

DATA SHEET

Part No.	AN8004
Package Code No.	SSIP003-P-0000S (Exclusive use for AN80xx)

Maintenance/Discontinued includes following types of product lifecycle stage.
planed maintenance type
discontinued type
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AN8004

3-pin, positive output, low dropout voltage regulator (50 mA type)

■ Overview

The AN80xx series are 3-pin, low dropout, fixed positive output type monolithic voltage regulators.

Since their power consumption can be minimized, they are suitable for battery-used power supply and reference voltage.

13 types of output voltage are available ; 2 V, 2.5 V, 3 V, 3.5 V, 4 V, 4.5 V, 5 V, 6 V, 7 V, 8 V, 8.5 V, 9 V, and 10 V.

■ Features

- Input /output voltage difference: 0.3 V max.
- Output current of up to 50 mA
- Low bias current: 0.6 mA typ.
- Output voltage: 4 V
- Built-in over current protection circuit

■ Applications

- 3-pin positive output voltage regulator (low drop 50 mA type)

■ Package

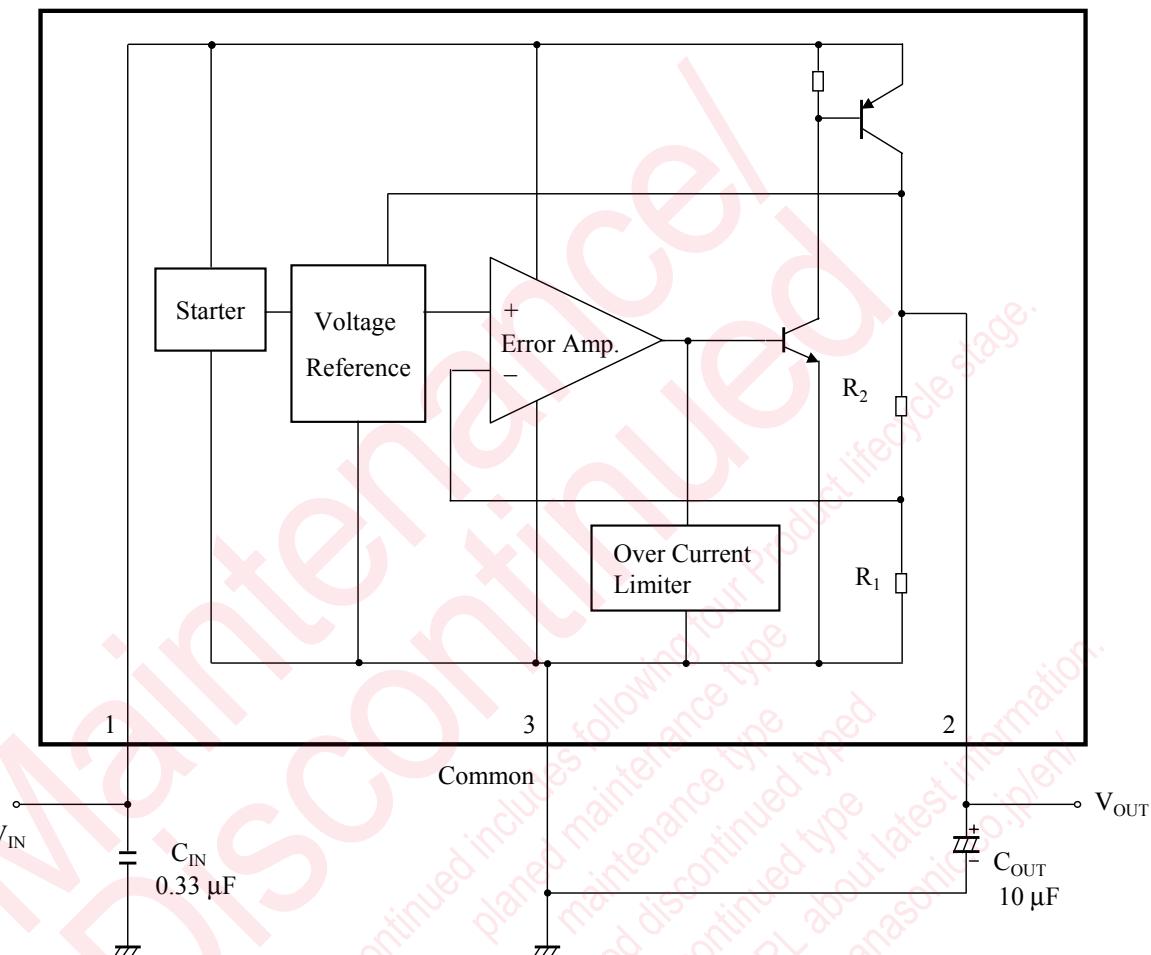
- 3-pin plastic shrink single inline package (SSIP type)

