

AN78N00 Series

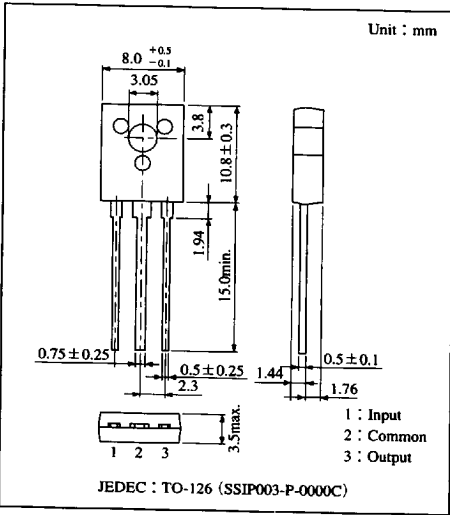
3-pin Positive Output Voltage Regulator (300mA Type)

Overview

The AN78N00 series is 3-pin fixed positive output voltage regulators. Stabilized fixed output voltage is obtained from unstable DC input voltage without using any external components. 12 types of fixed output voltage are available ; 4V, 5V, 6V, 7V, 8V, 9V, 10V, 12V, 15V, 18V, 20V and 24V. They can be used widely in power circuits with current capacitance up to 300mA.

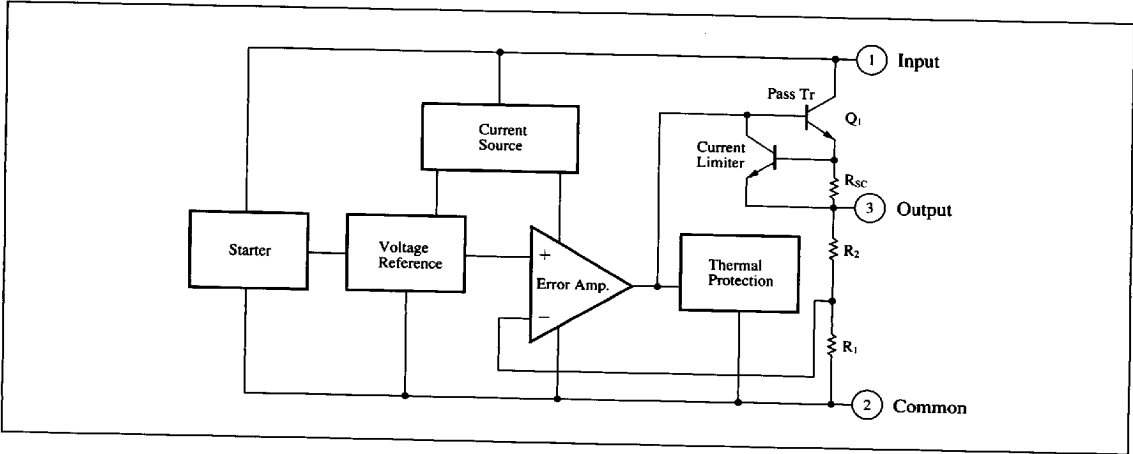
Features

- No external components
- Output voltage : 4V, 5V, 6V, 7V, 8V, 9V, 10V, 12V, 15V, 18V, 20V, 24V
- Short-circuit current limiting built-in
- Thermal overload protection built-in
- Output transistor safe area compensation



Voltage
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Block Diagram



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■ Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Input voltage	Vi	35 *1	V
		40 *2	V
Power dissipation	PD	8 *3	W
Operating ambient temperature	Topr	−20 to +80	℃
Storage temperature	Tstg	−55 to +150	℃

*1 AN78N04, AN78N05, AN78N06, AN78N07, AN78N08, AN78N09, AN78N10, AN78N12, AN78N15, AN78N18

*2 AN78N20, AN78N24

*3 Follow the derating curve. When Tj exceeds 150℃, the internal circuit cuts off the output.

