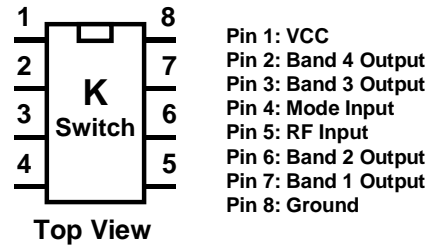


FEATURES

- Frequency Range: 100 KHz to 30 MHz
- RF Input Level: 1.5 to 5.0 V
- Output: High true (TTL Level)
- Bands: Any four non-overlapping ranges selected by user upon ordering
- Selectable Actuation mode
- Operating Voltage: 5 VDC, built in oscillator
- Power Consumption: 5 ma

DESCRIPTION

The Kswitch is a single chip RF sensing unit that provides four "in band" outputs. An "in band" output will be asserted high true when a frequency within it's preprogrammed range is present on the RF input pin. The Kswitch uses a Microchip PIC12C509 single chip microprocessor and requires minimal components for operation.

**Introduction**

The Kswitch was designed to fulfill a need for an inexpensive RF sensing unit that can be used to control a remote antenna switch or band switching relay deck. RF is sampled, limited and then applied to the RF input pin of the Kswitch. An internal counter inside the Kswitch will compare the frequency to preprogrammed limits and then assert one of the five band outputs if the frequency falls within the band ranges. If the RF source is removed from the input pin the last output is held. The Kswitch will respond to new frequencies within 250 milliseconds. The frequency ranges are preprogrammed when the Kswitch is programmed and are fixed. When you purchase a Kswitch you specify 4 non-overlapping ranges between 100 KHz and 30 MHz.

Accuracy

The Kswitch uses the internal oscillator inside the PIC12C509 as a timebase for frequency measurement. This oscillator is accurate to +/- 5% with a regulated 5-volt supply. Although not accurate enough for precise frequency measurement it is more than accurate for a band sensing application.

Actuation Option

There are two methods that the Kswitch can use to change bands. In **immediate** mode the band will be changes as soon as a frequency is detected within a valid band zone. In **delayed** mode a new frequency band is detected when a frequency is applied to the Kswitch but band switching is delayed until the frequency is taken away. The later is useful when constructing an antenna tuner for transmitting and is desirable not to change bandswitching when RF is applied. The desired mode is specified by the mode pin. When this pin is left unconnected immediate mode is selected, when pin 4 is grounded delayed mode is selected.

Sensing Delay

In immediate mode when a frequency change is detected the Kswitch will verify the change four times before an update is made. This will result in a delay of $2.17 \text{ mSec} * 4 = 8.68 \text{ mSec}$.

In delayed mode there will be a delay of approximately 20 mSec from the time RF has been removed before the Kswitch will update the band outputs.

Resolution

The Kswitch uses a relatively coarse resolution in frequency determination. This is due primarily to fact that an eight bit counter is utilized, which must be spread over the entire frequency range. The following table gives a list of available frequency limits that can be programmed into the Kswitch:

