

Description :

EC4219 是一顆 Single channel Linear LED Constant current driver。可由外接電阻調整輸出電流，恒定電流精度高；輸出電流不隨輸出電壓變化而變化。

Feature :

- 可調式輸出電流 5mA-60mA
- 恒定電流精度±3%
- 過溫保護
- 晶片可與 LED 共用 PCB 板
- SOP-8(EP) 和 TO252 封裝

Application

- LED 球泡燈
- LED 燈管、吸頂燈

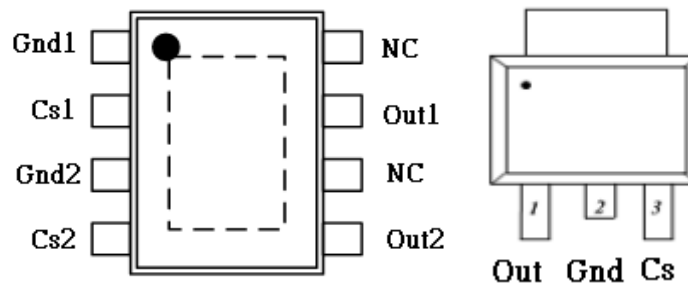
ABSOLUTE MAXIMUM RATINGS

- Out vs GND : -0.3V~+450V
- Cs vs GND : -0.3V~+9V
- Operating Temperature Range : -20°C~+125°C
- Junction Temperature Range : -40°C~+150°C
- Storage Temperature Range : -60°C~+150°C
- E.S.D(Human Body Mode) : 2KV
- E.S.D(Machine Mode) : 200V

Note:

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional Operation under these conditions is not implied. Continuous operation of the device at the absolute rating level may affect device reliability.

PIN CONFIGURATION



Top View(SOP 8 EP)

Top View(TO252)

Pin Name	Function
Gnd	Gnd
Out	Output Current
Cs	Current Sensor
NC	Not Connect

Ordering Information

EC4219NN XX R
 └───┬───┬───
 │ └───┬───
 │ └─── Tape Reel
 └─── Package:
 MH=SOP-8L
 (Exposed PAD)
 A4=T0252 3L

