

Low power consumption, Low ESR Cap.Compatible ME6206 Series

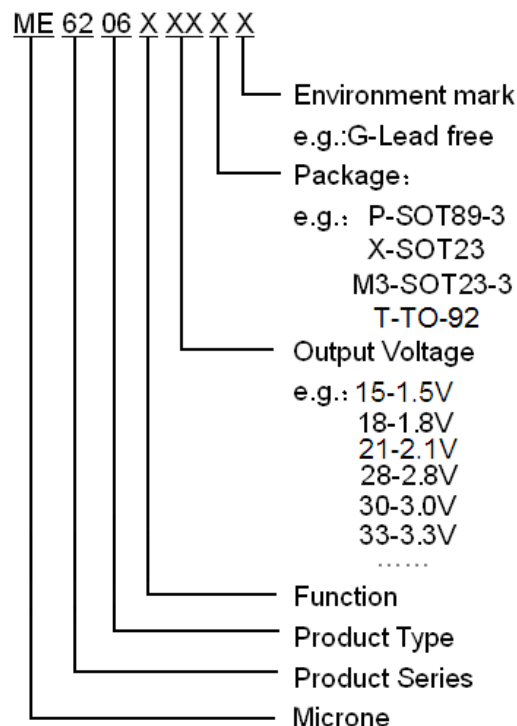
General Description

ME6206 series are highly precise, low power consumption, high voltage, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The series is compatible with low ESR ceramic capacitors. The current limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin.

Features

- Highly Accurate: $\pm 2\%$
- Output voltage range: 1.5V~5.0V (selectable in 0.1V steps)
- Low power consumption: 8uA(TYP.)
- Large output current: 300mA ($V_{IN}=4.3V, V_{OUT}=3.3V$)
- Input voltage: up to 6 V
- Dropout voltage: 0.2V at 100mA and 0.40V at 200mA
- Excellent Input Stability
- Be available to regulator and reference voltage
- Packages: SOT23-3, SOT89-3, SOT23, TO-92

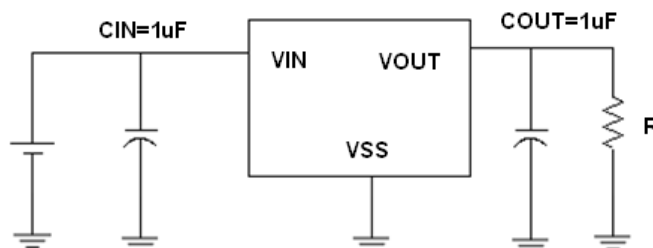
Selection Guide



Typical Application

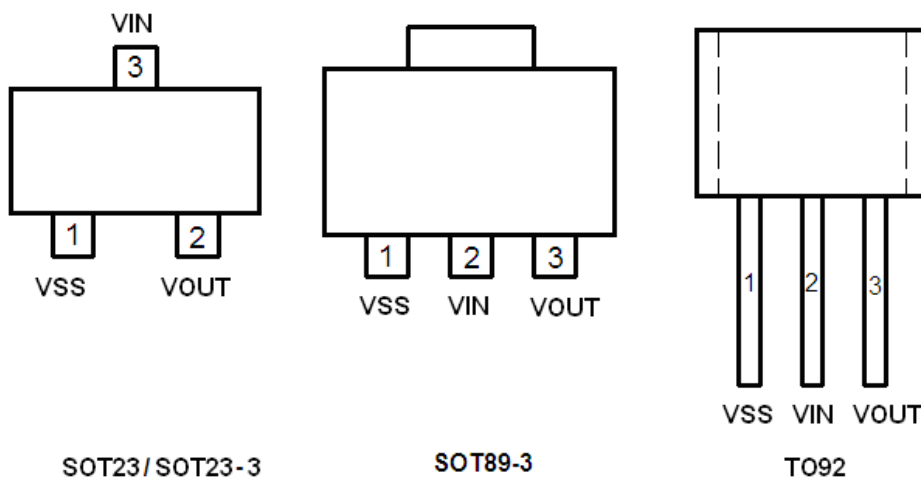
- Battery powered equipment
- Communication tools
- Mobile phones
- Portable games
- Portable AV systems
- Cameras, Video systems
- Reference voltage sources

Typical Application Circuit



| Product | Supply Current |
|---------|----------------|
| ME6206A | 8 uA |
| ME6206K | 180 uA |

Pin Configuration



Pin Assignment

ME6206Axx/ ME6206Kxx

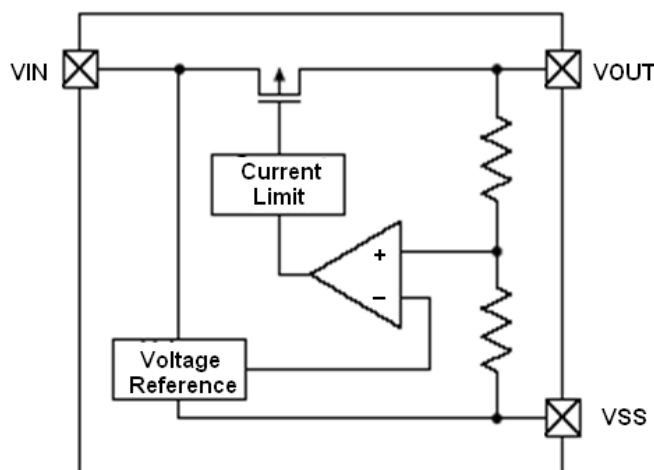
| Pin | | | | | Name | Function |
|---------|---------|---------|-------|-------|------|----------|
| M3 | P | P1 | X | T | | |
| SOT23-3 | SOT89-3 | SOT89-3 | SOT23 | TO-92 | | |
| 1 | 1 | 2 | 1 | 1 | VSS | Ground |
| 2 | 3 | 1 | 2 | 3 | VOUT | Output |
| 3 | 2 | 3 | 3 | 2 | VIN | Input |

The difference of printing on the chip between P and P1 is : P:  6206A , P1:  6206A1

