MG39U103-xxx
Data Sheet

Version: V1.03

Features

- 50mA, 60mA, 70mA or 80mA +/- 5% constant current output
- Operation voltage (VA-VB), 7.5 ~ 350V
- Temperature compensated
- Can be paralleled for higher current

Contents

1 Description

The MG39U103 is a constant current LED driver designed for high voltage DC power applications. It deliveries 50 mA +/- 5%, 60mA +/- 5%, 70mA +/- 5% or 80mA +/- 5% output current at an input range 7.5V ~ 350V. With state-of-the-art design skill, MG39U103 is suitable to drive LED lamp through high voltage DC power directly. No external components required.

The device is available in TO-252 package or dice form.

2 Order Information

Current / Package Type	50mA	60mA	70mA	80mA
Dice	MG39U103AH-050	MG39U103AH-060	MG39U103AH-070	MG39U103AH-080
TO-252	MG39U103AKB2-050	MG39U103AKB2-060	MG39U103AKB2-070	MG39U103AKB2-080
SOP8	MG39U103ASC1-050	MG39U103ASC1-060	MG39U103ASC1-070	MG39U103ASC1-080

3 Application Field

DC LED line bar driver

DC LED lamp driver

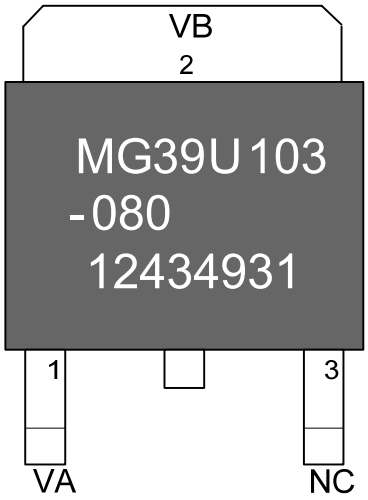
Decorative lighting

4 Pin Description

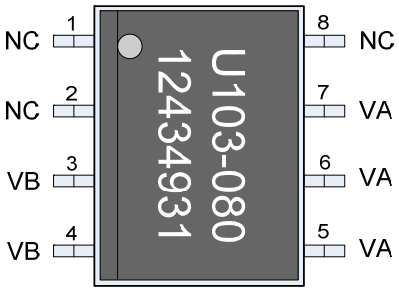
4.1 Pin Definition

TO-252	SOP8	Pin Name	Description
1	5, 6, 7	VA	Positive power input pin
2	3, 4	VB	Negative power input pin
3	1, 2, 8	NC	No connection

