

# MAGIC6

## Data Sheet

*\* This specifications are subject to be changed without notice*

## Revision History

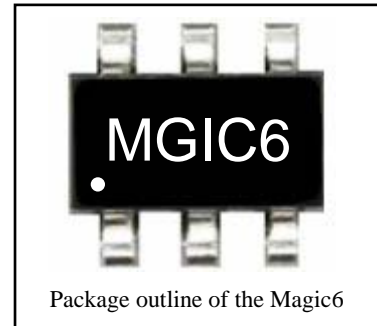
Rev. Number	Date	Rev. Contents
0.0	2011. 05. 24	- First Version
0.1	2011. 07. 29	- . Changed output current range : 20~100 → 10~100mA - . Added output current variation in FEATURES - . Added Thermal Resistance and Junction Temperature

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## DESCRIPTION

The Magic6 is specifically designed for LED lighting and decorative LED lighting applications.

The main application is LED lighting for sign board.



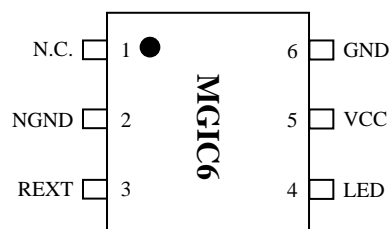
## FEATURES

- Output current : 10 ~ 100mA by external resistor
- 1 constant output channel with  $\pm 5\%$  variation
- Built in reverse power protection
- Maximum sinking output voltage : 18V
- Package : SOT23-6L

