DESCRIPTION

The Magic6 is specifically designed for LED lighting and decorative LED lighting applications.
The main application is LED lighting for sign board.

Package outline of the Magic6

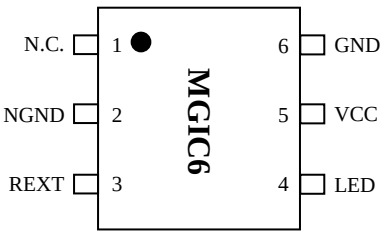
FEATURES

- Output current : 10 ~ 100mA by external resistor
- 1 constant output channel with ±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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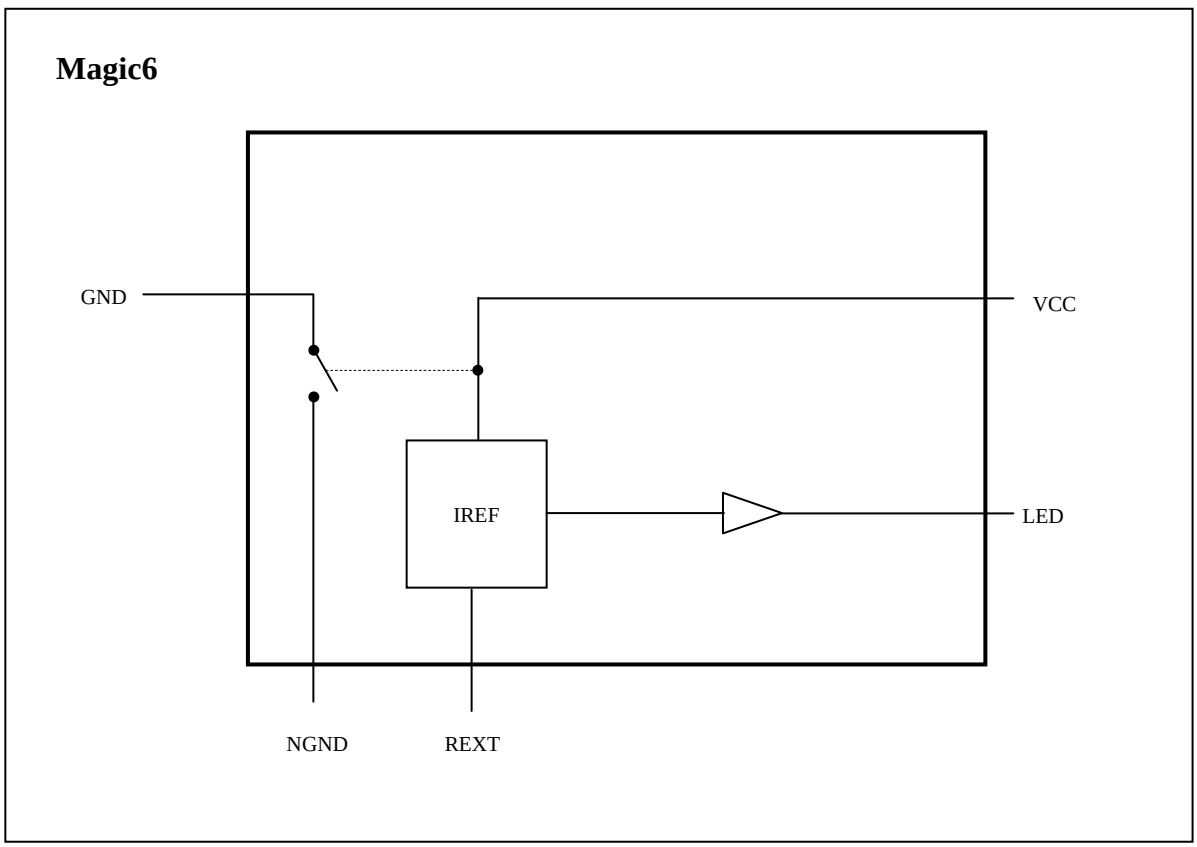
PIN DESCRIPTION

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)

