

# CMOS Oscillator/Divider

**mOSTEK**

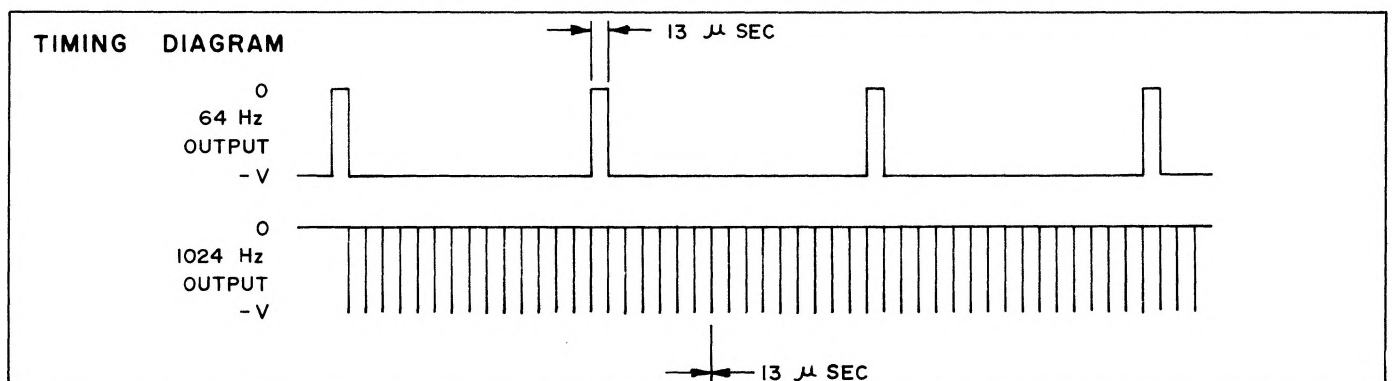
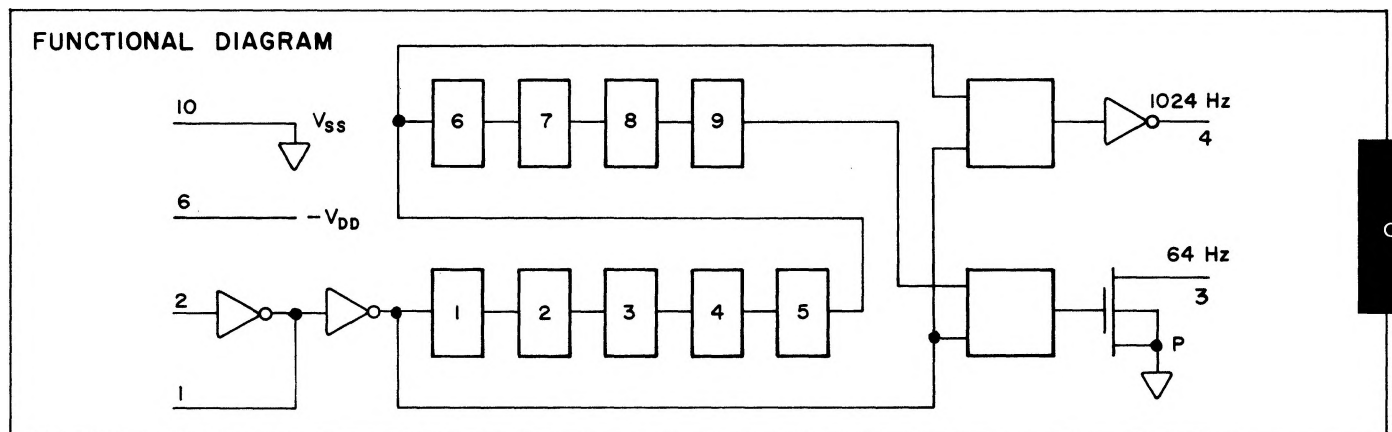
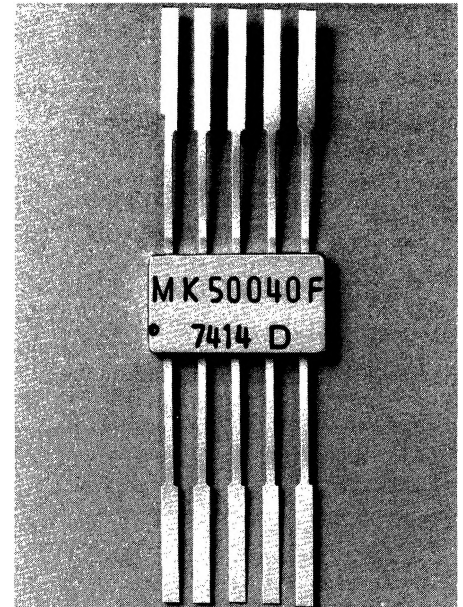
## FEATURES:

