NXM5001X

Bi-Directional VCM Driver with PWM

General Description

The NXM5001X is Bi-directional VCM Driver with PWM,
It operates with direction data 1bit and Duty data 10bit,
The frequency of PWM is selectable.

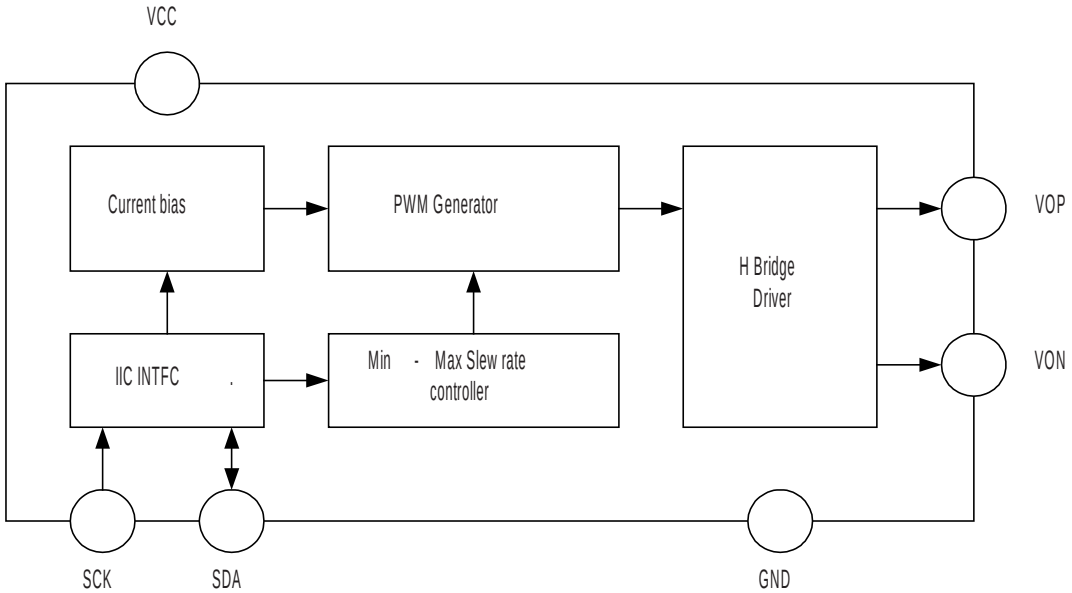
Feature

. Supply voltage : 2.5V ~ 3.6V
. Output On resistance : PMOS & NMOS 0.8ohm
. Grounded current without Load : 1.2mA @ 2.7MHz
. PWM Frequency : 1.1MHz/1.5MHz/1.8MHz/2.7MHz
. Selectable Min to Max Duty slew rate : 0/40ms/100ms/200ms @Min Duty ←→ Max duty
. Package : 1.47m*0.78m 6pin WLP

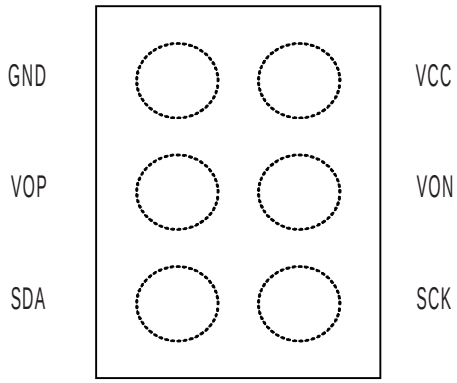
Application

. VCM Driver

Block Diagram



Terminal assignment



Top view

Pin description

Name	No.	Function	I/O	Description
GND	1	Ground	S	Ground
VOP	2	Positive output	O	Positive Drive output
SDA	3	Serial Data	B	Serial Data
SCK	4	Serial clock line	I	Serial clock line
VON	5	Negative output	O	Negative Drive output
VCC	6	Power supply	S	Power supply

Maximum Absolute ratings

Parameter	Symbol	Value	Unit
Supply Voltage	Vccmax	-0.3 ~ 3.6	V
Operating temperature	Topr	-25 ~ 85	℃
Storage temperature	Tstg	-45 ~ 150	℃
Power Dissipation	Pdmax	400	mW

