

### Features

- 2μA Ground Current at no Load
- ±2% Output Accuracy
- 300mA Output Current
- Wide Operating Input Voltage Range: 2V to 24V
- Dropout Voltage: 0.53V at 150mA ( $V_{OUT}=5V$ )
- Support Fixed Output Voltage  
1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 3.6V, 5.0V
- Stable with Ceramic or Tantalum Capacitor
- Current Limit Protection
- Over-Temperature Protection
- SOT-23-5 Package Available

### Applications

- Portable, Battery Powered Equipment
- Low Power Microcontrollers
- Laptop, Palmtops and PDAs
- Wireless Communication Equipment
- Audio/Video Equipment
- Car Navigation Systems
- Industrial Controls
- Weighting Scales
- Meters
- Home Automation

### General Description

The Devices is a low-dropout (LDO) voltage regulators with enable function offering the benefits of high input voltage, low-dropout voltage, low-power consumption, and miniaturized packaging.

The features of low quiescent current as low as 2.0μA and zero disable current is ideal for powering the battery equipment to a longer service life. The Devices

is stable with the ceramic output capacitor over its wide input range from 2V to 24V and the entire range of output load current.

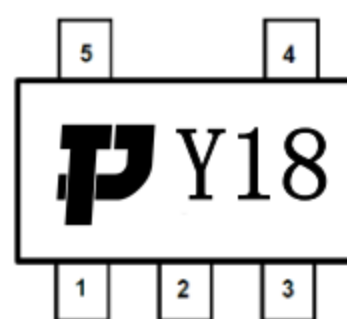
### Ordering Information

#### XC6204B252MR

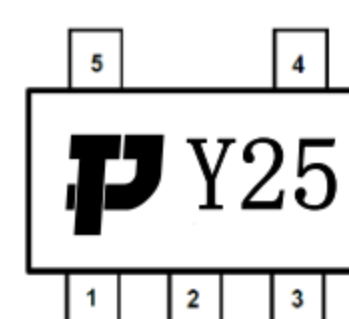
Output voltage: 182=1.8V  
252=2.5V  
282=2.8V  
302=3.0V  
362=3.6V  
332=3.3V  
502=5.0V