Absolute Maximum Ratings

| Parameter | Symbol | Description | Units |
|-------------------------------|-----------|-------------------------------|--------|
| Input Voltage | V_{IN} | 6.5 | V |
| Output Current | I_{out} | 500 | mA |
| Output Voltage | V_{out} | $V_{ss}-0.3 \sim V_{out}+0.3$ | V |
| Power Dissipation | SOT23-3 | P_d | 300 mW |
| | SOT89-3 | P_d | 500 mW |
| | SOT23 | P_d | 300 mW |
| | TO-92 | P_d | 500 mW |
| Operating Ambient Temperature | T_{Opr} | -25 ~ +125 | °C |
| Storage Temperature | T_{stg} | -40 ~ +125 | °C |

Block Diagram



ME6206A15

(VIN=Vout+1V, Cin=Cout=1uF, Ta=25°C Unless otherwise stated)

| PARAMETER | SYMBOL | CONDITION | MIX | TYP | MAX | UNIT |
|---|--|--|--------|---------------------------------|--------|------|
| Output Voltage | V _{OUT(E)} (Note 2) | I _{OUT} =10mA, V _{IN} =Vout+1V | X 0.98 | V _{OUT(T)} (Note 1) | X 1.02 | V |
| Input Voltage | V _{IN} | | | | 6 | V |
| Maximum Output Current | I _{OUT (max)} | V _{IN} =Vout+1V | | 100 | 120 | mA |
| Load Regulation | ΔV _{OUT} | V _{IN} =Vout+1V, 1mA ≤ I _{OUT} ≤ 80mA | | 10 | 20 | mV |
| Dropout Voltage (Note 3) | V _{dif1} | I _{OUT} = 20mA | | 180 | 200 | mV |
| | V _{dif2} | I _{OUT} = 50mA | | 360 | 380 | mV |
| Supply Current | I _{SS} | V _{IN} =Vout+1V | | 7 | 15 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | I _{OUT} = 10mA Vout+1V ≤ V _{IN} ≤ 5V | | 0.1 | 0.2 | %/V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin = [Vout+1]V +1Vp-pAC I _{OUT} = 10mA, f=1kHz | | 45 | 47 | dB |
| Short Circuit Current | I _{short} | Vin=Vout(T)+1.5V Vout=Vss | | 20 | 50 | mA |
| Over Current Protection | I _{limit} | | | 300 | | mA |

ME6206A18

(VIN=Vout+1V, Cin=Cout=1uF, Ta=25°C Unless otherwise stated)

| PARAMETER | SYMBOL | CONDITION | MIX | TYP | MAX | UNIT |
|-----------|--------|-----------|-----|-----|-----|------|
|-----------|--------|-----------|-----|-----|-----|------|

| | | | | | | |
|-------------------------------------|--|--|--------|--------------------------|--------|---------|
| Output Voltage | $V_{OUT(E)}$ (Note 2) | $I_{OUT}=10mA,$ $V_{IN}=V_{out}+1V$ | X 0.98 | $V_{OUT(T)}$ (Note 1) | X 1.02 | V |
| Input Voltage | V_{IN} | | | | 6 | V |
| Maximum Output Current | $I_{OUT} (max)$ | $V_{IN}=V_{out}+1V$ | | 120 | 150 | mA |
| Load Regulation | ΔV_{OUT} | $V_{IN}=V_{out}+1V,$ $1mA \leq I_{OUT} \leq 80mA$ | | 12 | 27 | mV |
| Dropout Voltage (Note 3) | V_{dif1} | $I_{OUT} = 20mA$ | | 180 | 200 | mV |
| | V_{dif2} | $I_{OUT} = 50mA$ | | 360 | 380 | mV |
| Supply Current | I_{SS} | $V_{IN}=V_{out}+1V$ | | 7 | 15 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | $I_{OUT} = 10mA$ $V_{out}+1V \leq V_{IN} \leq 5V$ | | 0.1 | 0.2 | %/V |
| Power Supply Ripple Rejection Ratio | PSRR | $V_{in} = [V_{out}+1]V$ $+1V_{p-pAC}$ $I_{OUT} = 10mA, f=1kHz$ | | 45 | 47 | dB |
| Short Circuit Current | I_{short} | $V_{in}=V_{out(T)}+1.5V$ $V_{out}=V_{ss}$ | | 25 | 50 | mA |
| Over Current Protection | I_{limit} | | | 400 | | mA |

ME6206A21

($V_{IN}=V_{out}+1V, C_{in}=C_{out}=1\mu F, T_a=25^\circ C$ Unless otherwise stated)

| PARAMETER | SYMBOL | CONDITION | MIX | TYP | MAX | UNIT |
|-------------------------------------|--|--|--------|--------------------------|--------|---------|
| Output Voltage | $V_{OUT(E)}$ (Note 2) | $I_{OUT}=10mA,$ $V_{IN}=V_{out}+1V$ | X 0.98 | $V_{OUT(T)}$ (Note 1) | X 1.02 | V |
| Input Voltage | V_{IN} | | | | 6 | V |
| Maximum Output Current | $I_{OUT} (max)$ | $V_{IN}=V_{out}+1V$ | | 200 | 300 | mA |
| Load Regulation | ΔV_{OUT} | $V_{IN}=V_{out}+1V,$ $1mA \leq I_{OUT} \leq 80mA$ | | 10 | 20 | mV |
| Dropout Voltage (Note 3) | V_{dif1} | $I_{OUT} = 50mA$ | | 100 | 130 | mV |
| | V_{dif2} | $I_{OUT} = 100mA$ | | 200 | 230 | mV |
| Supply Current | I_{SS} | $V_{IN}=V_{out}+1V$ | | 7 | 15 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | $I_{OUT} = 10mA$ $V_{out}+1V \leq V_{IN} \leq 5V$ | | 0.1 | 0.2 | %/V |
| Power Supply Ripple Rejection Ratio | PSRR | $V_{in} = [V_{out}+1]V$ $+1V_{p-pAC}$ $I_{OUT} = 10mA, f=1kHz$ | | 45 | 47 | dB |
| Short Circuit Current | I_{short} | $V_{in}=V_{out(T)}+1.5V$ $V_{out}=V_{ss}$ | | 20 | 50 | mA |
| Over Current Protection | I_{limit} | | | 450 | | mA |