ESD Characteristics

Mode	Polarity	Characteristic			unit
		min	typ	max	
HBM	Positive/Negative	2000	-	-	V
MM	Positive/Negative	200	-	-	V
CDM	Positive/Negative	800	-	-	V

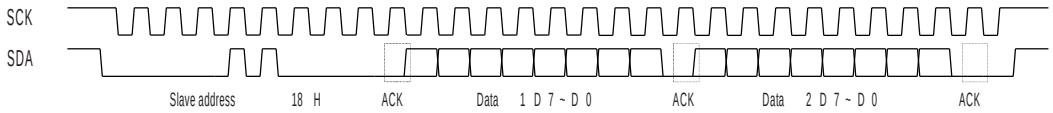
Electrical Characteristics

VCC = 2.8V, Ta=25.0°C Unless otherwise noted

Characteristics	Symbol	Condition	Value			unit
			min	typ	max	
Input Voltage range	Vin	-	2.2	-	3.6	V
Digital input "H" level	Vh	-	1.4	-	-	V
Digital input "L" level	Vl	-	-	-	0.4	V
Operating current without load 1	Icc1	@ f1		0.6		mA
Operating current without load 2	Icc2	@ f2		0.7		mA
Operating current without load 3	Icc3	@ f3		0.8		mA
Operating current without load 4	Icc4	@ f4		1.2		mA
Duty accuracy	Adt	@ 50% command	48.5		51.5	%
PWM Frequency 1	Fp1	@ f1	0.96	1.1	1.32	MHz
PWM Frequency 1	Fp2	@ f2	1.2	1.5	1.8	MHz
PWM Frequency 1	Fp3	@ f3	1.44	1.8	2.16	MHz
PWM Frequency 1	Fp4	@ f4	2.16	2.7	3.24	MHZ
Min-Max Slewrate 1	SL1	@mode 1	-	0	-	ms
Min-Max Slewrate 2	SL2	@mode 2	32	40	48	ms
Min-Max Slewrate 3	SL3	@mode 3	80	100	120	ms
Min-Max Slewrate 4	SL4	@mode 4	160	200	240	ms
Middle position duty error	Ed	All mode	-	0	-	%