### Marking

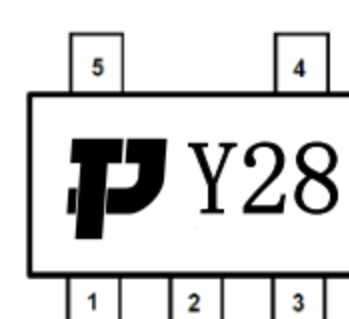
XC6204B182MR



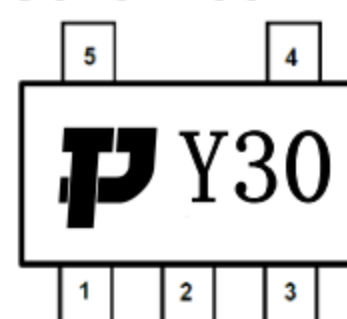
XC6204B252MR



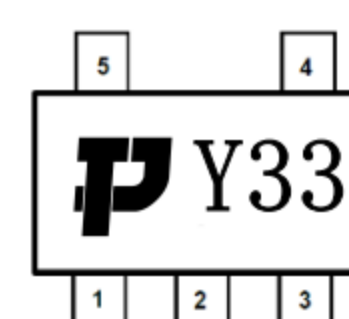
XC6204B282MR



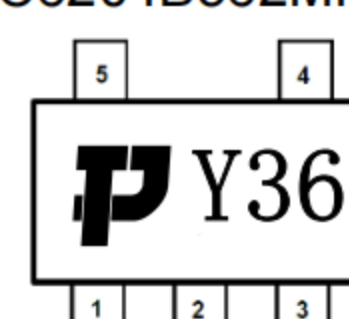
XC6204B302MR



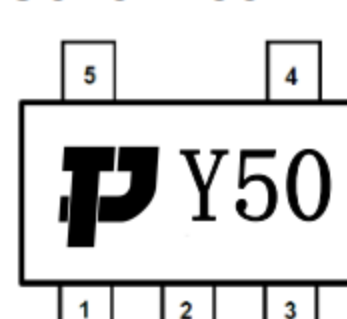
XC6204B332MR



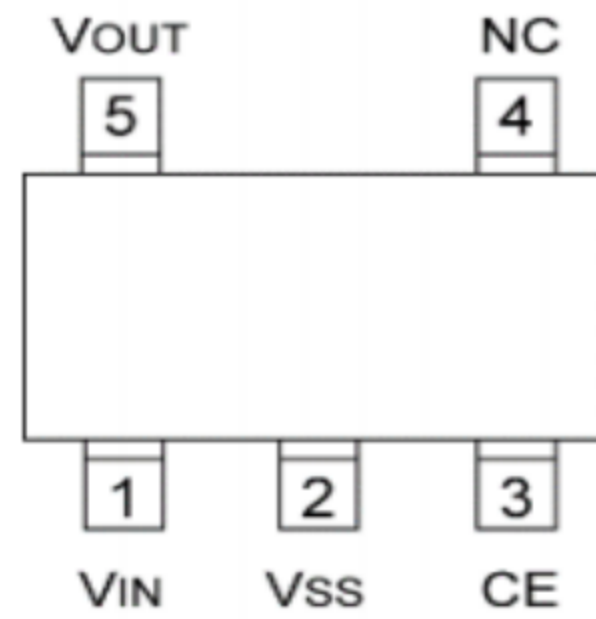
XC6204B362MR



XC6204B502MR



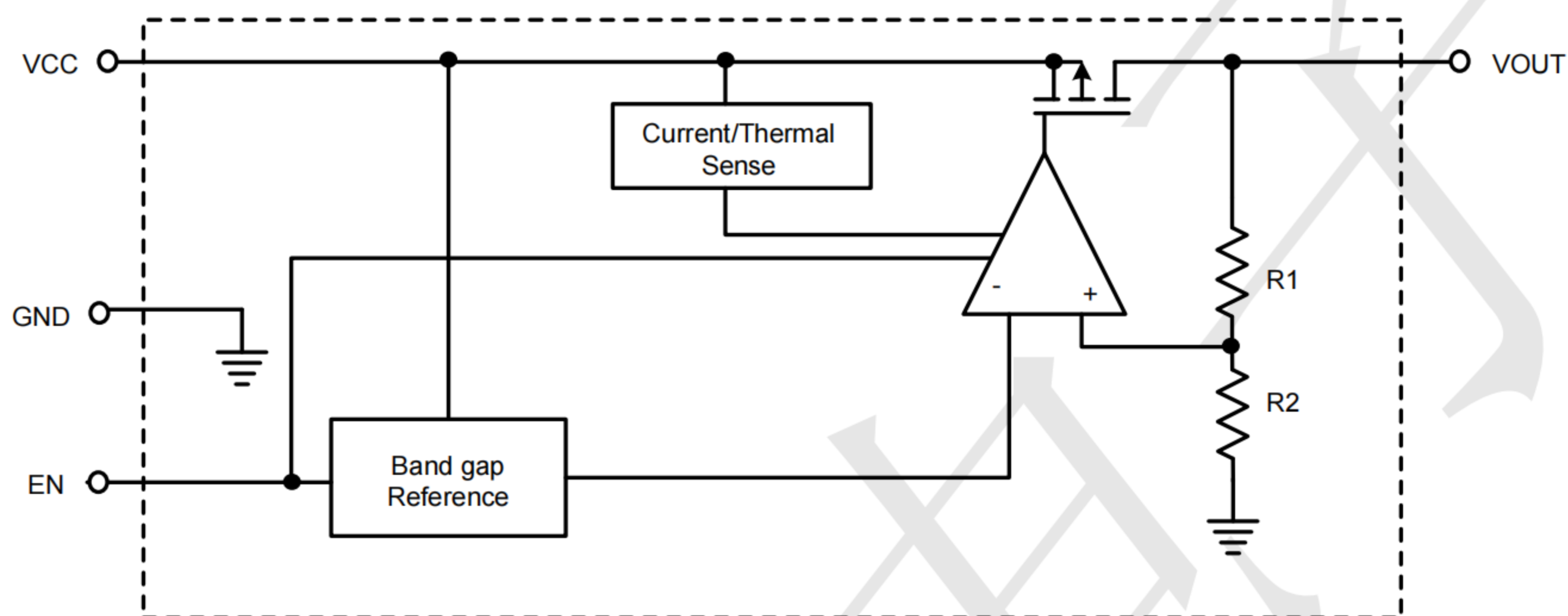
## PIN CONFIGURATION



SOT23-5

| Pin No | Pin Name | Pin Function             |
|--------|----------|--------------------------|
| 1      | VIN      | Input of Supply Voltage. |
| 2      | VSS      | Ground                   |
| 3      | CE       | Enable Control Input.    |
| 4      | NC       | No Internal Connection.  |
| 5      | VOUT     | Output of the Regulator  |

## BLOCK DIAGRAM



## Absolute Maximum Ratings

|                                             |                  |
|---------------------------------------------|------------------|
| VIN Pin to GND Pin Voltage .....            | -0.3V to 25V     |
| VOUT Pin to GND Pin Voltage .....           | -0.3V to 6.0V    |
| VOUT Pin to VIN Pin Voltage .....           | -25V to 0.3V     |
| Package Thermal Resistance (Note 2)         |                  |
| SOT-23-5, SOT-23-3, $\theta_{JA}$ .....     | 200 °C /W        |
| Lead Temperature (Soldering, 10 sec.) ..... | 260 °C           |
| Junction Temperature .....                  | 150 °C           |
| Storage Temperature Range .....             | -40 °C to 150 °C |
| ESD Susceptibility                          |                  |
| HBM .....                                   | 2KV              |
| MM .....                                    | 200V             |

