

DATA SHEET

RAA28

Infrared I2C remote control decoder

D.C. Characteristics

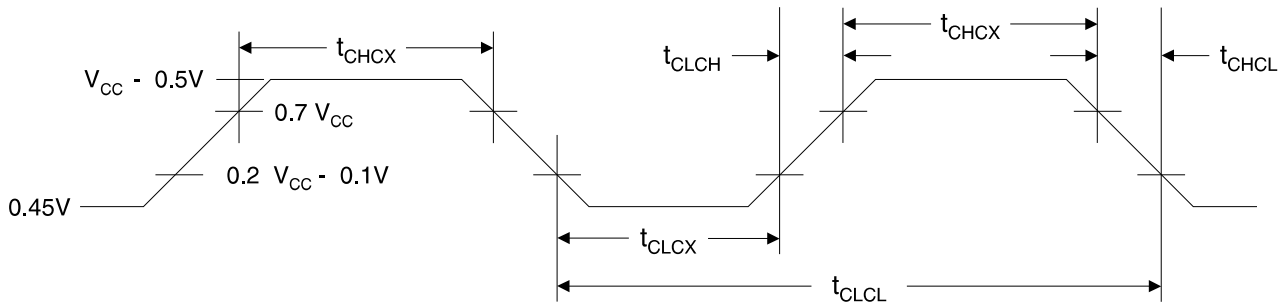
$T_A = -40^\circ\text{C}$ to 85°C , $V_{CC} = 2.7\text{ V}$ to 6.0 V (unless otherwise noted)

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)	$I_{OL} = 20\text{ mA}$, $V_{CC} = 5\text{ V}$ $I_{OL} = 10\text{ mA}$, $V_{CC} = 2.7\text{ V}$		0.5	V
V_{OH}	Output High Voltage (Ports 1, 3)	$I_{OH} = -80\ \mu\text{A}$, $V_{CC} = 5\text{ V} \pm 10\%$	2.4		V
		$I_{OH} = -30\ \mu\text{A}$	$0.75 V_{CC}$		V
		$I_{OH} = -12\ \mu\text{A}$	$0.9 V_{CC}$		V
I_{IL}	Logical 0 Input Current (Ports 1, 2, 3)	$V_{IN} = 0.45\text{ V}$		-50	μA
I_{TL}	Logical 1 to 0 Transition Current (Ports 1, 2, 3)	$V_{IN} = 2\text{ V}$		-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	$V_{CC} = 5\text{ V}$		20	mV
V_{CM}	Comparator Input Common Mode Voltage		0	V_{CC}	V
RRST	Reset Pulldown Resistor		50	300	$\text{K}\Omega$
C_{IO}	Pin Capacitance	Test Freq. = 1 MHz, $T_A = 25^\circ\text{C}$		10	pF
I_{CC}	Power Supply Current	Active Mode, 12 MHz, $V_{CC} = 6\text{ V}/3\text{ V}$		15/5.5	mA
		Idle Mode, 12 MHz, $V_{CC} = 6\text{ V}/3\text{ V}$ P1.0 & P1.1 = 0V or V_{CC}		5/1	mA
	Power Down Mode ⁽²⁾	$V_{CC} = 6\text{ V}$ P1.0 & P1.1 = 0V or V_{CC}		100	μA
		$V_{CC} = 3\text{ V}$ 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 I_{OL} for all output pins: 80 mA

If I_{OL} exceeds the test condition, V_{OL} 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	$V_{CC} = 2.7 V \text{ to } 6.0 V$		$V_{CC} = 4.0 V \text{ to } 6.0 V$		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

