

General Description

ICL1104 is a single channel high voltage linear constant current LED driver, which integrates 650V high voltage MOS. The output current can be set through an external resistor between 5mA and 80mA.

ICL1104 built-in linear type thermal protection function to effectively prevent damage to the system caused by high temperature.

ICL1104 system has simple peripherals, flexible application, high reliability, small volume, low system BOM cost, adjustable packaging technology can be applied to all kinds of LED lamps.

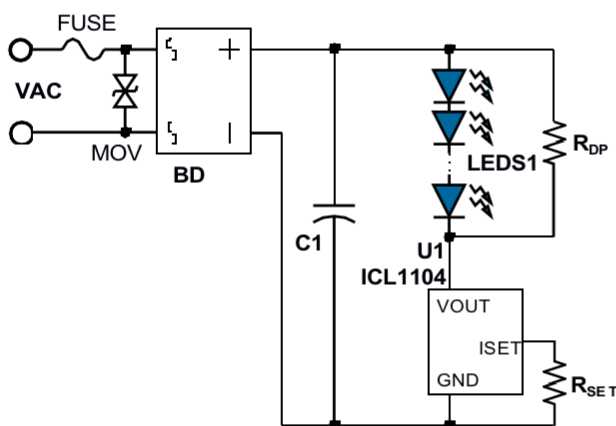
Features

- 650V/ 80mA HV NMOS integrated.
- Constant current control technology.
- System efficiency up to 93%.
- Linear type thermal protection function.
- NO EMI issue.
- Various thermal protection trip temperature available.

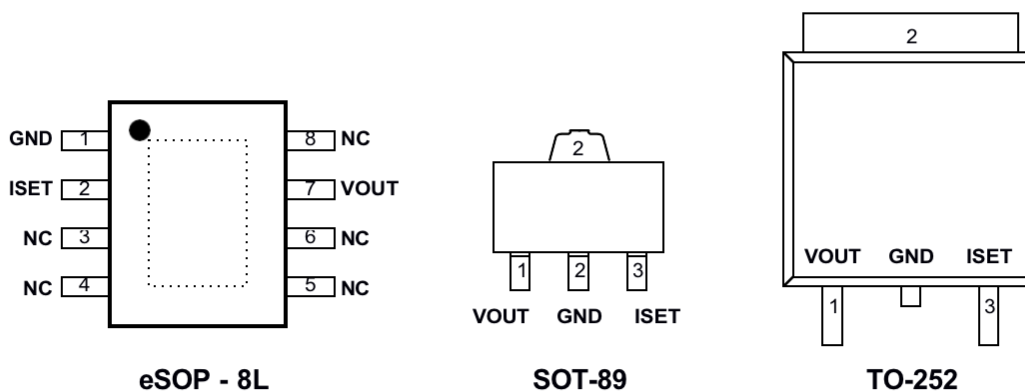
Applications

- LED T8/T10 Tube
- LED Bulb, Candle Light
- LED Ceiling Light
- Landscape lamp
- LED Down light
- Other LED lighting

Typical Application Circuit



Pin Diagrams (Top View)



Ordering Information

Part Number	Package	Packing	OTP Temperature	Chip Marking
ICL1104AE-A	eSOP-8L	4000 pcs/Reel	110°C	ICL1104 #####AEA Date Code
ICL1104AE-C			130°C	ICL1104 #####AEC Date Code
ICL1104AE-D			150°C	ICL1104 #####AED Date Code
ICL1104AS-A	SOT-89-3L	4000 pcs/Reel	110°C	ICL1104 #####AA
ICL1104AS-C			130°C	ICL1104 #####AC
ICL1104AS-D			150°C	ICL1104 #####AD
ICL1104AT-A	TO-252	2500 pcs/Reel	110°C	ICL1104 #####ATA Date Code
ICL1104AT-C			130°C	ICL1104 #####ATC Date Code
ICL1104AT-D			150°C	ICL1104 #####ATD Date Code

Pin Descriptions

Pin No.			Pin Name	Pin Function
eSOP8	SOT-89	TO-252		
1	2	2	GND	Ground Pin
2	3	3	ISET	The Output Current Setting Pin
3, 4, 5, 6, 8	-	-	NC	No Connection.
7	1	1	VOUT	Constant Current Output Pin
Exposed Thermal Pad (EP)			Heat dissipation pad. Connect to the ground plane and GND pin in the PCB layout. Must be soldered to electrical ground on the PCB.	

Absolute Maximum Ratings

Caution: Values beyond absolute ratings can cause the device to be prematurely damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not guaranteed.