## Recommended Operating Conditions

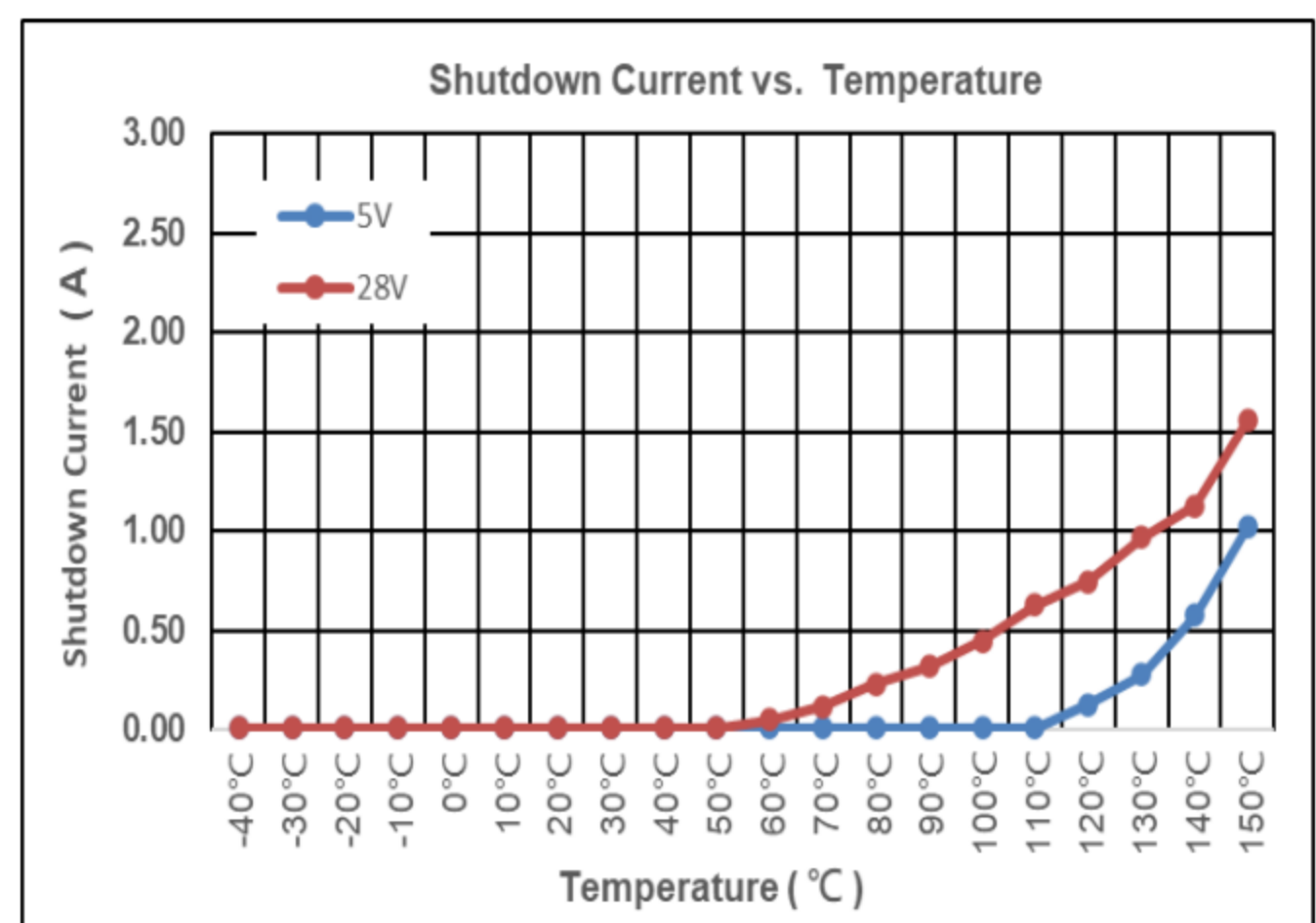
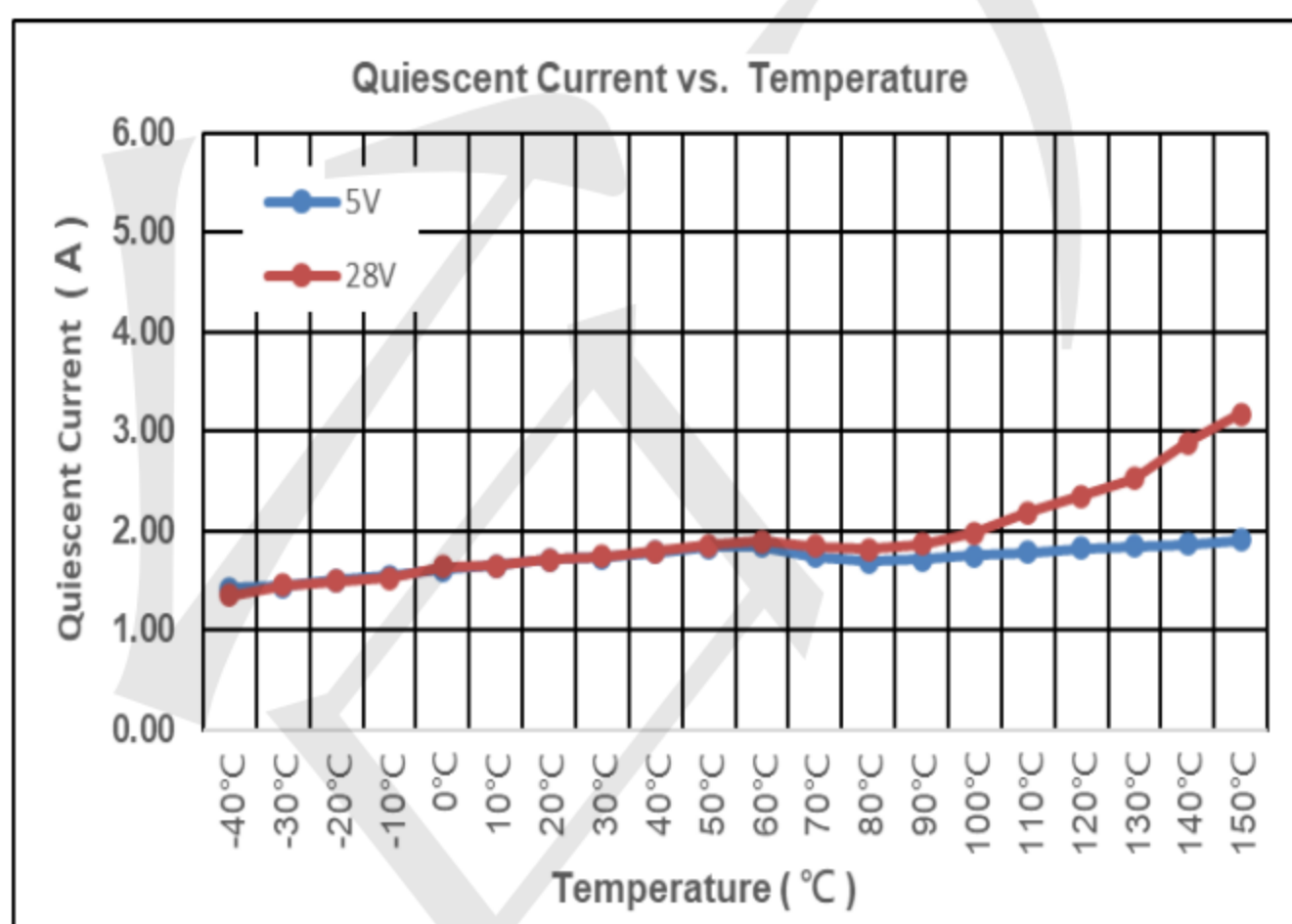