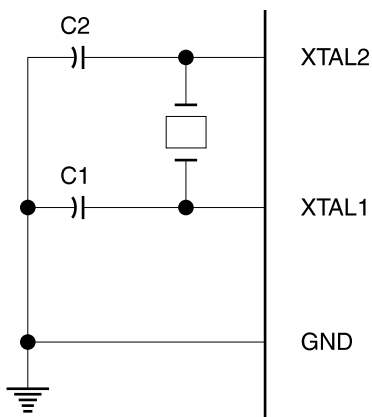
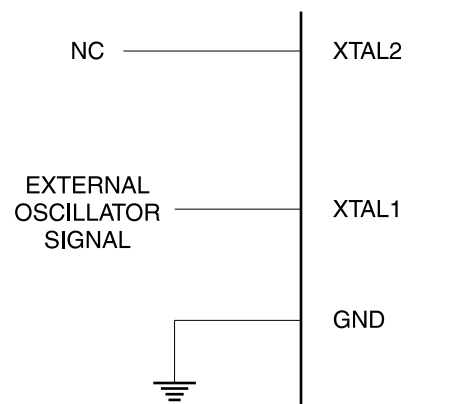
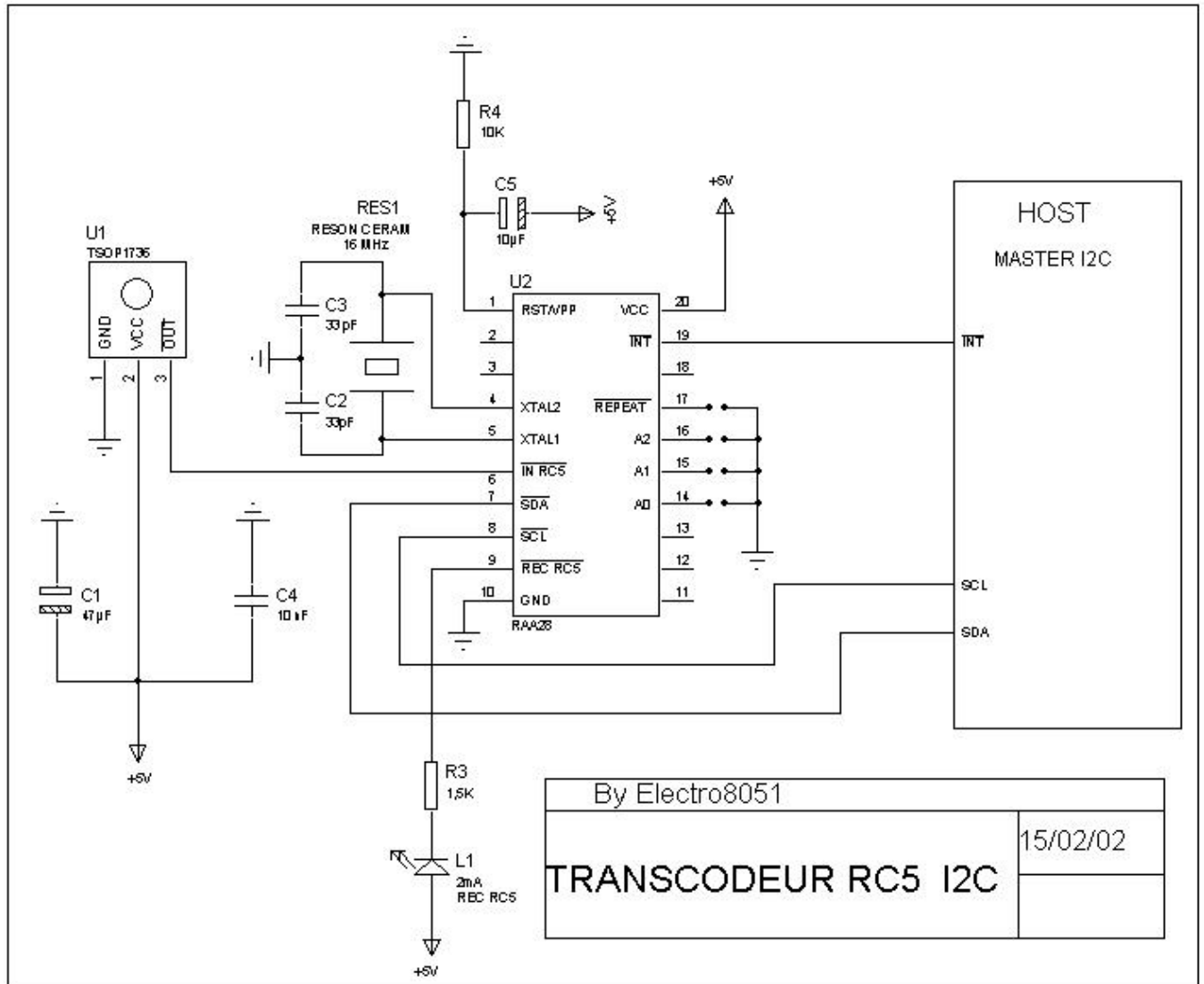


Figure 2. External Clock Drive Configuration



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

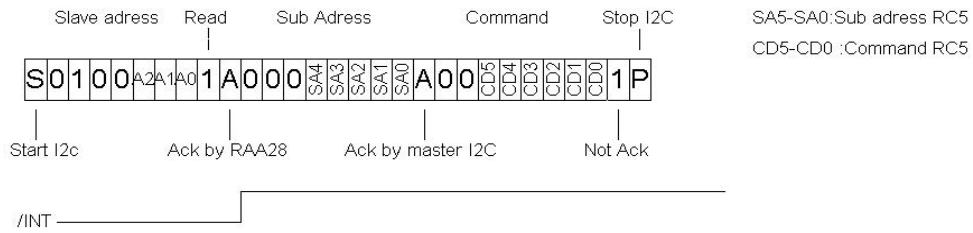
APPLICATION INFORMATION



Pin	Name	Type	Active	Use
1	RST	Input	High	Reset
2				Not use
3				Not use
4	XTAL2	Input		Crystal/reson
5	XTAL1	Input		Crystal/reson
6	In RC5	Input	Low	RC5 input
7	SDA	Input/output	Low	I2C DATA
8	SCL	Input/output	Low	Clock I2C
9	REC RC5	Input	Low	Led receive RC5
10	Power	Gnd		
11				Not use
12				Not use
13				Not use
14	A0 select	Input	Low	Select A0=0
15	A1 select	Input	Low	Select A1=0
16	A2 select	Input	Low	Select A2=0
17	Repeat	Input	Low	Select Repeat
18				Not use
19	INT	Output	Low	Active if RC5 valid
20	Power	5V		