■ Type

- Silicon monolithic bipolar IC

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■ Block Diagram



C_{OUT} : AN80xx series have their internal gain in order to improve performance. When the power line on the output side is long, use a capacitor of 10 μ F.

Also, the capacitor on the output side should be attached as close to the IC as possible.

When using at a low temperature, it is recommended to use the capacitors with low internal impedance (for example, tantalum capacitor) for output capacitors.

R_1 : 5 k Ω

R_2 : 11 k Ω

■ Absolute Maximum Ratings

A No.	Parameter	Symbol	Rating	Unit	Note
1	Supply voltage	V_{CC}	20	V	*1
2	Supply current	I_{CC}	100	mA	*4
3	Power dissipation	P_D	368	mW	*2
4	Operating ambient temperature	T_{opr}	−30 to +80	°C	*3
5	Storage temperature	T_{stg}	−55 to +150	°C	*3

Note) *1: The values under the condition not exceeding the above absolute maximum ratings and the power dissipation.

*2: The power dissipation shown is the value at $T_a = 80^\circ\text{C}$ for independent (unmounted) IC packaged.

When using this IC, refer to the $\bullet P_D - T_a$ diagram in the ■ Technical Data and use under the condition not exceeding the allowable value.

*3: Except for the power dissipation, operating ambient temperature, and storage temperature, all ratings are for $T_a = 25^\circ\text{C}$.

*4: Built-in over current limit circuit, and the current will not go over the limit.

■ Electrical Characteristics

Note) Unless otherwise specified, $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $V_{IN} = 5.0 \text{ V}$, $I_{OUT} = 20 \text{ mA}$, $C_{IN} = 0.33 \mu\text{F}$ and $C_{OUT} = 10 \mu\text{F}$ (ESR less than 5Ω).

B No.	Parameter	Symbol	Conditions	Limits			Unit	Note
				Min	Typ	Max		
1	Output voltage	V_{OUT}	$T_j = 25^\circ\text{C}$	3.84	4.00	4.16	V	—
2	Line regulation	REG_{LIN}	$T_j = 25^\circ\text{C}$ $4.5 \text{ V} \leq V_{IN} \leq 10.0 \text{ V}$	—	3.5	50	mV	—
3	Load regulation	REG_{LOA}	$T_j = 25^\circ\text{C}$ $1 \text{ mA} \leq I_{OUT} \leq 40 \text{ mA}$	—	10	30	mV	—
			$T_j = 25^\circ\text{C}$ $1 \text{ mA} \leq I_{OUT} \leq 50 \text{ mA}$	—	20	40		
4	Minimum input/output voltage difference	VD	$T_j = 25^\circ\text{C}$ $V_{IN} = 3.8 \text{ V}$, $I_{OUT} = 20 \text{ mA}$	—	0.07	0.2	V	—
			$T_j = 25^\circ\text{C}$ $V_{IN} = 3.8 \text{ V}$, $I_{OUT} = 50 \text{ mA}$	—	0.12	0.3		
5	Bias current	I_Q	$T_j = 25^\circ\text{C}$ $I_{OUT} = 0 \text{ mA}$	—	0.6	1.0	mA	—

■ Electrical Characteristics (Reference values for design)

Note) Unless otherwise specified, $T_a = 25^\circ\text{C} \pm 2^\circ\text{C}$, $V_{IN} = 5.0 \text{ V}$, $I_{OUT} = 20 \text{ mA}$, $C_{IN} = 0.33 \mu\text{F}$ and $C_{OUT} = 10 \mu\text{F}$ (ESR less than 5Ω).