Application Circuit

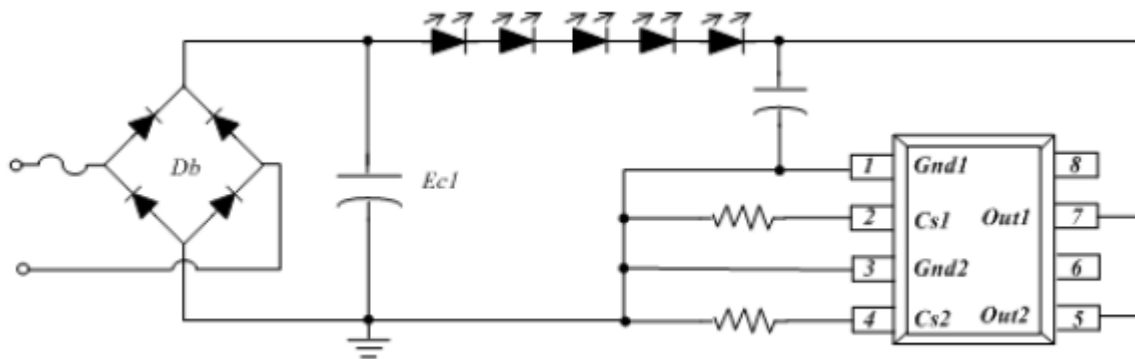


Fig 1. Typical Application Circuit

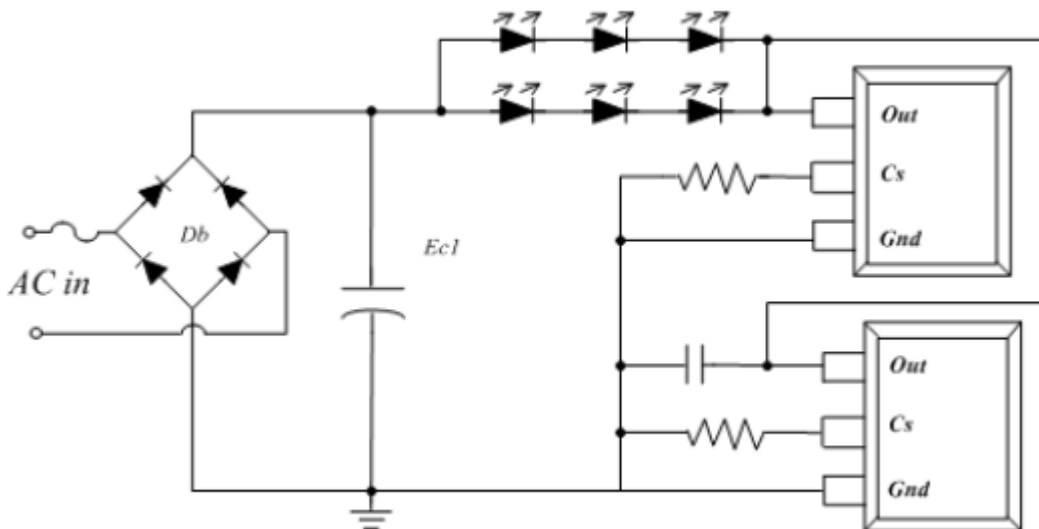


Fig 2. Parallel Application Circuit

ELECTRICAL CHARACTERISTICS

T_A = 25°C unless otherwise specified

Parameter	Condition	Min	Typ	Max	Unit
Output Voltage	I _{out} =0mA	--	--	450	V
Output input Voltage	I _{out} =30mA	6.5	--	---	V
Output Current	--	5	--	60	mA
Static Current	V _{out} =110V,Cs floating	--	0.16	0.25	mA
Cs Voltage	V _{out} =10V	--	0.6	--	V
Current Compensation Temperature		--	110	--	°C

Output Current Character

Output 端輸出電流計算公式為： $I_{out} = V_{cs} / R_{cs}$ (A)

