MG39113
Datasheet

Version: V1.0

Contents

Features

- I_{LED} current is programmable with only one external resistor, Iout max. ~ 150mA
- Simple application, very few external components
- No inductor, electrolytic capacitor
- Support one LED string with one tap or multi tap application
- PF>0.95
- THD_i < 20%
- High power efficiency, 80%~90%
- LED TRIAC support
- Temperature compensated
- 3Pin SOT-89 Package

1 Description

The MG39113 is a high precision linear LED driver. The current is programmable through an external resister. The maximum delivery current is 150mA. The driving scheme can be configured as one tap or multi tap structure.

If the LED string is configured into multi segments, each segment is sequentially turned on and off by tracking the on/off state of others segments. Since voltage applied on IC is minimized when conducting, the lighting efficiency is high. The AC voltage and line - input current could be tuned in phase, so high PF is possible.

The LED strings can be configured with different structures: one tap, multi-taps and two taps with equivalent light output. Also the IC can be placed in parallel for high wattage output.

The device is available in SOT89 package or dice form.

2 Order Information

Function / Package	Part Number
Dice	MG39113AH
SOT89	MG39113AR

3 Application Field

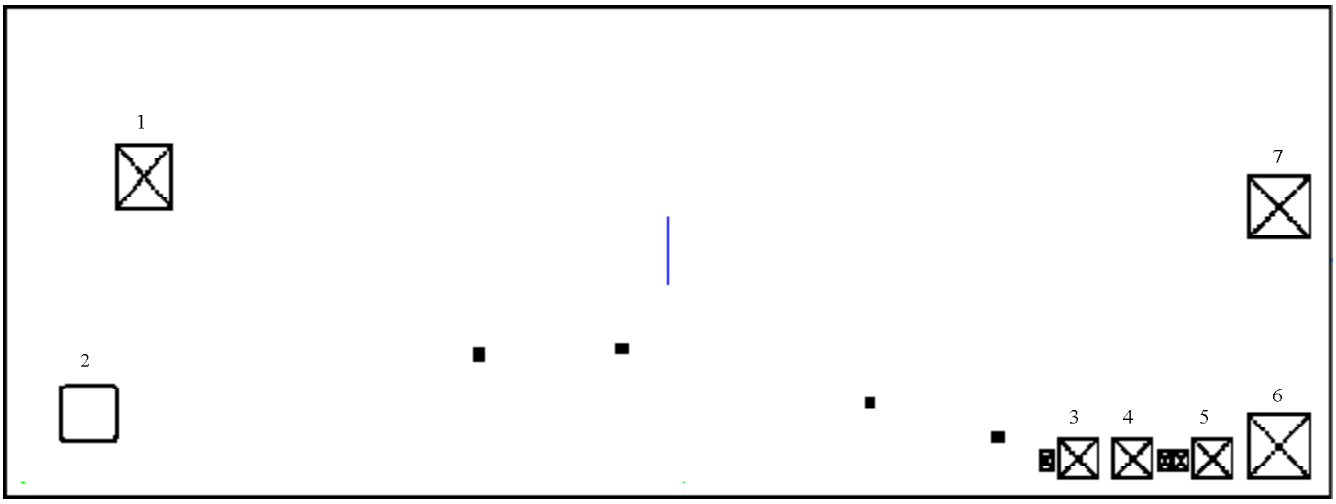
Incandescent and Fluorescent lamp/tube replacement
Outdoor lighting

