

OVERVIEW

The CF5750 series are analog clock driver ICs using 32.768kHz reference frequency of crystal oscillator. Some versions in accordance with the combinations of each motor drive characteristics can provide a wide range of applications for various clock specifications.

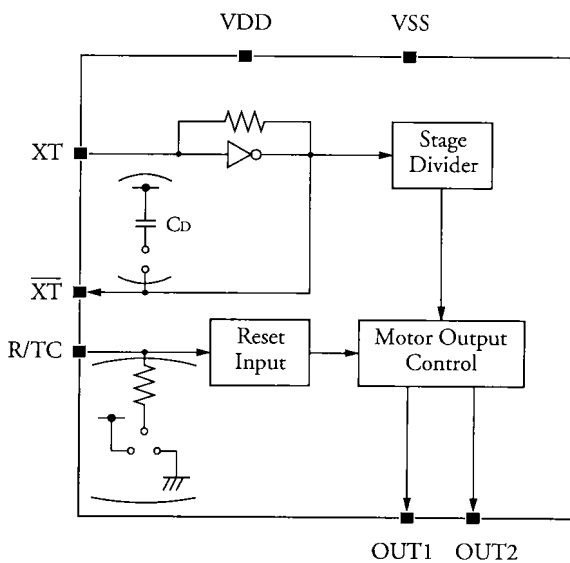
FEATURES

- Operating voltage 1.2 to 2.0V
- Low current 1.2μA(typ)/1.5V
- Built-in oscillator circuits (32.768 kHz)
Built-in crystal oscillator capacitors (C_D)
- Motor output
Various motor output
- Reset function
- Input debounce function (R/TC)
- Chip form (CF5750x)

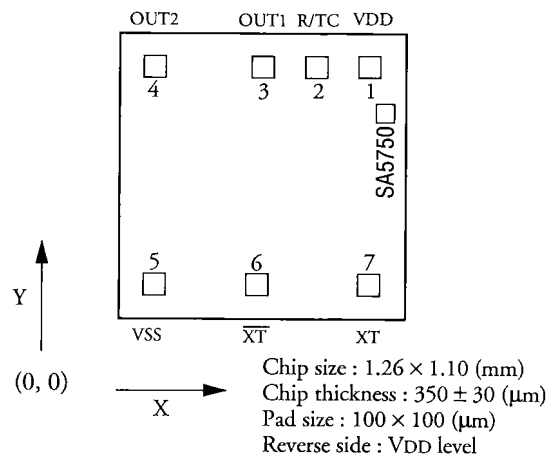
SERIES LINEUP

		CF5750A	CF5750C	CF5750D
Built-in Capacitor	XT terminal C _G (pF)	—	—	—
	\overline{XT} terminal C _D (pF)	34	34	34
Reset Input	Active Level	High	Low	Low
		(Pull-down resistor)	(Pull-up resistor)	(Pull-up resistor)
Motor Output	Active Level	High	High	High
	Hand Drive Cycle t _{CY} (sec)	1	0.125	1
	Pulse Width t _{PW} (msec)	27.34375	62.5	46.875

BLOCK DIAGRAM



PAD LAYOUT (Top view)



CF5750 series

PAD DESCRIPTION (Unit : μm)

No.	Name	Description	Dimensions	
			X	Y
1	VDD	Power supply pin	1081	969
2	R/TC	Reset/Test Clock Input	850	969
3	OUT1	Motor drive output 1	606	969
4	OUT2	Motor drive output 2	156	969
5	VSS	Ground	156	145
6	$\overline{\text{XT}}$	Crystal oscillator connection	571	145
7	XT	Crystal oscillator connection	1081	145

ABSOLUTE MAXIMUM RATINGS

($V_{SS} = 0\text{V}$, unless otherwise noted.)