All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

VOUT Sustaining Voltage, V_{OUT}	650V
VOUT Sink Current, I_{OUT}	100mA
Operating Junction Temperature, T_J	-40°C to 165°C
Storage Temperature Range	-55°C to 150°C
Lead Temperature (Soldering, 10 seconds)	260°C

Electrical Characteristics

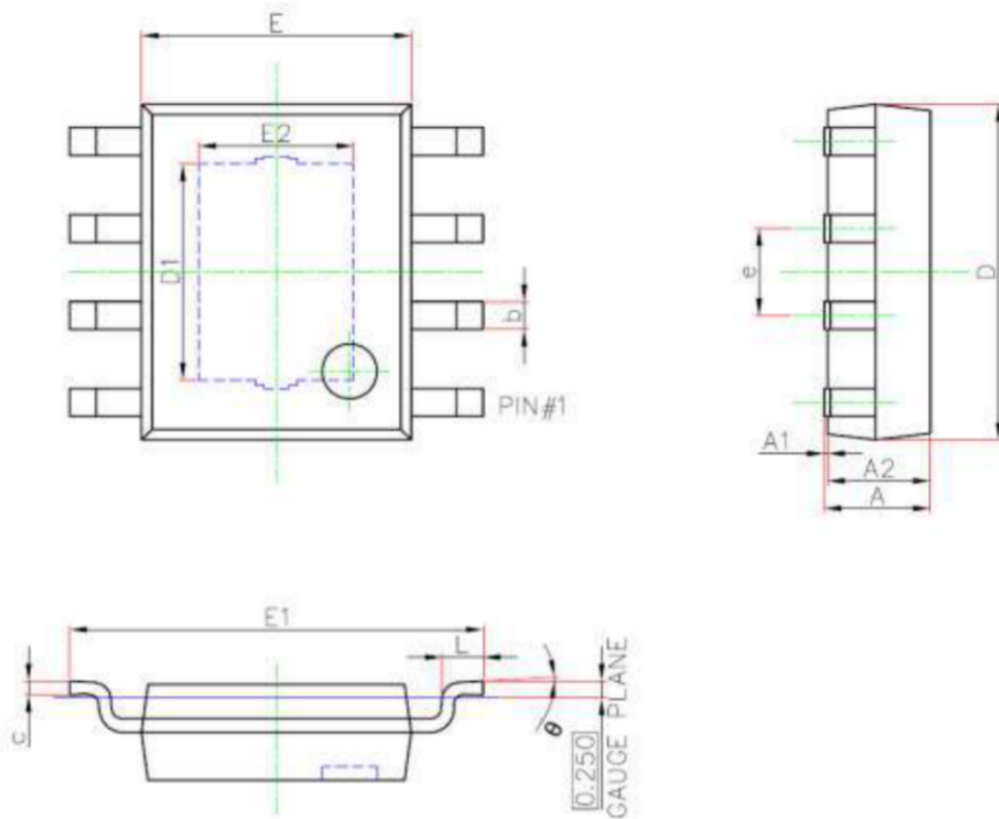
Unless otherwise noted, $T_A = 25^\circ\text{C}$.

Parameter	Symbol	Condition	Min	Typ	Max	Unit
VOUT Input Voltage	V_{OUT}	$I_{OUT}=30\text{mA}$	7			V
Output Current	I_{OUT}		5		80	mA
ISET Pin Voltage	V_{ISET}		580	600	620	mV
Static Current		$V_{OUT}=20\text{V}$, ISET floating		80		uA
Thermal Protection Temperature	T_{TP}	ICL1104AE/AS/AT-A		110		°C
		ICL1104AE/AS/AT-C		130		
		ICL1104AE/AS/AT-D		150		

Note: The maximum regulating current is only allowed in the applications which have suitable heat-sink area for the chip in PCB design. The maximum allowable power dissipation of the chip highly depends on the PCB design, PCB material, and ambient temperature. The chip may be damaged if the Junction Temperature is higher than 165°C.