4.2 Pin Configuration

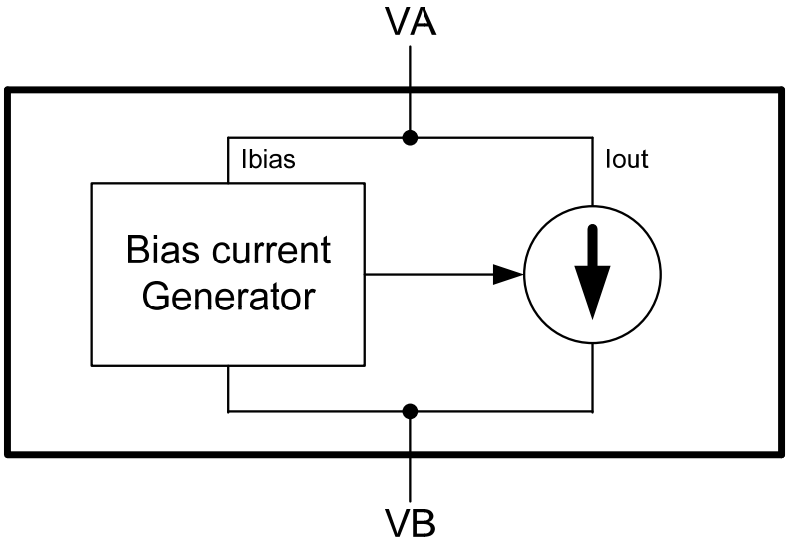


TO-252



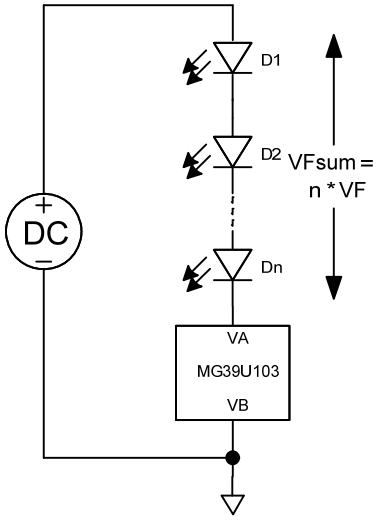
8-pin SOP with
Exposed Pad

5 Block Diagram

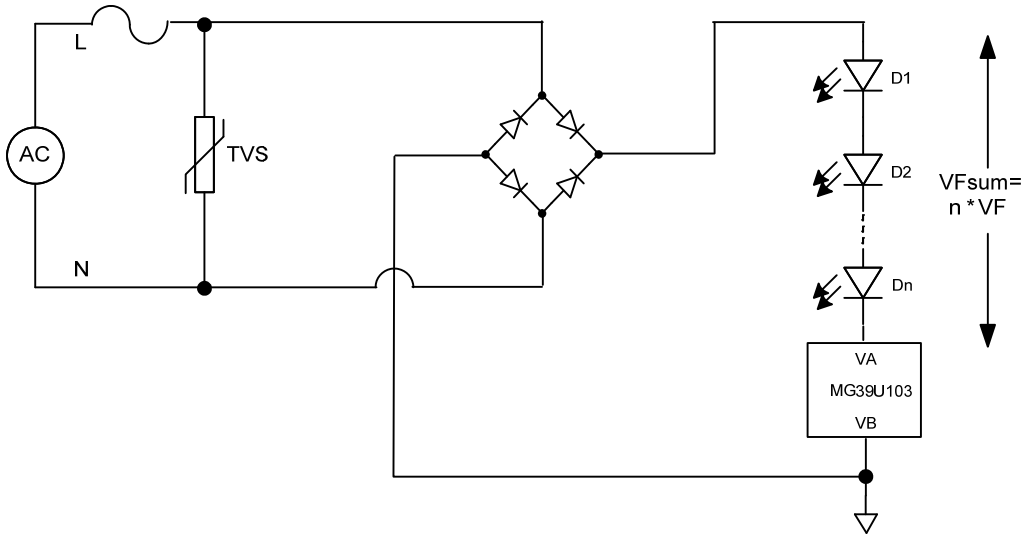


6 Application Circuit

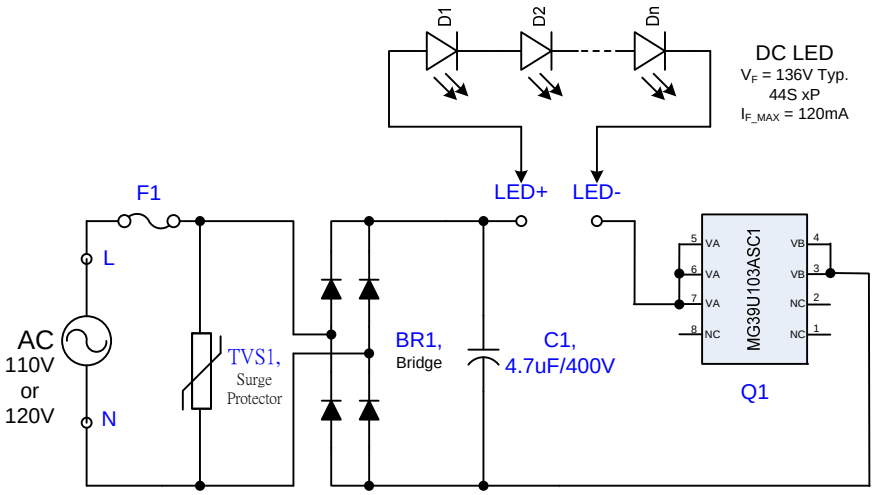
Example 1



Example 2



Example 3



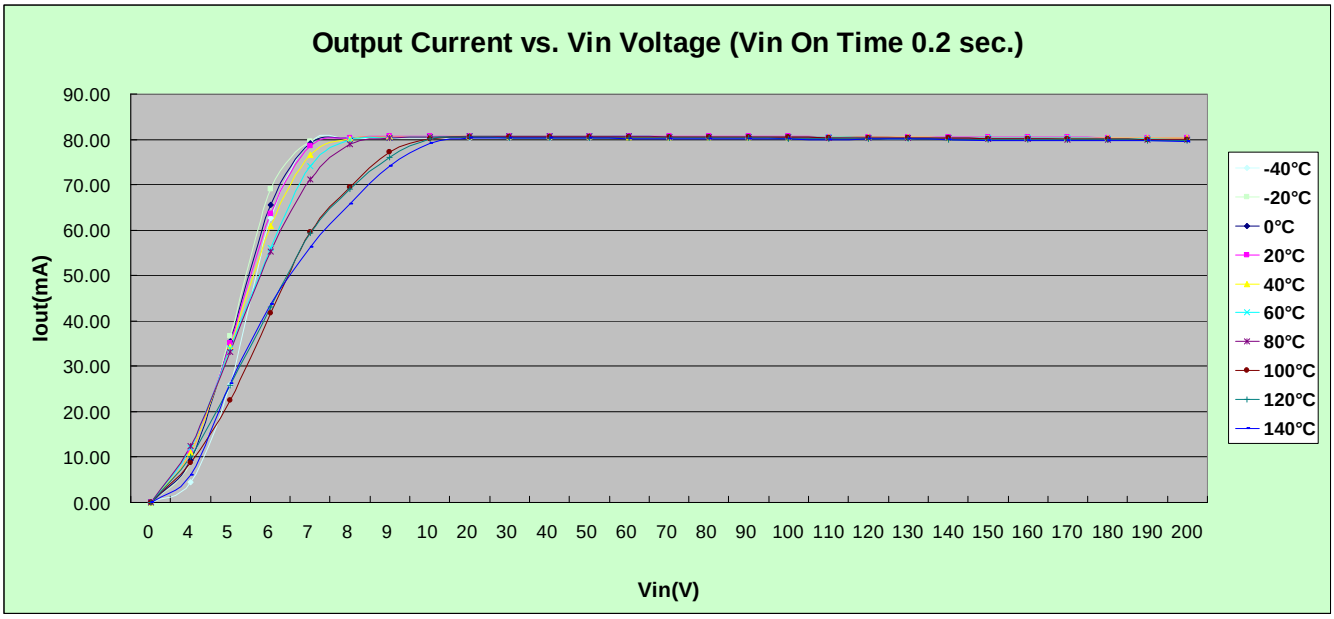
7 Absolute Maximum Rating

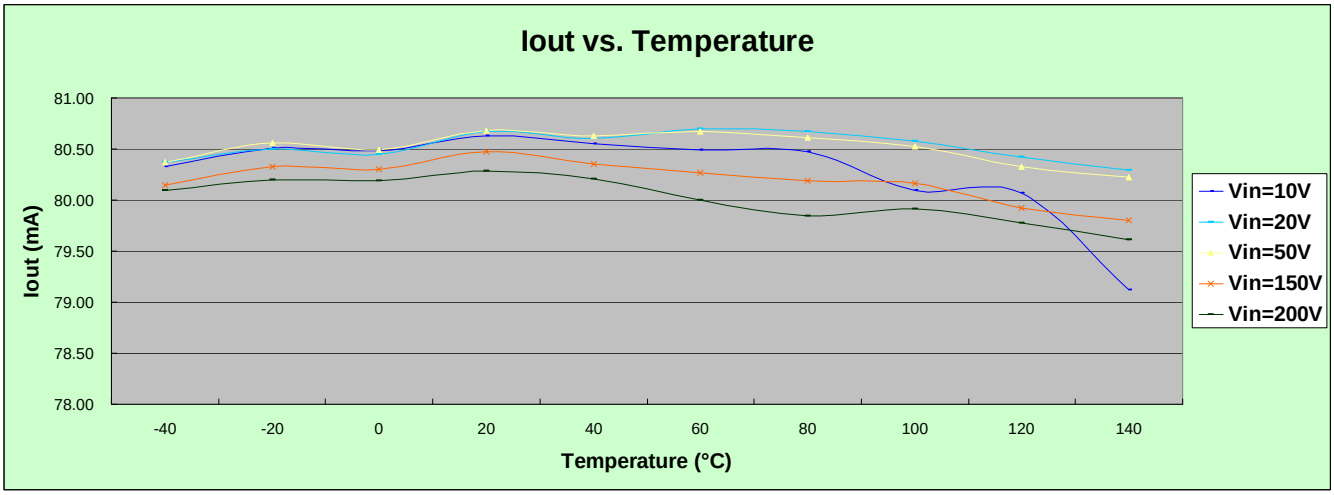
Parameter	Rating	Unit
Supply Voltage	-0.5 to +400	V
Operating temperature	-40 to +125	°C
Storage temperature	-55 to +155	°C

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

8 Electrical Characteristics

Parameter	Sym.	Conditions	Min.	Typ.	Max.	Unit
Input Voltage	Vop	VA-VB	7.5	-	350	V
Output current	Iout	All input range, -080	76	80	84	mA
		All input range, -070	66.5	70	73.5	mA
		All input range, -060	57	60	63	mA
		All input range, -050	47.5	50	52.5	mA
Idd temperature coefficient	△Iout/△T	Junction Temperature: -40 ~ +125℃	-	0.01	-	%/℃
VA applied ON time	Ton	Output current = 0.9*Iout	-	-	100	us
VA removed off time	Toff	Output current = 0.1*Iout	-	-	100	us

