



RCL Semiconductors Ltd.

EL Lamp Driver IC

C1008

GENERAL DESCRIPTION

C1008 series product is a poly gate CMOS integrated circuit which is designed to drive an Electroluminescence Lamp (EL). One trigger input TG is provided and is active at high. 3 seconds display delay function is implemented by internal divider. EL turns off gradually within 2-3 seconds after 3 seconds delay. The driving capability for IND output and frequency for EL output is as same as the one of C1001B.

C1008 series product can be widely used in the back light of digital watch, analogy watch, calculator etc.

FUNCTIONS

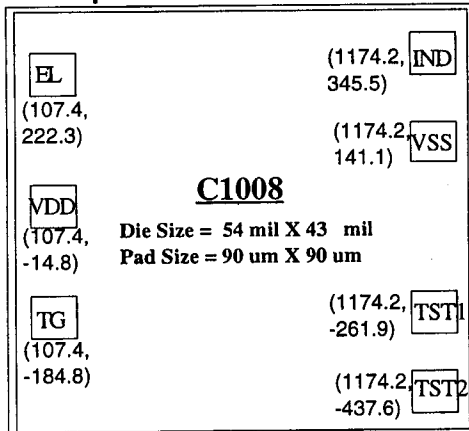
- Single 3V or 1.5V battery operation
- DC to AC conversion
- Built-in RC oscillator
- Built-in 3 seconds delay
- Built-in fade out within 2-3 seconds
- Mask Option for the following items
TG active at high or low;
TG makes EL has or has not 3 seconds delay ;
EL and IND pad location exchanging

FEATURES

- Economical solution for EL display.
- CMOS process and low power consumption.
- No external component needed for delay and fade out function.
- Min. external components application.

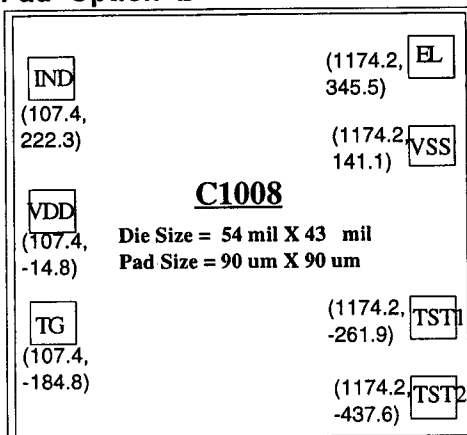
PAD DIAGRAM AND PIN DESCRIPTION

Pad Option 1



PIN	DESCRIPTION
IND	DC to AC converter output
EL	DC to AC converter output
VDD	Positive power supply
TG	Trigger input pin active at high or low
TST2	Test Pin
TST1	Test Pin
Vss	Negative power supply

Pad Option 2



PIN	DESCRIPTION
EL	DC to AC converter output
IND	DC to AC converter output
VDD	Positive power supply
TG	Trigger input pin active at high or low
TST2	Test Pin
TST1	Test Pin
Vss	Negative power supply

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 CHARACTERISTICS

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

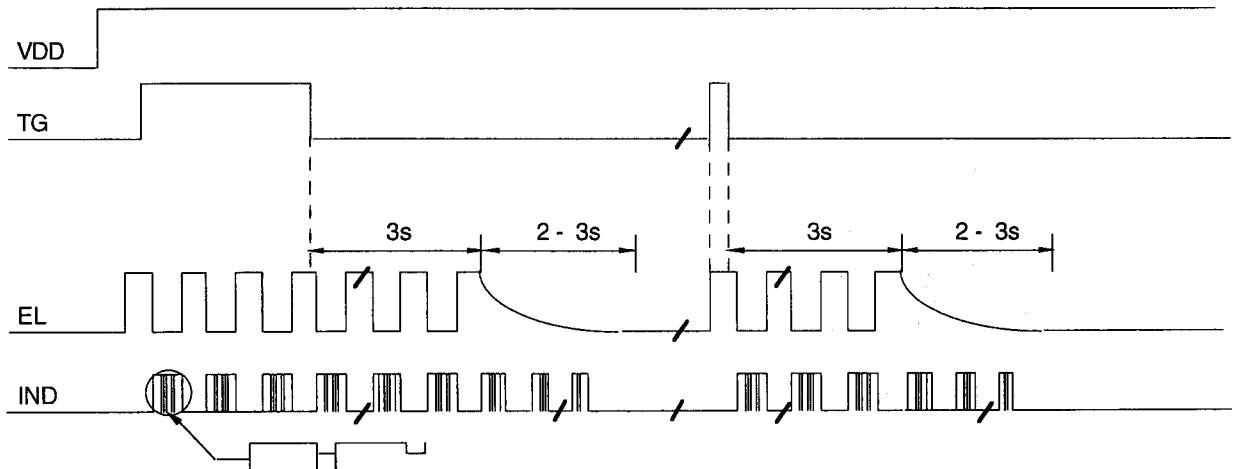
Characteristics	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Operating voltage range	V _{DD}	1.3	3.0	4.5	V	--
Standard current	I _{DD}	--	0.1	1	μA	*no load
IND Output Source Current	I _{OH1}	1.3	2.6	--	mA	V _{OH} = 0.8V
EL Output Source Current	I _{OH2}	1.0	2.2	--	mA	V _{OH} = 0.8V
IND Output Sink Current	I _{OL1}	10	20	--	mA	V _{OL} = 0.8V
EL Output 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}	0.3	0.5	--	mA	V _{OH} = 0.8V
EL Output Source Current	I _{OH2}	0.2	0.4	--	mA	V _{OH} = 0.8V
IND Output Sink Current	I _{OL1}	3.0	10	--	mA	V _{OL} = 0.8V
EL Output 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

