# ELM900x CMOS White LED flashlight driver

## ■General description

ELM900x is CMOS white LED flashlight driver. This series can drive two series connected white LED by 1.5V～3.0V input voltage. ELM900 series uses an external inductor as voltage booster and consists of an oscillator circuit and a driving transistor. The input DC power is transformed to constant current pulse when the external inductor is switched on and repeatly at the frequency : 35kHz, 55kHz.

## ■Features

・Low noise    : 35kHz, 55kHz
                  (constant frequency switching)
・Constant average power control
・High efficiency
・Package      : SOT-89

## ■Application

・White LED flashlight
・Laser pointer
・LCD backlighting

## ■Maximum absolute ratings

| Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| Max.voltage (Vdd～Vss) | Vdd | 12 | V |
| Max.voltage (LX～Vss) | Vlx | 12 | V |
| Max.current LX | Ilx | 200 | mA |
| Power dissipation | Pd | 300 | mW |
| Operating temperature | Top | −20～+70 | ℃ |
| Storage temperature | Tstg | −55～+125 | ℃ |

## ■Selection guide

### ELM900x-x

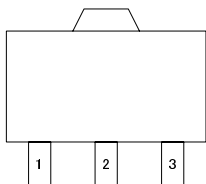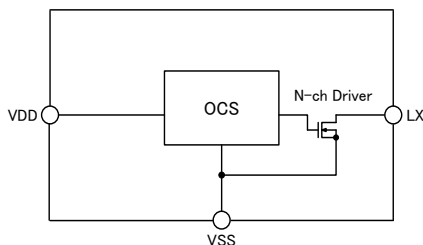| Symbol | | |
|---|---|---|
| a | Switching frequency | B : Frequency 35kHz<br>D : Frequency 55kHz |
| b | Taping direction | S : Refer to PKG file<br>N : Refer to PKG file |

ELM900 x - x
↑   ↑
a   b

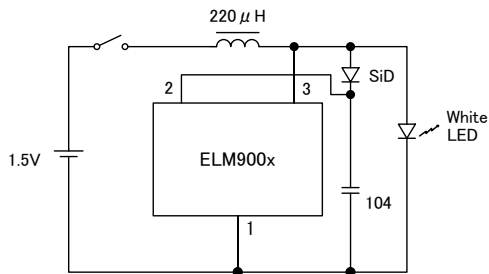## ■Pin configuration

SOT-89 (TOP VIEW)



| Pin No. | Pin name |
|---|---|
| 1 | VSS |
| 2 | VDD |
| 3 | LX |

## ■Block diagram

## ■Appliaction circuit

### 1cell 1LED

220 μH

2 3 SiD

White LED

1.5V ELM900x

104

1

### 2cell 2LED

390 μH

2 3

White LED

3.0V ELM900x

White LED

1
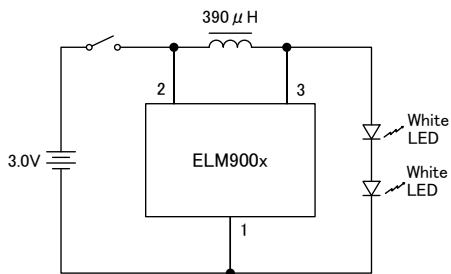
## ■Electrical characteristics

Top=25℃

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Power voltage | Vdd | | 1.0 | | 5.0 | V |
| Current consumption | Iss | Vdd=3.0V | | 7.0 | 14.0 | μA |
| Output current of LX pin | Ilx | Vdd=3.0V | 90.0 | | | mA |
| Leakage current of LX pin | Ilxl | Vdd=LX=6.0V | | | 1.0 | μA |
| Oscillation frequency : 35kHz | Fosc | Vdd=3.0V | 22 | 35 | 55 | kHz |
| Oscillation frequency : 55kHz | | | 35 | 55 | 75 | |
| Duty ratio:switching 35kHz | Duty | Vdd=3.0V | 45 | 55 | 65 | % |
| Duty ratio:switching 55kHz | | | 45 | 55 | 75 | |

## ■Marking

SOT-89

① ②

③ ④
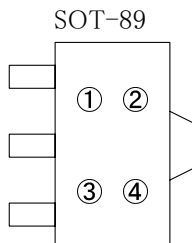
No. ① , ② : Product IC code
90

No. ③ : the assembly lot No.1

| Products | Lot No. |
|---|---|
| ELM900B | 0〜9 |
| ELM900D | A〜Z (I, O, X expected) |

No. ④ : the assembly lot No.2

| Products | Lot No. |
|---|---|
| ELM900B | A〜Z (I, O, X expected) |
| ELM900D | 0〜9 |

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