ME6206A28

(VIN=Vout+1V,Cin=Cout=1uF,Ta=25°C Unless otherwise stated)

| PARAMETER | SYMBOL | CONDITION | MIX | TYP | MAX | UNIT |
|--|--|---|--------|---------------------------------|--------|------|
| Output Voltage | V _{OUT(E)} (Note 2) | I _{OUT} =10mA, V _{IN} =Vout+1V | X 0.98 | V _{OUT(T)} (Note 1) | X 1.02 | V |
| Input Voltage | V _{IN} | | | | 6 | V |
| Maximum Output Current | I _{OUT} (max) | V _{IN} =Vout+1V | | 300 | 350 | mA |
| Load Regulation | ΔV _{OUT} | V _{IN} =Vout+1V 1mA≤I _{OUT} ≤100mA | | 14 | 28 | mV |
| Dropout Voltage (Note 3) | V _{dif1} | I _{OUT} =80mA | | 180 | 200 | mV |
| | V _{dif2} | I _{OUT} =200mA | | 380 | 400 | mV |
| Supply Current | I _{SS} | V _{IN} =Vout+1V | | 8 | 15 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | I _{OUT} =40mA Vout+1V ≤V _{IN} ≤6V | | 0.03 | 0.2 | %/V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC I _{OUT} =10mA,f=1kHz | | 50 | 52 | dB |
| Short Circuit Current | I _{short} | Vin=Vout(T)+1.5V Vout=Vss | | 30 | 60 | mA |
| Over Current Protection | I _{limit} | | | 500 | | mA |

ME6206A30

(VIN=Vout+1V,Cin=Cout=1uF,Ta=25°C Unless otherwise stated)

| PARAMETER | SYMBOL | CONDITION | MIX | TYP | MAX | UNIT |
|--|--|---|--------|---------------------------------|--------|------|
| Output Voltage | V _{OUT(E)} (Note 2) | I _{OUT} =10mA, V _{IN} =Vout+1V | X 0.98 | V _{OUT(T)} (Note 1) | X 1.02 | V |
| Input Voltage | V _{IN} | | | | 6 | V |
| Maximum Output Current | I _{OUT} (max) | V _{IN} =Vout+1V | | 300 | 350 | mA |
| Load Regulation | ΔV _{OUT} | V _{IN} =Vout+1V 1mA≤I _{OUT} ≤100mA | | 14 | 28 | mV |
| Dropout Voltage (Note 3) | V _{dif1} | I _{OUT} =80mA | | 180 | | mV |
| | V _{dif2} | I _{OUT} =200mA | | 380 | | mV |
| Supply Current | I _{SS} | V _{IN} =Vout+1V | | 8 | 15 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | I _{OUT} =40mA Vout+1V ≤V _{IN} ≤6V | | 0.03 | 0.2 | %/V |
| Power Supply Ripple Rejection Ratio | PSRR | Vin= [Vout+1]V +1Vp-pAC I _{OUT} =10mA,f=1kHz | | 50 | 52 | dB |
| Short Circuit Current | I _{short} | Vin=Vout(T)+1.5V Vout=Vss | | 30 | 60 | mA |

| | | | | | | |
|-------------------------|-------------|--|--|-----|--|----|
| Over Current Protection | I_{limit} | | | 500 | | mA |
|-------------------------|-------------|--|--|-----|--|----|

ME6206A33

($V_{IN}=V_{out}+1V, C_{in}=C_{out}=1\mu F, T_a=25^{\circ}C$ Unless otherwise stated)

| PARAMETER | SYMBOL | CONDITION | MIX | TYP | MAX | UNIT |
|-------------------------------------|--|---|--------|--------------------------|--------|---------|
| Output Voltage | $V_{OUT(E)}$ (Note 2) | $I_{OUT}=10mA,$ $V_{IN}=V_{out}+1V$ | X 0.98 | $V_{OUT(T)}$ (Note 1) | X 1.02 | V |
| Input Voltage | V_{IN} | | | | 6 | V |
| Maximum Output Current | $I_{OUT} (max)$ | $V_{IN}=V_{out}+1V$ | | 300 | 350 | mA |
| Load Regulation | ΔV_{OUT} | $V_{IN}=V_{out}+1V$ $1mA \leq I_{OUT} \leq 100mA$ | | 14 | 28 | mV |
| Dropout Voltage (Note 3) | V_{dif1} | $I_{OUT} = 80mA$ | | 180 | 200 | mV |
| | V_{dif2} | $I_{OUT} = 200mA$ | | 380 | 400 | mV |
| Supply Current | I_{SS} | $V_{IN}=V_{out}+1V$ | | 9 | 15 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | $I_{OUT} = 40mA$ $V_{out}+1V \leq V_{IN} \leq 6V$ | | 0.03 | 0.2 | %/V |
| Power Supply Ripple Rejection Ratio | PSRR | $V_{in} = [V_{out}+1]V$ $+1Vp-pAC$ $I_{OUT} = 10mA, f=1kHz$ | | 50 | 52 | dB |
| Short Circuit Current | I_{short} | $V_{in}=V_{out(T)}+1.5V$ $V_{out}=V_{ss}$ | | 30 | 60 | mA |
| Over Current Protection | I_{limit} | | | 500 | | mA |

