



RCL Semiconductors Ltd.

Dual Flashing EL Lamp Driver IC

C1004

GENERAL DESCRIPTION

C1004 is a series of 2 ELs driver with flashing which is designed in Poly Gate CMOS technology. It can work under 3V or 1.5V DC power supply. C1004 can support EL1 and EL2 output pins to control 2 ELs to flash in four different modes which is selected by OP1 and OP2. ALM is a one-shoot trigger input.

Single choke, 1 diode (or 2 diodes), 4 transistors and 1 resistor are used in application circuits .

FUNCTIONS

- Power supply: 1.5V ~ 3V
- DC to AC conversion by a few external components.
- Built-in RC oscillator.
- Two internal function control inputs:
 - OP1: flashing mode control
 - OP2: flashing in one or bi-directions control
- Support trigger input (Negative or Positive Pulse).

FEATURES

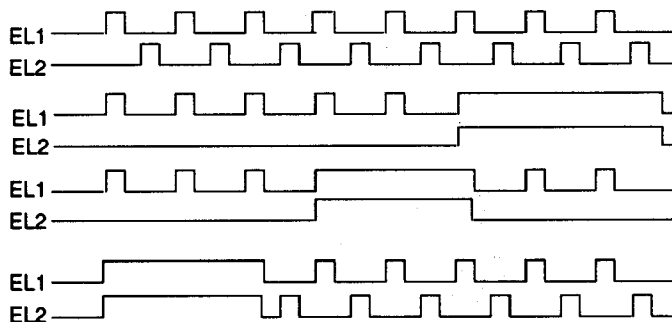
- CMOS process, high performance and stability.
- Extra low power consumption.
- 4 flash types selectively.

OPTION LIST

Device Name	Trigger Pulse
C1004-1	Negative
C1004-2	Positive

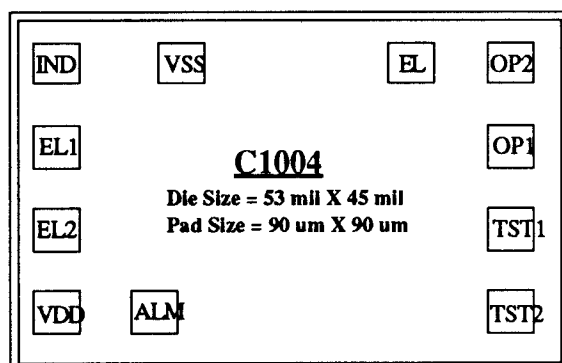
FLASHING MODE SELECTIVE TABLE

OP2	OP1	Press Alarm
0	0	L1 → L2 flash 8 cycles
0	1	L1 flash 5 times and L1+L2 on then all off
1	0	L1 flash 3 times and L1+L2 on then L1 flash 2 times
1	1	L1+L2 on then L1 → L2 flash 5 times then all off



Note : 0 : VSS; 1: Open

PAD DIAGRAM



PIN	DESCRIPTION
TST1, TST2	Test Pins
ALM	Trigger input pin
VDD	Positive power supply
EL	DC to AC converter output
IND	DC to AC converter output
VSS	Negative power supply
EL1 ~ EL2	EL output control pins
OP1 ~ OP2	Option pins for flash function

Note: Substrate should be connected to VDD

ABSOLUTE MAXIMUM RATINGS

(Ta = 25 °C)

Parameter	Symbol	Limits
Power supply voltage range	V _{DD} - V _{SS}	- 0.3V to + 5.0V
Input voltage range	V _{in}	V _{SS} - 0.3 to V _{DD} + 0.3
Operating temperature range	T _A	0 to +60°C
Storage temperature range	T _{stg}	-40 to +70°C

DC ELECTRICAL CHARACTERISTICSUnless otherwise specified, Ta = 25°C, V_{DD} = 3.0V, V_{SS} = 0V