■ Electrical Characteristics (Ta=25℃)

● AN78N04 (4V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	Vo	Tj=25℃	3.84	4	4.16	V
Output voltage tolerance	Vo	Vi=6.5 to 20V, Io=5 to 200mA	3.8	—	4.2	V
Line regulation	REG _{IN}	Vi=6.5 to 25V, Tj=25℃	—	9	40	mV
		Vi=7 to 20V, Tj=25℃	—	4	20	mV
Load regulation	REG _L	Io=1 to 300mA, Tj=25℃	—	20	80	mV
		Io=5 to 200mA, Tj=25℃	—	10	40	mV
Bias current	I _{bias}	Tj=25℃	—	2.8	5	mA
Input bias current fluctuation	$\Delta I_{bias(IN)}$	Vi=6.5 to 25V, Tj=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{bias(L)}$	Io=1 to 300mA, Tj=25℃	—	—	0.5	mA
Output noise voltage	V _{no}	f=10Hz to 100kHz	—	38	—	μV
Ripple rejection ratio	RR	Vi=7 to 17V, Io=50mA, f=120Hz	62	72	—	dB
Minimum input/output voltage difference	V _{DIF(min.)}	Io=300mA, Tj=25℃	—	2	—	V
Output short circuit current	Io(Short)	Vi=35V, Tj=25℃	—	300	—	mA
Peak output current	Io(Peak)	Tj=25℃	—	500	—	mA
Output voltage temperature coefficient	$\Delta V_o/T_a$	Io=5mA, Tj=0 to 125℃	—	−0.3	—	mV/℃

Note 1) The specified condition Tj=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, Vi=9V, Io=100mA, Ci=0.33 μF, Co=0.1 μF, Tj=0 to 125℃

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■ Electrical Characteristics (Ta=25℃)

● AN78N05 (5V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	VO	Tj=25℃	4.8	5	5.2	V
Output voltage tolerance	VO	Vi=7.5 to 20V, Io=5 to 200mA	4.75	—	5.25	V
Line regulation	REGIN	Vi=7.5 to 25V, Tj=25℃	—	10	50	mV
		Vi=8 to 20V, Tj=25℃	—	5	25	mV
Load regulation	REGL	Io=1 to 300mA, Tj=25℃	—	20	100	mV
		Io=5 to 200mA, Tj=25℃	—	10	50	mV
Bias current	Ibias	Tj=25℃	—	2.8	5	mA
Input bias current fluctuation	ΔIbias(IN)	Vi=7.5 to 25V, Tj=25℃	—	—	0.8	mA
Load bias current fluctuation	ΔIbias(L)	Io=1 to 300mA, Tj=25℃	—	—	0.5	mA
Output noise voltage	Vno	f=10Hz to 100kHz	—	40	—	μV
Ripple rejection ratio	RR	Vi=8 to 18V, Io=50mA, f=120Hz	62	72	—	dB
Minimum input/output voltage difference	VDIF(min.)	Io=300mA, Tj=25℃	—	2	—	V
Output short circuit current	IO(Short)	Vi=35V, Tj=25℃	—	300	—	mA
Peak output current	IO(Peak)	Tj=25℃	—	500	—	mA
Output voltage temperature coefficient	ΔVO/Ta	Io=5mA, Tj=0 to 125℃	—	-0.3	—	mV/℃

Note 1) The specified condition Tj=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, Vi=10V, Io=100mA, Ci=0.33 μF, Co=0.1 μF, Tj=0 to 125℃