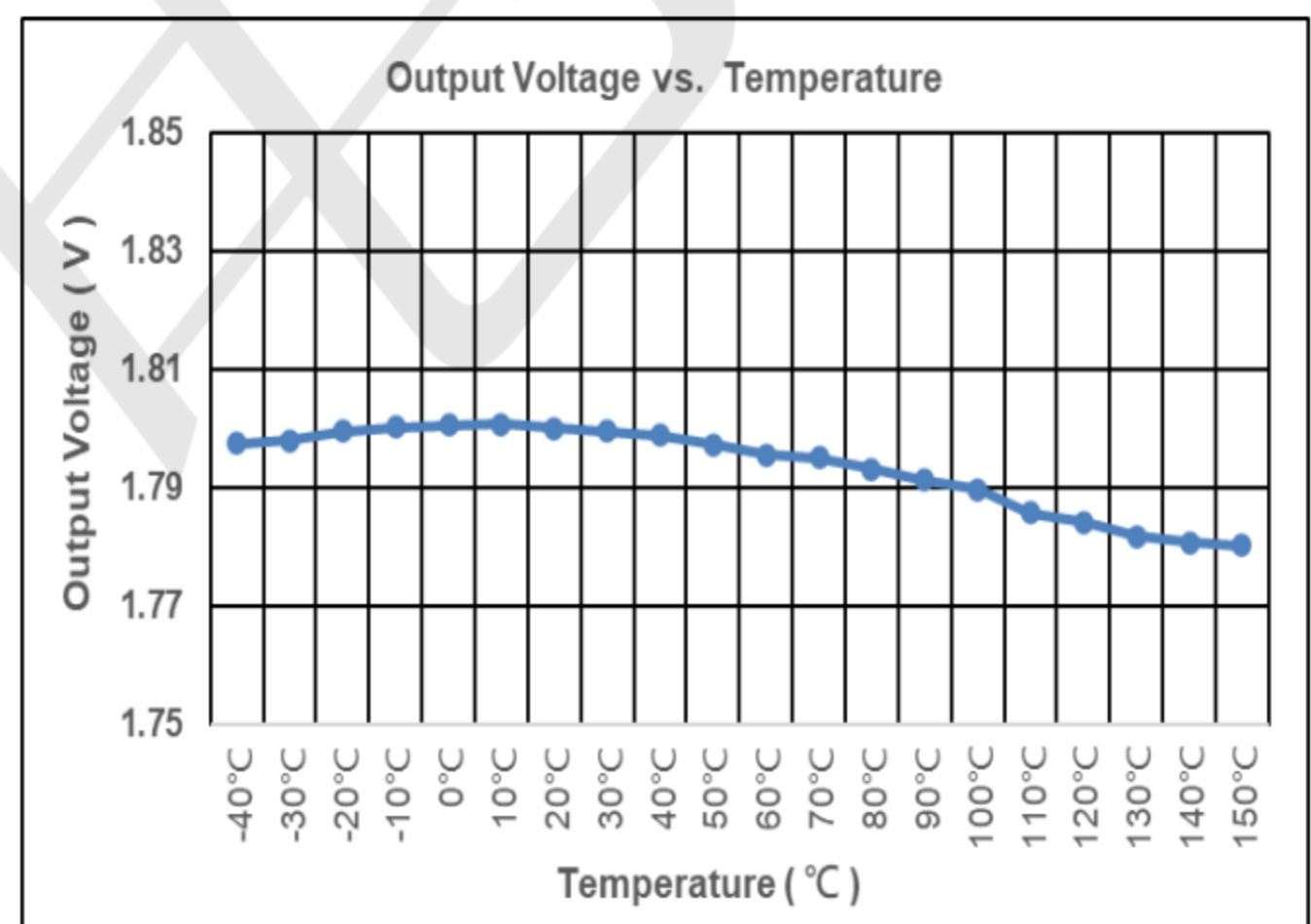
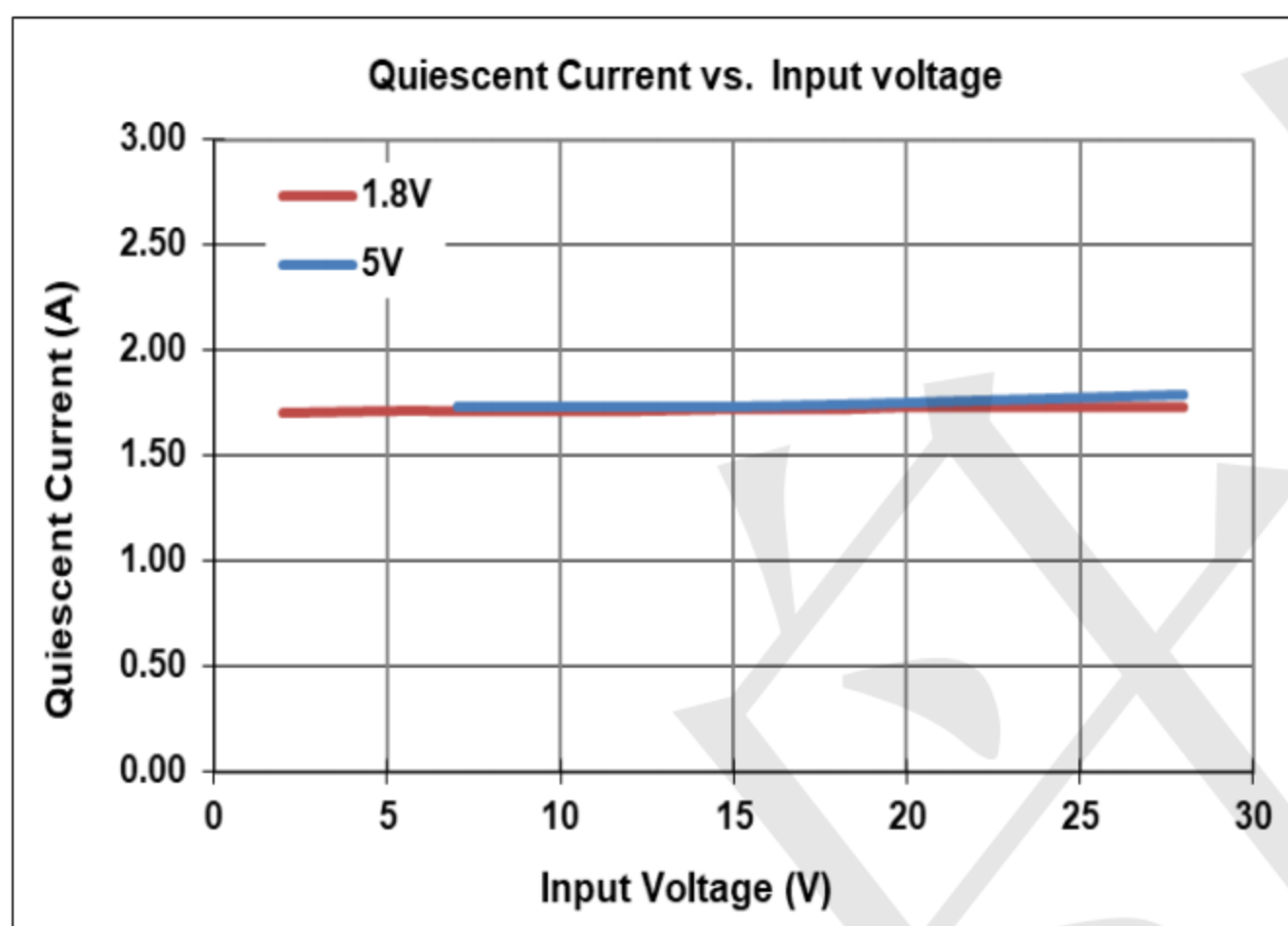
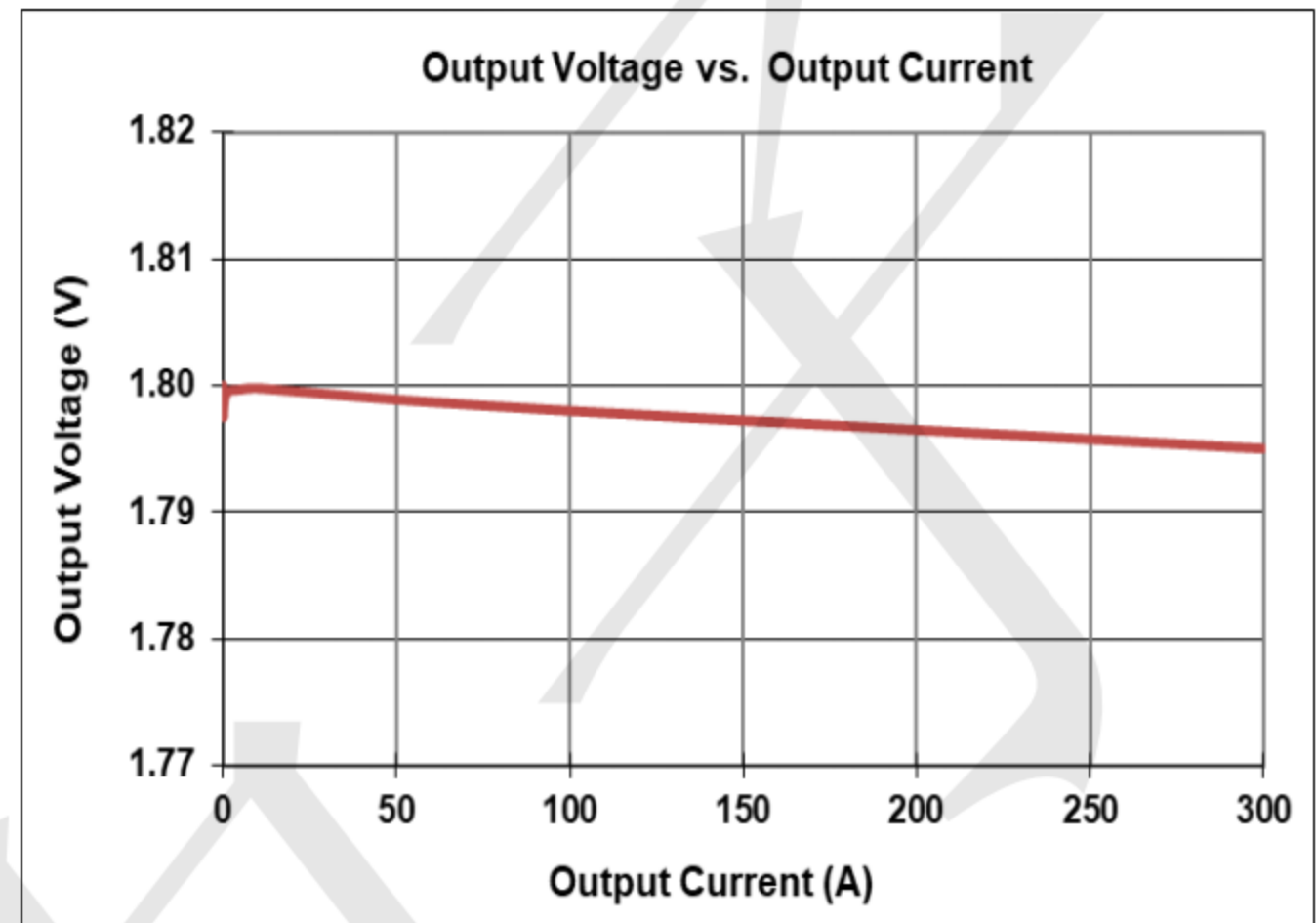
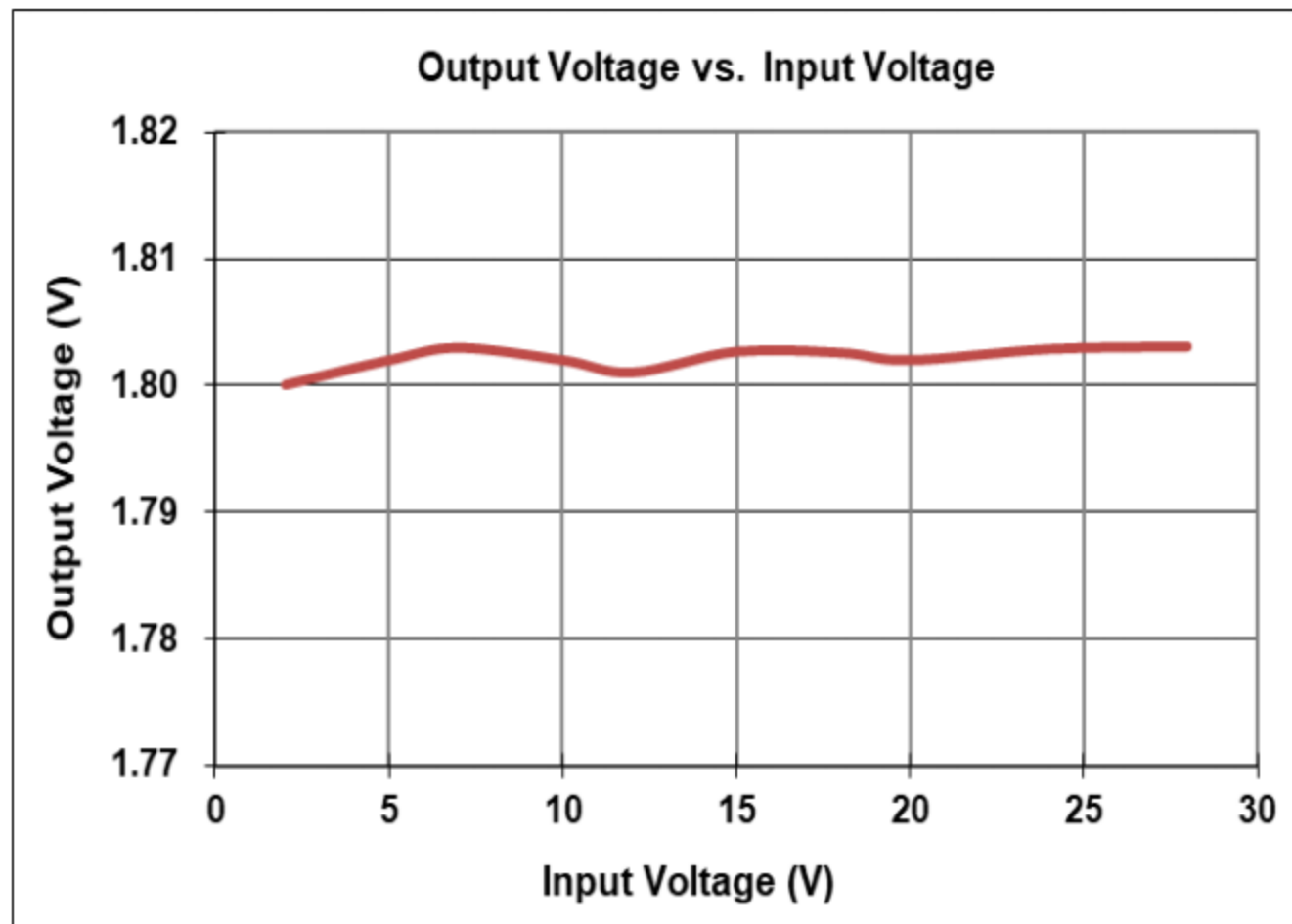
|                                  |                |
|----------------------------------|----------------|
| Supply Input Voltage .....       | -2.0V to 24V   |
| Junction Temperature Range ..... | -40°C to 125°C |
| Ambient Temperature Range .....  | -40°C to 85°C  |