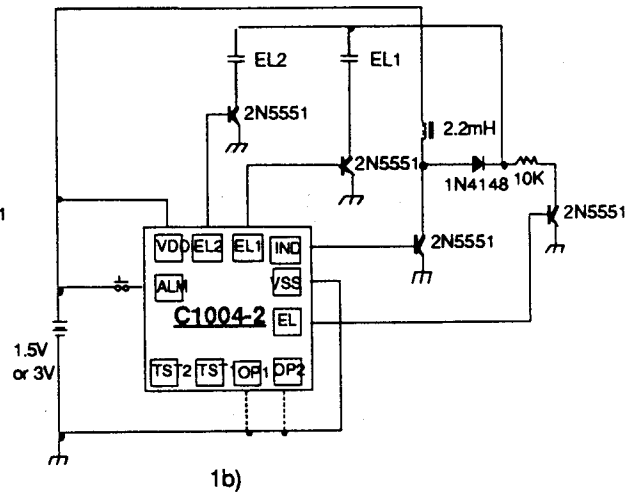
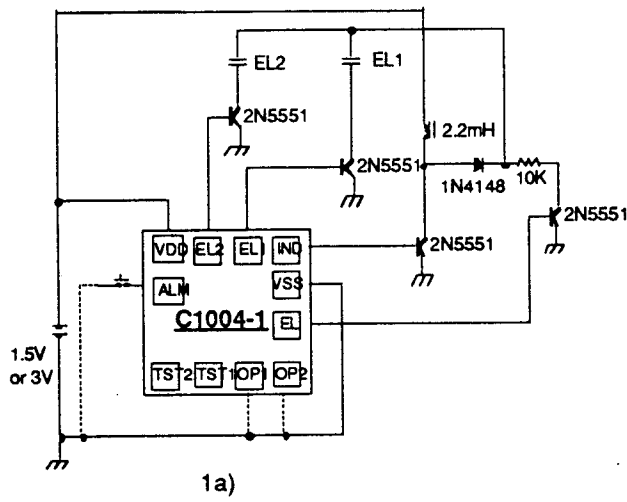
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Operating voltage range	V _{DD}	1.3	3.0	4.5	V	—
Standard current	I _{DD}	--	0.1	1	μA	*no load
IND Output Source Current	I _{OH1}	3.0	4.6	--	mA	V _{OH} = 0.8V
EL, EL1 and EL2 Output Source Current	I _{OH2}	1.0	2.2	--	mA	V _{OH} = 0.8V
IND Ouput Sink Current	I _{OL1}	10	20	--	mA	V _{OL} = 0.8V
EL, EL1 and EL2 Ouput Sink Current	I _{OL2}	2.0	4.0	--	mA	V _{OL} = 0.8V
Oscillator Starting Voltage	V _{STP}	1.3	--	--	V	—
Oscillator Frequency	F _{osc}	400	500	670	KHZ	V _{DD} = 3.0V

Unless otherwise specified, Ta = 25°C, V_{DD} = 1.5V, V_{SS} = 0V

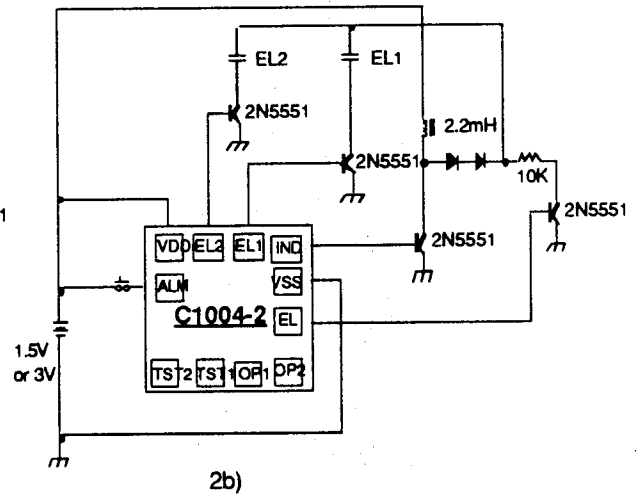
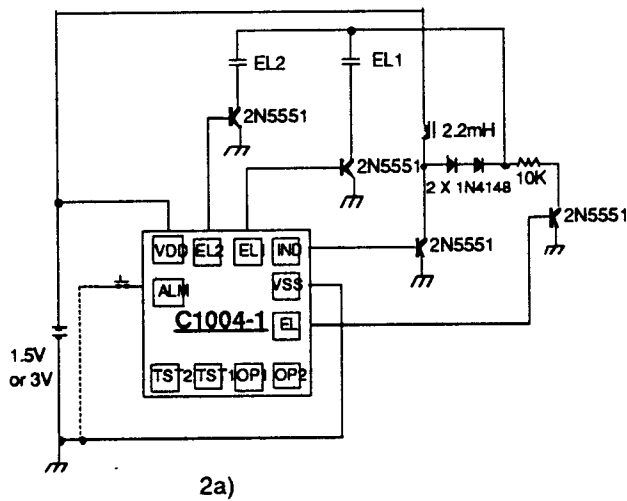
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Operating voltage range	V _{DD}	1.3	1.5	4.5	V	—
Standard current	I _{DD}	--	0.1	1	μA	*no load
IND Output Source Current	I _{OH1}	0.5	0.8	--	mA	V _{OH} = 0.8V
EL, EL1 and EL2 Output Source Current	I _{OH2}	0.2	0.4	--	mA	V _{OH} = 0.8V
IND Ouput Sink Current	I _{OL1}	3.0	10	--	mA	V _{OL} = 0.8V
EL, EL1 and EL2 Ouput Sink Current	I _{OL2}	0.3	0.8	--	mA	V _{OL} = 0.8V
Oscillator Starting Voltage	V _{STP}	1.3	--	--	V	—
Oscillator Frequency	F _{osc}	400	500	670	KHZ	V _{DD} = 1.5V