The characteristics listed below are reference values for design of the IC and are not guaranteed by inspection.

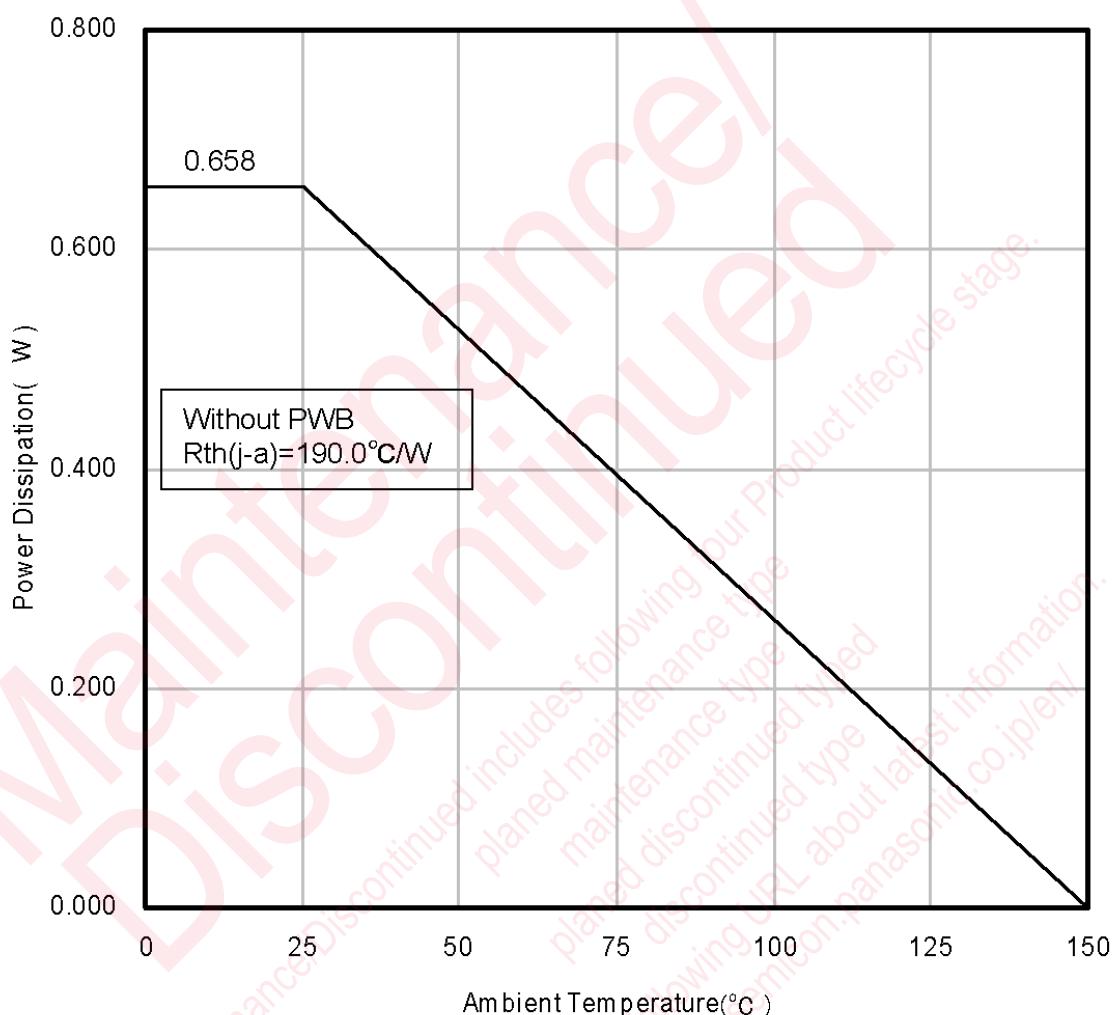
If a problem does occur related to these characteristics, Panasonic will respond in good faith to user concerns.