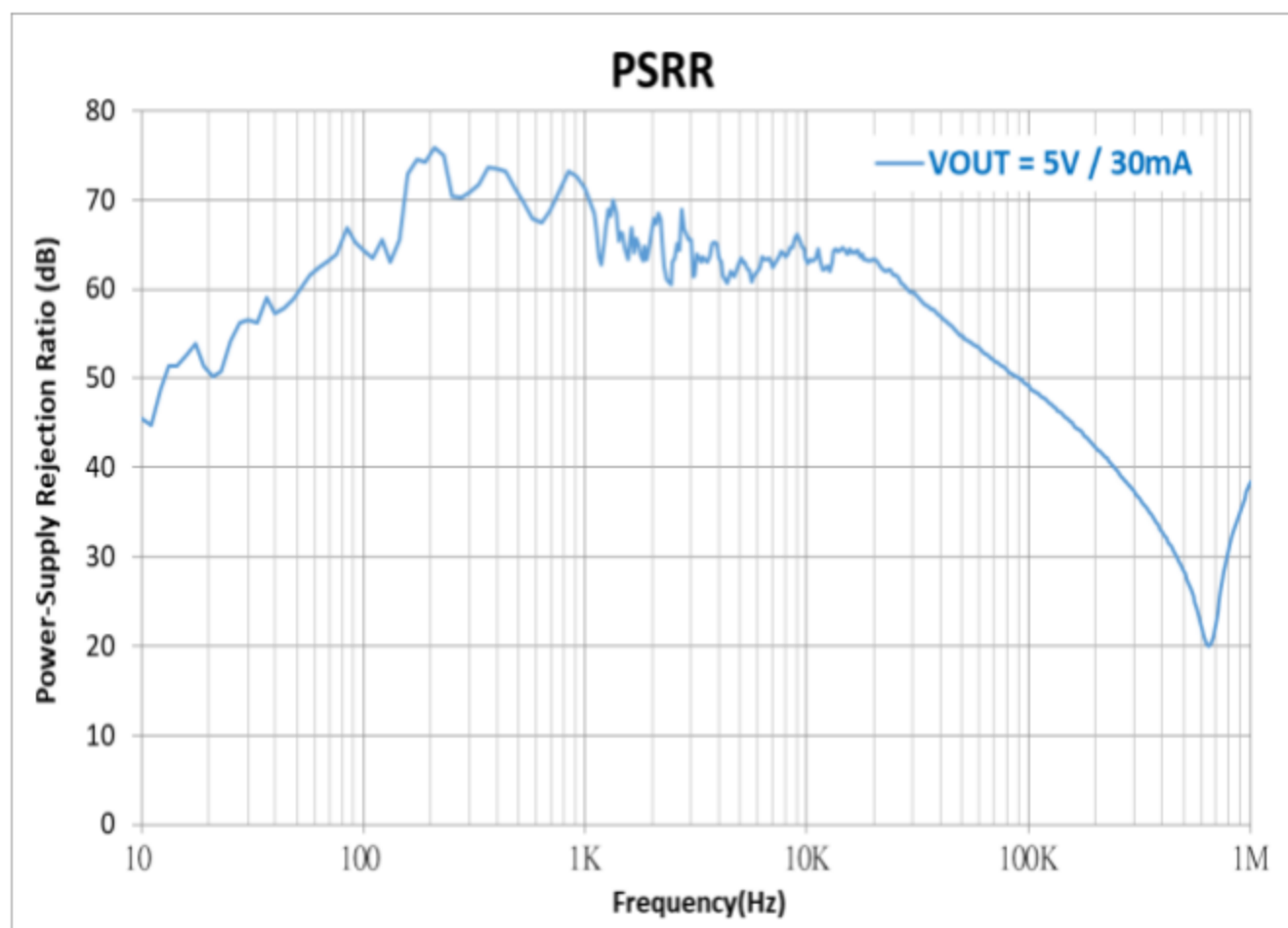
### Electrical Characteristics

( $V_{IN}=15V$ ,  $V_{EN}=5V$ ,  $T_A=25^{\circ}C$ , unless otherwise specified) (Note 1)

| Parameter                              | Symbol           | Test Conditions                                                           | Min | Typ  | Max | Unit        |
|----------------------------------------|------------------|---------------------------------------------------------------------------|-----|------|-----|-------------|
| Supply Voltage                         | $V_{IN}$         |                                                                           | 2   | --   | 24  | V           |
| DC Output Voltage Accuracy             |                  | $I_{LOAD} = 0.1mA$                                                        | -2  |      | 2   | %           |
| Dropout Voltage ( $I_{LOAD} = 100mA$ ) | $V_{DROP}$       | $V_{OUT} \geq 5V$                                                         | --  | 0.35 |     | V           |
|                                        | $V_{DROP\_3.3V}$ | $V_{OUT} = 3.3V$                                                          |     | 0.42 |     |             |
|                                        | $V_{DROP\_1.8V}$ | $V_{OUT} = 1.8V$                                                          |     | 0.5  |     |             |
| Ground Current ( $I_{LOAD} = 0mA$ )    | $I_Q$            | $V_{OUT} \leq 5V$                                                         |     | 2.0  | 4.5 | $\mu A$     |
| Shutdown Ground Current                | $I_{SD}$         | $V_{EN} = 0V$ ,<br>$V_{OUT} = 0V$                                         |     | 0.01 | 0.5 | $\mu A$     |
| $V_{OUT}$ Shutdown Leakage Current     | $I_{LEAK}$       |                                                                           |     | 0.01 | 0.5 | $\mu A$     |
| Enable Threshold Voltage               | $V_{IH}$         | EN Rising                                                                 | 1.1 |      |     | V           |
|                                        | $V_{IL}$         | EN Falling                                                                |     |      | 0.4 |             |
| EN Input Current                       | $I_{EN}$         | $V_{EN} = 27V$                                                            |     | 10   | 100 | nA          |
| Line Regulation                        | $\Delta LINE$    | $I_{LOAD} = 1mA$ ,<br>$10 \leq V_{IN} \leq 20V$                           | --  | 0.3  |     | %           |
| Load Regulation                        | $\Delta LOAD$    | $10mA \leq I_{LOAD} \leq 0.2A$                                            |     | 0.3  |     | %           |
| Output Current Limit                   | $I_{LIM}$        | $V_{OUT} = 0$                                                             | 300 | 500  |     | mA          |
| Power Supply Rejection Ratio           | PSRR             | $V_{OUT} = 5V$ ,<br>$I_{LOAD} = 30mA$ ,<br>$V_{IN} = 12V$ ,<br>$f = 1kHz$ |     | 70   |     | dB          |
| Thermal Shutdown Temperature           | $T_{SD}$         | $I_{LOAD} = 10mA$                                                         | --  | 160  | --  | $^{\circ}C$ |
| Thermal Shutdown Hysteresis            | $\Delta T_{SD}$  |                                                                           |     | 15   |     | $^{\circ}C$ |