Note: * refers to EL & IND open, and the trigger input open.

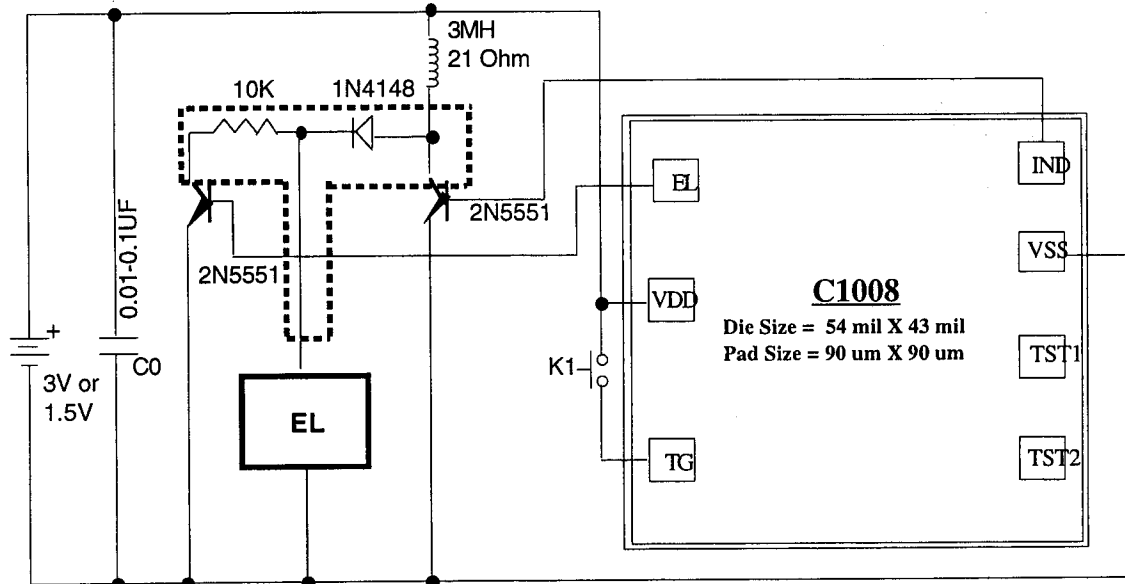
TIMING DIAGRAM



COIL OPTION LIST FOR C1008

VDD (V)	Coil		EL Area (cm squ.)	EL Voltage (V)	Colour
	MH	OHM			
3.0	3	37	1.5 X 2.5	140	Blue
	2	14	1.5 X 2.5	165	Blue
	2	14	2.5 X 2.5	130	Blue
	1	11	2.5 X 2.5	160	Blue
	1	11	3.5 X 6.0	110	Green
1.5	2	14	1.5 X 2.5	105	Blue
	1	11	1.5 X 2.5	120	Blue
	1	11	1.1 X 2.3	160	Green-Blue
	1	11	2.5 X 2.5	100	Green

TYPICAL APPLICATION CIRCUIT



RCL reserves the right to make changes to these specifications at any time without notice, and RCL does not assume any responsibility for use of any circuitry described

NOTE:

1. Substrate is connector to VDD.
2. The wires connected to TG can not across the lines inside the black dot line box. Furthermore, these wires should be separated from the lines inside the black dot line box by Vss or Vdd.
3. During the watch application, the two wires connected to crystal are better to be surrounded by Vss or Vdd, and they are the farer the better away from the wire connected to EL.
4. The items 2, 3 are very important for PCB layout.

Note: The application diagram and timing diagram shown up in this spec. is for TG active at high, and active at low didn't shown up here.

OPTION LIST

1. TG active at high or low
2. With 3 seconds delay built-in or without 3 seconds delay
3. Pad order is similar to C1001B or Mosart

Device Name	TG active		3 seconds delay		Pad order	
	at high	at low	Yes	No	Option 1	Option 2
C1008-1	X		X		X	
C1008M-1	X		X			X
C1008-2	X			X	X	
C1008M-2	X			X		X
C1008-3		X	X		X	
C1008M-3		X	X			X
C1008-4		X		X	X	
C1008M-4		X		X		X