● AN78N06 (6V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	VO	Tj=25℃	5.75	6	6.25	V
Output voltage tolerance	VO	Vi=8.5 to 20V, Io=5 to 200mA	5.7	—	6.3	V
Line regulation	REGIN	Vi=8.5 to 25V, Tj=25℃	—	11	60	mV
		Vi=9 to 20V, Tj=25℃	—	6	30	mV
Load regulation	REGL	Io=1 to 300mA, Tj=25℃	—	20	120	mV
		Io=5 to 200mA, Tj=25℃	—	10	60	mV
Bias current	Ibias	Tj=25℃	—	2.8	5	mA
Input bias current fluctuation	ΔIbias(IN)	Vi=8.5 to 25V, Tj=25℃	—	—	0.8	mA
Load bias current fluctuation	ΔIbias(L)	Io=1 to 300mA, Tj=25℃	—	—	0.5	mA
Output noise voltage	Vno	f=10Hz to 100kHz	—	45	—	μV
Ripple rejection ratio	RR	Vi=9 to 19V, Io=50mA, f=120Hz	59	70	—	dB
Minimum input/output voltage difference	VDIF(min.)	Io=300mA, Tj=25℃	—	2	—	V
Output short circuit current	IO(Short)	Vi=35V, Tj=25℃	—	300	—	mA
Peak output current	IO(Peak)	Tj=25℃	—	500	—	mA
Output voltage temperature coefficient	ΔVO/Ta	Io=5mA, Tj=0 to 125℃	—	-0.4	—	mV/℃

Note 1) The specified condition Tj=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, Vi=11V, Io=100mA, Ci=0.33 μF, Co=0.1 μF, Tj=0 to 125℃

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■ Electrical Characteristics (Ta=25℃)

● AN78N07 (7V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	$T_J=25^{\circ}\text{C}$	6.7	7	7.3	V
Output voltage tolerance	V_O	$V_I=9.5\text{ to }20\text{V}, I_O=5\text{ to }200\text{mA}$	6.65	—	7.35	V
Line regulation	REG_{IN}	$V_I=9.5\text{ to }25\text{V}, T_J=25^{\circ}\text{C}$	—	12	70	mV
		$V_I=10\text{ to }20\text{V}, T_J=25^{\circ}\text{C}$	—	7	35	mV
Load regulation	REG_L	$I_O=1\text{ to }300\text{mA}, T_J=25^{\circ}\text{C}$	—	20	140	mV
		$I_O=5\text{ to }200\text{mA}, T_J=25^{\circ}\text{C}$	—	10	70	mV
Bias current	I_{bias}	$T_J=25^{\circ}\text{C}$	—	2.8	5	mA
Input bias current fluctuation	$\Delta I_{\text{bias}}(\text{IN})$	$V_I=9.5\text{ to }25\text{V}, T_J=25^{\circ}\text{C}$	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{\text{bias}}(\text{L})$	$I_O=1\text{ to }300\text{mA}, T_J=25^{\circ}\text{C}$	—	—	0.5	mA
Output noise voltage	V_{no}	$f=10\text{Hz to }100\text{kHz}$	—	50	—	μV
Ripple rejection ratio	RR	$V_I=10\text{ to }20\text{V}, I_O=50\text{mA}, f=120\text{Hz}$	57	69	—	dB
Minimum input/output voltage difference	$V_{\text{DIF}}(\text{min.})$	$I_O=300\text{mA}, T_J=25^{\circ}\text{C}$	—	2	—	V
Output short circuit current	$I_{\text{O}}(\text{Short})$	$V_I=35\text{V}, T_J=25^{\circ}\text{C}$	—	300	—	mA
Peak output current	$I_{\text{O}}(\text{Peak})$	$T_J=25^{\circ}\text{C}$	—	500	—	mA
Output voltage temperature coefficient	$\Delta V_O/T_a$	$I_O=5\text{mA}, T_J=0\text{ to }125^{\circ}\text{C}$	—	-0.4	—	mV/℃

Note 1) The specified condition $T_J=25^{\circ}\text{C}$ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, $V_I=12\text{V}$, $I_O=100\text{mA}$, $C_I=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$, $T_J=0\text{ to }125^{\circ}\text{C}$

