



— 華半導體股份有限公司
MOSDESIGN SEMICONDUCTOR CORP.

EL CONTROLE

M5003

EL LAMP DRIVER IC

GENERAL DESCRIPTION 功能叙述

The M5003 is CMOS chip design for Electro-luminescence Lamp (EL) to light has independent circuit to control switching and EL driver frequency circuit, The switching frequency is decided by CKX, If OSC connect a resistor to VDD, or connect a capacitor to VSS the switching frequency can be adjusted. Delay function can be implement if ON connect a capacitor to VSS. The time of delay is decided by the value of capacitor.

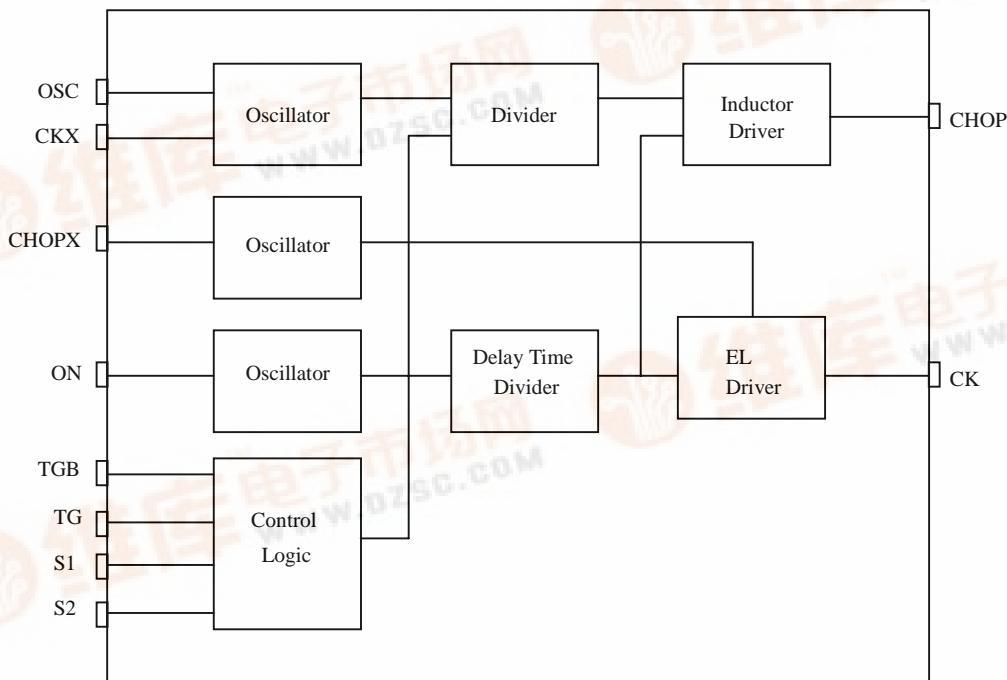
FEATURES 产品特长

- DC to AC conversion
- Built-in RC oscillator
- Two trigger inputs
TG : active High
TGB : active Low
- Adjustable EL driver frequency by CKX
- Adjustable Switching frequency by CHOPX

APPLICATIONS 产品应用

- EL display

BLOCK DIAGRAM 功能方块图





EL LAMP DRIVER IC

ABSOLUTE MAXIMUM RATING

(TA=25°C)

Parameter	Rating	Unit
Supply Voltage	-0.3 to 5.0	V
Input Voltage	-0.2~V _{DD} +0.2	V
Operating Temperature	-20 to 75	°C
Storage Temperature	-40 to 90	°C

ELECTRICAL CHARACTERISTICS

Characteristics	Sym.	Min.	Typ.	Max.	Unit	Conditions
Operating Voltage	V _{DD}	—	3	3.5	V	
Operating Current	I _{OP}	—	0.1	0.5	mA	No load
Quiescent Current	I _{SB}	—	1	5	μ A	
Driving Current	I _{OL}	—	10	—	μ A	@V _{DS} =0.5V
	I _{OH}	—	100	—		@V _{OH} =2.5V
CK Frequency	F _{CK}	—	400	—	Hz	± 30% TOL.
CHOP Frequency	F _{CHOP}	—	16	—	KHz	± 30% TOL.
Oscillator Frequency	F _{OSC}	0	25	60	°C	External ± 30%