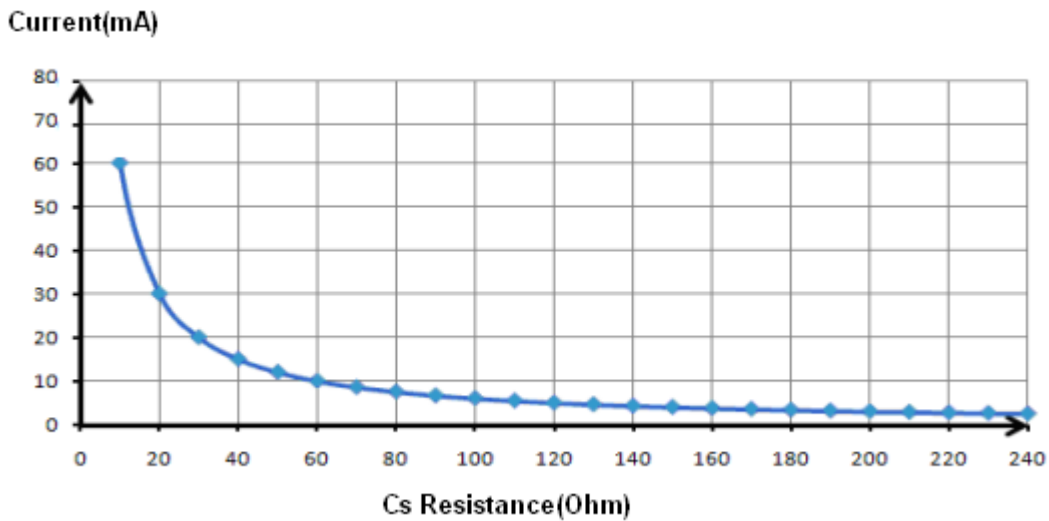


Fig 3 Output Current vs. Cs Resistance

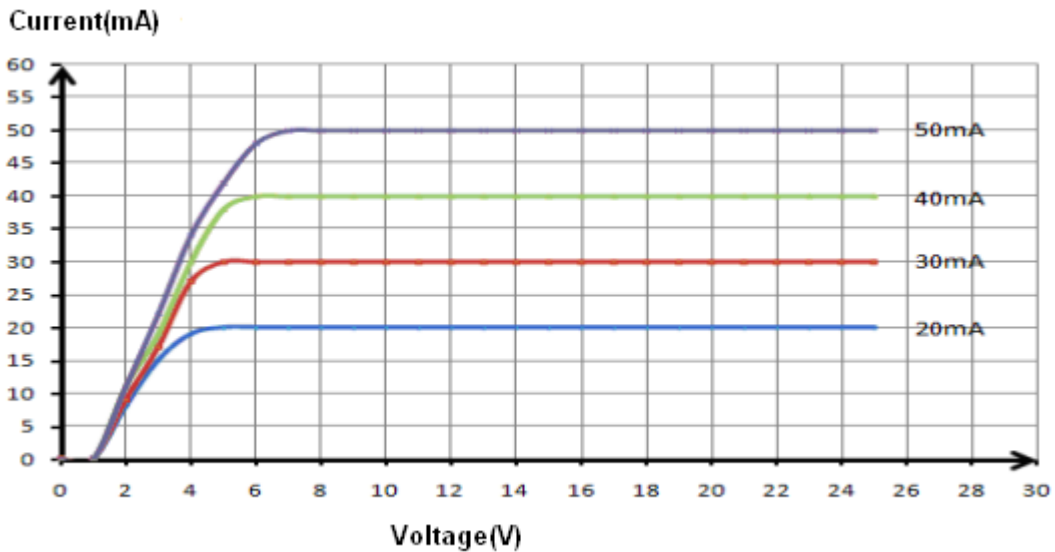


Fig 4. Output constant current curve.

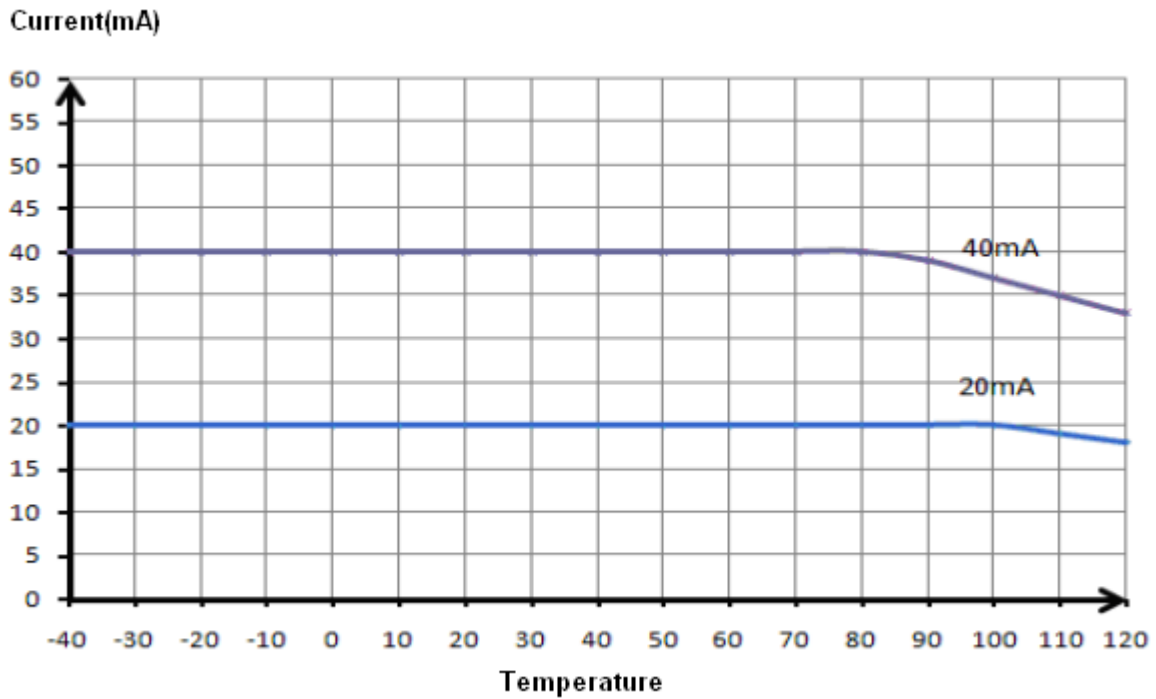


Fig 5. Output current temperature character

當 LED 燈具內部溫度過高，會引起 LED 燈出現嚴重的光衰，縮短了 LED 燈的使用壽命。如圖 5 所示，當溫度過高時，晶片內部會使得輸出電流自動減小，以降低燈具溫度。