B No.	Parameter	Symbol	Conditions	Reference values			Unit	Note
				Min	Typ	Max		
6	Ripple rejection ratio	RR	$5.0 \text{ V} \leq V_{IN} \leq 7.0 \text{ V}$ $f = 120 \text{ Hz}$	56	67	—	dB	—
7	Output noise voltage	Vno	$10 \text{ Hz} \leq f \leq 100 \text{ kHz}$	—	80	—	μV	—
8	Output voltage temperature coefficient	$\frac{\Delta V_{OUT}}{T_a}$	$-30^\circ\text{C} \leq T_j \leq 125^\circ\text{C}$	—	0.2	—	$\text{mV/}^\circ\text{C}$	—

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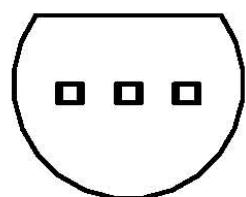
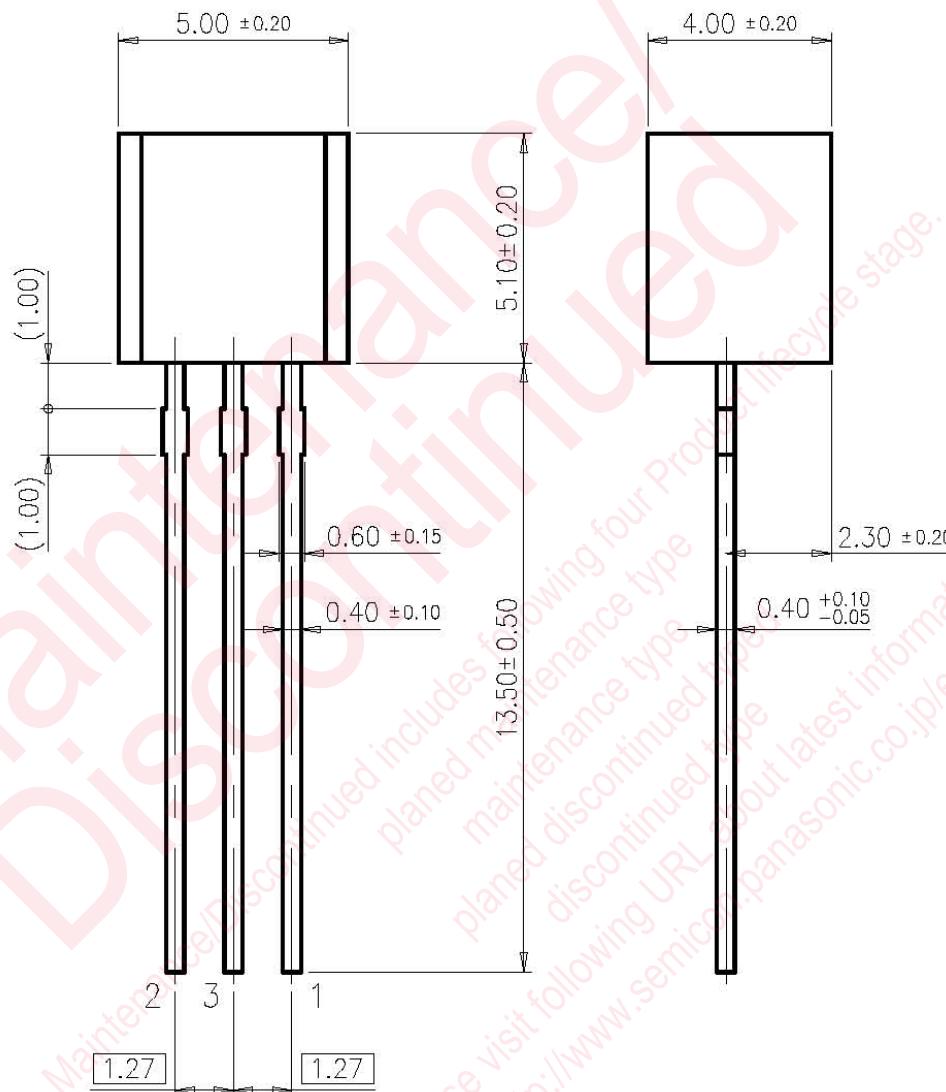
■ Technical Data

- P_D — T_a diagram



■ Package Dimensions (Unit: mm)

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