● AN78N08 (8V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	$T_J=25^{\circ}\text{C}$	7.7	8	8.3	V
Output voltage tolerance	V_O	$V_I=10.5\text{ to }23\text{V}, I_O=5\text{ to }200\text{mA}$	7.6	—	8.4	V
Line regulation	REG_{IN}	$V_I=10.5\text{ to }25\text{V}, T_J=25^{\circ}\text{C}$	—	13	80	mV
		$V_I=12\text{ to }23\text{V}, T_J=25^{\circ}\text{C}$	—	8	40	mV
Load regulation	REG_L	$I_O=1\text{ to }300\text{mA}, T_J=25^{\circ}\text{C}$	—	25	160	mV
		$I_O=5\text{ to }200\text{mA}, T_J=25^{\circ}\text{C}$	—	10	80	mV
Bias current	I_{bias}	$T_J=25^{\circ}\text{C}$	—	2.8	5	mA
Input bias current fluctuation	$\Delta I_{\text{bias}}(\text{IN})$	$V_I=10.5\text{ to }25\text{V}, T_J=25^{\circ}\text{C}$	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{\text{bias}}(\text{L})$	$I_O=1\text{ to }300\text{mA}, T_J=25^{\circ}\text{C}$	—	—	0.5	mA
Output noise voltage	V_{no}	$f=10\text{Hz to }100\text{kHz}$	—	55	—	μV
Ripple rejection ratio	RR	$V_I=11\text{ to }21\text{V}, I_O=50\text{mA}, f=120\text{Hz}$	56	69	—	dB
Minimum input/output voltage difference	$V_{\text{DIF}}(\text{min.})$	$I_O=300\text{mA}, T_J=25^{\circ}\text{C}$	—	2	—	V
Output short circuit current	$I_{\text{O}}(\text{Short})$	$V_I=35\text{V}, T_J=25^{\circ}\text{C}$	—	300	—	mA
Peak output current	$I_{\text{O}}(\text{Peak})$	$T_J=25^{\circ}\text{C}$	—	500	—	mA
Output voltage temperature coefficient	$\Delta V_O/T_a$	$I_O=5\text{mA}, T_J=0\text{ to }125^{\circ}\text{C}$	—	-0.4	—	mV/℃

Note 1) The specified condition $T_J=25^{\circ}\text{C}$ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, $V_I=14\text{V}$, $I_O=100\text{mA}$, $C_I=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$, $T_J=0\text{ to }125^{\circ}\text{C}$

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■ Electrical Characteristics (Ta=25℃)

● AN78N09 (9V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	Vo	Tj=25℃	8.65	9	9.35	V
Output voltage tolerance	Vo	V1=11.5 to 24V, Io=5 to 200mA	8.55	—	9.45	V
Line regulation	REGIN	V1=11.5 to 25V, Tj=25℃	—	14	90	mV
		V1=13 to 24V, Tj=25℃	—	9	45	mV
Load regulation	REGL	Io=1 to 300mA, Tj=25℃	—	25	180	mV
		Io=5 to 200mA, Tj=25℃	—	10	90	mV
Bias current	Ibias	Tj=25℃	—	2.8	5	mA
Input bias current fluctuation	$\Delta I_{bias(IN)}$	V1=11.5 to 25V, Tj=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{bias(L)}$	Io=1 to 300mA, Tj=25℃	—	—	0.5	mA
Output noise voltage	Vno	f=10Hz to 100kHz	—	60	—	μV
Ripple rejection ratio	RR	V1=12 to 22V, Io=50mA, f=120Hz	56	68	—	dB
Minimum input/output voltage difference	V _{DIF(min.)}	Io=300mA, Tj=25℃	—	2	—	V
Output short circuit current	Io(Short)	V1=35V, Tj=25℃	—	300	—	mA
Peak output current	Io(Peak)	Tj=25℃	—	500	—	mA
Output voltage temperature coefficient	$\Delta V_o/T_a$	Io=5mA, Tj=0 to 125℃	—	-0.5	—	mV/℃

Note 1) The specified condition Tj=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, V1=15V, Io=100mA, C1=0.33 μF, Co=0.1 μF, Tj=0 to 125℃