## APPLICATIONS

- LED Lighting
- Decorative LED Lighting

## PIN CONFIGURATION

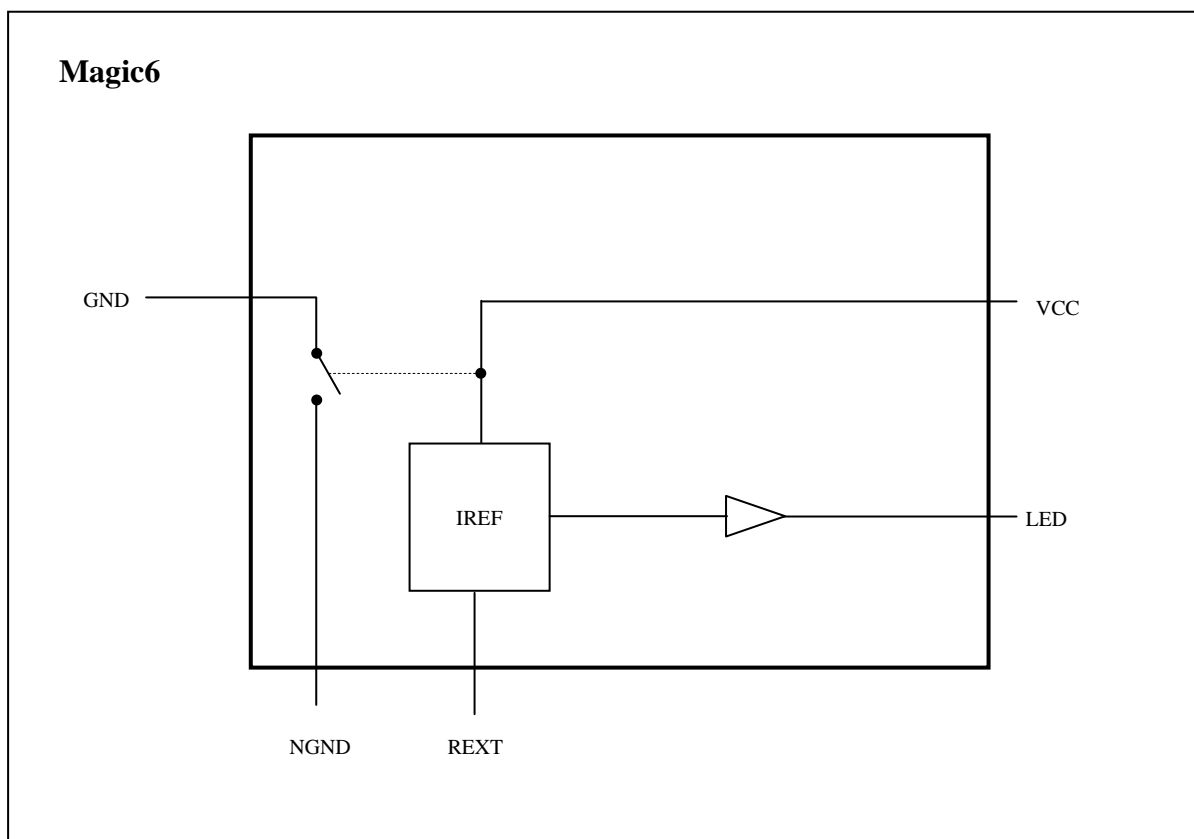


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## PIN DESCRIPTION

Pin No.	Pin Name	Description
1	N.C.	No Connect
2	NGND	Neutral Ground Pin
3	REXT	Resistor connected to NGND
4	LED	LED Driver Terminal
5	VCC	Power Terminal
6	GND	Ground Terminal

## BLOCK DIAGRAM



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**ABSOLUTE MAXIMUM RATINGS** (Note 1)

PARAMETER	SYMBOL	RATING	UNIT
Ground Voltage	GND	-0.3	V
Power Voltage	VCC	20	V
Output Current	I <sub>LED</sub>	120	mA
Power Dissipation (Ta = 25°C) (Note 2)	P <sub>D</sub>	0.4	W
Thermal Resistance (Note 3)	θ <sub>JA</sub>	250	°C/W
Junction Temperature	T <sub>JMAX</sub>	150	°C
Operating Temperature	T <sub>opr</sub>	-40 ~ 85	°C
Storage Temperature	T <sub>stg</sub>	-55 ~ 150	°C

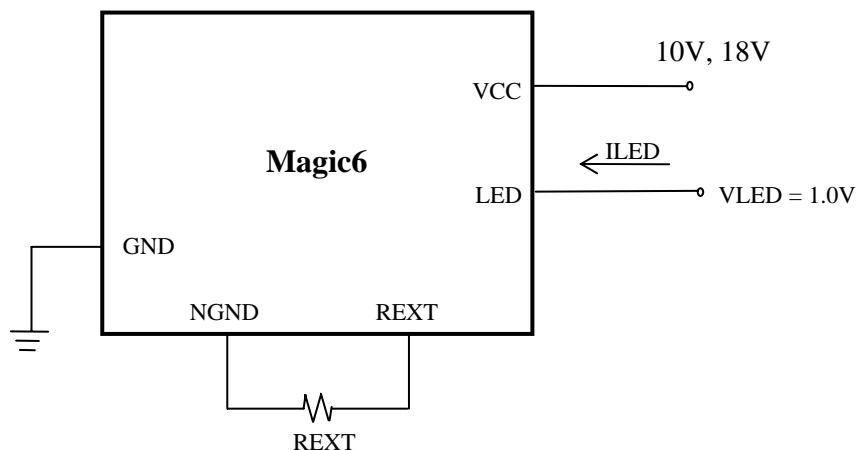
Note1. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device.

Note2. derate 4.0mW/°C above +25°C. This is recommended to operate under this power dissipation specification.

