I_{OH} = -30 µA	0.75 V_{CC}		V
		I_{OH} = -12 µA	0.9 V_{CC}		V
I_{IL}	Logical 0 Input Current (Ports 1, 2, 3)	V_{IN} = 0.45 V		-50	µA
I_{TL}	Logical 1 to 0 Transition Current (Ports 1, 2, 3)	V_{IN} = 2 V		-750	µA
I_{LI}	Input Leakage Current (Port P1.0, P1.1)	0 < V_{IN} < V_{CC}		±10	µA
V_{OS}	Comparator Input Offset Voltage	V_{CC} = 5 V		20	mV
V_{CM}	Comparator Input Common Mode Voltage		0	V_{CC}	V
RRST	Reset Pulldown Resistor		50	300	KΩ
C_{IO}	Pin Capacitance	Test Freq. = 1 MHz, T_A = 25°C		10	pF
I_{CC}	Power Supply Current	Active Mode, 12 MHz, V_{CC} = 6 V/3 V		15/5.5	mA
		Idle Mode, 12 MHz, V_{CC} = 6 V/3 V P1.0 & P1.1 = 0V or V_{CC}		5/1	mA
	Power Down Mode(2)	V_{CC} = 6 V P1.0 & P1.1 = 0V or V_{CC}		100	µA
		V_{CC} = 3 V P1.0 & P1.1 = 0V or V_{CC}		20	µA

Notes: 1. Under steady state (non-transient) conditions, I_{OL} must be externally limited as follows:
Maximum I_{OL} per port pin:20 mA
Maximum total IOL for all output pins:80 mA
If IOL exceeds the test condition, VOL may exceed the related specification. Pins are not guaranteed to sink current greater than the listed test conditions.
2. Minimum V_{CC} for Power Down is 2 V.

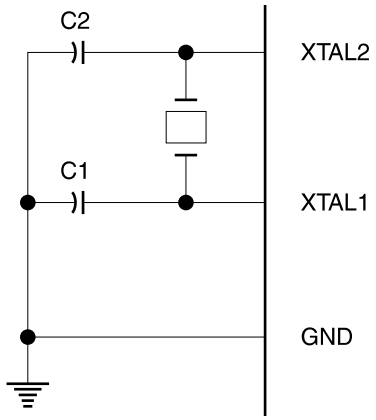
External Clock Drive Waveforms



External Clock Drive

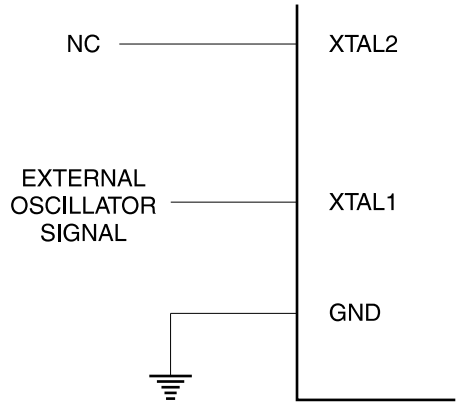
Symbol	Parameter	V_{CC} = 2.7 V to 6.0 V		V_{CC} = 4.0 V to 6.0 V		Units
		Min	Max	Min	Max	
$1/t_{CLCL}$	Oscillator Frequency	0	12	0	24	MHz
t_{CLCL}	Clock Period	83.3		41.6		ns
t_{CHCX}	High Time	30		15		ns
t_{CLCX}	Low Time	30		15		ns
t_{CLCH}	Rise Time		20		20	ns
t_{CHCL}	Fall Time		20		20	ns

Figure 1. Oscillator Connections



Notes: C1, C2 = 30 pF ± 10 pF for Crystals
= 40 pF ± 10 pF for Ceramic Resonators

