Ordering number : EN7885

SANYO Semiconductors
DATA SHEET

LA9450CL — Bi-CMOS IC For Laser Diode Pulse Driver IC

Overview

The LA9450CL is a pulse driver IC for laser diode that enables low voltage operation.

Features

- Two-power voltage design for low power consumption. Two-mode switching function of DC (supplied from $V_{CC}1$: 2.4V) and pulse luminescence (supplied from $V_{CC}2$: 2.8V).
- Low voltage ($V_{CC}1$=2.0V min, $V_{CC}2$=2.6V min) and low current consumption ($I_{CC}1$=500µA) design.
- Low saturation PNP driver is used for DC mode for the low V_{CE}sat.
- Small package ECSP3020-10 (size 3×2mm, pin pitch 0.65mm)

Function

- Laser driver
- Two-mode switching functions of DC and pulse luminescence

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		4.5	V
Allowable power dissipation	Pd max	For every 1°C rise in temperature over 25°C, the power is reduced by a factor of 1.55mW/°C	150	mW
Operating temperature	Topr		-10 to +70	°C
Storage temperature	Tstg		-40 to +125	°C

Operating Condition at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommend supply voltage	$V_{CC}1$		2.4	V
	$V_{CC}2$		2.8	V
Operating supply voltage range	$V_{CC}1$ opg		2.0 to 3.5	V
	$V_{CC}2$ opg		2.6 to 3.5	V

Electrical Characteristics at Ta = 25°C, $V_{CC}1$ = 2.4V, $V_{CC}2$ = 2.8V, R_L = 25Ω

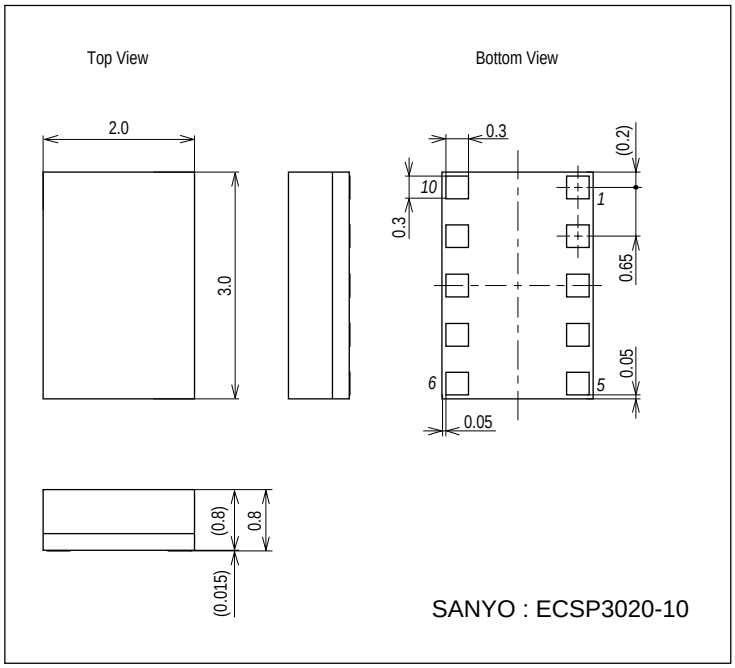
Parameter	Symbol	Conditions		Ratings min	Ratings typ	Ratings max	unit
Supply current 1 DC mode	$I_{CC}11$	I_{IN}=0μA, Vcont=$V_{CC}2$ VSW=0V, R_L=∞	$V_{CC}1$	300	500	1500	μA
	$I_{CC}12$		$V_{CC}2$		0.1	5	μA
Supply current 2 Pulse mode	$I_{CC}21$	I_{IN}=0μA, Vcont=$V_{CC}2$ VSW=$V_{CC}2$	$V_{CC}1$	300	500	670	μA
	$I_{CC}22$		$V_{CC}2$	70	110	150	μA
Supply current 3 Pulse mode	$I_{CC}31$	I_{IN}=500μA, Vcont=0V VSW=$V_{CC}2$	$V_{CC}1$	300	530	710	μA
	$I_{CC}32$		$V_{CC}2$	68	80	93	mA
Output current	I_{OUT}	I_{IN}=500μA, Vcont=0V		65	75	85	mA
Current gain	Igain	I_{IN}=500μA, Vcont=0V		130	150	170	
Maximum output current Pulse	I_{OUT} maxP	I_{IN}=1200μA, Vcont=0V, R_L=10Ω		140	165	210	mA
Maximum output current DC	I_{OUT} maxD	I_{IN}=1200μA, Vcont=0V, R_L=10Ω		150	175	210	mA
Maximum output voltage Pulse	V_{OUT} maxP	I_{IN}=1000μA, Vcont=0V, VSW=$V_{CC}2$		2.4	2.58		V
Maximum output voltage DC	V_{OUT} maxD	I_{IN}=1000μA, Vcont=0V, VSW=0V		2.15	2.24		V
Cont high level	Vcont H			$V_{CC}2/2$		$V_{CC}2$+0.2	V
Cont low level	Vcont L			-0.2		0.4	V
SW High level	VSW H			$V_{CC}1$-0.7		$V_{CC}2$+0.2	V
SW Low level	VSW L			-0.2		0.15	V
I_{IN} Input resistance	R_{IN}			270	330	390	Ω
* Rising edge time	tr	R_L=10Ω, I_{OUT} peak=40mA, 10→90%			2.9	4.1	ns
* Falling edge time	tf	R_L=10Ω, I_{OUT} peak=40mA, 90→10%			6.1	8.6	ns
*Cont falling edge delay time	Tondelay	I_{OUT} peak=55mA, cont 50%→Output 50%			6.8	8.9	ns
*Cont falling edge delay time	Tofdelay	I_{OUT} peak=55mA, cont 50%→Output 50%			10.8	14.1	ns