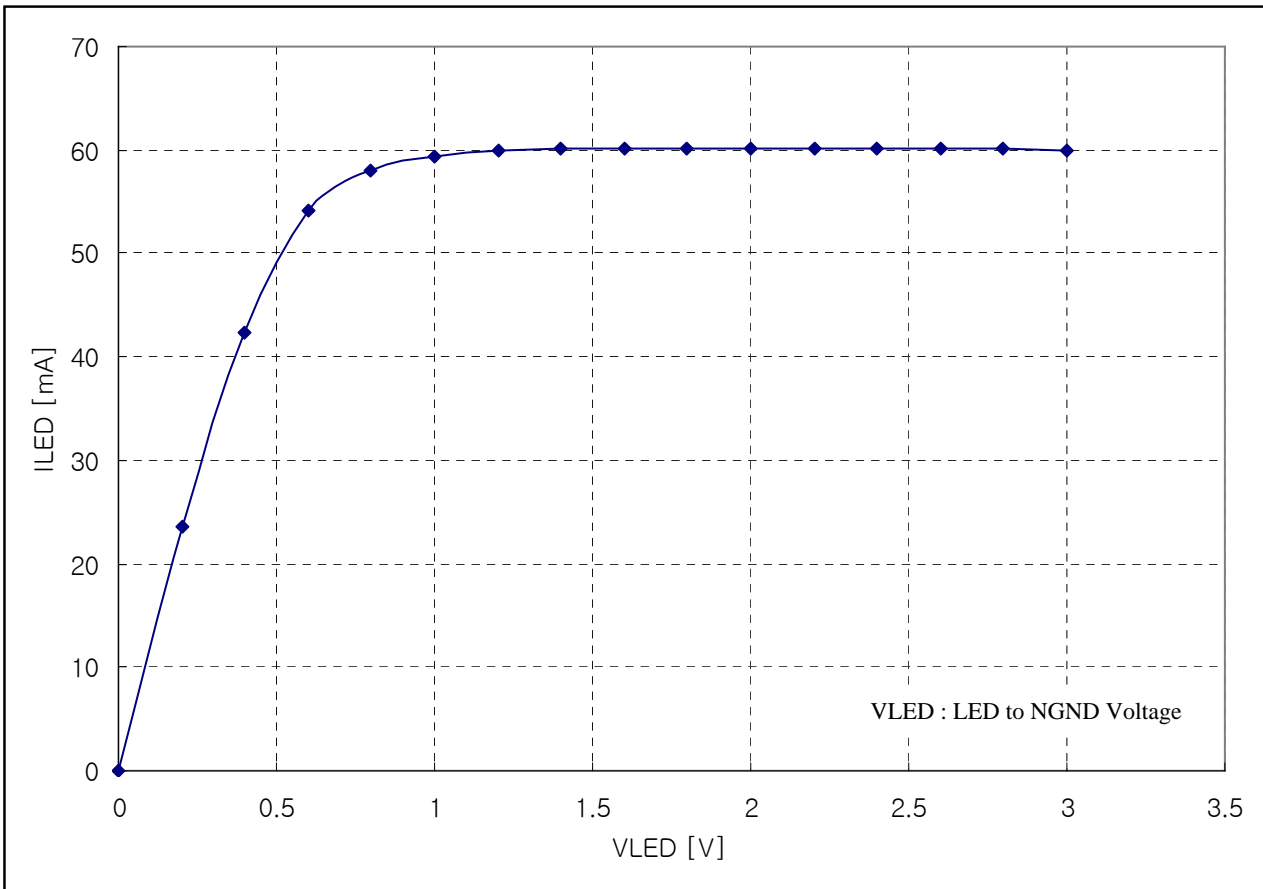
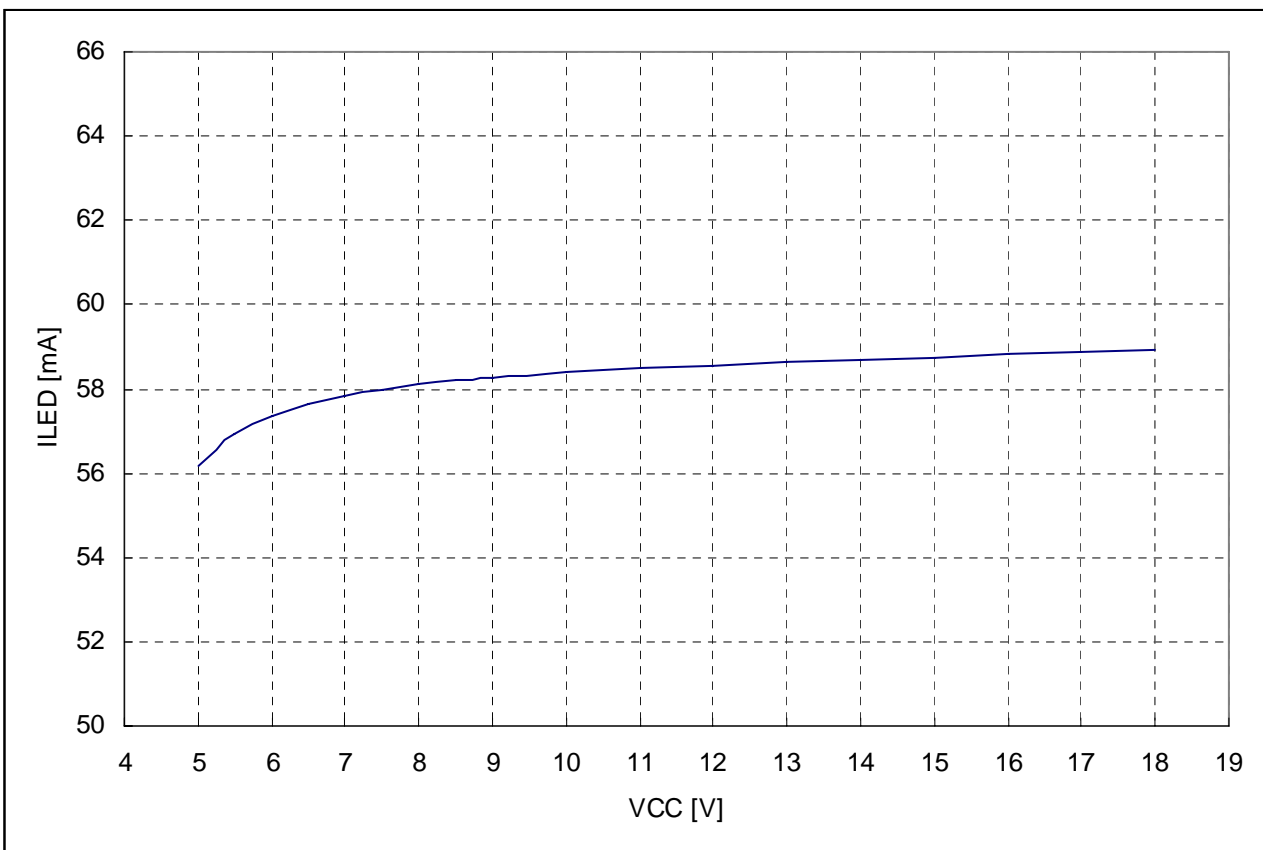
Note3. Measured on JESD51-7, 4-layer PCB