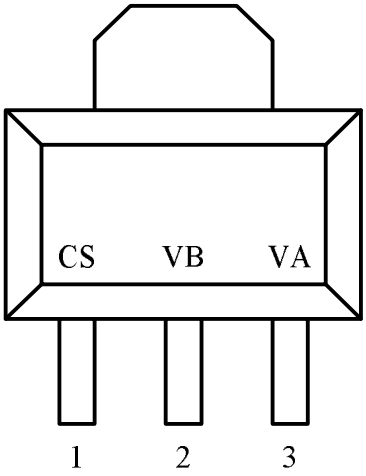
4 Pin Description

4.1 Pin Definition

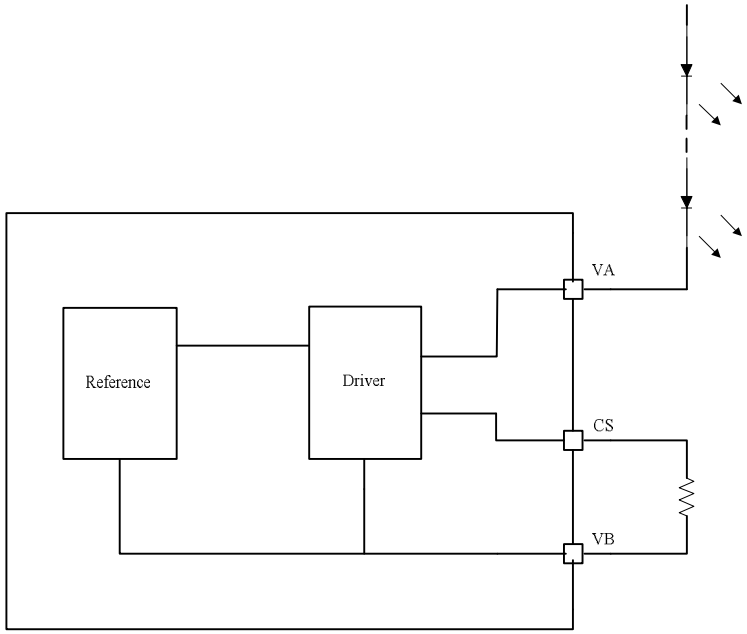
SOT8	COB	Pin Name	I/O	Description
1	7	CS	I	Current sense Pin
2	6	VB	G	Ground pin
3	1, 2	VA	P	High voltage power pad