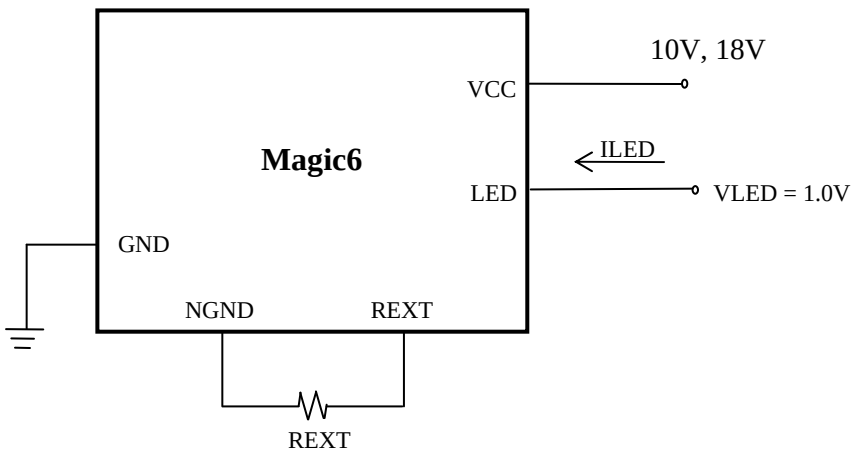
PARAMETER	SYMBOL	RATING	UNIT
Ground Voltage	GND	-0.3	V
Power Voltage	VCC	20	V
Output Current	ILED	120	mA
Power Dissipation (Ta = 25ºC) (Note 2)	P_D	0.4	W
Thermal Resistance (Note 3)	Θ_{JA}	250	℃/W
Junction Temperature	T_{JMAX}	150	℃
Operating Temperature	T_{opr}	-40 ~ 85	℃
Storage Temperature	T_{stg}	-55 ~ 150	℃

Note1. Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device.
Note2. derate 4.0mW/℃ above +25℃. 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 = 25ºC)