**ELECTRICAL CHARACTERISTICS** (VCC=12V, REXT=41.2k, Ta = 25°C)

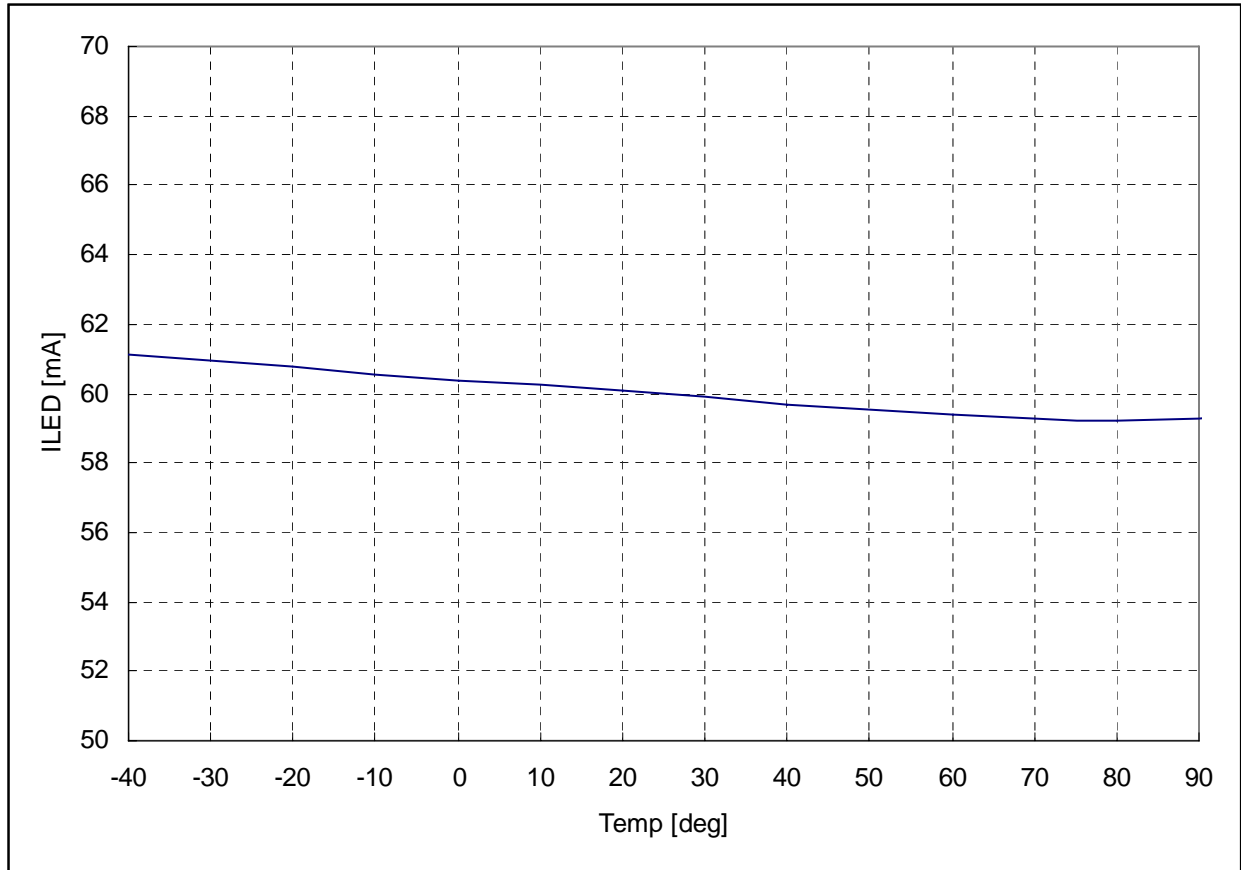
DC CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
High Supply Voltage	VCC	5.0	-	18.0	V
Supply Current	ICC	-	-	1.0	mA
LED Output Dropout Voltage	V <sub>dr</sub>	-	1.0	-	V
LED Driver Output Current ( VLED=1.0V )	I <sub>LED</sub>	55.58	58.5	61.44	mA
Output Current Change versus VCC		-	1.0	-	%/V
NGND Output Voltage	NGND	-	-	0.5	V

**DC CHARACTERISTIC TEST CIRCUIT**


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**CONSTANT OUTPUT CURRENT ( REXT = 41.2KΩ )**

**OUTPUT CURRENT vs. VCC ( REXT = 41.2KΩ, VLED=1V )**


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**OUTPUT CURRENT vs. TEMPERATURE ( REXT = 41.2K $\Omega$  )**