- Low power dissipation
- Direct replacement for SCL 5437
- Inverter for crystal controlled oscillator with external frequency determination

## DESCRIPTION:

The MK 50040 is a CMOS nine stage binary ripple divider useful in timekeeping applications. The chip has two output frequencies of 64 Hz and 1024 Hz with an input frequency of 32768 Hz determined by a crystal. The 64Hz provides the main timekeeping pulses and the 1024Hz is used to operate a dc-dc converter.

The 64 Hz output device is an open-drain P-channel device which will deliver 50  $\mu$ A with -1 volt drop when on and less than 50 na at -15 volts (for MK 50040F-1) or -10 volts (for MK 50040F-2) when off. The 1024 Hz output is a CMOS inverter.



## ABSOLUTE MAXIMUM RATINGS

Storage Temperature Range  $-40^{\circ}$  to  $+100^{\circ}\text{C}$

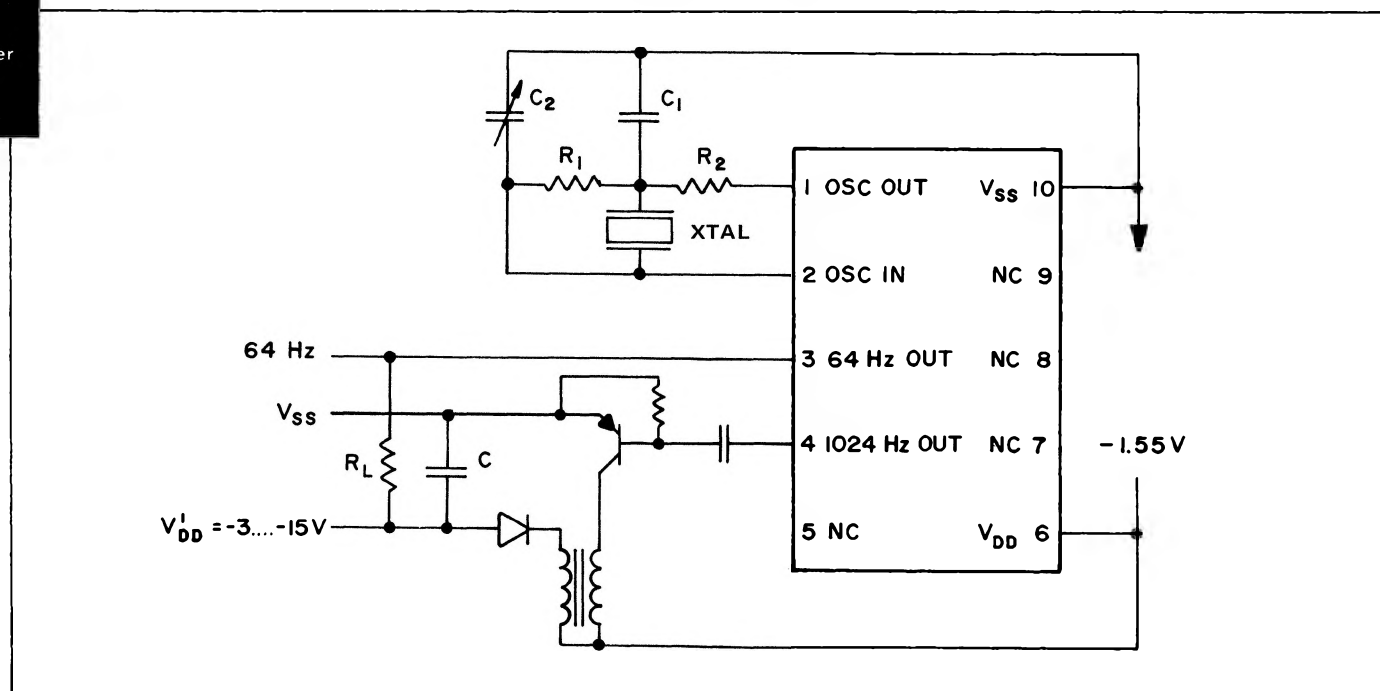
Operating Temperature Range  $-10^{\circ}$  to  $+60^{\circ}\text{C}$