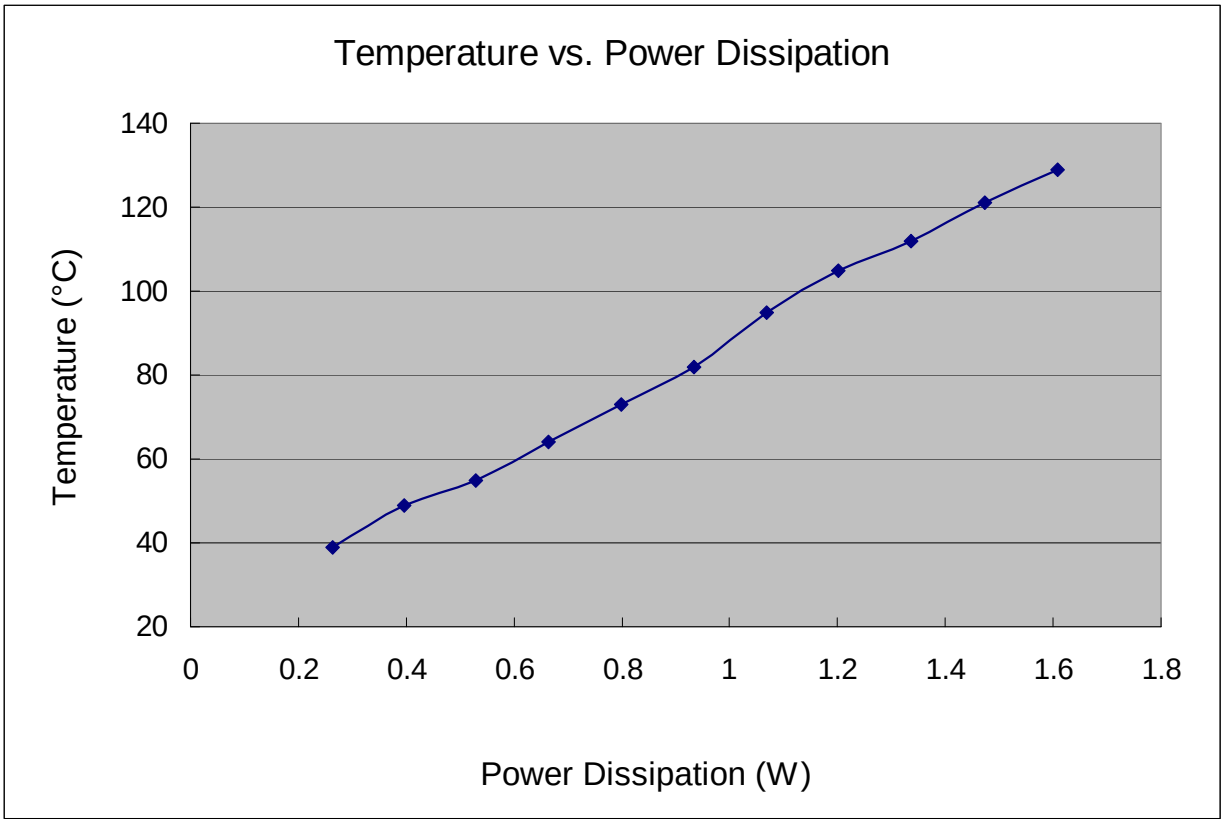




9 Application information

The MG39U103 can sustain an input voltage level as high as 350V. But users should care the heat dissipation issue for their applications. The following diagram shows the relation between the package temperatures and power dissipation.

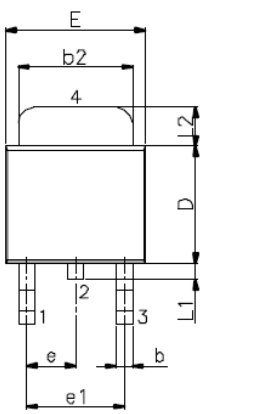
Conditions: TO-252 package, Room Temperature: 20°C.
The thermal resistance is around 66°C /W, junction to ambient (no air flow)

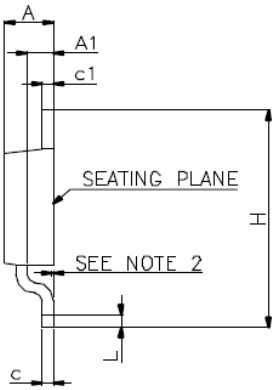


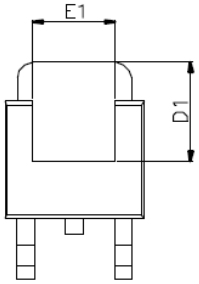
Note: Rule of thumb, it is suggested that the IC surface temperature is maintained below 90°C (Celsius degree). For TO-252 package, maintain the power dissipation below 2W.