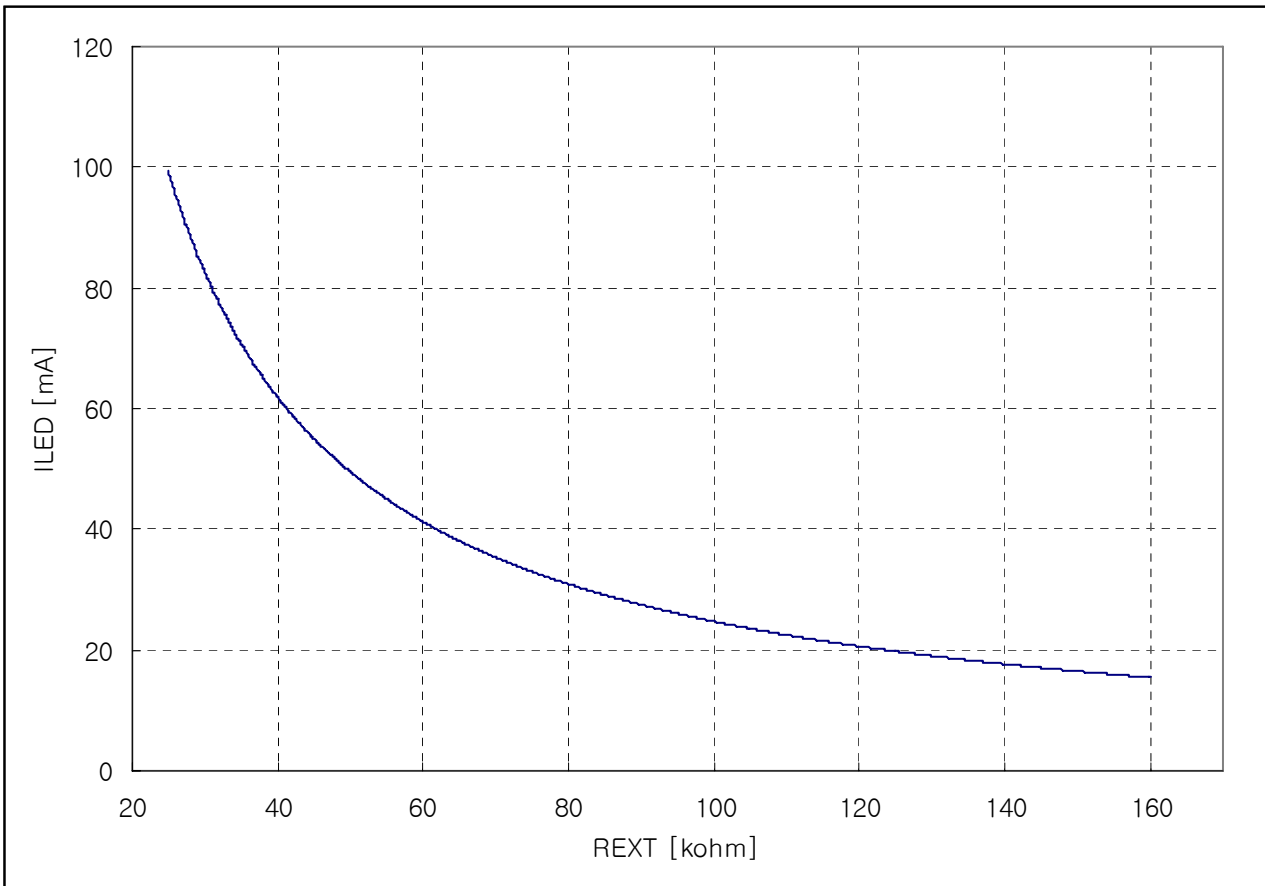
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## ADJUSTING OUTPUT CURRENT

The output current is determined by an external resistor(1% range).

