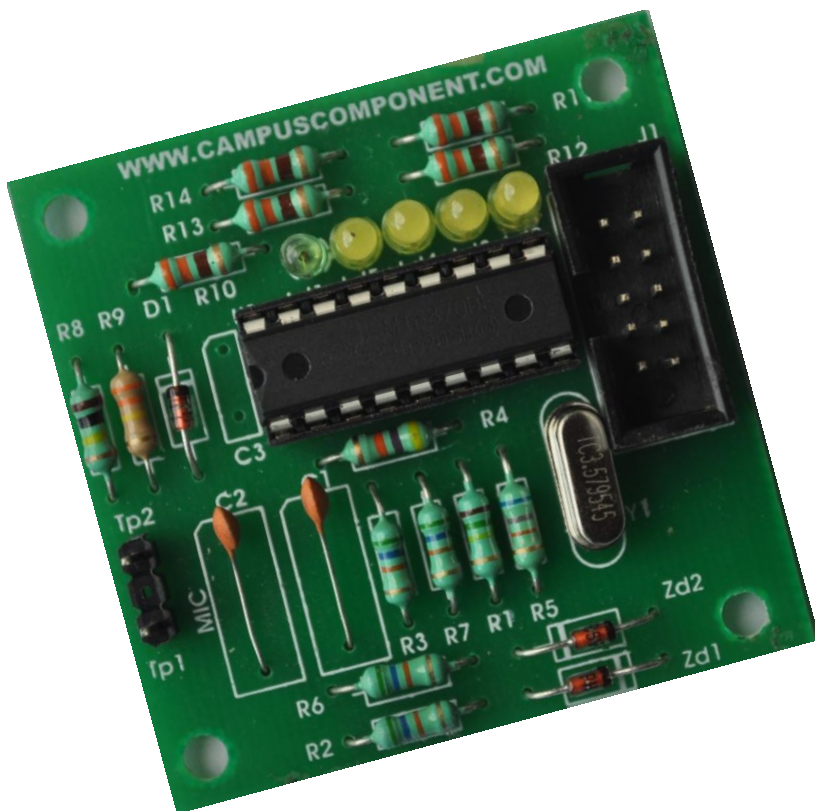


DTMF Module



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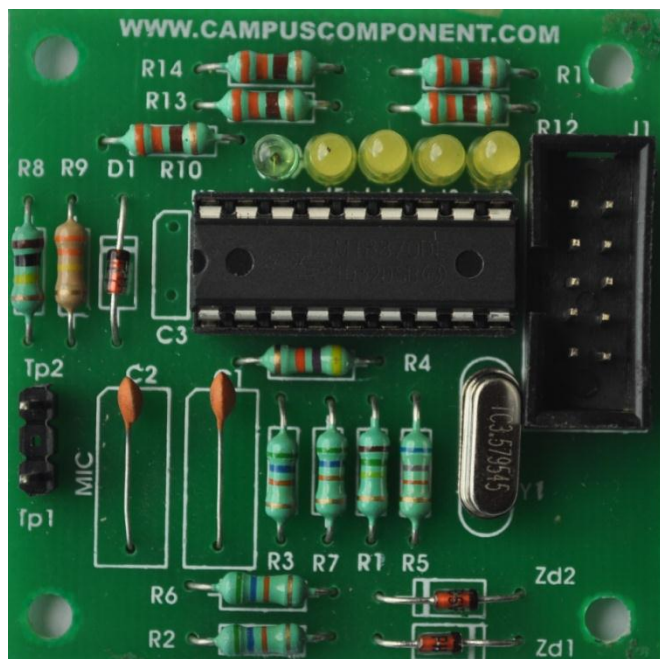
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DTMF Module