READ I2C

RAA28 I2C BUS PROTOCOL



RAA28 Slave Address								
A7	A6	A5	A4	A3	A2	A1	A0	HEX
0	1	0	0	A2	A1	A0	R	
0	1	0	0	0	0	0	1	41H
0	1	0	0	0	0	1	1	43H
0	1	0	0	0	1	0	1	45H
0	1	0	0	0	1	1	1	47H
0	1	0	0	1	0	0	1	49H
0	1	0	0	1	0	1	1	4BH
0	1	0	0	1	1	0	1	4DH
0	1	0	0	1	1	1	1	4FH

- Start I2c :send by master
- Slave address :send by master
- Sub address :send by RAA28
- Command :send by RAA28
- Stop I2c :send by master

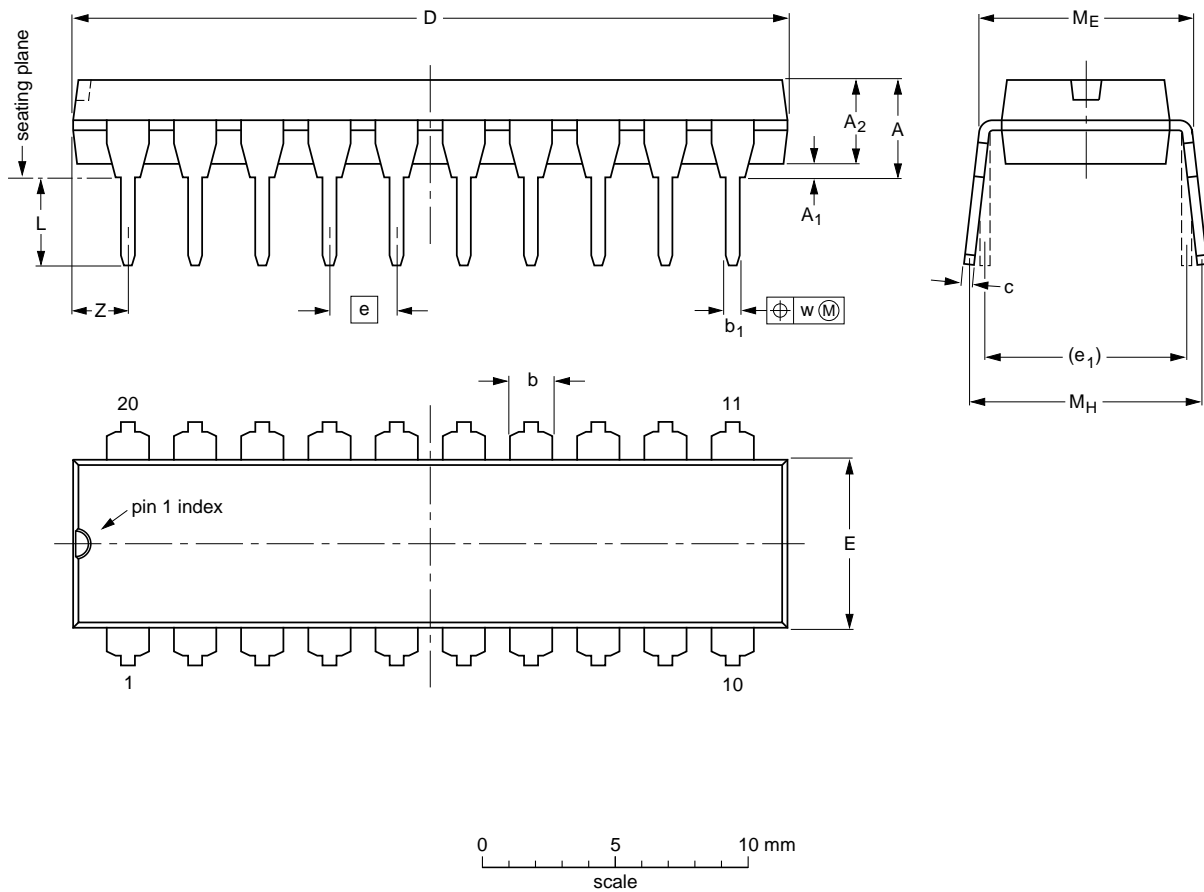
Infrared remote control decoder

RAA28

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			