4.2 Pin Configuration



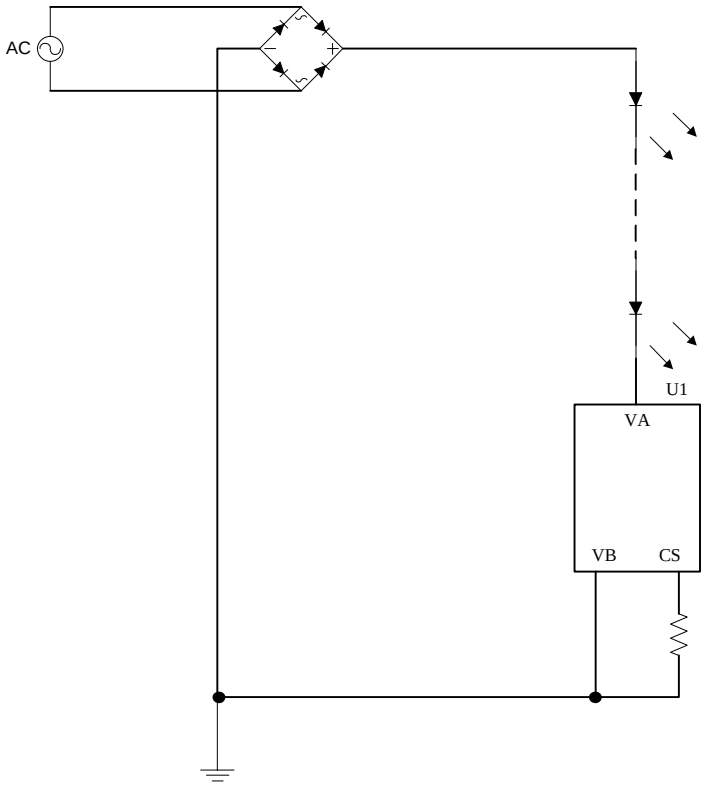


5 Block Diagram

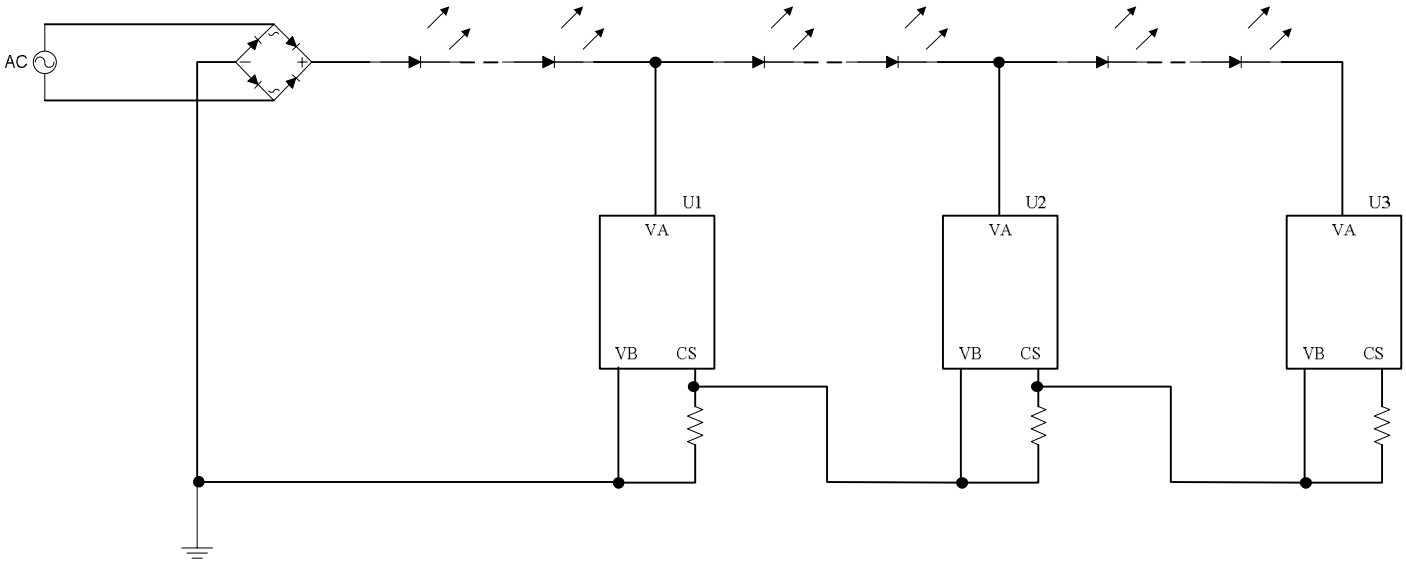


6 Application Circuit

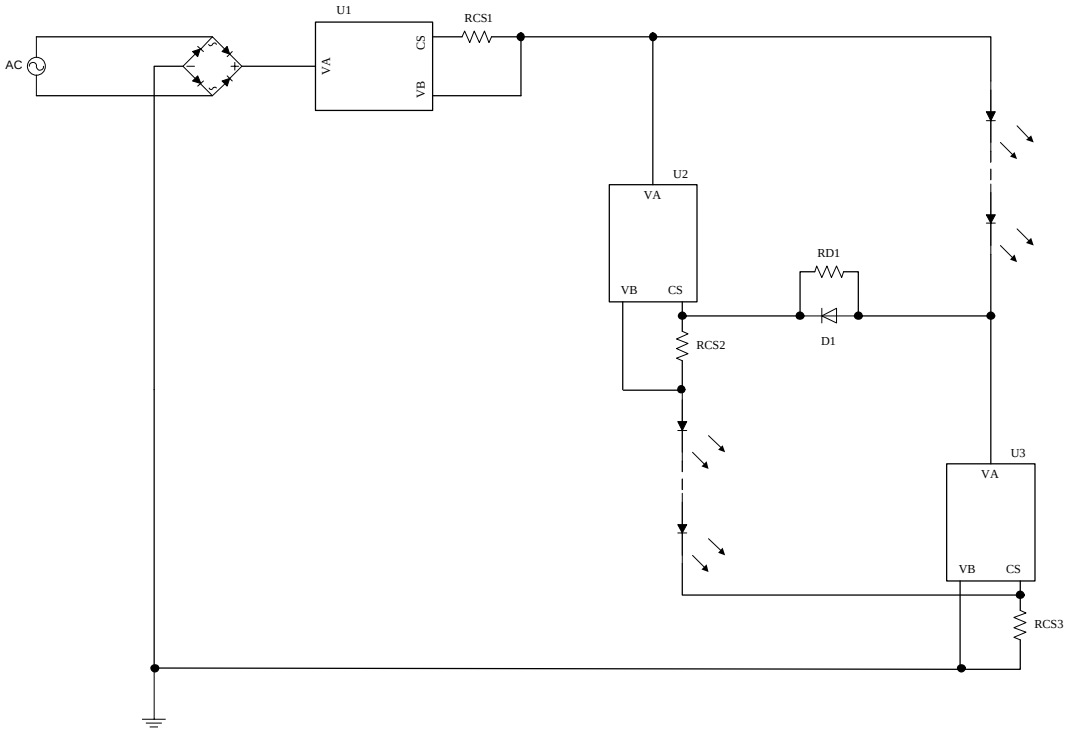
Baisc one tap application



Three taps application



Parallel to series scheme



7 Absolute Maximum Rating

Parameter	Rating	Unit
VA Supply Voltage	-0.5 to +530	V
CS to VB	-0.3 to 4V	V
Junction temperature	150	°C
Storage temperature	-55 ~ 150	°C
Temperature Resistance (Θ_{JA}), eSOP8	150	℃/W
Temperature Resistance (Θ_{JA}), eSOP16	100	℃/W

Note: Operating temperature is strongly related to the power consumption of IC.