● AN78N10 (10V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	Vo	Tj=25℃	9.6	10	10.4	V
Output voltage tolerance	Vo	V1=12.5 to 25V, Io=5 to 200mA	9.5	—	10.5	V
Line regulation	REGIN	V1=12.5 to 30V, Tj=25℃	—	15	100	mV
		V1=13 to 25V, Tj=25℃	—	10	50	mV
Load regulation	REGL	Io=1 to 300mA, Tj=25℃	—	25	200	mV
		Io=5 to 200mA, Tj=25℃	—	10	100	mV
Bias current	Ibias	Tj=25℃	—	2.8	5	mA
Input bias current fluctuation	$\Delta I_{bias(IN)}$	V1=12.5 to 30V, Tj=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{bias(L)}$	Io=1 to 300mA, Tj=25℃	—	—	0.5	mA
Output noise voltage	Vno	f=10Hz to 100kHz	—	70	—	μV
Ripple rejection ratio	RR	V1=13 to 23V, Io=50mA, f=120Hz	56	68	—	dB
Minimum input/output voltage difference	V _{DIF(min.)}	Io=300mA, Tj=25℃	—	2	—	V
Output short circuit current	Io(Short)	V1=35V, Tj=25℃	—	300	—	mA
Peak output current	Io(Peak)	Tj=25℃	—	500	—	mA
Output voltage temperature coefficient	$\Delta V_o/T_a$	Io=5mA, Tj=0 to 125℃	—	-0.5	—	mV/℃

Note 1) The specified condition Tj=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, V1=16V, Io=100mA, C1=0.33 μF, Co=0.1 μF, Tj=0 to 125℃

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■ Electrical Characteristics (Ta=25℃)

● AN78N12 (12V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V _O	T _J =25℃	11.5	12	12.5	V
Output voltage tolerance	V _O	V _I =14.5 to 27V, I _O =5 to 200mA	11.4	—	12.6	V
Line regulation	REG _{IN}	V _I =14.5 to 30V, T _J =25℃	—	15	100	mV
		V _I =16 to 27V, T _J =25℃	—	10	50	mV
Load regulation	REG _L	I _O =1 to 300mA, T _J =25℃	—	25	240	mV
		I _O =5 to 200mA, T _J =25℃	—	10	120	mV
Bias current	I _{bias}	T _J =25℃	—	2.8	5	mA
Input bias current fluctuation	ΔI _{bias} (IN)	V _I =14.5 to 30V, T _J =25℃	—	—	0.8	mA
Load bias current fluctuation	ΔI _{bias} (L)	I _O =1 to 300mA, T _J =25℃	—	—	0.5	mA
Output noise voltage	V _{no}	f=10Hz to 100kHz	—	80	—	μV
Ripple rejection ratio	RR	V _I =15 to 25V, I _O =50mA, f=120Hz	55	67	—	dB
Minimum input/output voltage difference	V _{DIF} (min.)	I _O =300mA, T _J =25℃	—	2	—	V
Output short circuit current	I _O (Short)	V _I =35V, T _J =25℃	—	300	—	mA
Peak output current	I _O (Peak)	T _J =25℃	—	500	—	mA
Output voltage temperature coefficient	ΔV _O /Ta	I _O =5mA, T _J =0 to 125℃	—	-0.6	—	mV/℃

Note 1) The specified condition T_J=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, V_I=19V, I_O=100mA, C_I=0.33 μF, C_O=0.1 μF, T_J=0 to 125℃