-	-	117.6 KHz	235.3 KHz	352.9 KHz	470.6 KHz	588.2 KHz	705.8 KHz
823.5 KHz	941.1 KHz	1.058 MHz	1.176 MHz	1.294 MHz	1.411 MHz	1.529 MHz	1.647 MHz
1.764 MHz	1.882 MHz	2.000 MHz	2.117 MHz	2.235 MHz	2.352 MHz	2.470 MHz	2.588 MHz
2.705 MHz	2.823 MHz	2.940 MHz	3.050 MHz	3.176 MHz	3.294 MHz	3.411 MHz	3.529 MHz
3.647 MHz	3.764 MHz	3.882 MHz	4.000 MHz	4.117 MHz	4.235 MHz	4.352 MHz	4.470 MHz
4.588 MHz	4.705 MHz	4.823 MHz	4.941 MHz	5.058 MHz	5.176 MHz	5.294 MHz	5.411 MHz
5.529 MHz	5.647 MHz	5.764 MHz	5.882 MHz	6.000 MHz	6.117 MHz	6.235 MHz	6.352 MHz
6.470 MHz	6.588 MHz	6.705 MHz	6.823 MHz	6.942 MHz	7.052 MHz	7.176 MHz	7.294 MHz
7.411 MHz	7.529 MHz	7.647 MHz	7.764 MHz	7.882 MHz	8.000 MHz	8.117 MHz	8.235 MHz
8.352 MHz	8.470 MHz	8.588 MHz	8.705 MHz	8.823 MHz	8.941 MHz	9.058 MHz	9.176 MHz
9.294 MHz	9.411 MHz	9.529 MHz	9.647 MHz	9.764 MHz	9.882 MHz	10.00 MHz	10.11 MHz
10.23 MHz	10.35 MHz	10.47 MHz	10.58 MHz	10.70 MHz	10.82 MHz	10.94 MHz	11.05 MHz
11.17 MHz	11.29 MHz	11.41 MHz	11.52 MHz	11.64 MHz	11.76 MHz	11.88 MHz	12.00 MHz
12.11 MHz	12.23 MHz	12.35 MHz	12.47 MHz	12.58 MHz	12.70 MHz	12.82 MHz	12.94 MHz
13.05 MHz	13.17 MHz	13.29 MHz	13.41 MHz	13.52 MHz	13.64 MHz	13.76 MHz	13.88 MHz
14.00 MHz	14.11 MHz	14.23 MHz	14.35 MHz	14.47 MHz	14.58 MHz	14.70 MHz	14.82 MHz
14.94 MHz	15.05 MHz	15.17 MHz	15.29 MHz	15.41 MHz	15.53 MHz	15.65 MHz	15.76 MHz
15.88 MHz	16.00 MHz	16.12 MHz	16.23 MHz	16.35 MHz	16.47 MHz	16.58 MHz	16.70 MHz
16.82 MHz	16.94 MHz	17.05 MHz	17.17 MHz	17.29 MHz	17.41 MHz	17.53 MHz	17.66 MHz
17.88 MHz	18.00 MHz	18.12 MHz	18.23 MHz	18.35 MHz	18.47 MHz	18.58 MHz	18.70 MHz
18.82 MHz	18.94 MHz	19.05 MHz	19.17 MHz	19.29 MHz	19.41 MHz	19.53 MHz	19.64 MHz
19.76 MHz	19.88 MHz	20.00 MHz	20.11 MHz	20.23 MHz	20.35 MHz	20.47 MHz	20.58 MHz
20.70 MHz	20.82 MHz	20.94 MHz	21.05 MHz	21.17 MHz	21.29 MHz	21.41 MHz	21.52 MHz
21.64 MHz	21.76 MHz	21.88 MHz	22.00 MHz	22.11 MHz	22.23 MHz	22.35 MHz	22.47 MHz
22.58 MHz	22.70 MHz	22.82 MHz	22.94 MHz	23.05 MHz	23.17 MHz	23.29 MHz	23.41 MHz
23.52 MHz	23.64 MHz	23.76 MHz	23.88 MHz	24.00 MHz	24.11 MHz	24.23 MHz	24.35 MHz
24.47 MHz	24.58 MHz	24.70 MHz	24.82 MHz	24.94 MHz	25.05 MHz	25.17 MHz	25.29 MHz
25.41 MHz	25.52 MHz	25.64 MHz	25.76 MHz	25.88 MHz	26.00 MHz	26.11 MHz	26.23 MHz
26.35 MHz	26.47 MHz	26.59 MHz	26.70 MHz	26.82 MHz	26.94 MHz	27.05 MHz	27.17 MHz
27.29 MHz	27.41 MHz	27.53 MHz	27.64 MHz	27.76 MHz	27.88 MHz	28.00 MHz	28.11 MHz
28.23 MHz	28.35 MHz	28.47 MHz	28.59 MHz	28.70 MHz	28.82 MHz	28.94 MHz	29.05 MHz
29.17 MHz	29.29 MHz	29.41 MHz	29.53 MHz	29.64 MHz	29.76 MHz	29.88 MHz	30.00 MHz