DC CHARATERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT
High Supply Voltage	VCC	5.0	-	18.0	V
Supply Current	ICC	-	-	1.0	mA
LED Output Dropout Voltage	Vdr	-	1.0	-	V
LED Driver Output Current (VLED=1.0V)	ILED	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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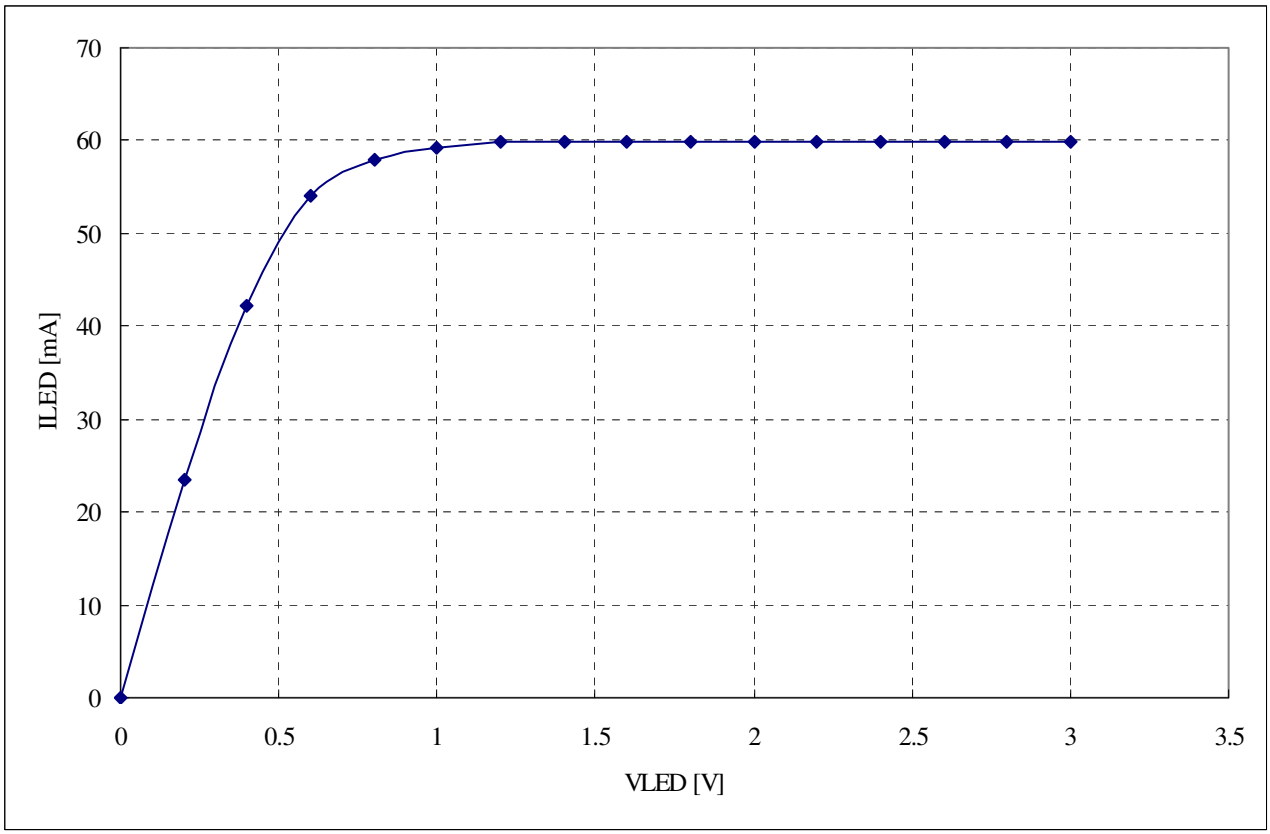
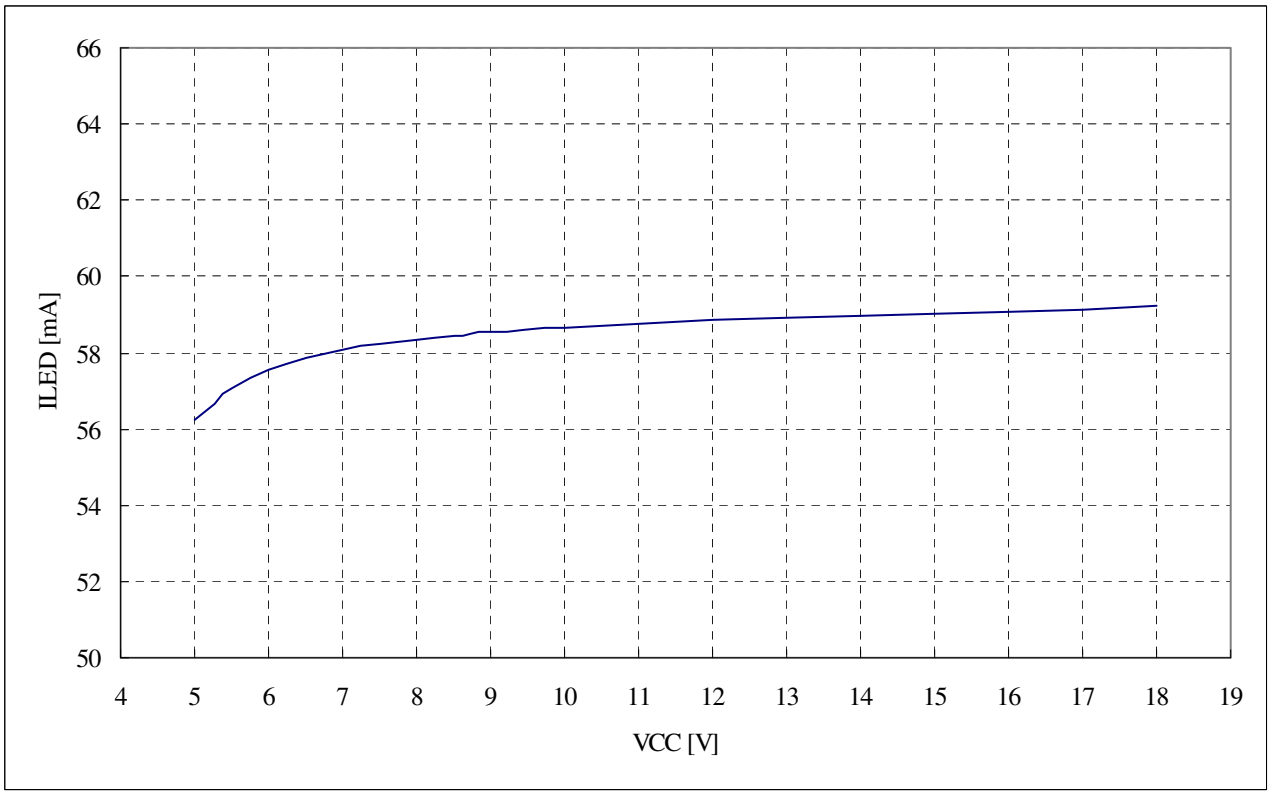
CONSTANT OUTPUT CURRENT (REXT = 41.2KΩ)