● AN78N15 (15V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V _O	T _J =25℃	14.4	15	15.6	V
Output voltage tolerance	V _O	V _I =17.5 to 30V, I _O =5 to 200mA	14.25	—	15.75	V
Line regulation	REG _{IN}	V _I =17.5 to 30V, T _J =25℃	—	16	100	mV
		V _I =20 to 30V, T _J =25℃	—	11	50	mV
Load regulation	REG _L	I _O =1 to 300mA, T _J =25℃	—	25	300	mV
		I _O =5 to 200mA, T _J =25℃	—	10	150	mV
Bias current	I _{bias}	T _J =25℃	—	2.8	5	mA
Input bias current fluctuation	ΔI _{bias} (IN)	V _I =17.5 to 30V, T _J =25℃	—	—	0.8	mA
Load bias current fluctuation	ΔI _{bias} (L)	I _O =1 to 300mA, T _J =25℃	—	—	0.5	mA
Output noise voltage	V _{no}	f=10Hz to 100kHz	—	80	—	μV
Ripple rejection ratio	RR	V _I =18.5 to 28.5V, I _O =50mA, f=120Hz	54	66	—	dB
Minimum input/output voltage difference	V _{DIF} (min.)	I _O =300mA, T _J =25℃	—	2	—	V
Output short circuit current	I _O (Short)	V _I =35V, T _J =25℃	—	300	—	mA
Peak output current	I _O (Peak)	T _J =25℃	—	500	—	mA
Output voltage temperature coefficient	ΔV _O /Ta	I _O =5mA, T _J =0 to 125℃	—	-0.8	—	mV/℃

Note 1) The specified condition T_J=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, V_I=23V, I_O=100mA, C_I=0.33 μF, C_O=0.1 μF, T_J=0 to 125℃

■ Electrical Characteristics (Ta=25℃)

● AN78N18 (18V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V _O	T _J =25℃	17.3	18	18.7	V
Output voltage tolerance	V _O	V _I =21 to 33V, I _O =5 to 200mA	17.1	—	18.9	V
Line regulation	REG _{IN}	V _I =21 to 33V, T _J =25℃	—	18	100	mV
		V _I =22 to 33V, T _J =25℃	—	13	50	mV
Load regulation	REG _L	I _O =1 to 300mA, T _J =25℃	—	30	360	mV
		I _O =5 to 200mA, T _J =25℃	—	10	180	mV
Bias current	I _{bias}	T _J =25℃	—	2.8	5	mA
Input bias current fluctuation	ΔI _{bias(IN)}	V _I =21 to 33V, T _J =25℃	—	—	0.8	mA
Load bias current fluctuation	ΔI _{bias(L)}	I _O =1 to 300mA, T _J =25℃	—	—	0.5	mA
Output noise voltage	V _{no}	f=10Hz to 100kHz	—	90	—	μV
Ripple rejection ratio	RR	V _I =22 to 32V, I _O =50mA, f=120Hz	53	65	—	dB
Minimum input/output voltage difference	V _{DIF(min.)}	I _O =300mA, T _J =25℃	—	2	—	V
Output short circuit current	I _{O(Short)}	V _I =35V, T _J =25℃	—	300	—	mA
Peak output current	I _{O(Peak)}	T _J =25℃	—	500	—	mA
Output voltage temperature coefficient	ΔV _O /Ta	I _O =5mA, T _J =0 to 125℃	—	-1.0	—	mV/℃

Note 1) The specified condition T_J=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, V_I=27V, I_O=100mA, C_I=0.33 μF, C_O=0.1 μF, T_J=0 to 125℃

● AN78N20 (20V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V _O	T _J =25℃	19.2	20	20.8	V
Output voltage tolerance	V _O	V _I =23 to 35V, I _O =5 to 200mA	19.0	—	21	V
Line regulation	REG _{IN}	V _I =23 to 35V, T _J =25℃	—	19	100	mV
		V _I =24 to 35V, T _J =25℃	—	14	50	mV
Load regulation	REG _L	I _O =1 to 300mA, T _J =25℃	—	30	400	mV
		I _O =5 to 200mA, T _J =25℃	—	10	200	mV
Bias current	I _{bias}	T _J =25℃	—	2.8	5	mA
Input bias current fluctuation	ΔI _{bias(IN)}	V _I =23 to 35V, T _J =25℃	—	—	0.8	mA
Load bias current fluctuation	ΔI _{bias(L)}	I _O =1 to 300mA, T _J =25℃	—	—	0.5	mA
Output noise voltage	V _{no}	f=10Hz to 100kHz	—	100	—	μV
Ripple rejection ratio	RR	V _I =24 to 34V, I _O =50mA, f=120Hz	52	64	—	dB
Minimum input/output voltage difference	V _{DIF(min.)}	I _O =300mA, T _J =25℃	—	2	—	V
Output short circuit current	I _{O(Short)}	V _I =35V, T _J =25℃	—	300	—	mA
Peak output current	I _{O(Peak)}	T _J =25℃	—	500	—	mA
Output voltage temperature coefficient	ΔV _O /Ta	I _O =5mA, T _J =0 to 125℃	—	-1.2	—	mV/℃