ME6206K33

($V_{IN}=V_{out}+1V, C_{in}=C_{out}=1\mu F, T_a=25^{\circ}C$ Unless otherwise stated)

| PARAMETER | SYMBOL | CONDITION | MIX | TYP | MAX | UNIT |
|-------------------------------------|--|---|--------|--------------------------|--------|---------|
| Output Voltage | $V_{OUT(E)}$ (Note 2) | $I_{OUT}=10mA,$ $V_{IN}=V_{out}+1V$ | X 0.98 | $V_{OUT(T)}$ (Note 1) | X 1.02 | V |
| Input Voltage | V_{IN} | | | | 6 | V |
| Maximum Output Current | $I_{OUT} (max)$ | $V_{IN}=V_{out}+1V$ | | 300 | 350 | mA |
| Load Regulation | ΔV_{OUT} | $V_{IN}=V_{out}+1V$ $1mA \leq I_{OUT} \leq 100mA$ | | 14 | 28 | mV |
| Dropout Voltage (Note 3) | V_{dif1} | $I_{OUT} = 80mA$ | | 180 | 200 | mV |
| | V_{dif2} | $I_{OUT} = 200mA$ | | 380 | 400 | mV |
| Supply Current | I_{SS} | $V_{IN}=V_{out}+1V$ | | 180 | 500 | μA |
| Line Regulations | $\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$ | $I_{OUT} = 40mA$ $V_{out}+1V \leq V_{IN} \leq 6V$ | | 0.03 | 0.2 | %/V |
| Power Supply Ripple Rejection Ratio | PSRR | $V_{in} = [V_{out}+1]V$ $+1Vp-pAC$ $I_{OUT} = 10mA, f=1kHz$ | | 50 | 52 | dB |

| | | | | | | |
|-------------------------|-------------|--|--|-----|----|----|
| Short Circuit Current | I_{short} | $V_{in}=V_{out}(T)+1.5V$ $V_{out}=V_{ss}$ | | 30 | 60 | mA |
| Over Current Protection | I_{limit} | | | 500 | | mA |

Note :

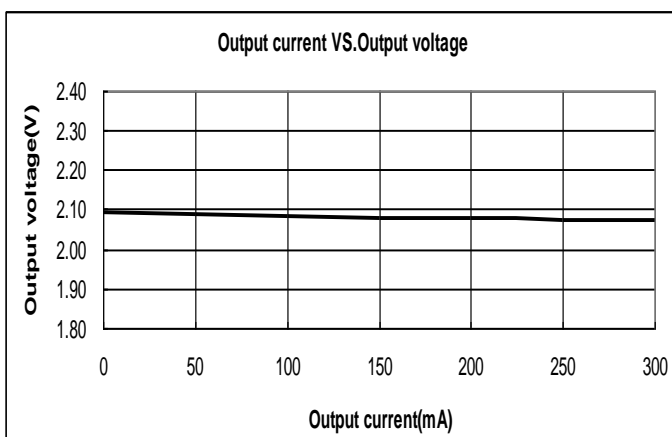
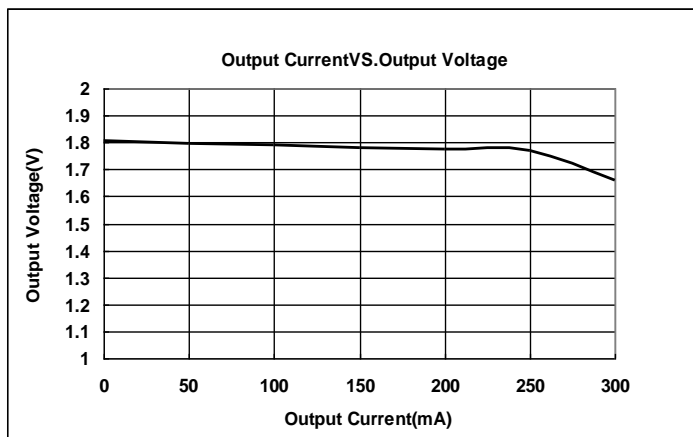
1. $V_{OUT}(T)$: Specified Output Voltage
2. $V_{OUT}(E)$: Effective Output Voltage (i.e. The output voltage when “ $V_{OUT}(T)+1.0V$ ”is provided at the V_{in} pin while maintaining a certain I_{out} value.)
3. V_{dif} : $V_{IN1}-V_{OUT}(E)'$
 V_{IN1} : The input voltage when $V_{OUT}(E)'$ appears as input voltage is gradually decreased.
 $V_{OUT}(E)'$ =A voltage equal to 98% of the output voltage whenever an amply stabilized I_{out} { $V_{OUT}(T)+1.0V$ } is input.

Type Characteristics

(1) Output Current VS. Output Voltage ($V_{IN}=V_{out}+1$, $T_a = 25\text{ }^\circ\text{C}$)

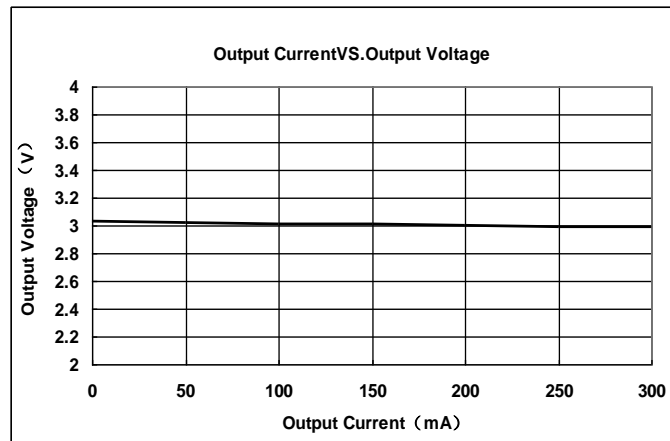
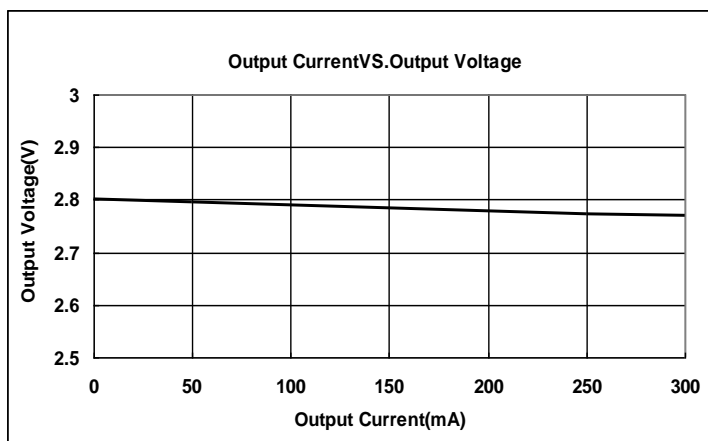
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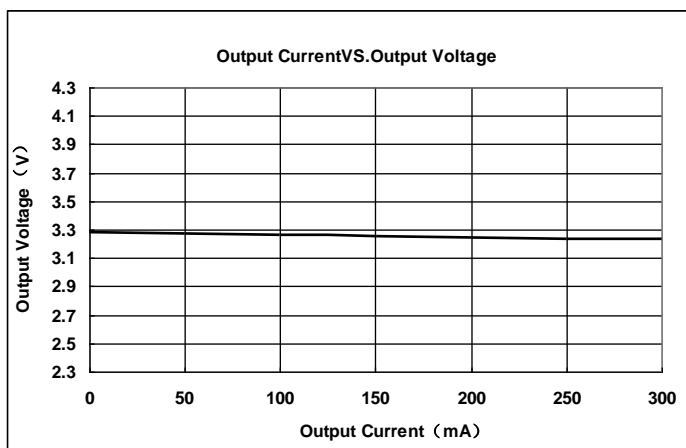