The relationship between ILED and REXT are follows;

$$I_{OUT}[A] = 2475 / R_{EXT}$$



REXT [kΩ]	Typical Output Current [mA]
41.2	60
62	40
120	20

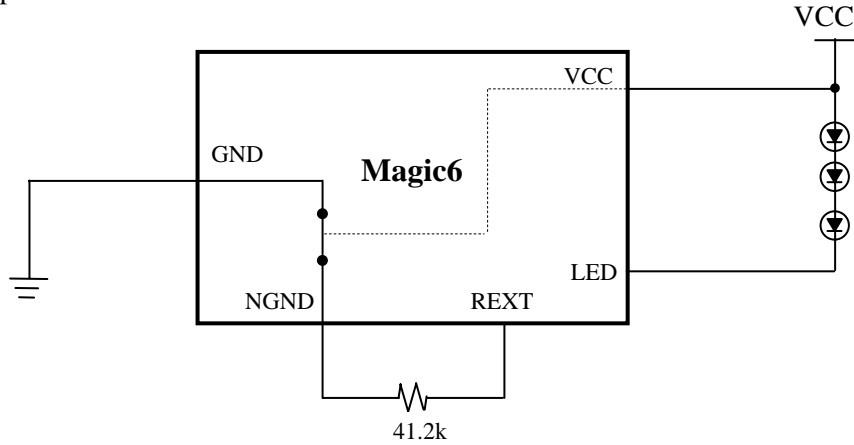
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**APPLICATION SAMPLES**

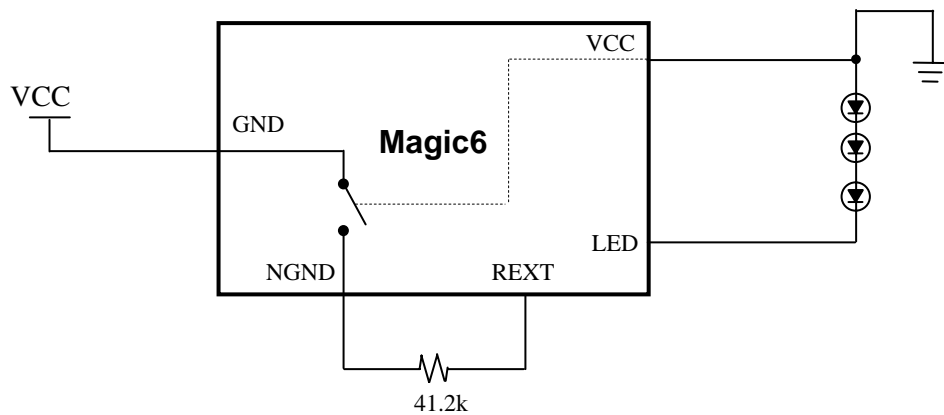
Using Internal Reverse Power Protection Circuit