Note 1) The specified condition T_J=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, V_I=29V, I_O=100mA, C_I=0.33 μF, C_O=0.1 μF, T_J=0 to 125℃

Voltage
Regu-
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■ Electrical Characteristics (Ta=25℃)

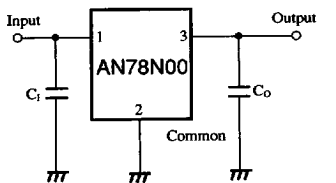
● AN78N24 (24V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	$T_j=25^{\circ}\text{C}$	23	24	25	V
Output voltage tolerance	V_O	$V_I=27\text{ to }38\text{V}$, $I_O=5\text{ to }200\text{mA}$	22.8	—	25.2	V
Line regulation	REG_{IN}	$V_I=27\text{ to }38\text{V}$, $T_j=25^{\circ}\text{C}$	—	20	100	mV
		$V_I=28\text{ to }38\text{V}$, $T_j=25^{\circ}\text{C}$	—	15	50	mV
Load regulation	REG_L	$I_O=1\text{ to }300\text{mA}$, $T_j=25^{\circ}\text{C}$	—	30	480	mV
		$I_O=5\text{ to }200\text{mA}$, $T_j=25^{\circ}\text{C}$	—	10	240	mV
Bias current	I_{bias}	$T_j=25^{\circ}\text{C}$	—	2.8	5	mA
Input bias current fluctuation	$\Delta I_{\text{bias (IN)}}$	$V_I=27\text{ to }38\text{V}$, $T_j=25^{\circ}\text{C}$	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{\text{bias (L)}}$	$I_O=1\text{ to }300\text{mA}$, $T_j=25^{\circ}\text{C}$	—	—	0.5	mA
Output noise voltage	V_{no}	$f=10\text{Hz to }100\text{kHz}$	—	110	—	μV
Ripple rejection ratio	RR	$V_I=28\text{ to }38\text{V}$, $I_O=50\text{mA}$, $f=120\text{Hz}$	50	63	—	dB
Minimum input/output voltage difference	$V_{\text{DIF (min.)}}$	$I_O=300\text{mA}$, $T_j=25^{\circ}\text{C}$	—	2	—	V
Output short circuit current	$I_{\text{O (Short)}}$	$V_I=35\text{V}$, $T_j=25^{\circ}\text{C}$	—	300	—	mA
Peak output current	$I_{\text{O (Peak)}}$	$T_j=25^{\circ}\text{C}$	—	500	—	mA
Output voltage temperature coefficient	$\Delta V_O/T_a$	$I_O=5\text{mA}$, $T_j=0\text{ to }125^{\circ}\text{C}$	—	-1.5	—	$\text{mV}/^{\circ}\text{C}$

Note 1) The specified condition $T_j=25^{\circ}\text{C}$ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, $V_I=33\text{V}$, $I_O=100\text{mA}$, $C_I=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$, $T_j=0\text{ to }125^{\circ}\text{C}$

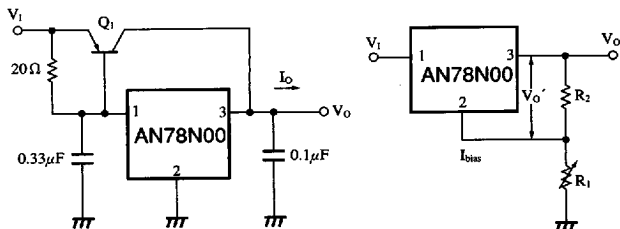
■ Basic Regulator Circuit



C_I : is set when the input line is long.