10 Package Dimension

10.1 TO-252 Package Dimension



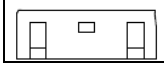




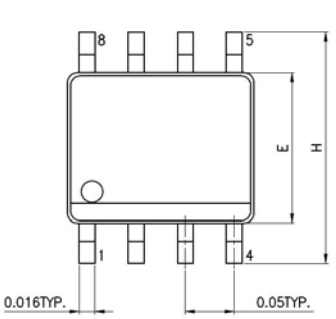
VARIATIONS (ALL DIMENSIONS SHOWN IN INCH)

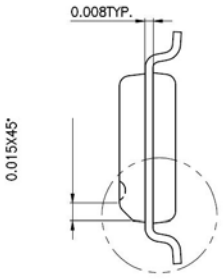
SYMBOLS	MIN.	MAX.
A	0.086	0.094
A1	0.040	0.050
b	0.024 TYP.	
b2	0.205	0.215
c	0.018	0.023
c1	0.018	0.023
D	0.210	0.220
E	0.250	0.265
⚠1 D1	0.180	—
⚠1 E1	0.150	—
e	0.090 BSC.	
e1	0.180 BSC.	
H	0.370	0.410
L	0.020	—
L1	0.025	0.040
L2	0.06	0.08

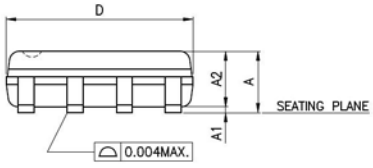
NOTES:
1. JEDEC OUTLINE : TO-252 AB
2. 2 MILS SUGGESTED FOR POSITIVE CONTACT AT MOUNTING.



10.2 SOP8 Package Dimension







	STANDARD		THERMAL	
SYMBOLS	MIN.	MAX.	MIN.	MAX.
A	0.053	0.069	0.053	0.067
A1	0.004	0.010	0.000	0.006
A2	0.053	0.059	0.049	0.059
D	0.189	0.196	0.189	0.196
E	0.150	0.157	0.150	0.157
H	0.228	0.244	0.228	0.244
L	0.016	0.050	0.016	0.050
θ°	0	8	0	8

UNIT : INCH

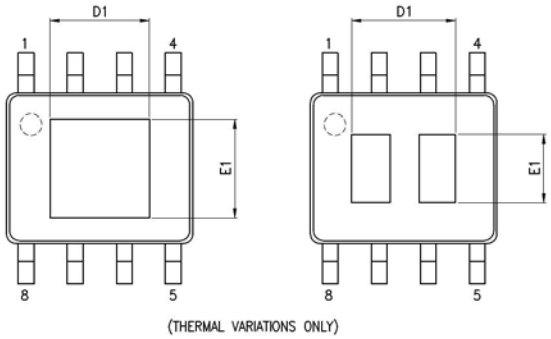
THERMALLY ENHANCED DIMENSIONS

PAD SIZE	E1		D1	
	MIN.	MAX.	MIN.	MAX.
90X90E	0.077	0.090	0.077	0.090
95X13E	0.081	0.095	0.111	0.130
96X65E(DUAL PAD)	0.070	0.096	0.114	0.140

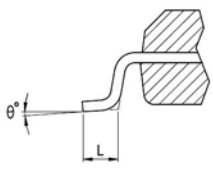
UNIT : INCH

NOTES:
1.JEDEC OUTLINE : MS-012 AA(STANDARD)
MS-012 BA(THERMAL)
2.DIMENSIONS "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED .15mm (.006in) PER SIDE.
3.DIMENSIONS "E" DOES NOT INCLUDE INTER-LEAD FLASH, OR PROTRUSIONS. INTER-LEAD FLASH AND PROTRUSIONS SHALL NOT EXCEED .25mm (.010in) PER SIDE.

DUAL PAD



(THERMAL VARIATIONS ONLY)



11 Revision History

Rev	Descriptions	Date
V1.01	Initial release.	2011/10/03
V1.02	Add SOP8 package information.	2013/01/17
V1.03	Add 60mA and 70mA output selection	2013/09/17