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



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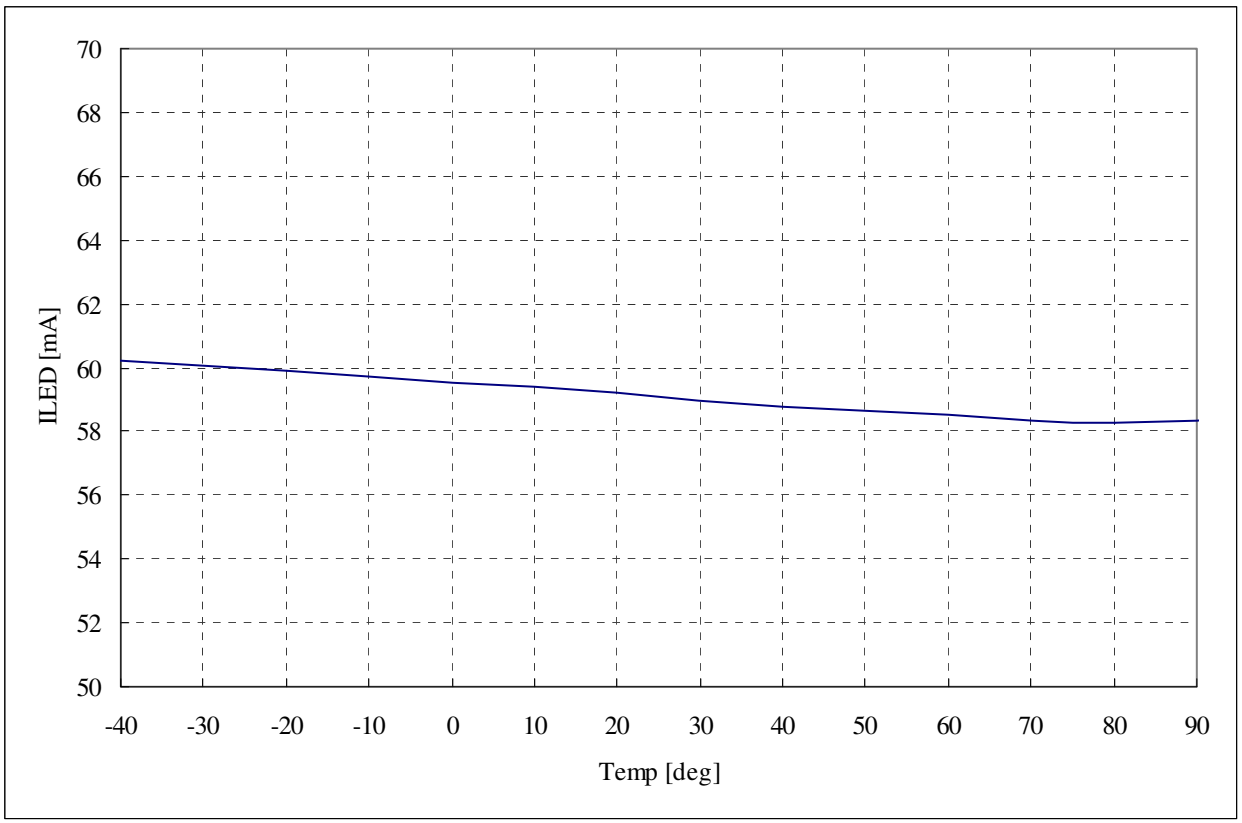
OUTPUT CURRENT vs. TEMPERATURE (VCC=12V, REXT = 41.2KΩ)