C_O : improves the transient response.

■ Application Circuit

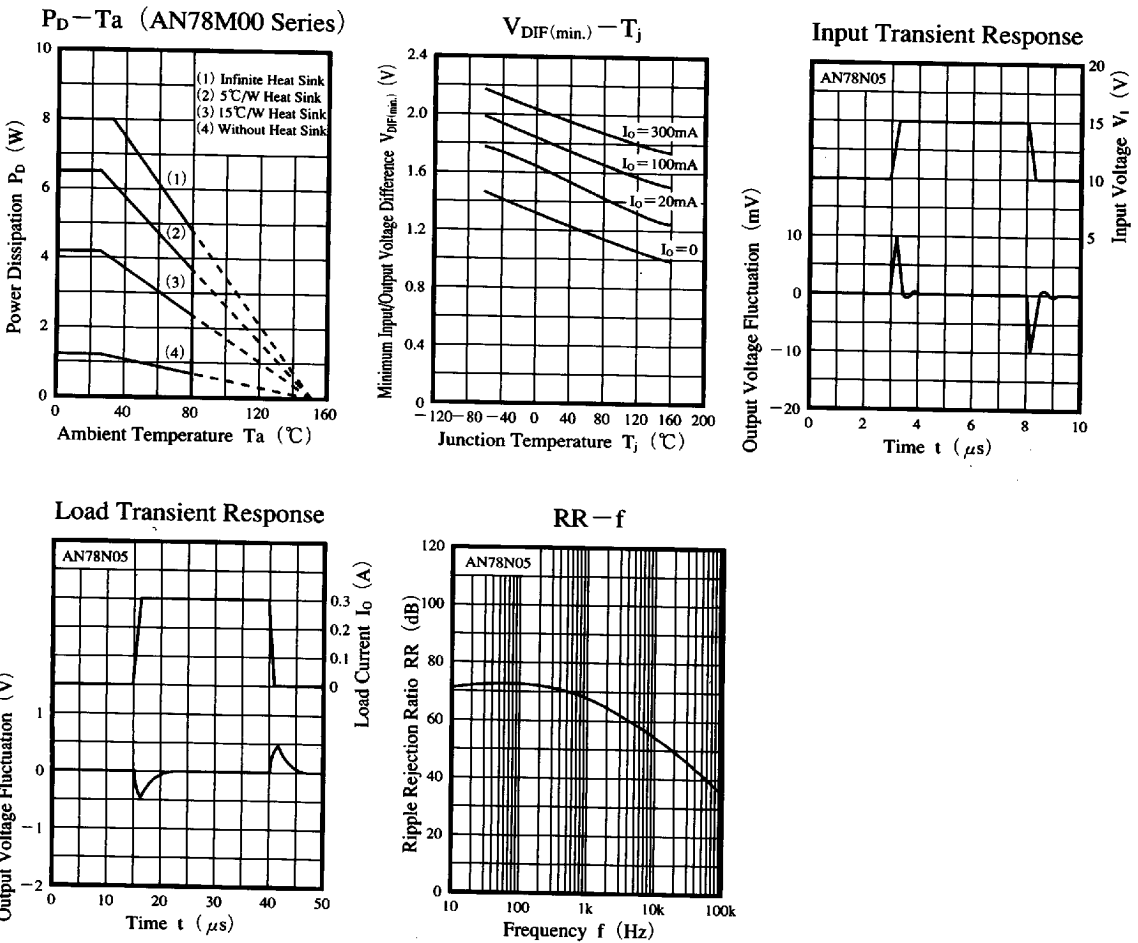


$$|V_O| = V_O' + \left(I_{\text{bias}} + \frac{V_O'}{R_2} \right) R_1$$

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Characteristics Curve



Voltage
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