**DYNAMIC OPERATING CHARACTERISTICS** at  $T_A = 25^{\circ}\text{C}$ ,  $V_{DD} = -1.55\text{V}$

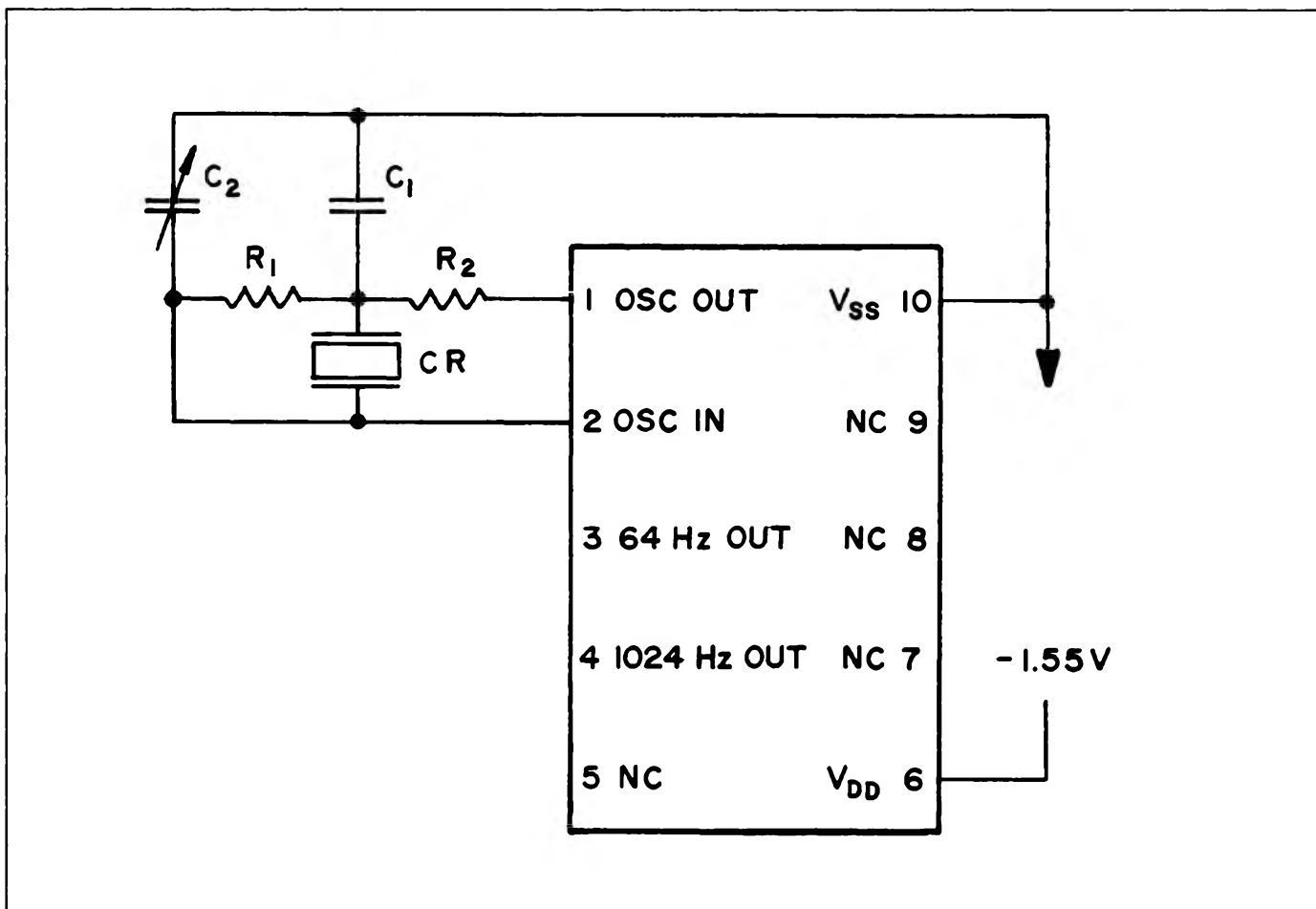
CHARACTERISTICS		SYMBOL	TEST CONDITIONS	LIMITS			UNITS
				MIN.	TYP.	MAX.	
Operating Current		$I_L$	Oscillator Frequency 32768 Hz No Load		3	5	$\mu\text{A}$
Minimum Starting Voltage		$V_S$		-1.35			Volt
Output Current MK 50040F-1		$I_1$	64 Hz output Pin 3	ON $V_{OUT} = -1$ volt	50	75	$\mu\text{A}$
				OFF $V_{OUT} = -15$ volt	—	0.01	
Output Current MK 50040F-2		$I_1$	64 Hz output Pin 3	ON $V_{OUT} = -1$ volt	50	75	$\mu\text{A}$
				OFF $V_{OUT} = -10$ volt	—	0.01	
Pulse Width		$t_{w(64)}$	Pin 3	8	13	18	$\mu\text{sec}$
Output Current	Sink	$I_2$	Pin 4 1024 Hz output	"0" $V_{OUT} = V_{DD} + .7\text{V}$	200	—	$\mu\text{A}$
	Source			"1" $V_{OUT} = -.2\text{V}$	20	—	
Pulse Width		$t_{w(1024)}$	Pin 4	8	13	18	$\mu\text{sec}$

It is very important in testing and application of low power time base IC's that external wiring or interconnection capacitance be minimal since such capacitance can cause significantly increased power consumption.