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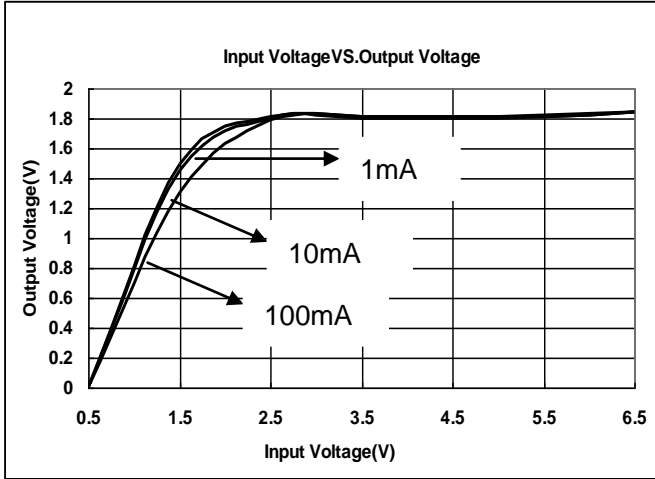


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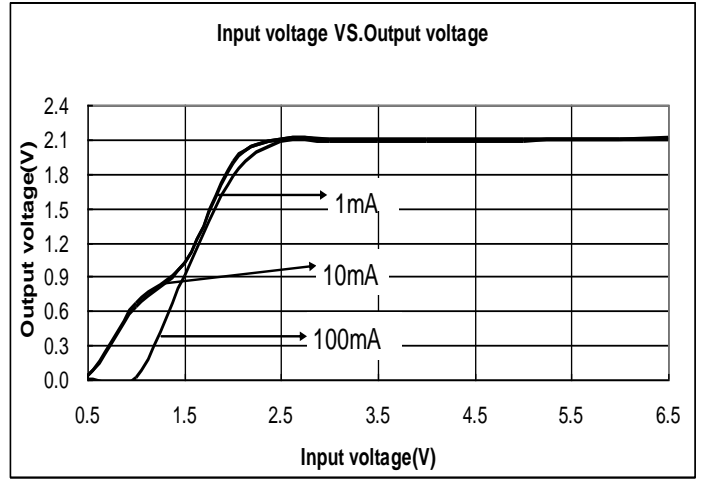


(2) Input Voltage VS. Output Voltage ($T_a = 25^\circ\text{C}$)

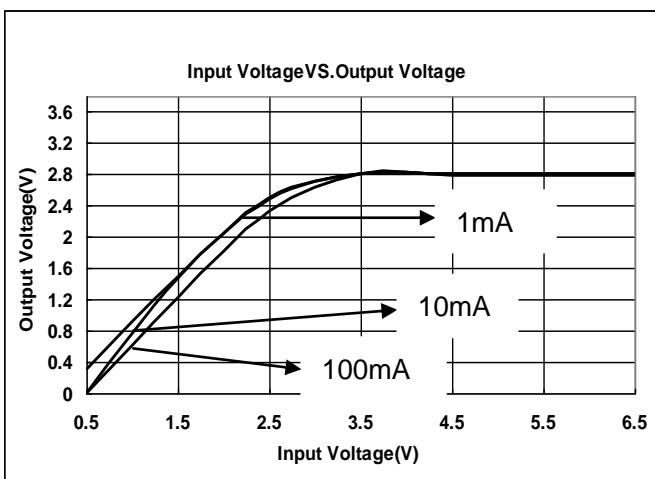
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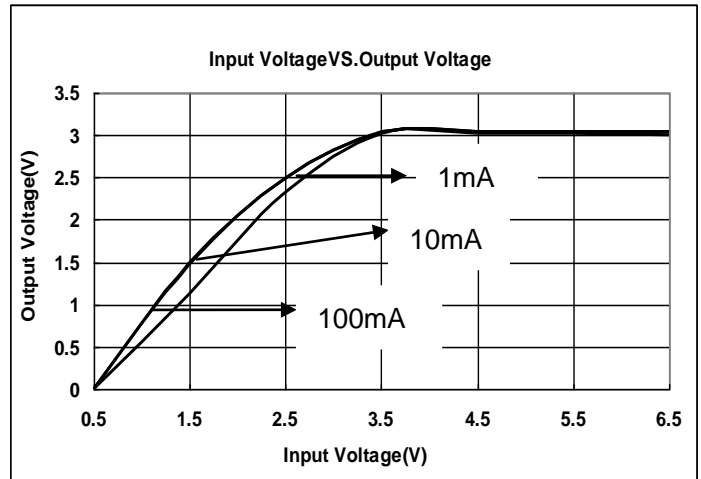
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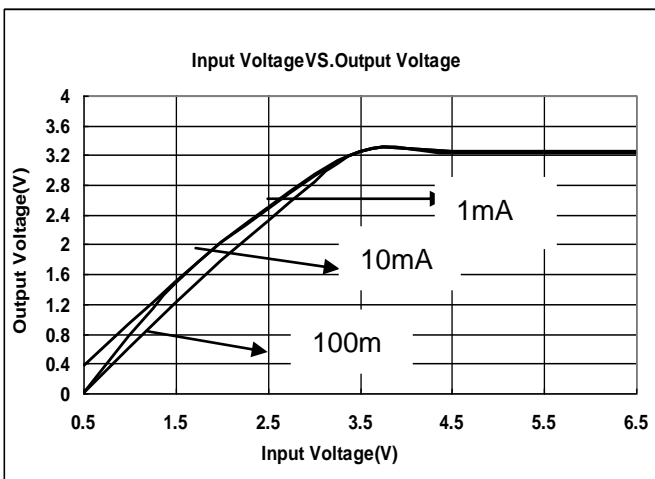
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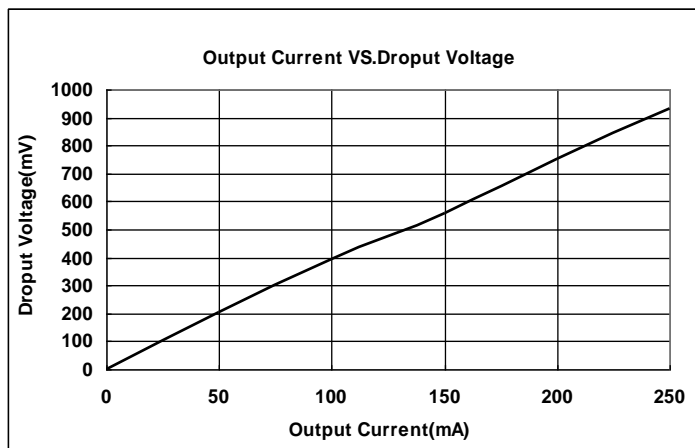