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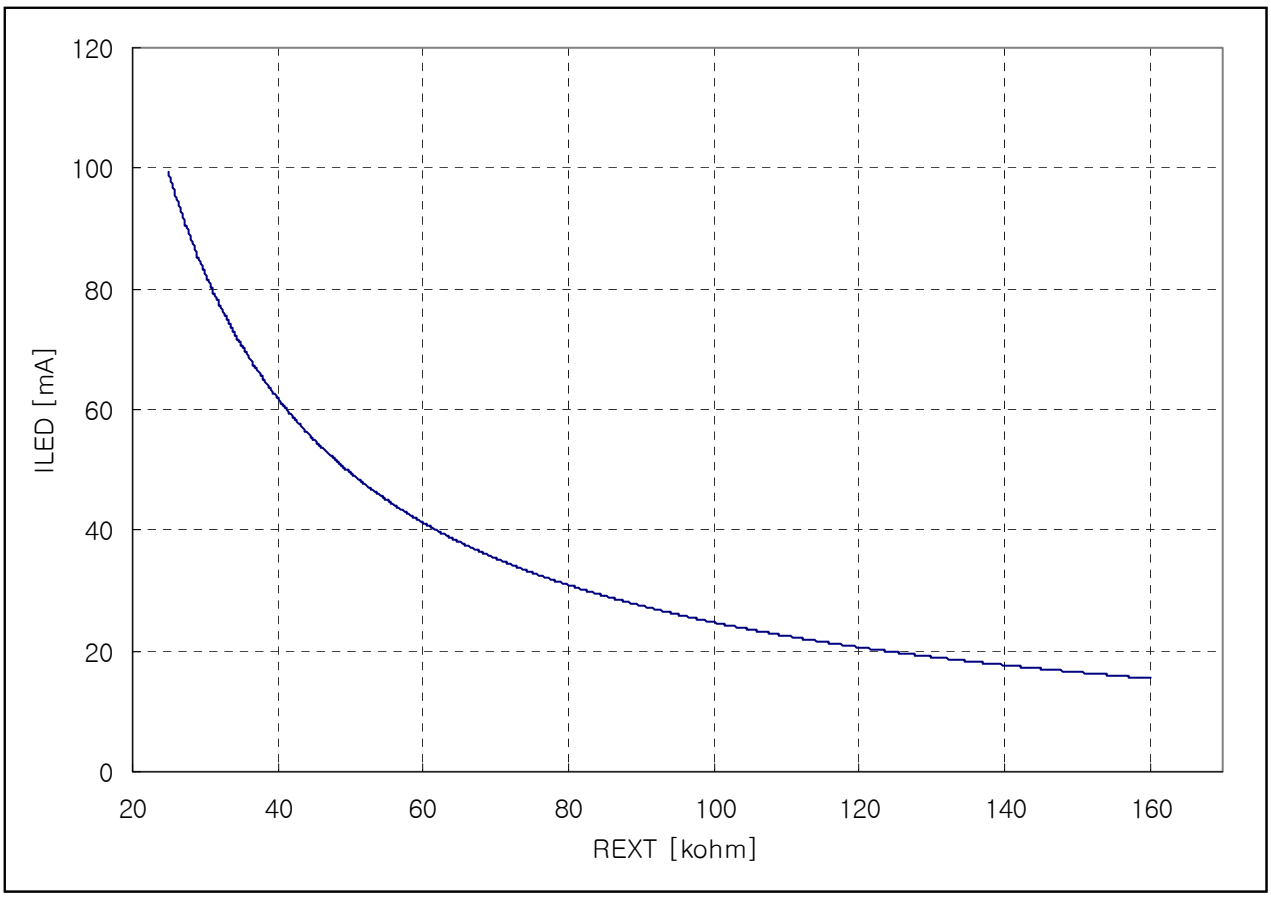
ADJUSTING OUTPUT CURRENT

