KR512PS10 Frequency Divider

КР512ЛС10

General Description

The KSR512PS10 (in Western typography) is an “adjustable frequency divider for clocks” according to a Russian website. (The ‘PS’ suffix denotes a ‘frequency converter’ according to Wikipedia.) NOTE: Although sometimes claimed to be equivalent to MOSTEK MK5009, the KR512 is totally incompatible.

The device appears to comprise an oscillator, a fixed division stage and a series of further selectable dividers followed by an open-drain output.

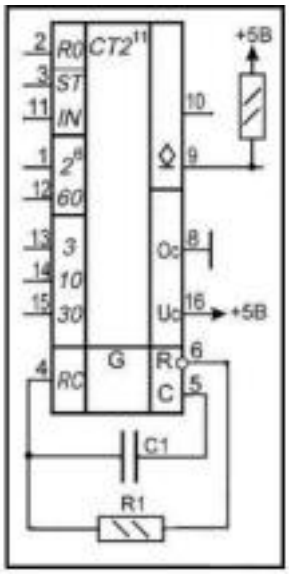
The oscillator may be controlled by an RC network, a crystal or an external input.

Maximum ratings are unknown, but published information suggests the device is intended for use with a +5V supply.

Features

- Operates from standard +5V supply
- No negative supply required
- Compatible with standard logic
- Open-drain output can sink 10mA
- Maximum Operating Frequency ~500kHz
- Fixed division by 2048
- Additional divisors of 3, 10, 30, 60 or 64 by selection

Published Block Diagram



Inputs and Outputs

Pin 2 is Reset. When high, it resets all dividers to zero.
Pin 3 is Count Inhibit. When high, it disconnects the dividers from the output.
Pin 7 appears open circuit.
Pin 10 appears to have no function.
Pin 11 is a direct input. Any signal applied here is inverted and coupled to the output in parallel with the divider output, unless this is inhibited. However, a static logic level on this input does not inhibit the counter output, (It appears satisfactory to leave this input open when not in use.)

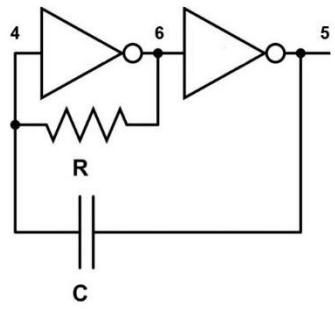
Setting Divisor Ratio

Pin 1	12	13	14	15	Divisor
L	L	L	L	L	2048
H	L	L	L	L	131072
L	H	L	L	L	122880
L	L	H	L	L	6144
L	L	L	H	L	20480
L	L	L	L	H	61440

All other input combinations appear to be invalid

RC Oscillator Connections

(Logic conjectured)



F = 1/(2.2xRxC)

Power Consumption

Unloaded, oscillator off	~3.0 mA
RC oscillator, 40kHz	~18 mA

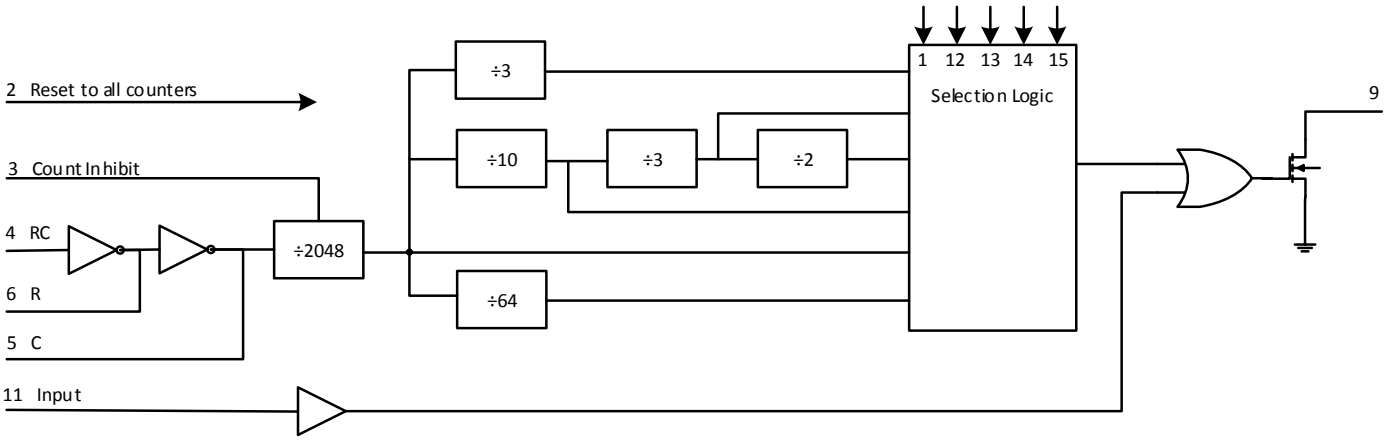
Open-Drain Output

Output Low Voltage V	Current mA
0.12	4
0.15	5
0.17	6
0.24	8
0.31	10

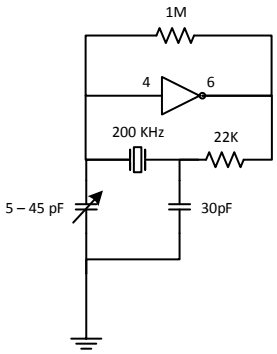
DISCLAIMER

This information has been gathered from a variety of sources. The internal logic is conjectured from measurements on a number of samples, as are the parametric data. The information is presented in good faith, but no liability can be accepted for any error or omission.

Conjectured Logic Diagram



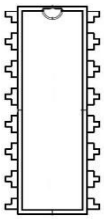
Crystal Oscillator Connections



NOTE: It appears that the device was not designed to be used with a crystal. The circuit shown works well at 200 kHz, but attempts to operate at 32768 Hz have been unsuccessful. The problem appears to be the extra inverter output at pin 5, which is coupled to the input on pin 4 by stray capacitance on adjacent pins, and which causes positive feedback at high frequencies overriding the (relatively) low frequency crystal.

Outline

DIP-16



Marking: **КР512ЛС10**