系統方案設計

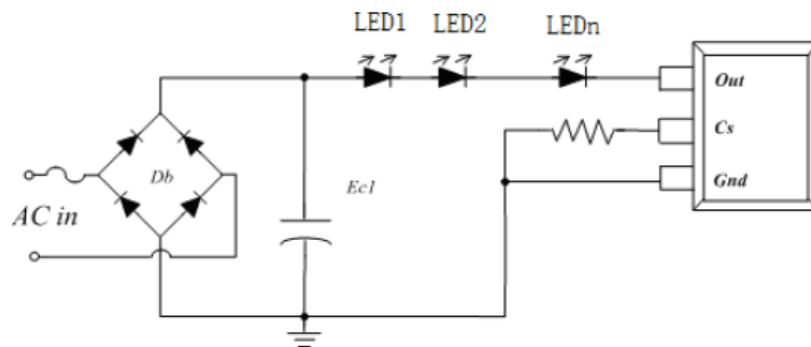


Fig. 6 Output efficiency

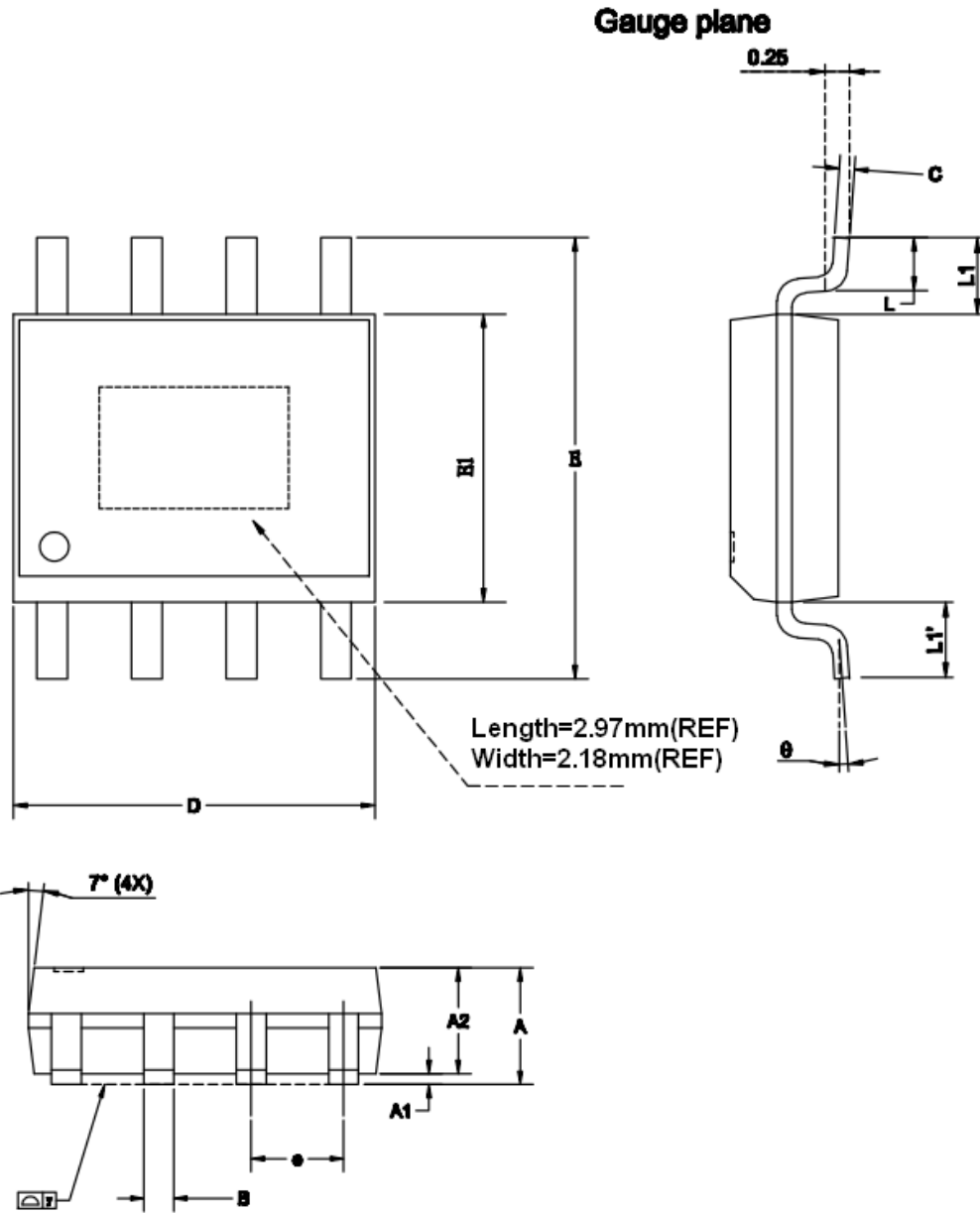
圖 6 所示應用電路的工作效率如下：

$$\eta = P_{LED} / P_{IN} = N * V_{LED} * I_{LED} / V_{IN} * I_{LED} = N * V_{LED} / V_{IN}$$

可以看出，系統串聯的 LED 數量越多，系統工作效率越高。亦即 Out 端承受的壓降越低，效率越高，但同時也必須滿足圖 4 所示的 Output 所需的最低電壓。