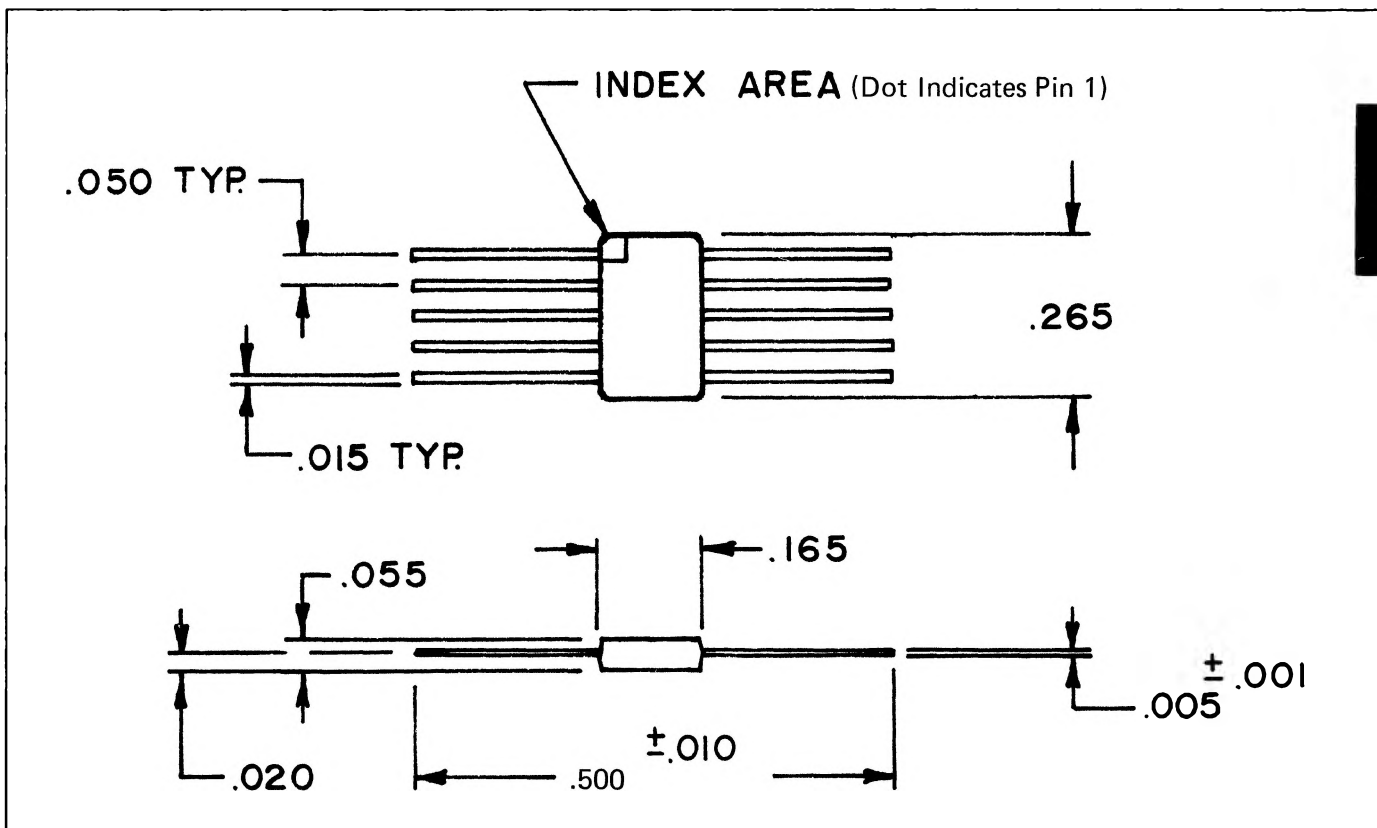
## RECOMMENDED CIRCUIT for 32768 Hz crystal



# SCHEMATIC



# PACKAGE



Consumer