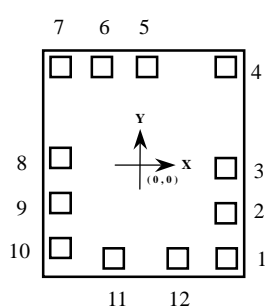
PIN DESCRIPTION

Pad Name	Description
VDD	Positive power supply
TG	Trigger input active at High
ON	Delay option pin, connect cap to VSS
OSC	Switching freq adjust pin, connect R to VDD
CHOPX	Switching freq adjust pin, connect R to VSS
CKX	EL freq adjust pin, connect cap to VSS
S2	EL driving frequency select pin
S1	EL driving frequency select pin
VSS	Negative power supply
TGB	Trigger input active at Low
CK	DC to AC converter output
CHOP	DC to AC converter output



EL LAMP DRIVER IC

PAD ASSIGNMENT & POSITION



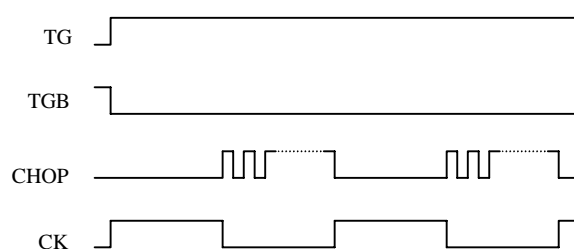
UNIT : um

No.	NAME	X	Y
1	VDD	429	-488
2	TG	429	-263
3	ON	429	-30
4	OSC	429	490
5	CKX	13	490
6	CHOPX	-220	490
7	S2	-430	490
8	S1	-430	14
9	VSS	-430	-219
10	TGB	-430	-452
11	CK	-164	-488
12	CHOP	172	-488

* CHIP SIZE ~ 1.3 x 1.5 mm²

* IC substrate should be connected to VDD in PCB(PCB 上 IC 底座必須接 VDD)

TIMING WAVEFORM



EL DRIVER FREQUENCY SELECT

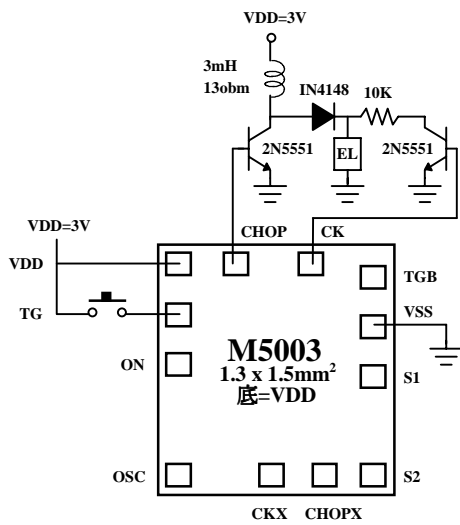
S1	S2	CK (@3V)	CK (@1.5V)
X	X	2K Hz	500 Hz
X	VSS	1K Hz	250 Hz
VSS	X	4K Hz	1K Hz
VSS	VSS	500 Hz	125 Hz



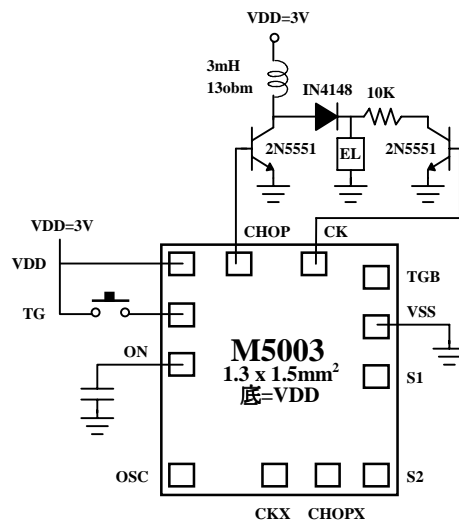
EL LAMP DRIVER IC

APPLICATION DIAGRAM 参考电路图

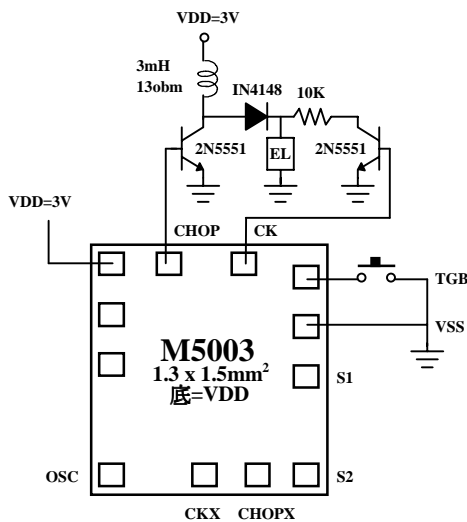
(1) Without delay using TG trigger



(3) With delay using TG trigger



(2) Without delay using TGB trigger



(1) With delay, and adjust EL, switching freq.