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

The relationship between ILED and REXT are follows;

$$I_{OUT}[A] = 2450 / R_{EXT}$$



REXT [kΩ]	Typical Output Current [mA]
41.2	58.5
62	40.0
120	21.0

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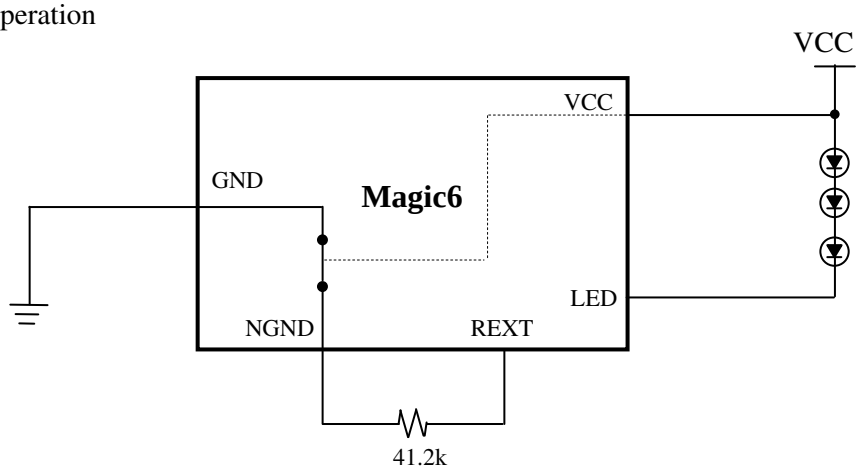
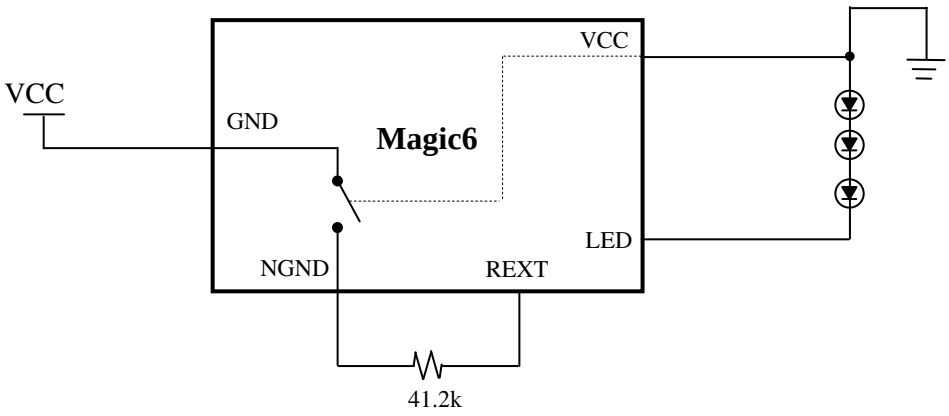
APPLICATION SAMPLES

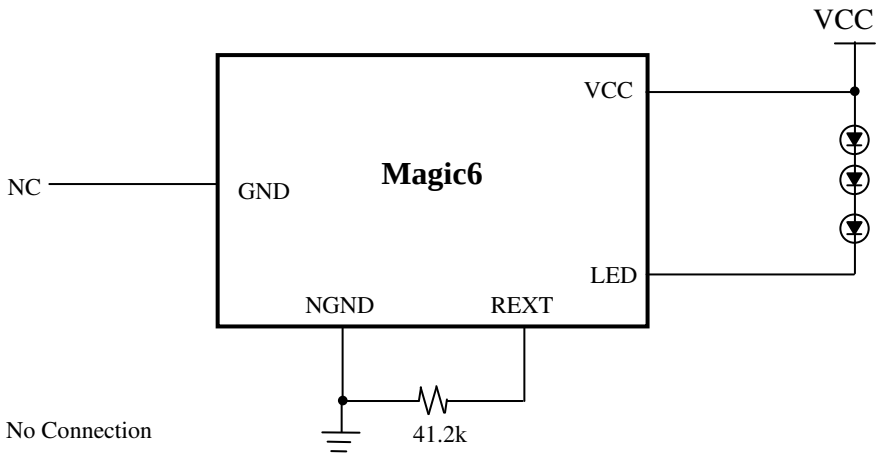
Using Internal Reverse Power Protection Circuit
-. Normal Operation



Using Internal Reverse Power Protection Circuit
-. Protection Circuit Activated.