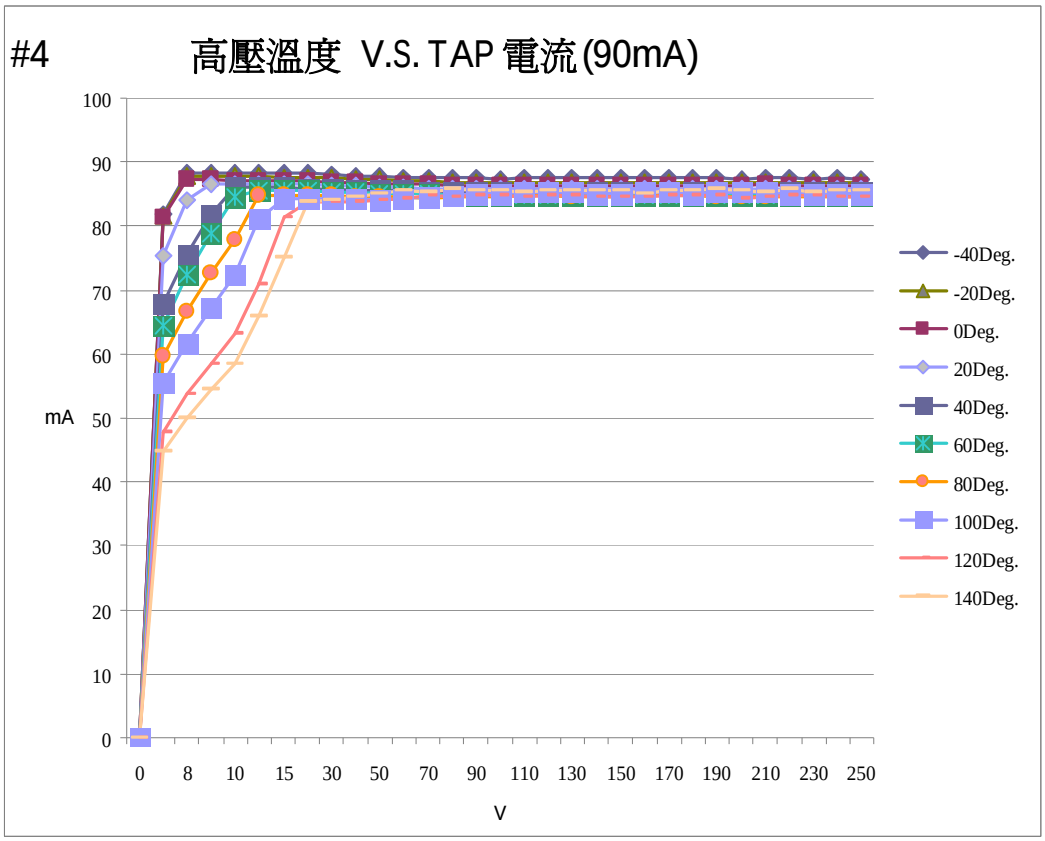
8 Electrical Characteristics

All typical numbers are at Ta=25°C & VIN=12V, unless otherwise noted.