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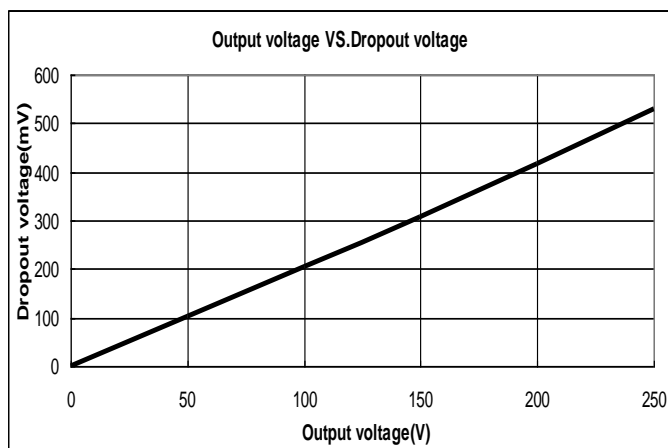


(3) Output Current VS. Dropout Voltage ($V_{IN}=V_{out}+1V, T_a = 25^\circ C$)

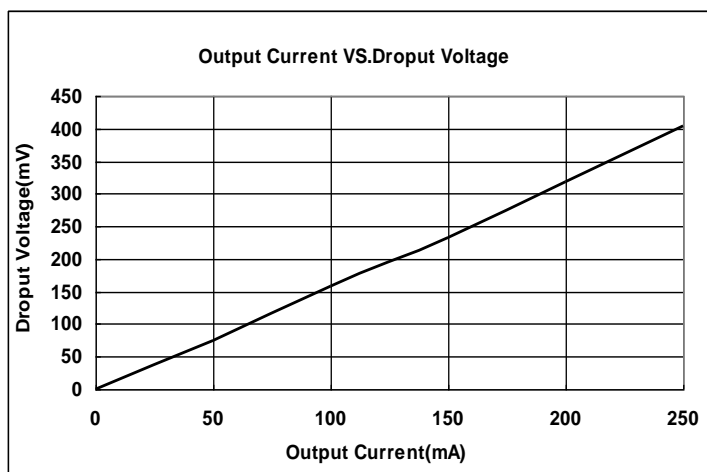
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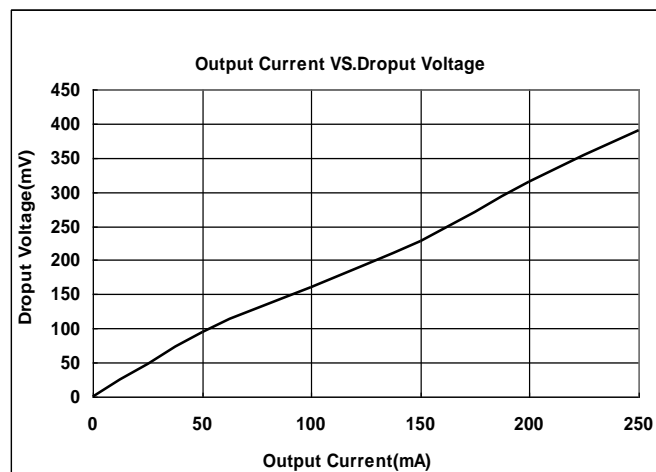
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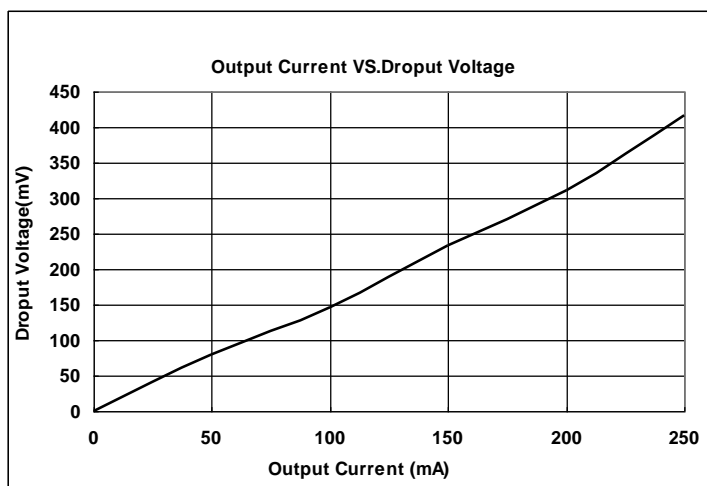
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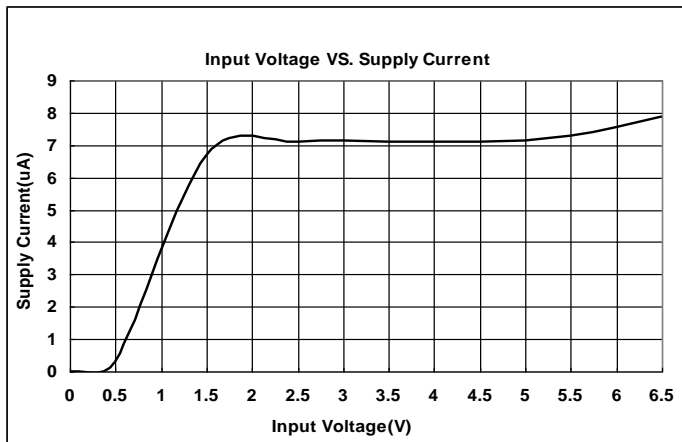