Since the Kswitch can detect four different bands, five frequencies must be specified as follows:

Frequency 1: Band 1 Low limit
Frequency 2: Band 1 High limit = Band 2 Low limit
Frequency 3: Band 2 High Limit = Band 3 Low limit
Frequency 4: Band 3 High Limit = Band 4 Low limit
Frequency 5: Band 4 High limit

Freq.1	Freq. 2	Freq. 3	Freq. 4	Freq. 5
Band One	Band 2	Band 3	Band 4	

Typical Kswitch Application:

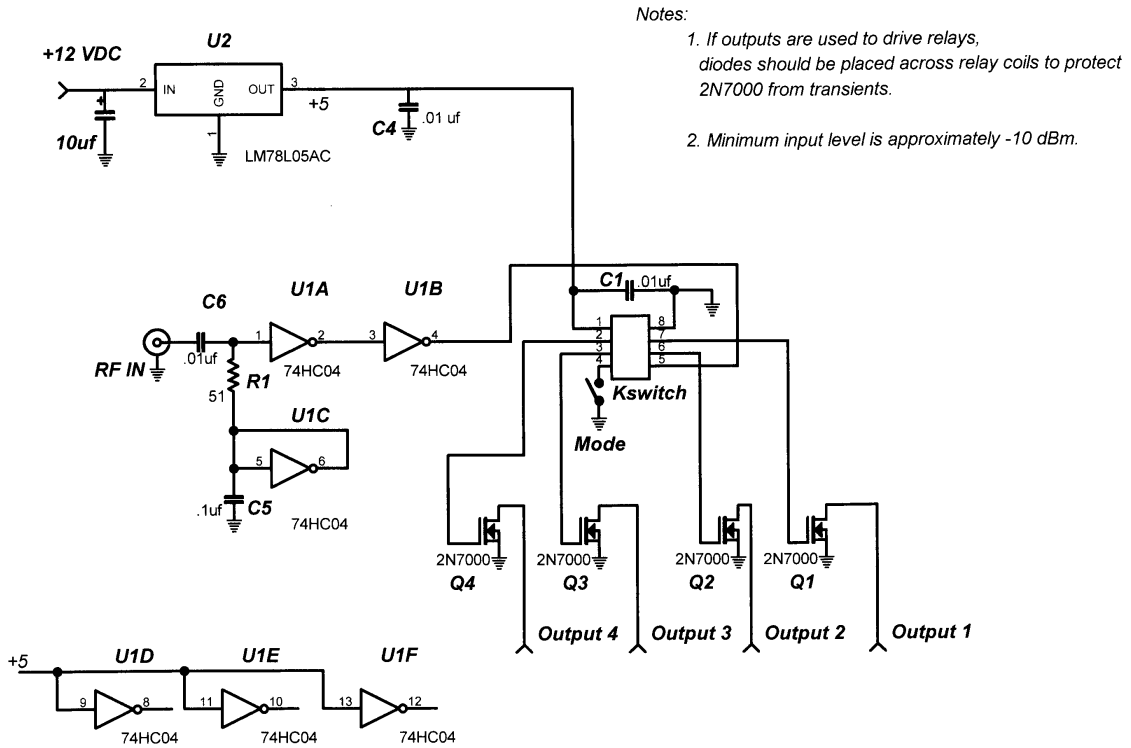


Figure 1

The Kswitch is fully guaranteed and if you are not satisfied please return the Kswitch IC for a full refund. Any questions will be handled by snail-mail or e-mail via these addresses:

Steven T. Elliott K1EL
 43 Meadowcrest Drive
 Bedford, NH 03110 USA

or e-mail: K1EL@aol.com

Watch the K1EL Website for latest updates and new product offerings:

<http://members.aol.com/k1el/index.html>