APPLICATION CIRCUITS

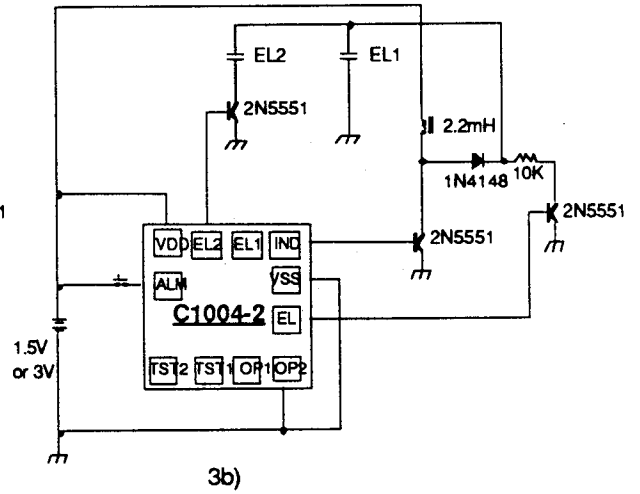
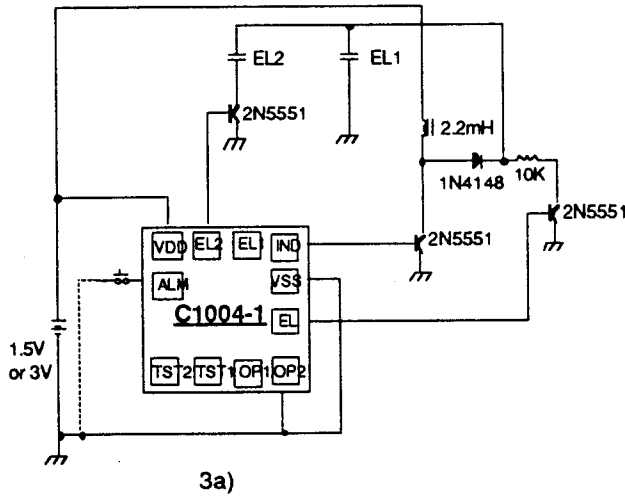
1)



