

## GENERAL DESCRIPTION

EC4217 is a signal segment Linear LED Driver chip, Supply current(Sink) is 120mA at  $V_{LED}=25V$  and  $Pow=15V$ . Other characteristic are sample application circuit (EC4217 use in 3.5 watts LED driver is only bridge rectifier and one 150kΩ resistor and one 4.7uF capacitor) and OVP( Over Voltage Protection)Function and negative coefficient output current behavior ◦

## FEATURES

- **TO-252-5L** Package Type ◦
- Sample application circuit ◦
- Built in 8V~15V Zener Diode equal circuit to supply chip power which no need Start up HVNMOS, so is convenient used in 110V/220V line voltage ◦

## APPLICATIONS

- LED Bulbs

## ABSOLUTE MAXIMUM RATINGS

- $I_z=8mA$  ◦
- $Pow=16.5V$  ◦
- Pin1 Break Down Voltage=600V at  $Pow=0V$  ◦
- Operating Temperature Range :  $-40^{\circ}C$  to  $120^{\circ}C$
- Storage Temperature Range :  $-40^{\circ}C$  to  $140^{\circ}C$
- ESD Level.....(H.B.M) 2KV  
(M.M) 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**

Pin Number	Pin Name	Function
1	LED	Link LED
2	OVP_In	Over Voltage Detect In
3	Gnd	Ground
4	Vref	2.5V Reference Voltage
5	Pow	Chip Power Supply

### Ordering Information

Part No.	Package Type	Marking Information	Remark
EC4217NNA5R	T0-252-5L	EC4217 LLLLL YYWWT	1. LLLLL : Lot No 2. YYWW : Date Code 3. T : Internal Tracking Code

### ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Power	Pow	R1=30K, $V_{CC}=30\text{V}$ , Pin4 Open	8.25	8.36	8.51	V
Reference Voltage	Vref	Pin4 Open	2.54	2.59	2.64	V
Leak Current	$I_{Leak}$	Pow=0V, $V_{(LED)}=40\text{V}$			1.25	$\mu\text{A}$
Driver Current	$I_D$	Pow=15V, $V_{LED}=25\text{V}$	110			mA
Quiescent Current	$I_Q$	R1=150K, Pin1 Open, $V_i=110\text{V}_{rms}$		0.75		$\text{mA}_{rms}$
Over Voltage Protection	OVP	R3=820K, Pin1 Voltage	82	92	108	V
Vref Input Resistor	Ri	Pow Open, Pin2 to Gnd Resistor		88		$\text{k}\Omega$
Channel Resistor	$R_{ON}$	$V_{CC}=30\text{V}$ , R1=22K, C1=4.7 $\mu\text{F}$			94	$\Omega$

### Functional Description

EC4217 is sample application circuit 、 low cost 、 high stability signal segment Linear LED Driver. The EC4217 power setup please reference (Fig1), The application circuit external resistor ‘R2’ use to setup chip operation voltage and drive current , The operation voltage and drive current is calculated by formula 1. Other define, The chip between Pin5(Pow) with Pin4(Vref) is resistor R9 , between Pin4(Vref) with Gnd is resistor R9A, The value are 192k and 88k (reference Fig2), The Pin4 has reference voltage 2.58V.

$$\text{Pow} = 2.58\text{V} + 2.58\text{V} \frac{R9}{R} \dots\dots \text{Formula 1 } R=R2(\text{Chip external resistor})//R9A$$