Parameter	Symbol	Condition	Rating	Unit
Supply Voltage	$V_{DD} - V_{SS}$		-0.3 to 5.0	V
Input Voltage	V_{IN}		$V_{SS} \leq V_{IN} \leq V_{DD}$	V
Operating Temperature	T_{OPR}		-30 to 80	$^{\circ}\text{C}$
Storage Temperature	T_{STG}		-65 to 150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS

($T_a = 25^{\circ}\text{C}$, $V_{DD} = 1.5\text{V}$, $V_{SS} = 0\text{V}$, $X'tal(f_0 = 32.768\text{kHz } C_1 \leq 35\text{k}\Omega)$ unless otherwise noted.)

Parameter	Symbol	Condition	Limit			Unit
			MIN	TYP	MAX	
Supply Voltage	V_{DD}		1.2	1.5	2.0	V
Supply Current	I_{DD}	OUT1,OUT2 = Open		1.2	4.0	μA
Oscillator Startup Time	t_{STA}	$V_{DD} = 1.2\text{V}$			5.0	sec
Motor Output Current	I_{MOT}	$V_{DD} = 1.2\text{V}$, $R_L = 400\Omega$ (Note.1)	2.4			mA
Input Resistance (R/TC)	R_{IN}	(Note.2)	200		1200	$\text{k}\Omega$
Oscillator Stability	$\Delta f/f$	$V_{DD} = 1.2\text{V}$ to 2.0V			1.0	PPM/0.1V
Internal Capacitor	C_G			-		pF
	C_D			(Note.3)		pF

Note.1

R_L is resistor of motor coil, that connect OUT1 between OUT2.

Note.2

$R_{IN} = V_{DD}/I_{IS}$. I_{IS} is current that flow into VSS from R/TC, when R/TC short VSS.

(R/TC build-in pull-up resistor.)

Note.3

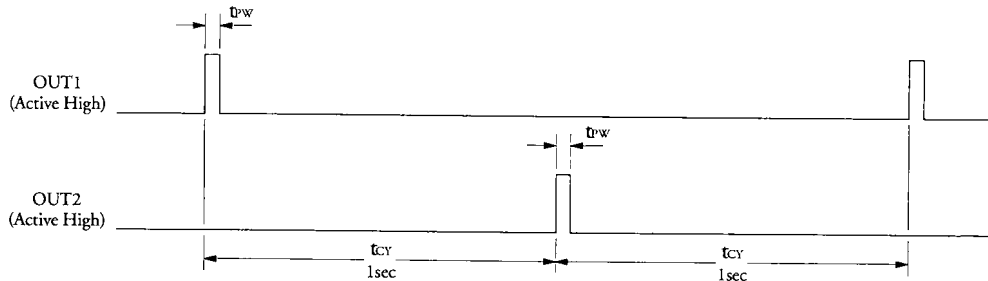
C_D is internal capacitor between VDD and XT.

C_G can't build-in capacitor between VDD and $\overline{\text{XT}}$.

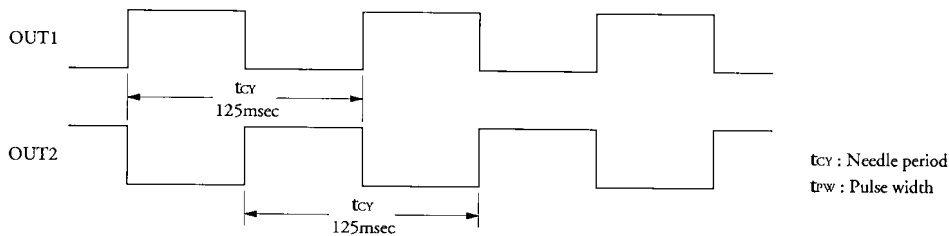
FUNCTIONAL DESCRIPTION

Motor Output

Stepping motor drive type



Sweeping motor drive type



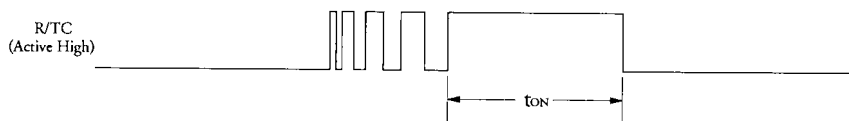
Input Debounce Function (R/TC)

Setting bouncing delay time prevents the circuit from the erroneous operation by R/TC input bouncing.