OUTLINE DIMENSIONS

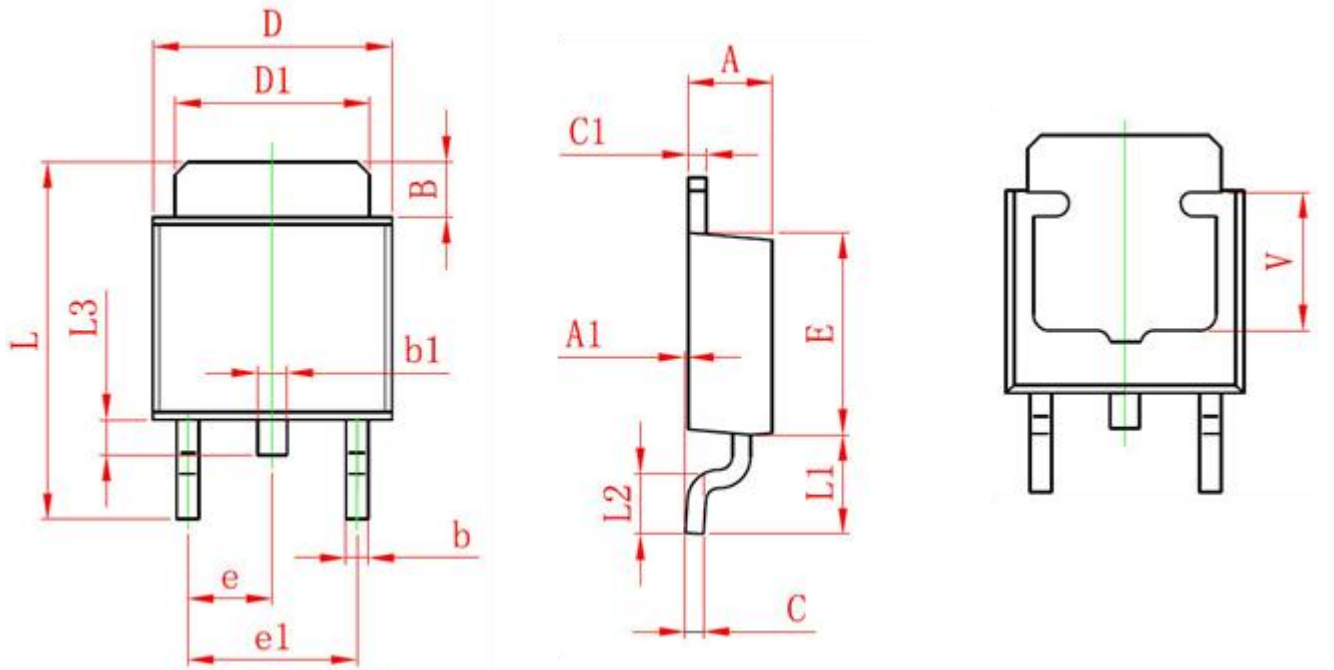
SOP-8L(Exposed PAD)



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.40	1.50	1.60	0.055	0.059	0.063
A1	0.00	—	0.10	0.000	—	0.004
A2	—	1.45	—	—	0.057	—
B	0.33	—	0.51	0.013	—	0.020
C	0.19	—	0.25	0.007	—	0.010
D	4.80	—	5.00	0.189	—	0.197
E1	3.80	3.90	4.00	0.150	0.153	0.157
e	—	1.27	—	—	0.050	—
E	5.80	6.00	6.20	0.228	0.236	0.244
L	0.40	—	1.27	0.016	—	0.050
y	—	—	0.10	—	—	0.004
theta	0°	—	8°	0°	—	8°
L1-L1'	—	—	0.12	—	—	0.005
L1	1.04REF			0.041REF		

OUTLINE DIMENSIONS

OUTLINE DRAWING TO252-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.450	0.750	0.018	0.030
b1	0.600	1.000	0.024	0.040
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.300	6.700	0.249	0.264
D1	5.100	5.500	0.201	0.217
E	5.400	5.700	0.213	0.224
e	2.150	2.450	0.085	0.097
e1	4.450	4.750	0.175	0.187
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.600	1.000	0.024	0.040
V	3.400	3.800	0.134	0.150