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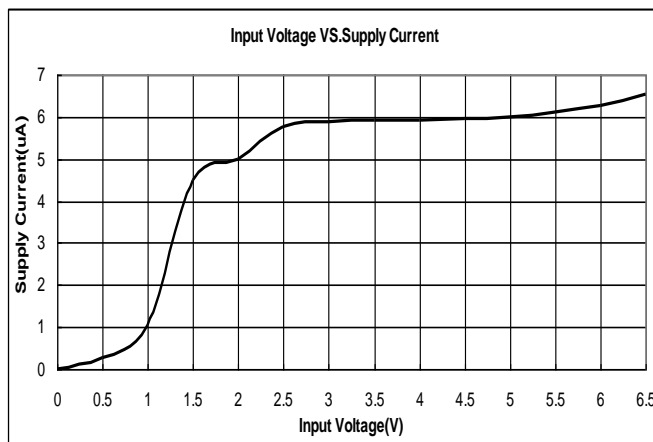


(4) Input Voltage VS. Supply Current (Ta = 25 °C)

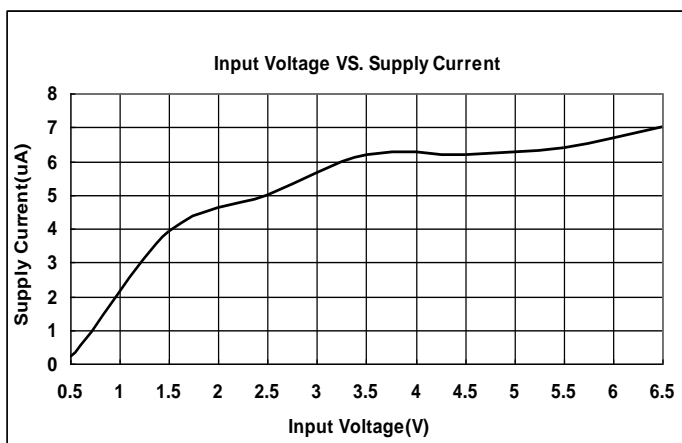
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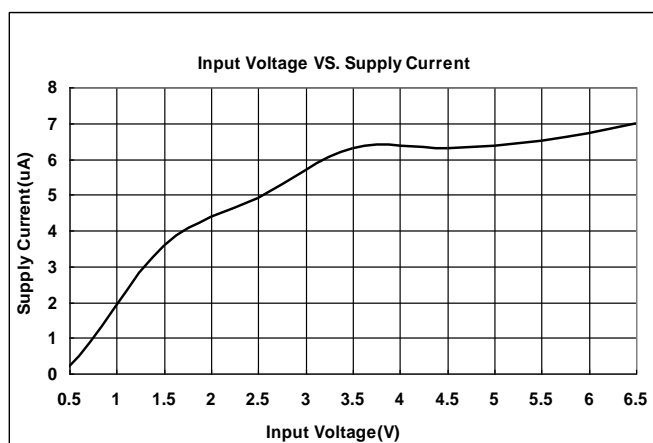
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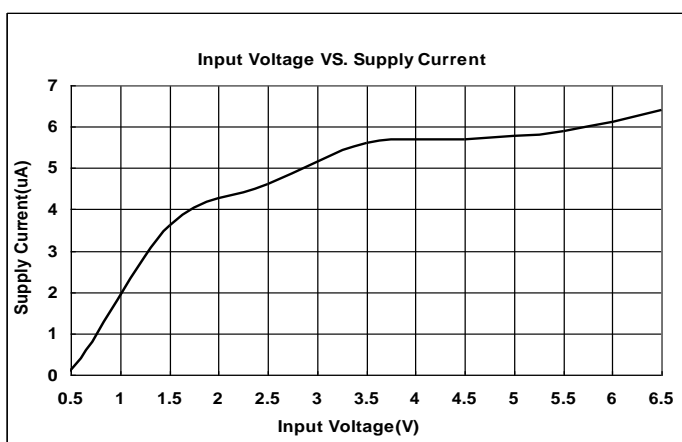
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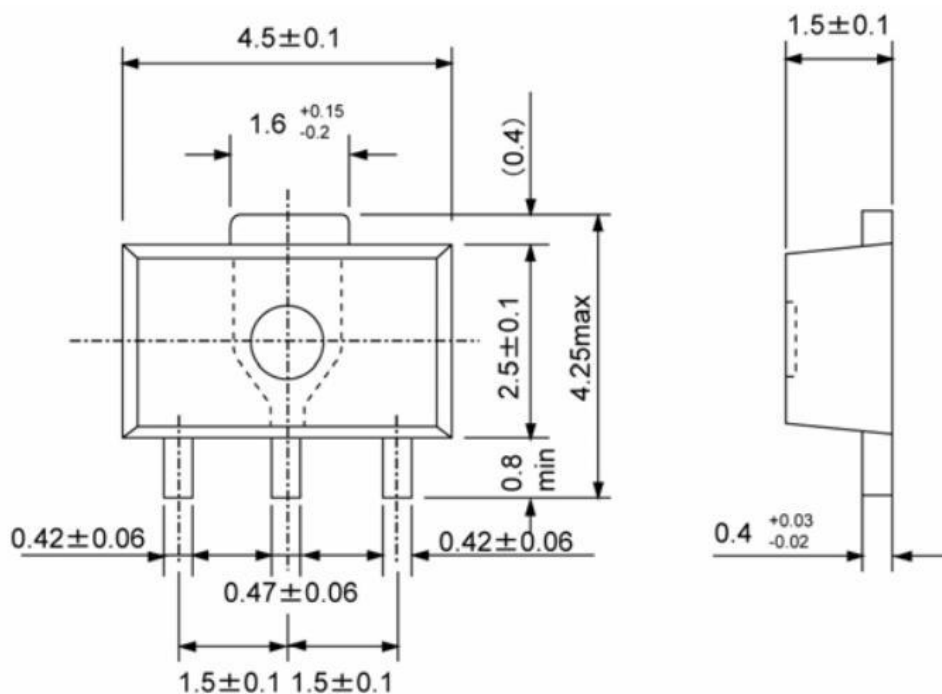