Figure 2. External Clock Drive Configuration

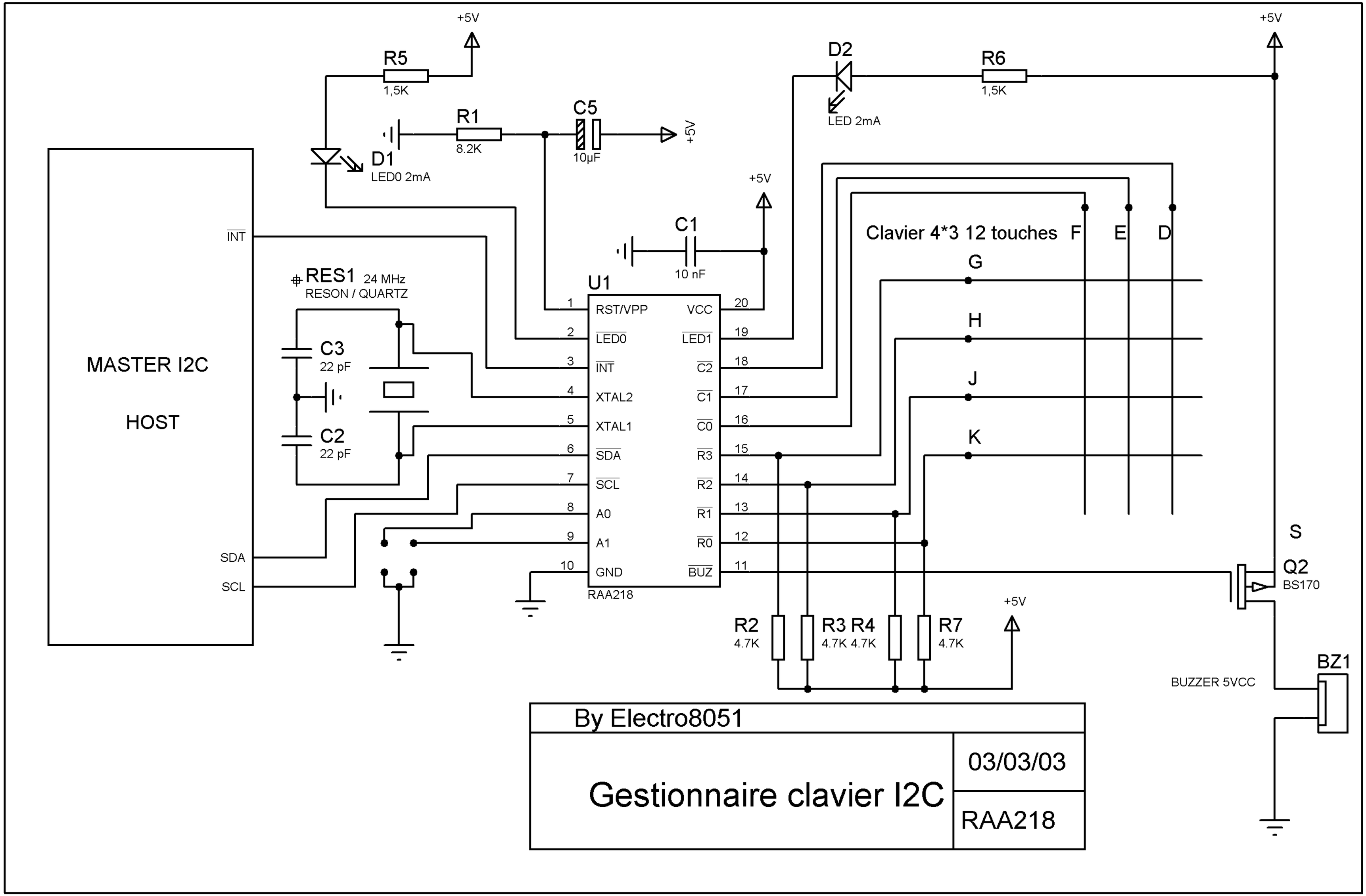


Pin	Name	Function	Type	Active level
1	RST	Reset	Input	Hight
2	/LED0	Output led0	Output	Low
3	/INT	Interrupt	Output	Low
4	XTAL2	Crystal	Input	
5	XTAL1	Crystal	Input	
6	/SDA	I2C data	Input/Output	Low
7	/SCL	I2c sync	Input	Low
8	A0	Adress A0	Input	
9	A1	Adress A1	Input	
10	GND	Ground	Alim 0V	
11	/BUZ	Buzzer	Output	Low
12	/ROW K	Keyboard	Input	
13	/ROW J	Keyboard	Input	
14	/ROW H	Keyboard	Input	
15	/ROW G	Keyboard	Input	
16	/COL F	Keyboard	Output	Low
17	/COL E	Keyboard	Output	Low
18	/COL D	Keyboard	Output	Low
19	/LED1	Output led1	Output	Low
20	VCC	VCC	Alim +5V	