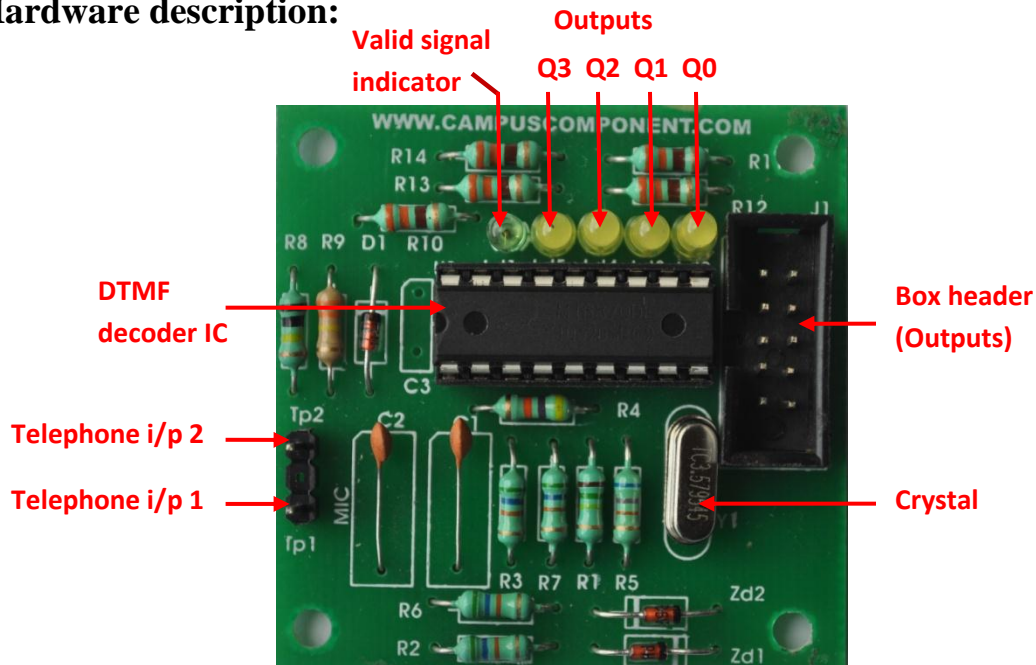
Features:

- Simple & Easy DTMF* Decoding from Mobile switch
- Decodes the received DTMF Signals from Telephone/ Mobile phone
- LED indicator for decoded output
- 5 outputs through Header Pin
- Output Status Indicator
- Easy interfacing with ATK-200

Technical specification:

- Power supply : 5V DC
- Size : 4.7 X 4.7 cm

*Full form of DTMF is Dual Tone Multi-frequency

Hardware description:

- **DTMF Decoder IC :**

This circuit detects the dial tone from a telephone line and decodes the keypad pressed on the remote telephone. The dial tone we heard when we pick up the phone set is call Dual Tone Multi-Frequency, DTMF in short. The name was given because the tone that we hear over the phone is actually made up of two distinct frequency tones, hence the name dual tone.

When a key is being pressed on the matrix keypad, it generates a unique tone consisting of two audible tone frequencies. For example, if the key '1' is being press on the phone, the tone you hear is actually consisting of a 697 Hz & 1209 Hz sine signal. Pressing key '9' will generate the tone form by 852 Hz & 1477 Hz. The tone of 825Hz + 1477 Hz will be decoded as binary '1001' as the output with the help of this IC MT 8870. The Keypad Dial Tone Frequency Table is given below:

	1209 Hz	1336 Hz	1477 Hz	1633 Hz
697 Hz	1	2	3	A
770 Hz	4	5	6	B
852 Hz	7	8	9	C
941 Hz	*	0	#	D

- **Telephone inputs:** Two input pins are provided for connection with the telephone line.
- **Valid signal indicator:** Presents logic high when a received tone-pair has been registered and the output latch has been updated.
- **Box header:**
It provides four output bits and a valid signal indicator bit, so that these digital bits can be interface to a computer or microcontroller for further application (E.g. remote control, phone line transfer operation, etc...).

- **Output (Q0-Q3) indicator:**

The decoded output of the valid tone received is in the form of 4-bit binary output. Hence 16 different signal combinations can be possible. The decoder output table for the given dial tone is given below:

Keytone	Output logic			
	Q3	Q2	Q1	Q0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
0	1	0	1	0
*	1	0	1	1
#	1	1	0	0
A	1	0	1	1
B	1	1	1	0
C	1	1	1	1
D	0	0	0	0

Notice that there are key tones for A B C and D. These are special tones which are normally not found on our telephone. It is a common standard build into the decoder chip.

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Location Map