No Using Internal Reverse Power Protection Circuit



NC : No Connection

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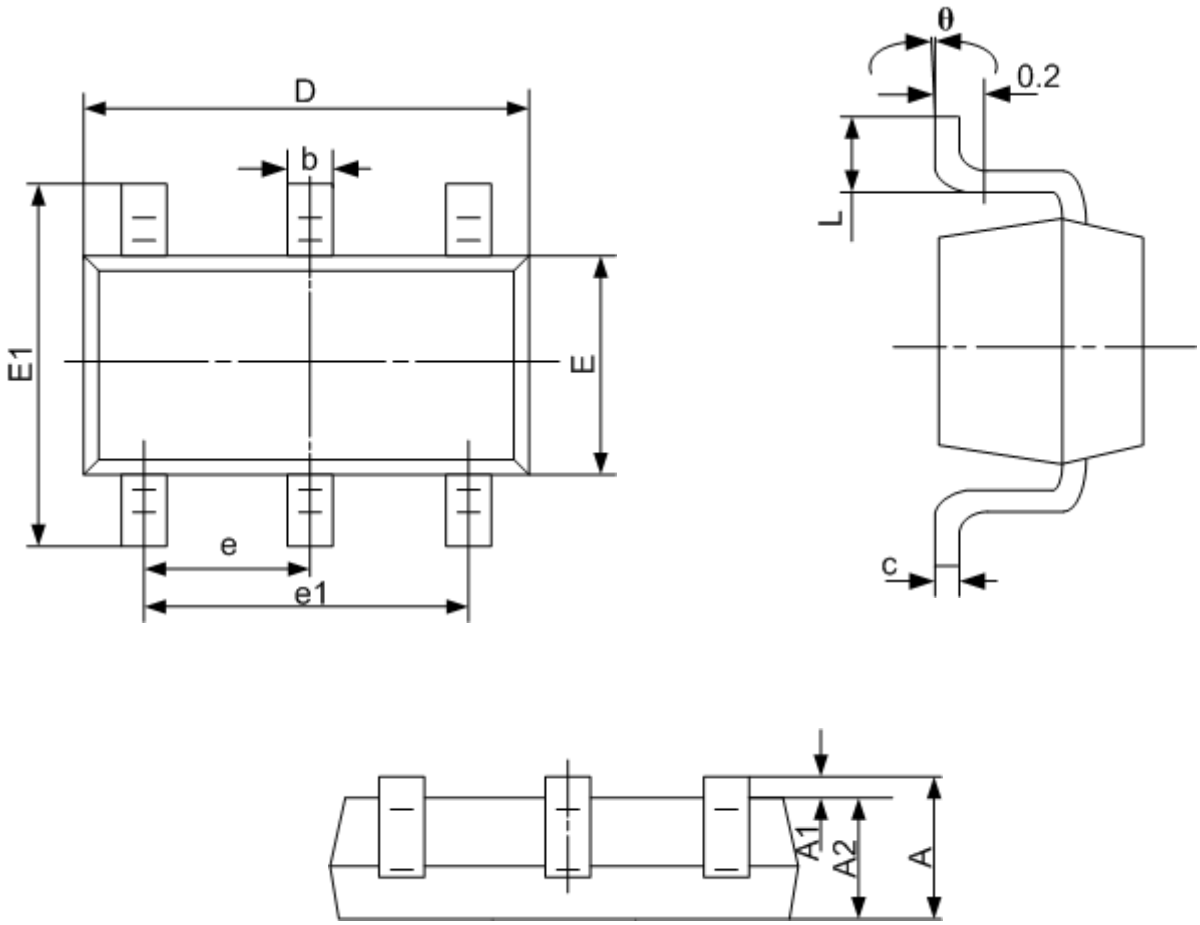
Package ; SOT23-6L



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
θ	0°	8°	0°	8°

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