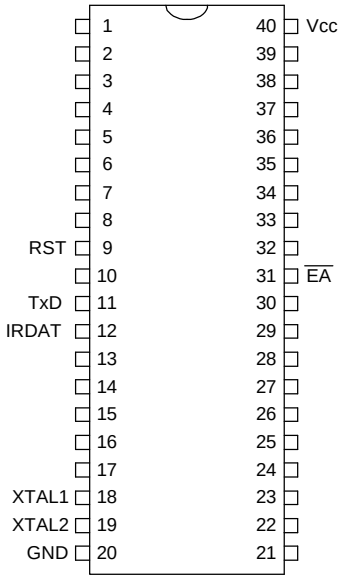
INNOTECH SYSTEMS INC.

IC1003 INFRARED RECEIVER/DECODER INTEGRATED CIRCUIT

FEATURES

- Integrated Solution
- Receives/Decodes NEC-standard codes
- Enables Computer or Microcontroller to Receive Infrared Remote Control Signals
- Converts IR input from Universal Remote Controls to Serial Data Words
- Compatible with Universal Remote Controls, Innotech's Spit*FIRE*, and Innotech Remote Control ICs.
- Available in 40 pin DIP (IC1003) and 44 pin PLCC (IC1003PLCC) packages.

PIN CONFIGURATION



DESCRIPTION

The IC1003 Infrared Receiver/Decoder converts conventional NEC protocol IR codes from universal remote controls into serial ASCII commands for interpretation by a host controller. The NEC protocol is among the most popular, and is used by NEC, Hitachi, Toshiba and Mitsubishi among others.

The NEC protocol consists of a 32 bit sequence. In normal use, the first 16 bits in an NEC code are the customer and product ID bytes, the next 8 bits (the third byte) are the button code, and the last 8 bits, used for error checking, are the third byte inverted.

The IC1003 IR Receiver decodes the entire 32 bit code. Before outputting data, the receiver checks that the code is valid by insuring that there are 32 correctly timed bits and that byte 3 (the button code) is properly equal to byte 4 inverted.

For maximum flexibility, the receiver disregards the data content of the first 16 bits, ensuring that it will accept any valid NEC customer and product code. If the decoder validates the data, it will transmit the button code (3rd byte) as a 3 byte asynchronous serial ASCII message at 9600 baud.

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ELECTRICAL CHARACTERISTICS

MAXIMUM GUARANTEED RATINGS*

Operating Temperature Range . . . . . 0°C - 70°C
Storage Temperature Range . . . . . -55°C to + 150°C
Voltage from any pin to V_{SS} . . . . . -0.5 to V_{CC} + 0.5
Voltage from V_{CC} to V_{SS} . . . . . -0.5 to +6.5

*Stresses above those listed could cause permanent damage to the device. This is a stress rating only and functional operation of the device at any other condition above those indicated in the operation sections of this specification is not implied.

DC ELECTRICAL CHARACTERISTICS (T_A = 0°C - 70°C, V_{CC} = +5.0 V ± 10%)

SYMBOL	PARAMETER	MIN	MAX	UNIT	COMMENT
V_{IL}	Input Voltage Low		$0.2V_{CC}$-0.1	V	
V_{IH}	Input Voltage High	$0.2V_{CC}$+0.9		V	Except XTAL
V_{OL}	Output Voltage Low		.45	V	I_{OL}=1.6mA
V_{OH}	Output Voltage High	2.4		V	IOH=-60µA
I_{CC}	Power Supply Current		22	mA	12 MHz Clock

DESCRIPTION OF PIN FUNCTIONS

Pin Number		Symbol	Function	Description
DIP	PLCC			
4	5	LED	Output	Visible LED. Flashes when IR is being received.
9	10	RST	Input	Reset
11	13	TxD	Output	Decoded Output Data at 9600 Baud
12	14	IRDAT	Input	IR data from infrared detector
18	20	XTAL1	Output	11.059 MHz Crystal Connection.
19	21	XTAL2	Input	11.059 MHz Crystal Connection.
20	22	GND	Ground	Ground
31	35	EA/VP	Input	Connect to +5 Volts
40	44	VCC	Power	+5 Volts Power Supply

CODE DESCRIPTION

The serial message format is as follows:

HexCodeMSB HexCodeLSB Carriage_Return

The HexCodes are printable hexadecimal ASCII from 0-9 or A-F and represent one nibble of the code. The Data Bits 7-4 are sent first followed by Data Bits 3-0.

For example, if the binary code is 10101000 (A8) the IC1003 IR Receiver will output:

'A' '8' CR or

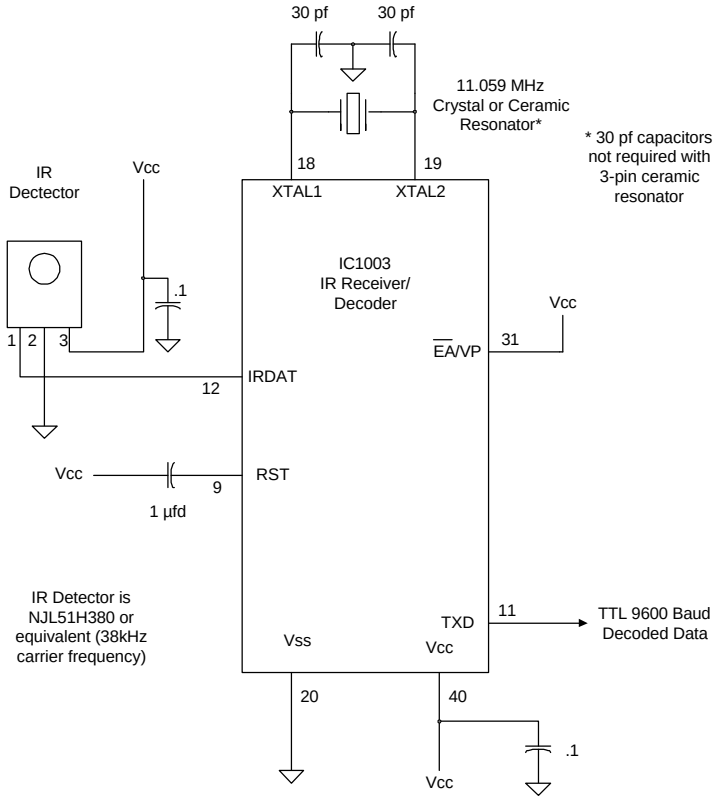
41h 38h 0Dh

at 9600 baud, 8 data bits, no parity, with 1 stop bit.

COMPATIBLE CODES

The IC1003 is compatible with all universal remote controls and with universal remote controls designed by Innotech Systems. When used with Innotech System's universal remote controls or with the Innotech Systems' SpitFIRE, the IC1003 is compatible with device codes 1–37 (without repeating keys) and device codes 57–62 (with repeating keys). The user will need to determine the appropriate device codes for other brand universal remote controls.

TYPICAL APPLICATION



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