HD43880

ANALOG CLOCK (4MHz COUNTER+DRIVER)

HD43880 is a standard C MOS IC for a quartz clock circuit of 4.19 MHz oscillation.

It contains oscillator, divider, output control circuit and output buffers for motor drive and alarm.

By applying low threshold technique and Si-gate LOCOS process, its power dissipation is reduced to the limit.

Output Buffers are designed to have very low impedance (max. 100 ohm at I_{OUT}=5mA) so that it may be used with any types of motors.

Two types of output waveforms are available according to the input of output control terminal.

One type is 16Hz output with 50% duty cycle for synchronous motor drive and the other is 1Hz output with the pulse width of 31.2ms alternating between OUT1 and OUT2 for stepping motor drive.


(DP-8)

■ **FEATURES**
- Low power dissipation   TYP. 30μA at 1.5V
- Low impedance output Buffer   Max. 100ohm at 1.2V
- Two types of output waveforms available
- Output for alarm provided
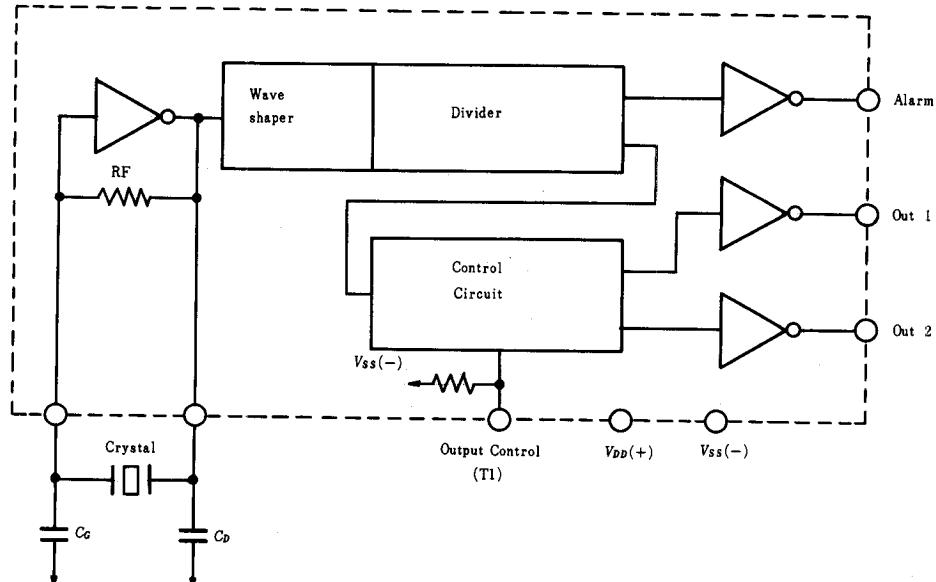

Terminal Assignment

Pin Number	Input	Output	Power Supply
1	T1		
2		ALARM	
3		OUT 1	
4		OUT 2	
5	OSC in		
6		OSC out	
7			V_{ss} (−)
8			V_{DD} (+)

■ **BLOCK DIAGRAM**

■ ABSOLUTE MAXIMUM RATINGS
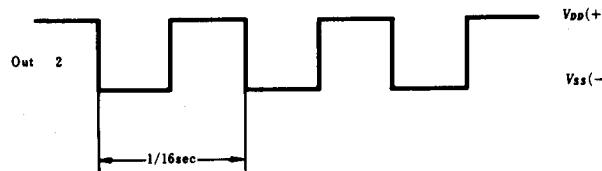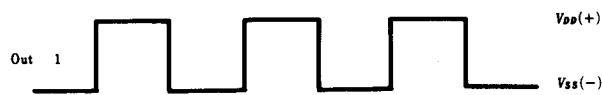
Parameter	Symbol	Rating	Unit
Supply Voltage	V_{DD}	-0.1 to $+5.0$	V
Operating Temperature	T_{op}	-20 to $+75$	°C
Storage Temperature	T_{stg}	-55 to $+125$	°C

■ OPERATING CHARACTERISTICS ($f_{osc}=4.194MHz$, $Ta=25°C$)
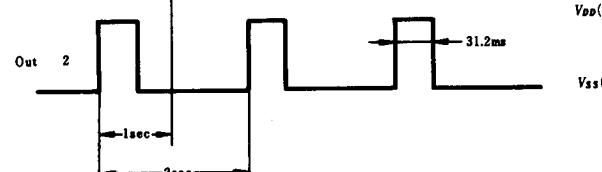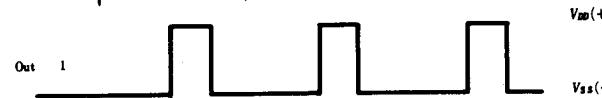
Parameter & Function	Symbol	Conditions	min	typ	max	Unit
Operating Voltage	V_{DD}	$C_G=C_D=15pF$ $C_{in}=50\Omega$	1.15	1.5	2.5	V
Dissipation Current	I_{DD}	$C_G=C_D=15pF$ $C_{in}=50\Omega$, $V_{DD}=15V$	—	30	50	μA
Starting Voltage for OSC	V_{start}	$C_G=C_D=15pF$ $C_{in}=50\Omega$	—	—	1.2	V
Frequency stability	$(\triangle f/f)/0.1V$	$C_G=C_D=15pF$ $V_{DD}=1.4-1.5V$	—	—	0.5	ppm/0.1V
Output Driver resistance	R SAT 1 (P+N)	$V_{DD}=1.2V$ $I_o=5mA$	—	—	100	Ω
Alarm driver resistance	R SAT 2 (P or N)	$V_{DD}=1.5V$ $I_o=0.1mA$	—	—	5	$k\Omega$
Output Waveform		$T_1=$ open or $V_{ss}(-)$	—	0.5Hz pulse width 31.2ms		
		$T_1=V_{DD}(+)$	—	16Hz duty 50%		
Alarm			—	1024Hz duty 50%		

■ OUTPUT WAVEFORMS

(1) 50% duty cycle

(2) Alternating between OUT 1 and OUT 2

(3)

■ CUSTOM VERSIONS

HD43880 has some flexibility to accept variety of customer's demand, so it can be modified in respect to the following items with alternative metal masks.

■ POSSIBLE MODIFICATIONS

Items		Options	Units
Output Frequency	with 50% duty	0.5, (1), (2), 4, 8, 16, 64 (See Note 1)	Hz
	with pulse width	0.5, 1, 2, 4, 8	Hz
Output Pulse width		23.4, 31.2, 39.1, 46.9	ms
Alarm Frequency		64, 128, 256, 512, 1024, 2048, 4096, 8192	Hz
Alarm Modulation Frequency (See Note 2)		0.5, 1, 2, 4, 8, 16	Hz
Pin Configuration & Reset Function		T_1 terminal can be replaced by Reset in any types of Pin configuration above.	

Note 1) Except 1Hz and 2Hz output, any combinations between output with 50% duty cycle and that with pulse width are possible. These two are switched by the level of T_1 terminal mentioned in General Description.
  2) Alarm output can be modulated by frequency signal as follows.

■ MODULATED ALARM WAVEFORMS