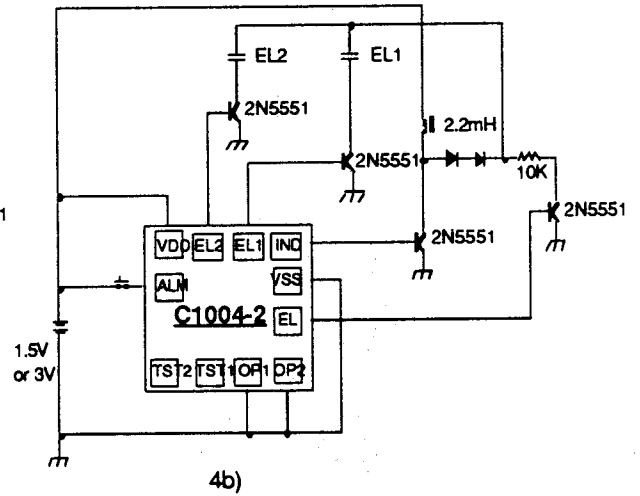
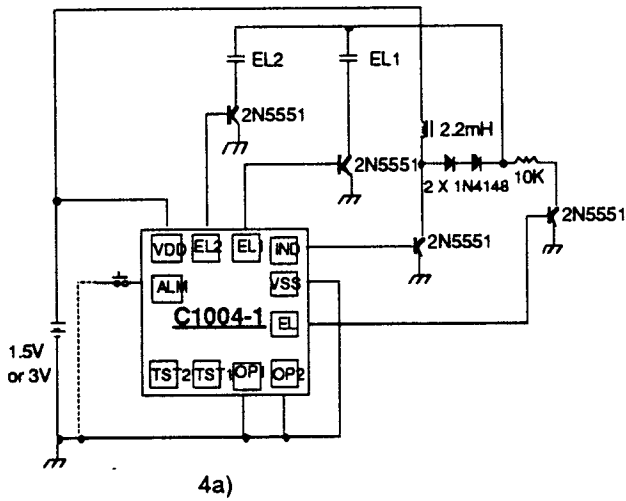
2) Option 1 for OP1=OP2=open



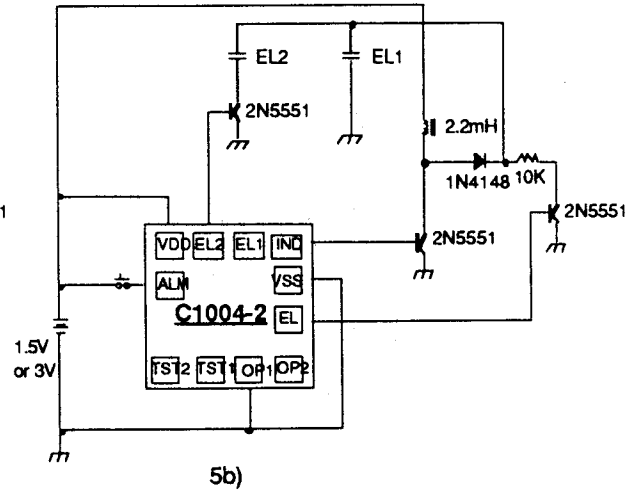
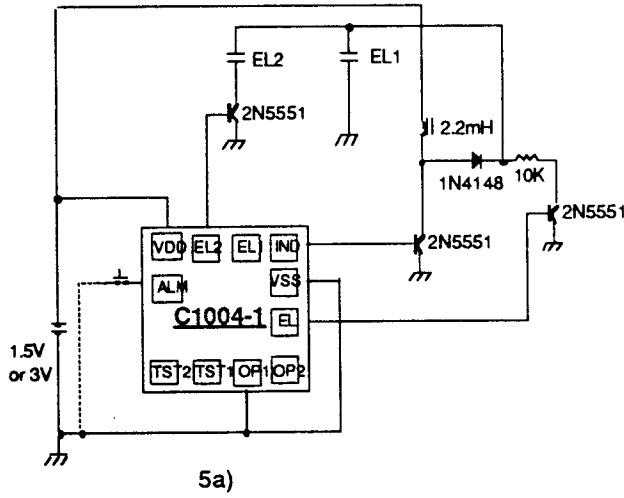
3) Option 2 for OP1=open, OP2=VSS