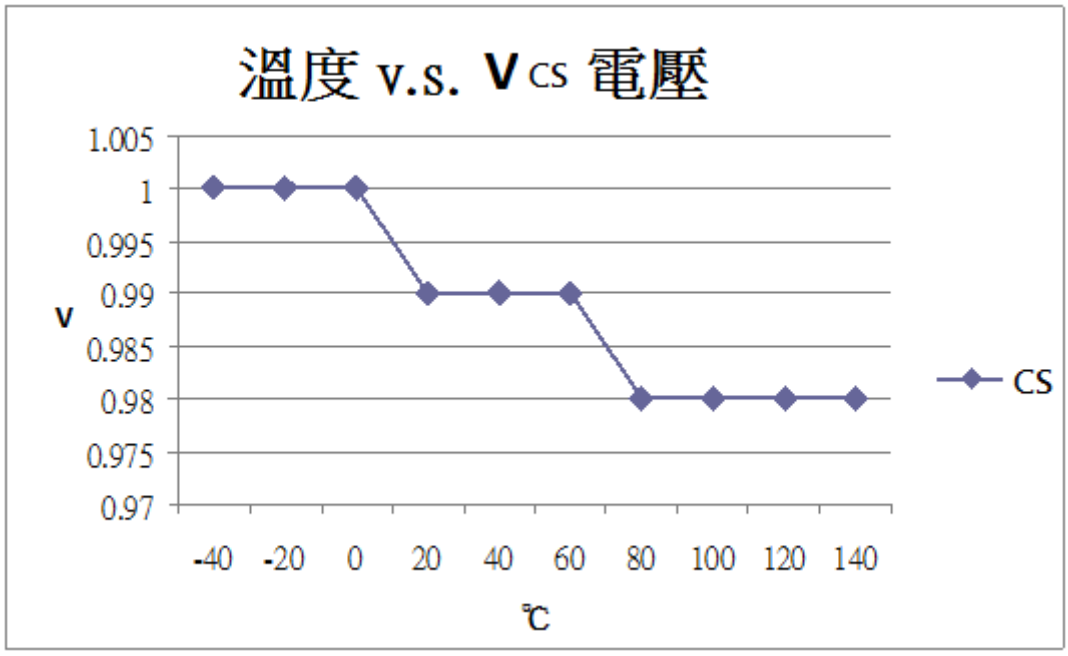
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage	V_{IN}	$V_A - V_B$	7.5	-	500	V
Input Current	I_{IN}	CS pin floating	-	150	500	uA
CS voltage level	Vcs	Iout<150mA	-	1	-	V
LED drive current	Iout		-	-	150	mA
Operating Junction Temperature	$T_{opr, j}$				125	℃
Operating Free-Air Temperature Range	T_A		-40		85	℃

9 Typical Performance Characteristics

I_{TAP} Current vs. Vin Voltage / Temperature
Current set to around 86mA



CS pin voltage vs. temperature



10 Application information

Please refer to `MG39113_xT_design_assistant_file_v1x.xls` for patameter selection.

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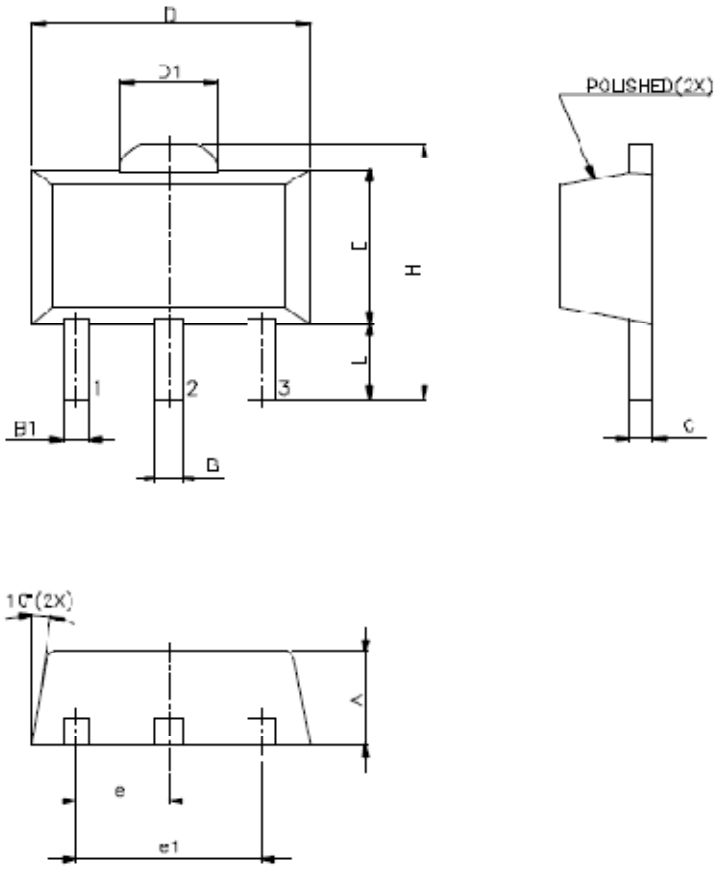
11 Package Dimension

11.1 SOT89 Package Dimension



SYMBOLS	MIN.	MAX.
A	1.40	1.60
B	0.44	0.56
B1	0.36	0.48
C	0.35	0.44
D	4.40	4.60
D1	1.35	1.83
E	2.29	2.60
H	3.94	4.25
e	1.50 BSC	
e1	3.00 BSC	
L	0.89	1.2

UNIT : mm

NOTES:

1.JEDEC OUTLINE : TO-243 AA

2.DIMENSION B1, 2 PLACES.

12 Revision History

Rev	Descriptions	Date
V1.0	Initial release.	2016/2/26