## Typical Operating Characteristics





### Typical Application Circuit

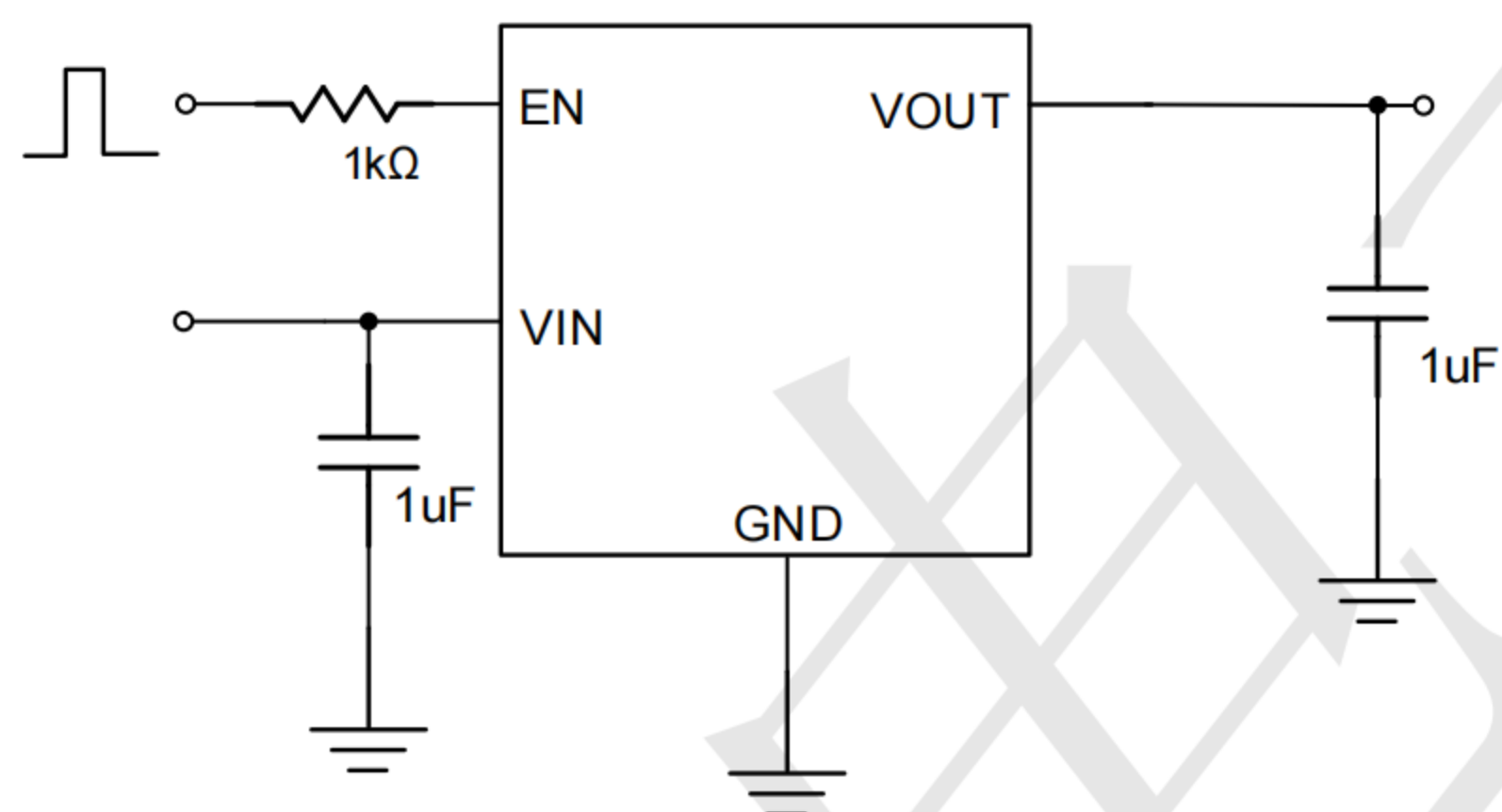
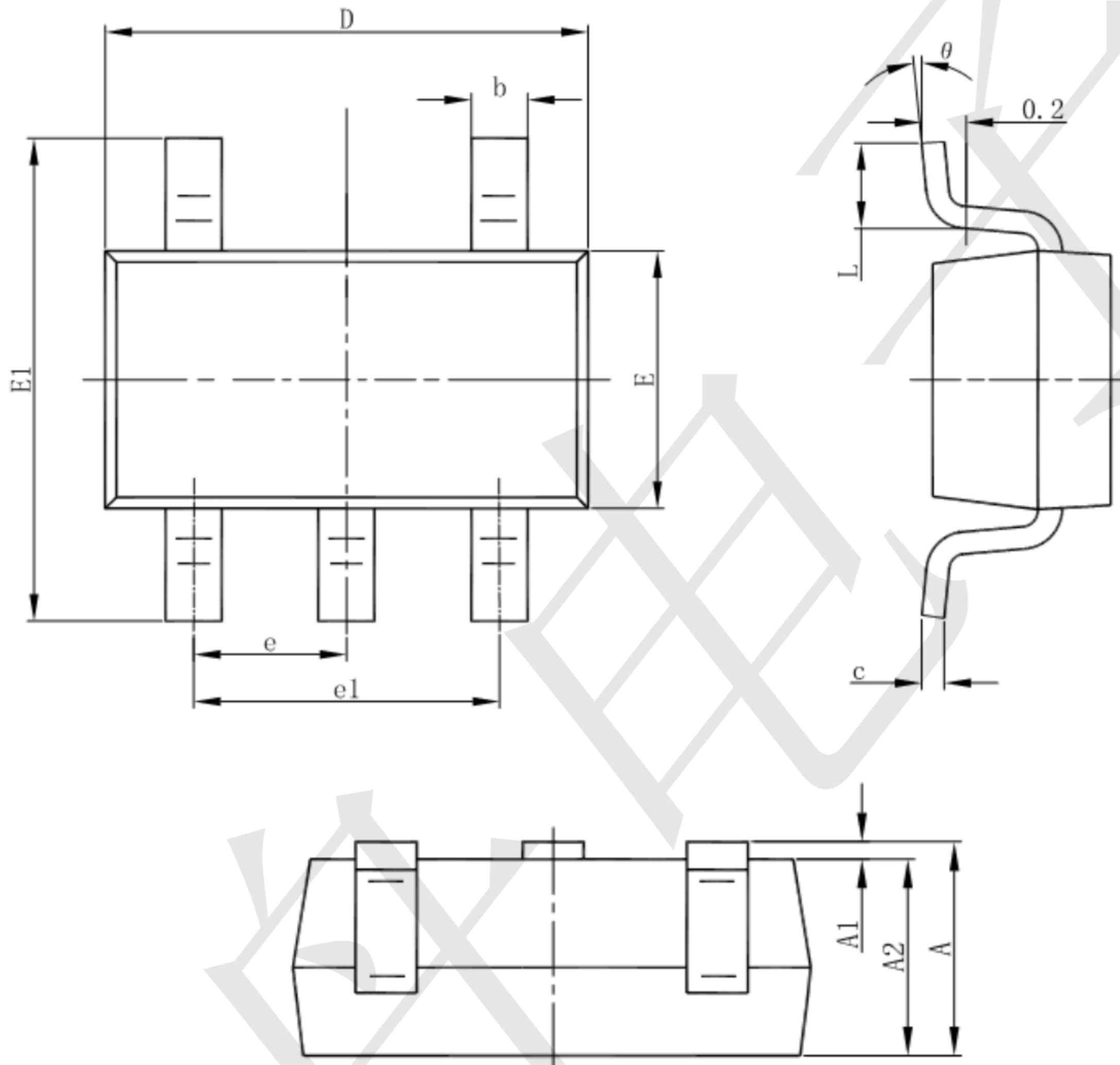


Figure 1: Application circuit of Fixed VOUT LDO with enable function

**Package informantion**

**SOT23-5**



| 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°    |