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DL8238

32768Hz Analog Clock Driver

General Description

DL8238x series is CMOS circuit used to drive stepping motor in analog clock. This circuit is built in with capacitors Cd and Cg for stability of oscillation.

Features

- Single 1.5V battery operation
- Low power consumption
- 32,768Hz quartz-crystal-controlled Oscillator with two built-in capacitors
- Output for 1Hz stepper motor with pulse duration
  (1) 46.875 ms (DL8238A)
  (2) 31.250 ms (DL8238G)
  (3) 23.438 ms (DL8238F)
  (4) 15.625 ms (DL8238H)
- Output for 8Hz stepper motor with pulse duration
  (1) 62.5 ms (DL8238J)
- Output for 16Hz stepper motor with pulse duration
  (1) 31.250 ms (DL8238K)
  (2) 46.875 ms (DL8238M)

Absolute Maximum Ratings (Ta=25°C)

Characteristic	Symbol	Value	Unit
Supply voltage (V_{DD}-V_{SS})	**Vds1**	-0.3 ~ +1.8	**V**
Operating Temperature	**Topr**	-20 ~ +75	°C
Storage Temperature	**Tstg**	-55 ~ +125	°C

DC Characteristic (VDD=1.5V VSS=0V f_{OSC}=32768Hz Ta=25°C)

Item	Symbol	Condition	Min.	Type	Max.	Unit
Supply Voltage	V_{DD}	-	1.1	**1.5**	**1.8**	**V**
OSC Start Voltage	**V_{OST}**	Within 3 sec.	-	-	1.4	V
Supply Current	**DI_{DD}**	No Load	-	1.0	2.0	μA
Motor Output Current	**I_M**	V_{DD}=1.2V R_L=200Ω	4.0	-	-	mA
OSC Stability	**ΔF/F**	ΔV_{DD}=0.1V	-	0.5	1.0	ppm
Internal Capacitor (Mask option)	Cd	-	1	-	25	pF
	Cg	-	1	-	25	

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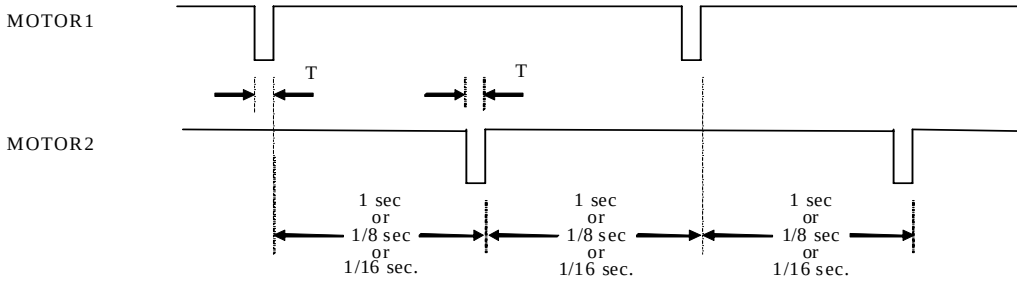
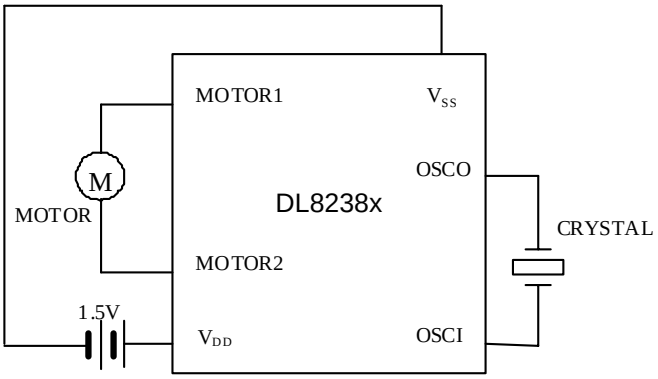
Timing Diagram

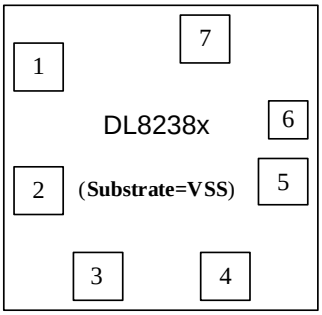


T = Pulse duration width (see **Features**)

Application Circuit



Bounding Diagram



No.	Name	X(μm)	Y(μm)
1	OSCO	62.5	365.0
2	VSS	62.5	210.0
3	MOT1	125.3	62.5
4	MOT2	396.6	62.5
5	VDD	472.5	223.2
6	T	487.5	326.0
7	OSCI	254.6	392.5