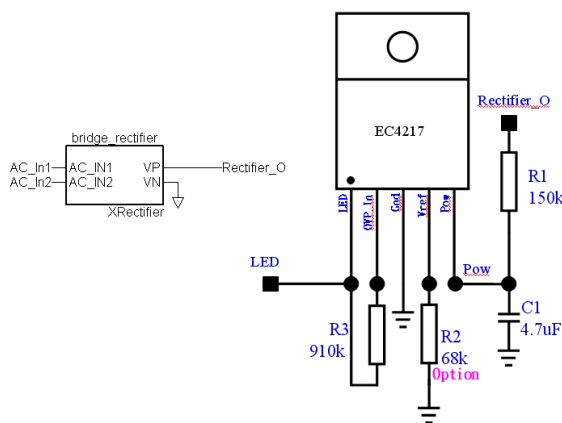


Fig1

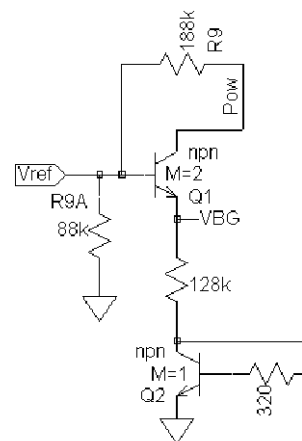


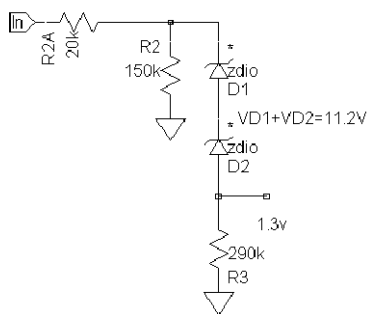
Fig2

LED drive current( $V_{LED}=25\text{V}$ )setup reference Table 1,

Pow(V)	ID(I LED mA) ±2.5%
15	135
14.5	131
14	128.5
13.5	121
13	115
12.5	107
12	99.5
11.5	92
11	85.5
10.5	79.5
10	73
9.5	66
9	60
8.5	52.5
8	46.5

Table 1

OVP Set up: Fig 3 is chip Pin4 (OVP\_In) equal circuit, When  $OVP\_In \geq 13V$  start OVP function , After OPV function is enabled then  $Pow(Pin5) \doteq 0V$ , The  $OVP\_IN(V)$  is calculated by formula 2

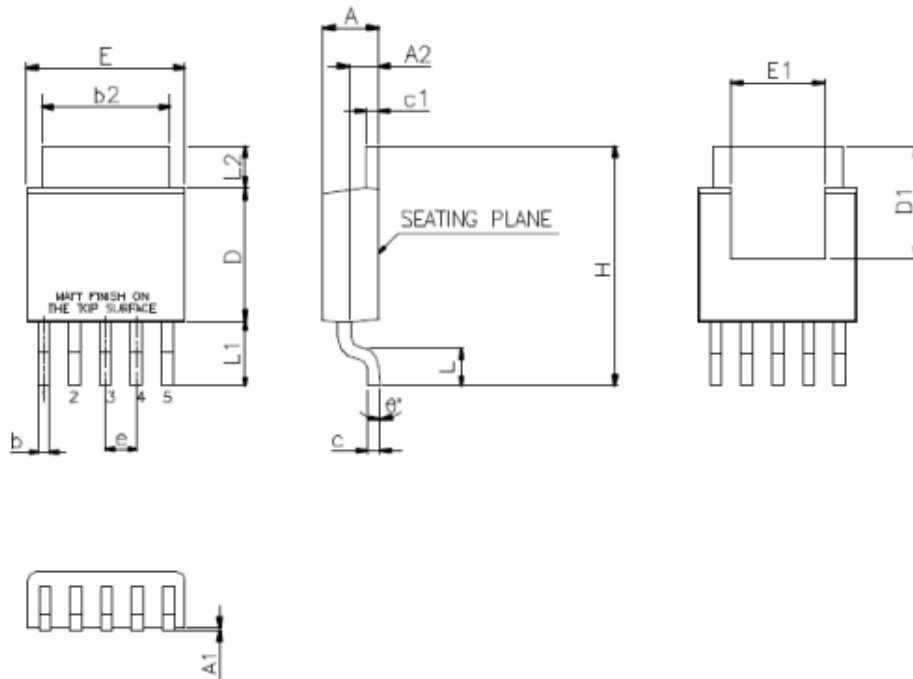


$$OVP\_IN(V) = \frac{R2A + R2}{R2A + R2 + R3(Rext)} \cdot Pin1(V) \dots\dots \dots 2$$

Fig3

## OUTLINE DIMENSIONS (Dimensions shown in millimeters)

### TO252-5L Package



SYMBOLS	DIMENSIONS IN MILLIMETER	
	MIN.	MAX.
A	2.18	2.39
A1	0.00	0.13
A2	1.02	1.27
b	0.51 TYP.	
b2	5.21	5.46
c	0.46	0.58
c1	0.46	0.58
D	5.33	5.59
D1	4.57	—
E	6.35	6.73
E1	3.81	—
e	1.27 BSC.	
H	9.40	10.41
L	1.40	1.78
L1	2.67 REF.	
L2	1.52	2.03
θ	0°	4°

NOTES:

1. JEDEC OUTLINE : N/A