

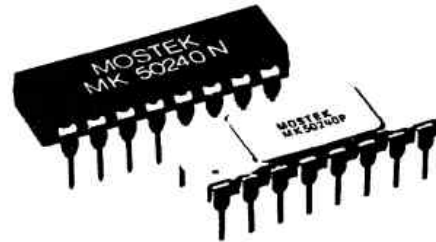
MOSTEK®

TOP OCTAVE FREQUENCY GENERATOR

MK50240/1/2

FEATURES

- Single Power Supply
- Broad Supply-Voltage Operating Range
- Low Power Dissipation
- High Output-Drive Capability
- MK 50240 — 50% Output Duty Cycle
MK 50241 — 30% Output Duty Cycle
MK 50242 — 50% Output Duty Cycle



DESCRIPTION

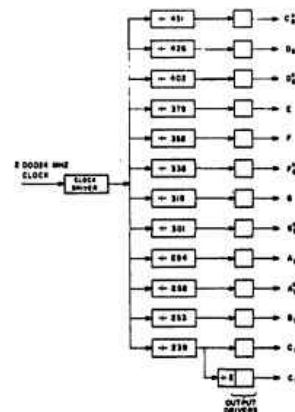
The MK 50240 is one of a family of ion-implanted, P-channel MOS synchronous frequency dividers.

Each output frequency is related to the others by a multiple $12\sqrt{2}$ providing a full octave plus one note on the equal-tempered scale.

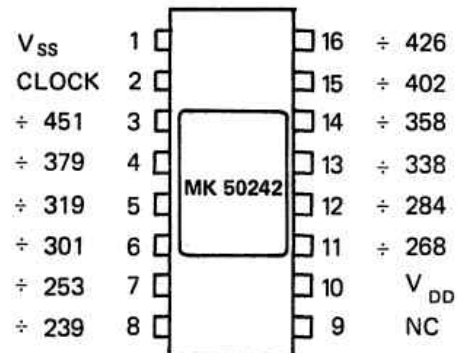
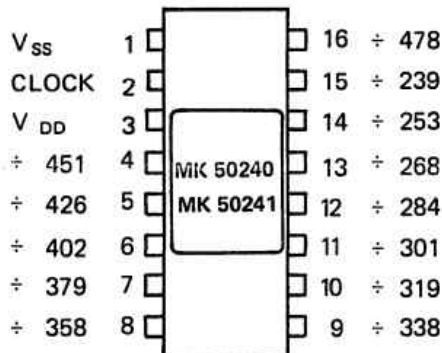
Low threshold-voltage enhancement-mode, as well as depletion-mode devices, are fabricated on the same chip allowing the MK 50240 family to operate from a single, wide-tolerance supply. Depletion-mode technology also allows the entire circuit to operate on less than 600mW of power. The circuits are packaged in 16-pin dual-in-line packages.

RFI emanation and feed-through is minimized by placing the input clock between the V_{DD} and V_{SS} pins. Internally, the layout of the chip isolates the output buffer circuitry from the divisor circuit clock lines. Also, the output buffers limit the minimum rise-time under no load conditions to reduce the RF harmonic content of each output signal.

FUNCTIONAL DIAGRAM



PIN CONNECTIONS



ABSOLUTE MAXIMUM RATINGS

Voltage on any pin relative to V_{SS} +0.3V to -20V

Operating Temperature (Ambient) 0°C to 50°C

Storage Temperature (Ambient) -40°C to 100°C

RECOMMENDED OPERATING CONDITIONS

(0°C ≤ T_A ≤ 50°C)

PARAMETER		MIN	TYP	MAX	UNITS	FIGURE
V_{SS}	Supply Voltage	0		0	V	
V_{DD}	Supply Voltage	-11.0	-15.0	-16.0		

ELECTRICAL CHARACTERISTICS

(0°C ≤ T_A ≤ 50°C; $V_{SS} = 0$, $V_{DD} = -11$ to -16V unless otherwise specified)

PARAMETER		MIN	TYP	MAX	UNITS	FIGURE
V_{IL}	Input Clock, Low	0		-1.0	V	FIG. 1
V_{IH}	Input Clock, High	$V_{DD} + 1.0$		V_{DD}	V	
f_I	Input Clock Frequency	100	2000.240	2500	kHz	
t_r, t_f	Input Clock Rise & Fall Times 10% to 90% @ 2.5 MHz			30	nsec	FIG. 1
t_{on}, t_{off}	Input Clock On and Off Times @ 2.5 MHz		200		nsec	FIG. 1
C_I	Input Capacitance		5	10	pF	
V_{OH}	Output, High @ 0.70 mA	$V_{DD} + 1.5$		V_{DD}	V	FIG. 2
V_{OL}	Output, Low @ 0.75 mA	$V_{SS} - 1.0$		V_{SS}	V	FIG. 2
t_{ro}, t_{fo}	Output Rise & Fall Times, 500 pF Load	250		2500	nsec	FIG. 3
t_{on}, t_{off}	Output Duty Cycle MK 50240P & MK 50242P MK 50241P (Pin 16 50%)		50 30		% %	
I_{DD}	Supply Current		24	37	mA	outputs unloaded