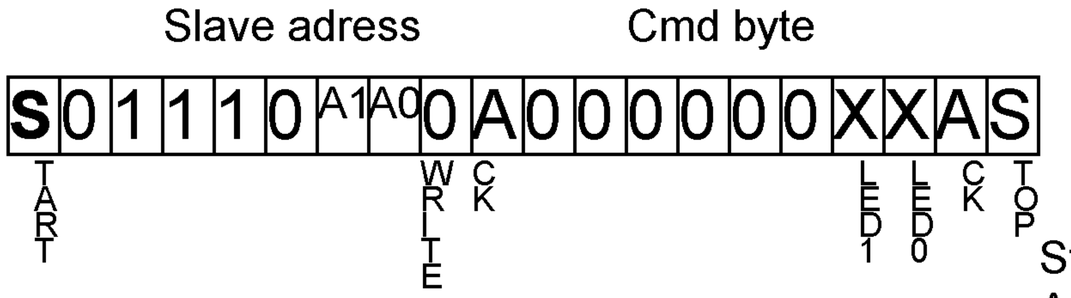
Key	Val ASCII
0	30H
1	31H
2	32H
3	33H
4	34H
5	35H
6	36H
7	37H
8	38H
9	39H
*	2AH
#	23H

Cmd byte	Led1	Led0
00	0	0
01	0	1
02	1	0
03	1	1

Slave adress			
Write	Read	A1	A0
70	71	0	0
72	73	0	1
74	75	1	0
76	77	1	1

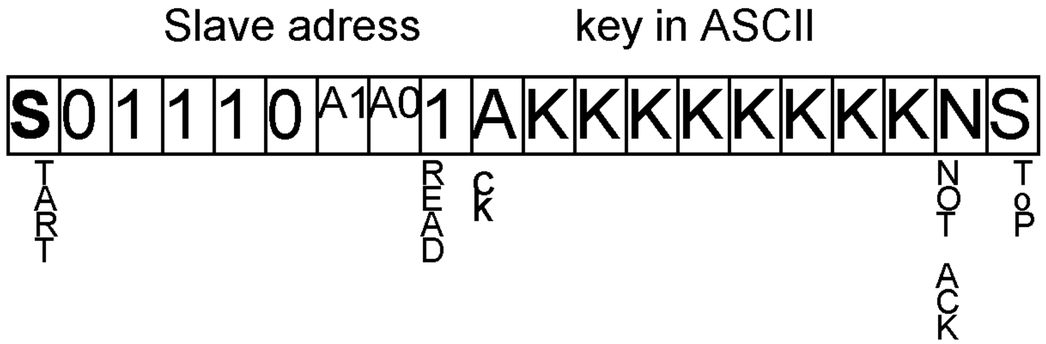

+5V
R5
1,5K
R1
8.2K
C5
10µF
+5V
D1
LED0 2mA
D2
LED 2mA
R6
1,5K
+5V
+5V
C1
10 nF
INT
RES1 24 MHz
RESON / QUARTZ
U1
C3
22 pF
C2
22 pF
1 RST/VPP
2 LED0
3 INT
4 XTAL2
5 XTAL1
6 SDA
7 SCL
8 A0
9 A1
10 GND
20 VCC
19 LED1
18 C2
17 C1
16 C0
15 R3
14 R2
13 R1
12 R0
11 BUZ
RAA218
MASTER I2C
HOST
SDA
SCL
Clavier 4*3 12 touches
F
E
D
G
H
J
K
S
Q2
BS170
BZ1
BUZZER 5VCC
R2
4.7K
R3 R4
4.7K 4.7K
R7
4.7K
+5V
By Electro8051
Gestionnaire clavier I2C
03/03/03
RAA218