-. Normal Operation

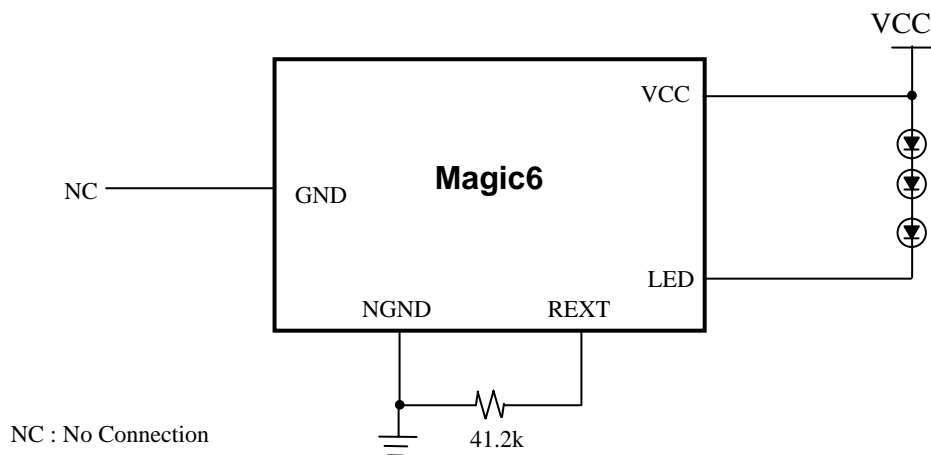


Using Internal Reverse Power Protection Circuit

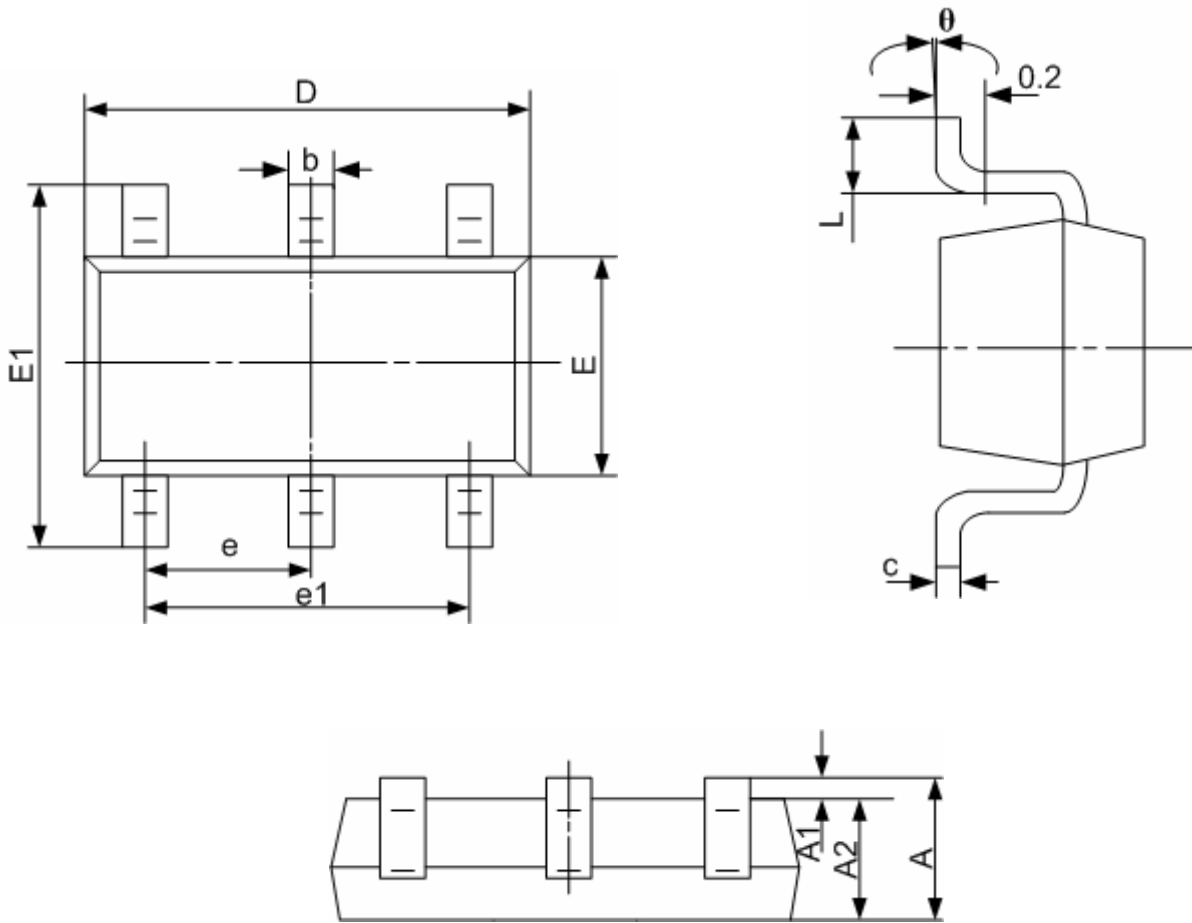
-. Protection Circuit Activated.



No Using Internal Reverse Power Protection Circuit



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**Package ; SOT23-6L**


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°

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