INPUT CLOCK WAVEFORM

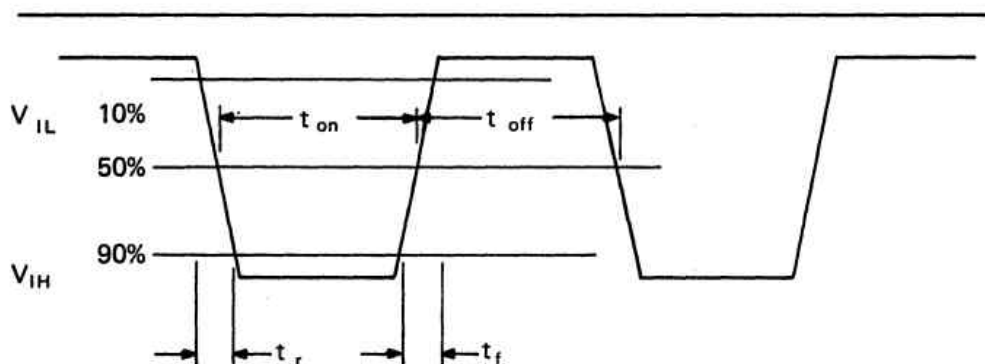


Figure 1

OUTPUT SIGNAL D. C. LOADING

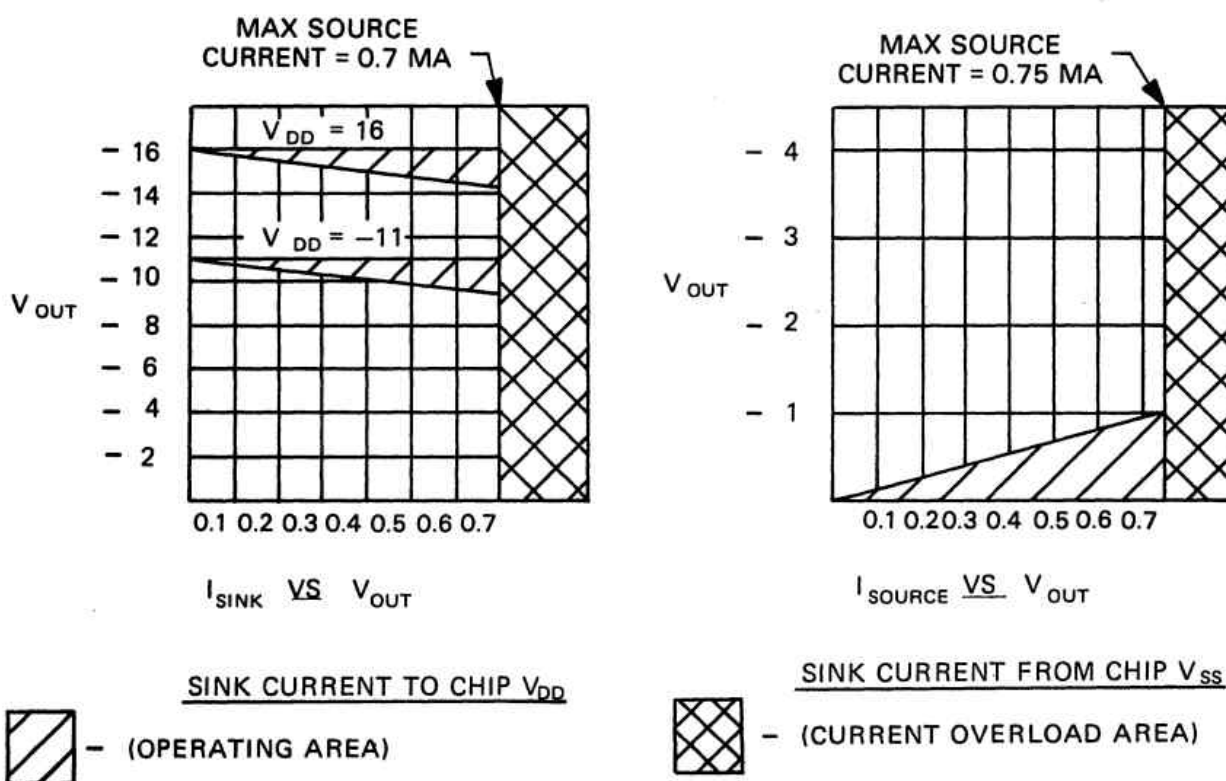
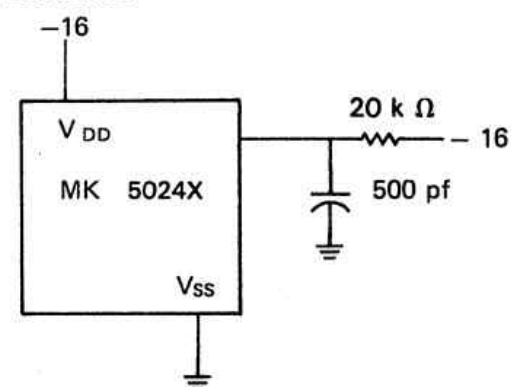
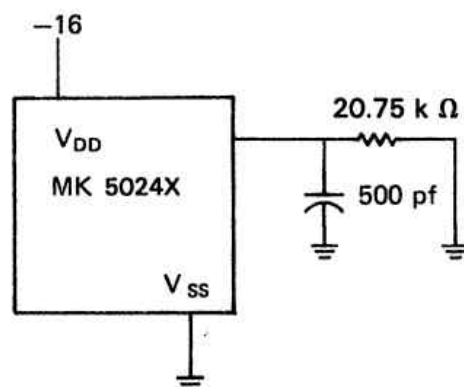


Figure 2

OUTPUT LOADING



t_{fo} Test



t_{ro} Test

Figure 3