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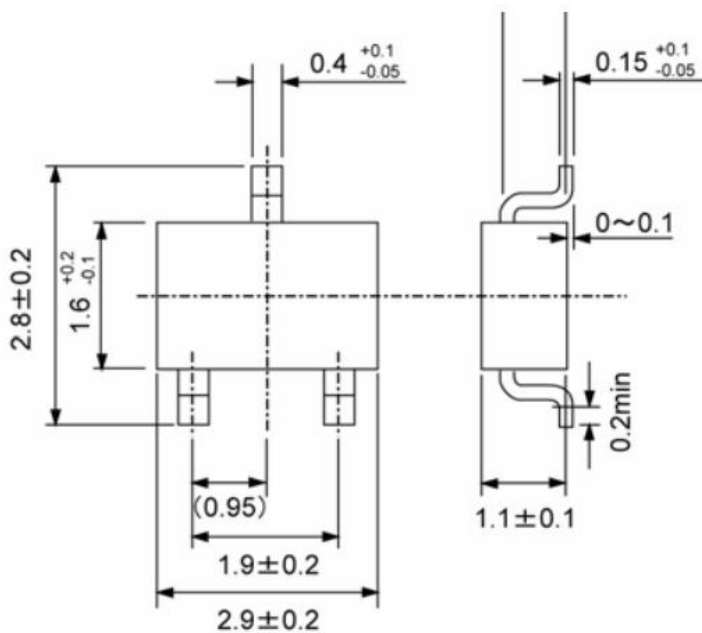


Packaging Information

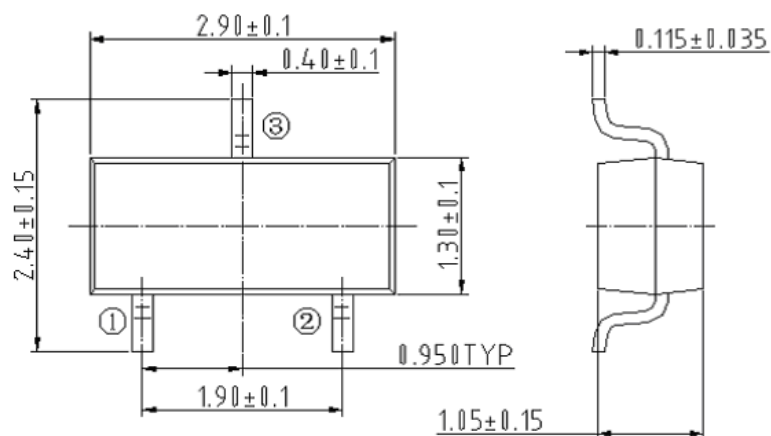
- SOT89-3



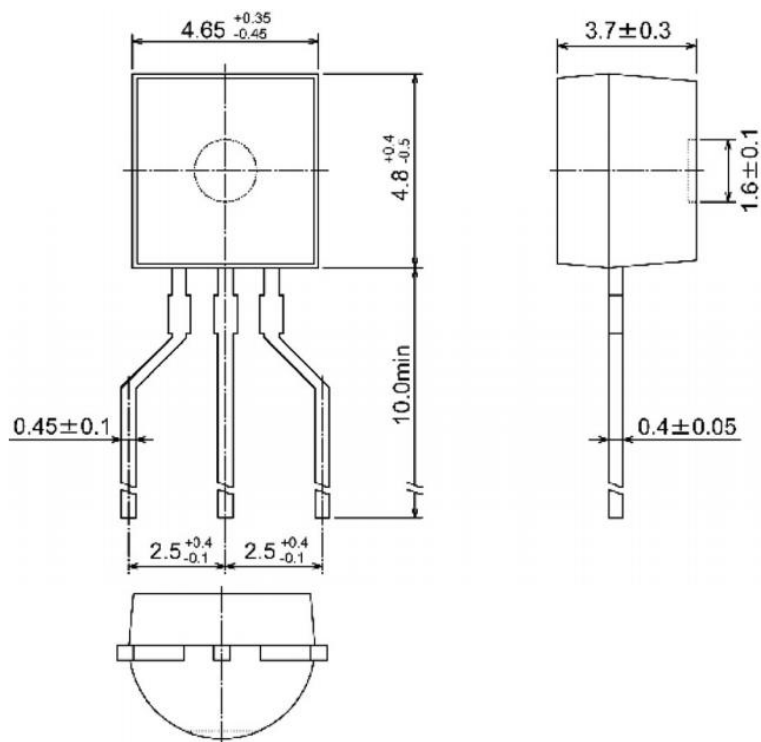
- SOT23-3



● SOT23



● TO-92



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