$t_{ON} < 62.5 \text{ msec}$: Reset input is ignored

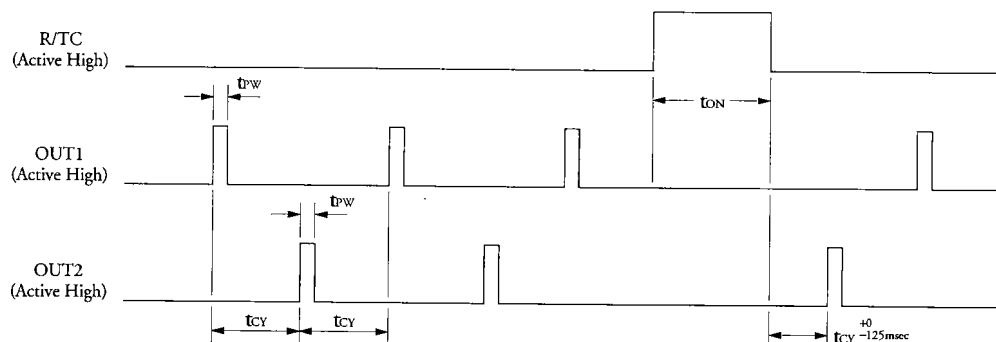
$62.5 \leq t_{ON} \leq 125 \text{ msec}$: Reset input is ignored or accepted

$t_{ON} > 125 \text{ msec}$: Reset input is accepted



Reset Function

R/TC goes to active level when motor output can be stopped. Motor output(OUT1,OUT2) restart of another stopped output after reset off.

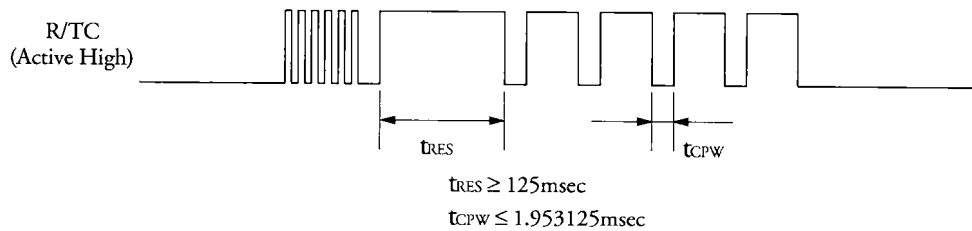


CF5750 series

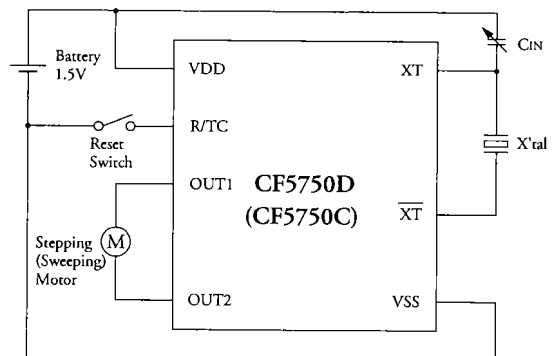
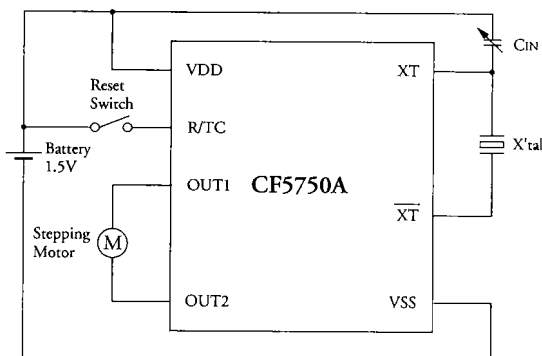
Test Function

Gain fast function

R/TC is active level more than 125 msec. And R/TC input outside clock when motor output gain fast. t_{CPW} is more less than 1.953125 msec.



APPLICATION CIRCUITS



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