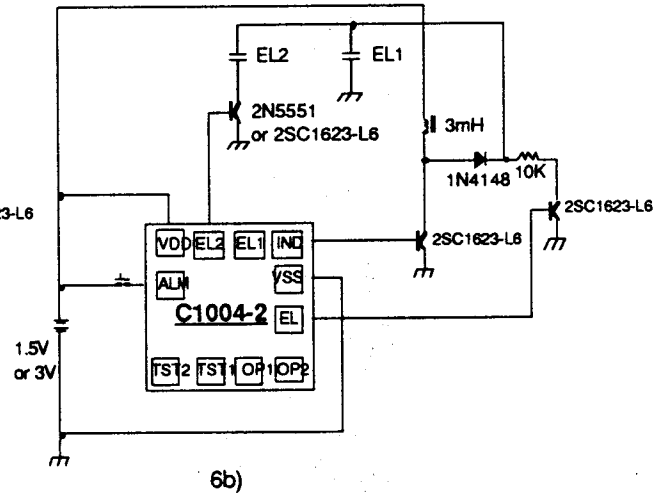
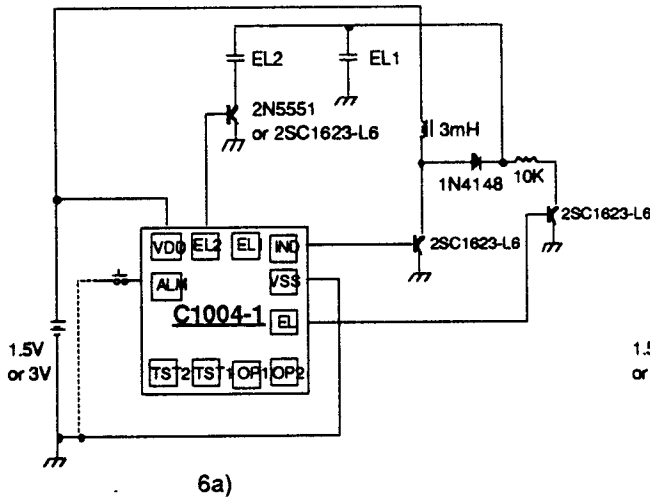
4) Option 3 for OP1=OP2=VSS



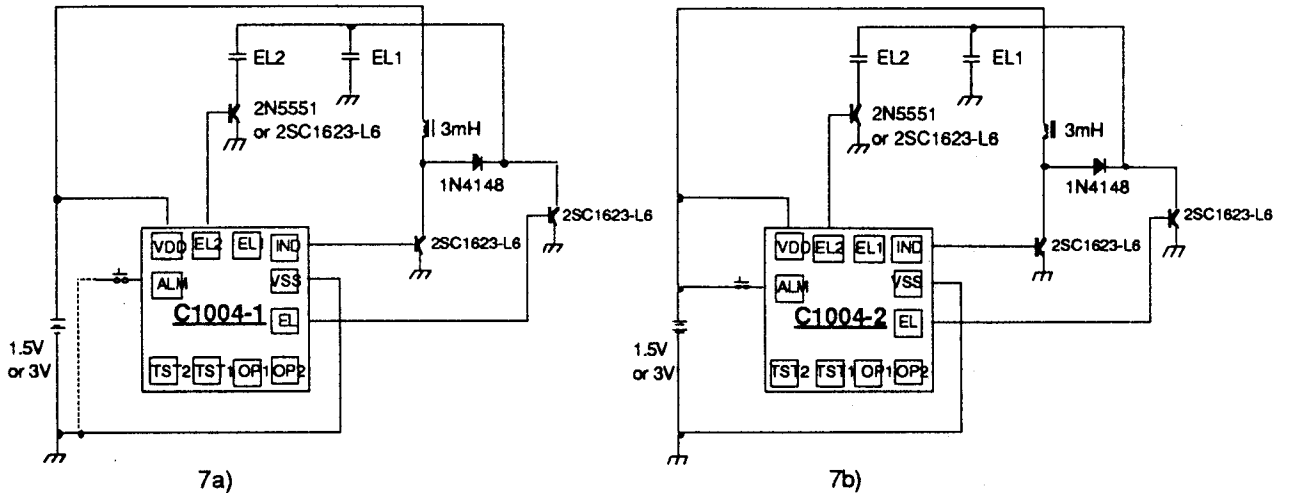
5) Option 4 for OP1=VSS, OP2=open



6) Low cost structure 1



7) Low cost structure 2



PCB LAYOUT RULE

1. VDD and VSS must be separate by different path for routing between high voltage signal and IC. Like shown below.
2. Between VDD and VSS nearest IC pre-placement a cap. space for reduce noise interference. The cap value may be 0.1 μ F or 0.2 μ F.
3. If there is a crystal must be far away from high voltage signal.
4. If space is enough please placing VSS signal between high voltage signal and digital signal.