WRITE LED



Start,stop,data :send by master
Ack : send by RAA218
Synchro : send by master

READ KEY

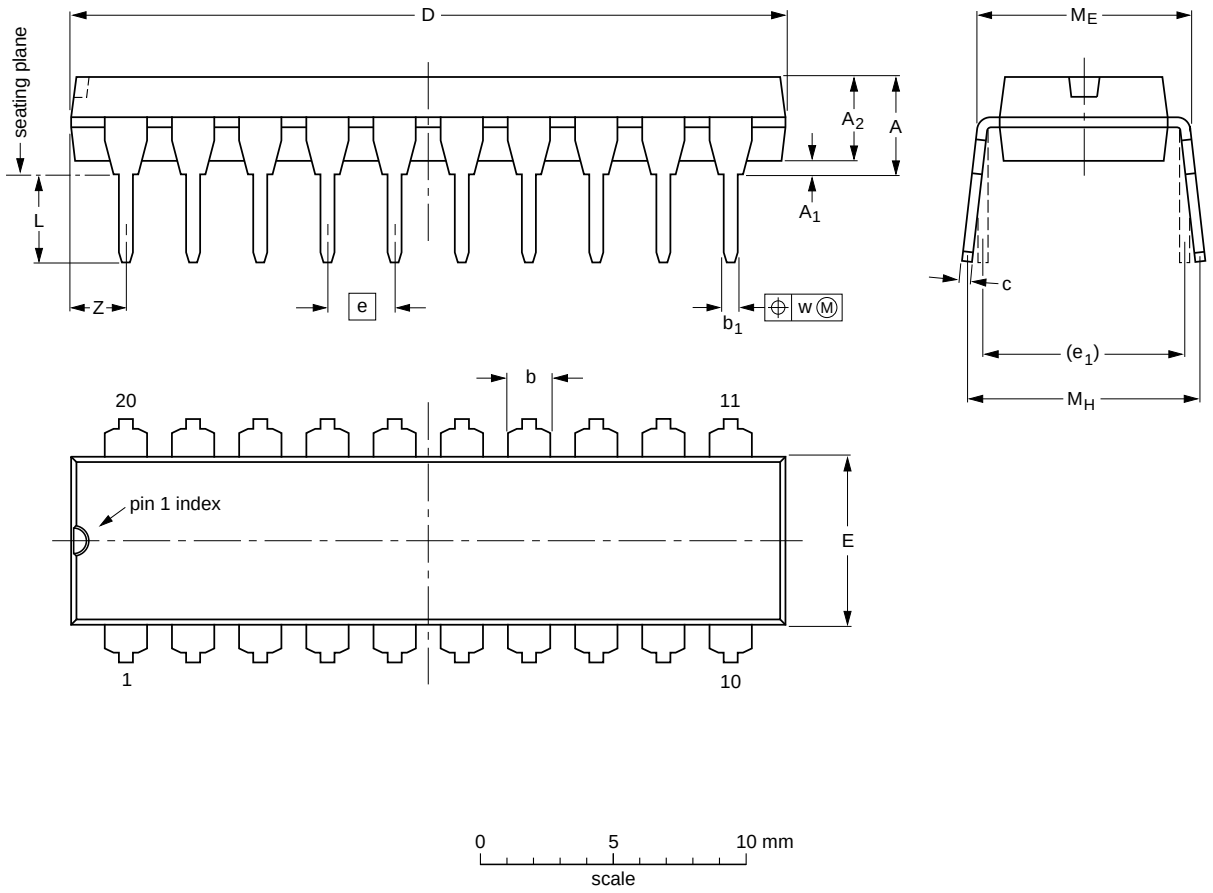


Buzzer is a 5V DC model, if less than 20 mA is needed,Q2 can be omitted.
Key value is updated when key is released.
When an I2C read occured and key value is not updated, FFH is returned.
Crystal or resonator 24 mhz can be used.
A1,A0 must be tired to VCC or GND to code slave adress..

INT will go down when key value is updated.
If master controls INT, an I2C read must be performed when INT rise down.
When RAA218 is read, INT go back to VCC..

PACKAGE OUTLINES

DIP20: plastic dual in-line package; 20 leads (300 mil) SOT146-1



DIMENSIONS (inch dimensions are derived from the original mm dimensions)

UNIT	A max.	A_1 min.	A_2 max.	b	b_1	c	D (1)	E (1)	e	e_1	L	M_E	M_H	w	Z (1) max.
mm	4.2	0.51	3.2	1.73 1.30	0.53 0.38	0.36 0.23	26.92 26.54	6.40 6.22	2.54	7.62	3.60 3.05	8.25 7.80	10.0 8.3	0.254	2.0
inches	0.17	0.020	0.13	0.068 0.051	0.021 0.015	0.014 0.009	1.060 1.045	0.25 0.24	0.10	0.30	0.14 0.12	0.32 0.31	0.39 0.33	0.01	0.078

Note

1. Plastic or metal protrusions of 0.25 mm maximum per side are not included.

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT146-1			SC603			