* Design target value and no measurement is performed.

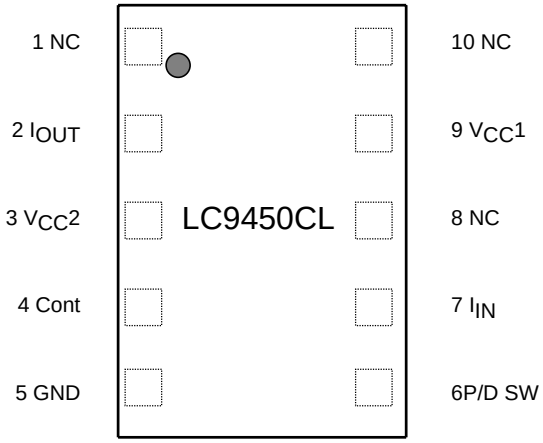
Package Dimensions

unit : mm (typ)

3291

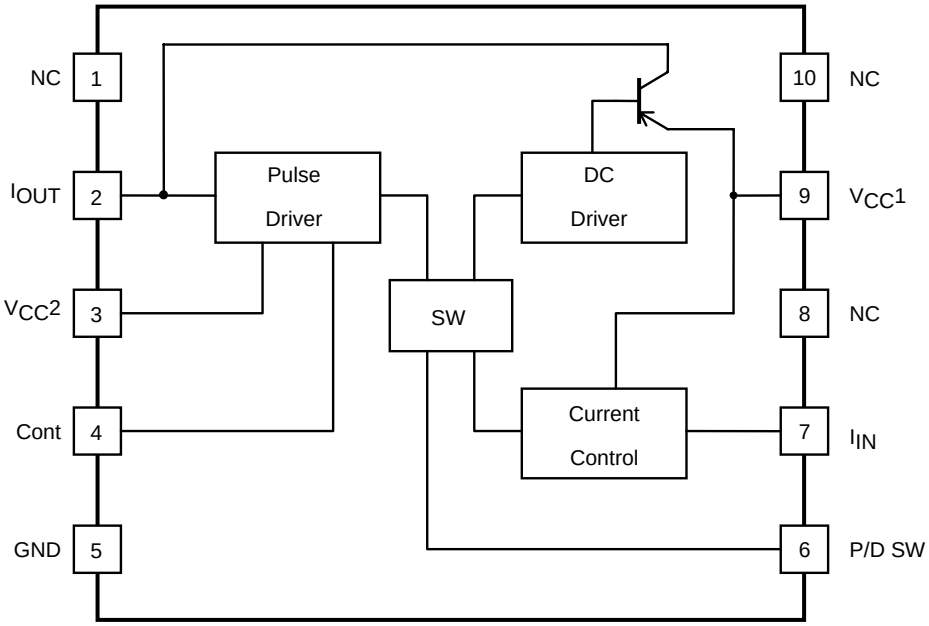


Pin Assignment

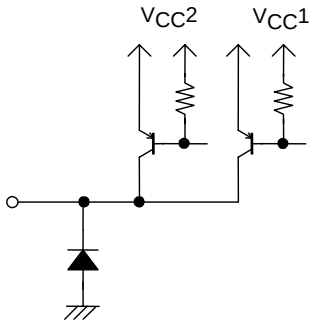
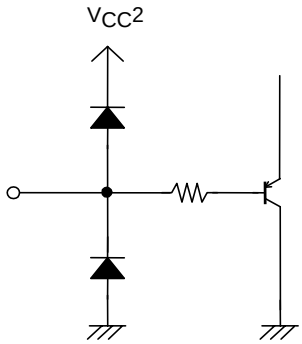
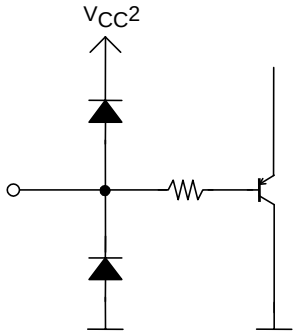
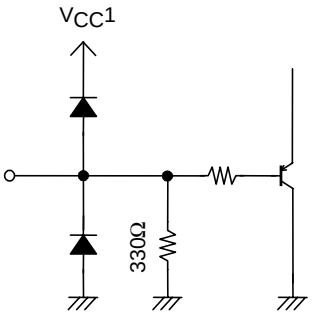


Top view

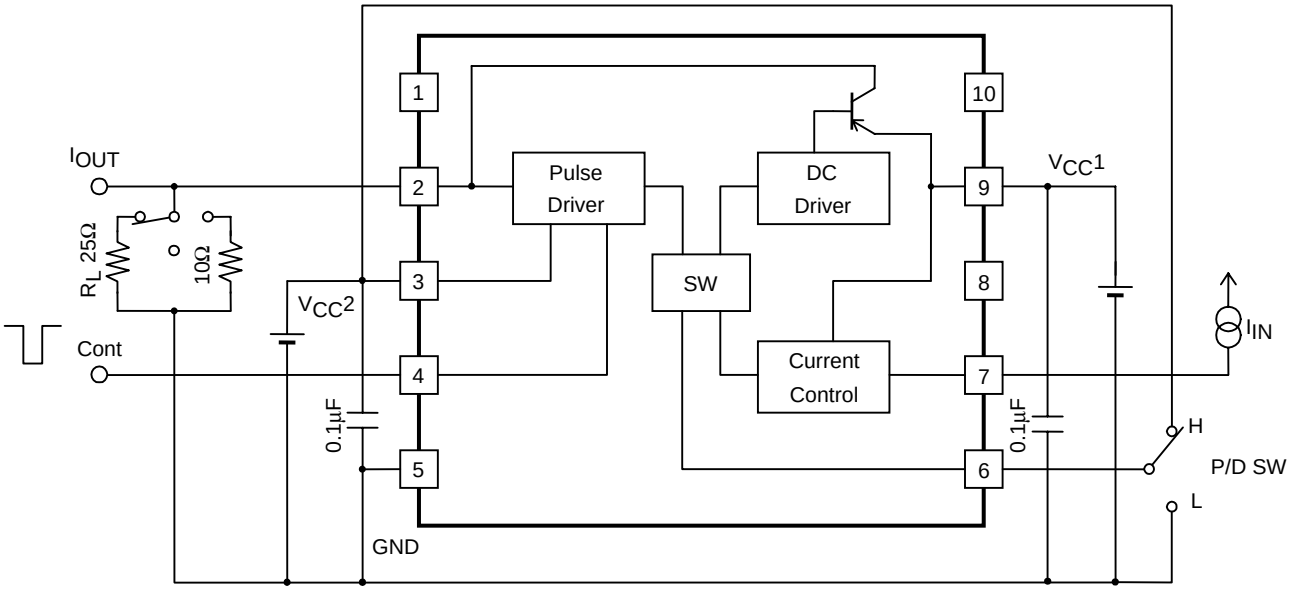
Block Diagram



Pin Functions

Pin No.	Pin Name	Pin Description	Equivalent Circuit
1	NC	NC	
2	I_{OUT}	This is a LD driver output terminal.	
3	$V_{CC}2$	This is a supply terminal for a pulse driver output. In DC luminescence mode, voltage which is bigger than $V_{CC}1$, and flowing are available.	
4	Cont	"Low" at pulse driver, and Iout output is ON.	
5	GND		
6	P/D SW	This is a switching terminal for DC/Pulse. (Low: DC, High: Pulse)	
7	I_{IN}	This is a controlled current input terminal. (Input resistance 330Ω)	
8	NC	NC	
9	$V_{CC}1$	This is a power supply terminal of a controlled circuit and driver output at DC luminescence. This can be connected to $V_{CC}2$ to use as a common power supply.	
10	NC	NC	

Test Circuit



Power supplies of I_{OUT} drive current - Pulse mode: $V_{CC}2$
DC mode: $V_{CC}1$