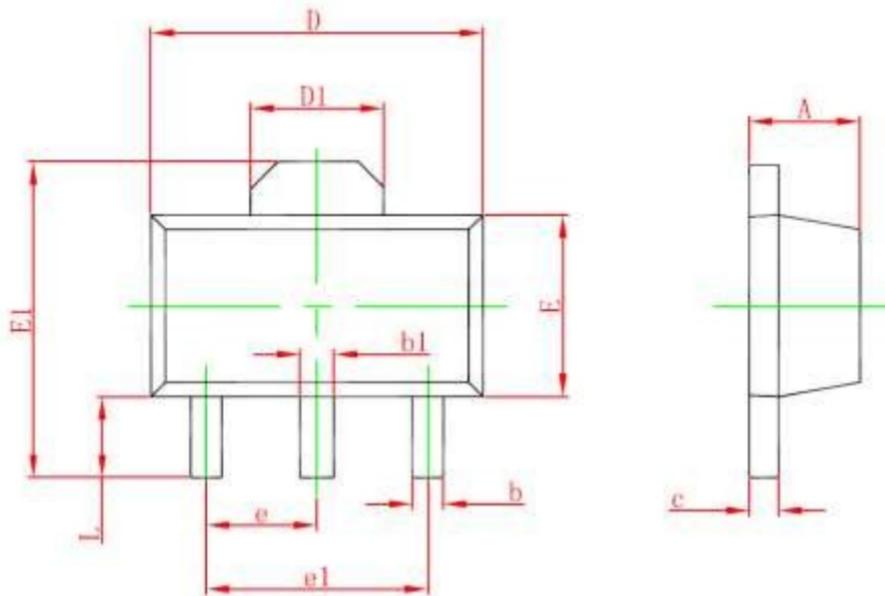
Package Information

eSOP-8L



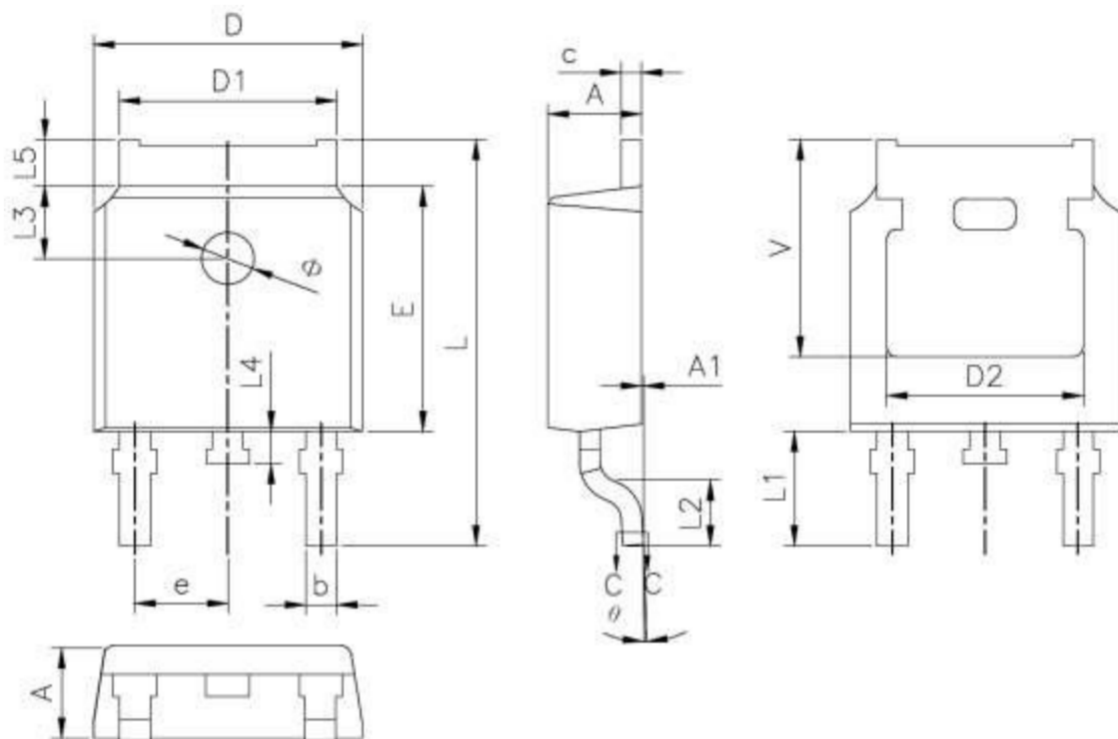
Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.300	1.750
A1	0.000	0.150
A2	1.300	1.600
b	0.300	0.500
c	0.170	0.250
D	4.700	5.100
D1	3.000	3.450
E	3.800	4.040
E1	5.790	6.300
E2	2.100	2.550
e	1.270(BSC)	
L	0.400	1.270
θ	0°	8°

SOT-89-3L



Symbol	Dimensions In Millimeters	
	Min.	Max.
A	1.400	1.600
b	0.320	0.520
b1	0.400	0.580
c	0.350	0.450
D	4.400	4.600
D1	1.600REF	
E	2.300	2.600
E1	3.940	4.250
e	1.500TYP	
e1	3.000TYP	
L	0.900	1.200

TO-252-2L



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	2.20	2.30	2.40
A1	0.00	-	0.127
b	0.66	0.76	0.86
C	0.46	0.51	0.58
D	6.50	6.60	6.70
D1	5.10	5.33	5.46
c	0.47	-	0.60
D2	4.83 REF.		
E	6.00	6.10	6.20
e	2.186	2.286	2.386
L	9.80	10.10	10.40
L1	2.90 REF.		
L2	1.40	1.50	1.60
L3	1.80 REF.		
L4	0.60	0.80	1.00
L5	0.70	-	1.25
φ	1.10	-	1.30
θ	0°	-	8°
V	5.35 REF.		