Technical Note

- IIC Format



Data 1	fs1	fs0	sr1	sr0	ven	P10	P9	P8
Data 2	P7	P6	P5	P4	P3	P2	P1	P0

- fs0, fs1 : PWM Frequency setting

fs1	fs0	Frequency
0	0	1.1MHz
0	1	1.5MHz
1	0	1.8MHz
1	1	2.7MHz

- sr0, sr1 : Min ←→ Max slew Rate time setting

sr1	sr0	Min ←→ Max slew Rate time
0	0	0ms
0	1	40ms
1	0	100ms
1	1	200ms

- ven : Power supply rejection option

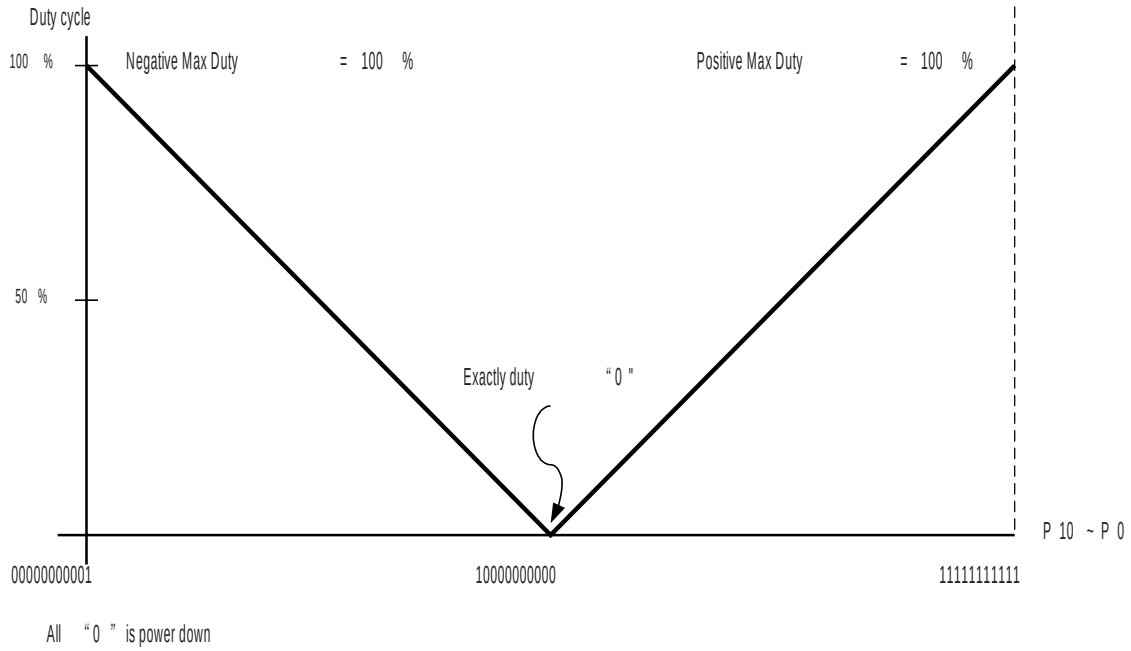
ven	Power supply rejection
0	off
1	on

* Power supply rejection

If the system is used not-regulated supply,
This option decrease the output variation due to power supply variation.
If the system is used regulated supply, This option must be set "0"

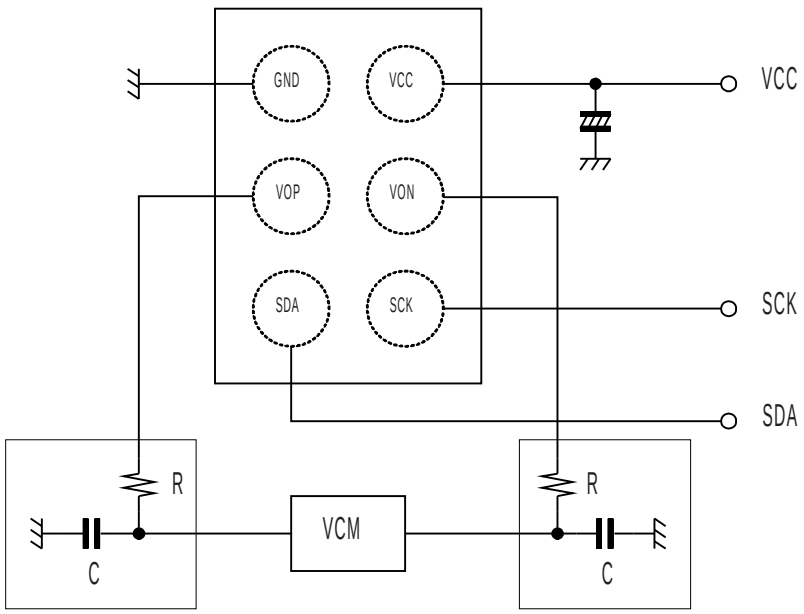
- P10~P0 : position data

If P10~P0 are all 0, this IC is power down mode
In other cases See, below figure.



Duty cycle vs. Position data

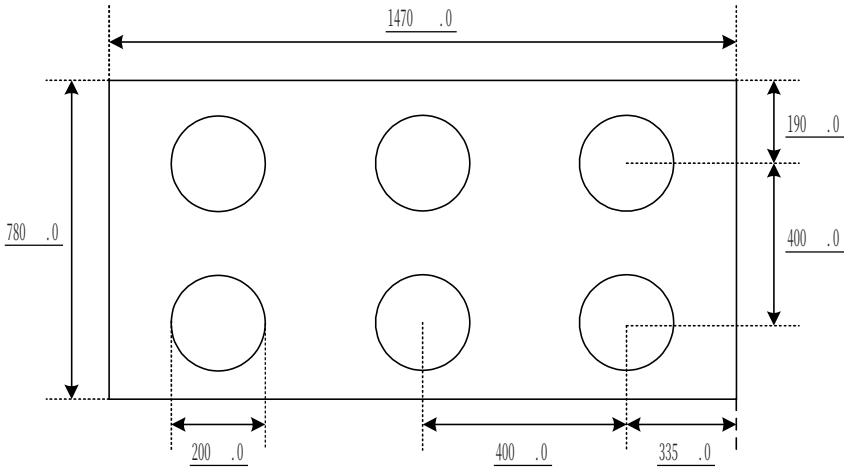
Application circuit



** R, C is option (PWM Filter)

Package outline

[Unit : um]



Bottom View

Bump Height : 50 um +/ -5