AN79M00/AN79M00F Series

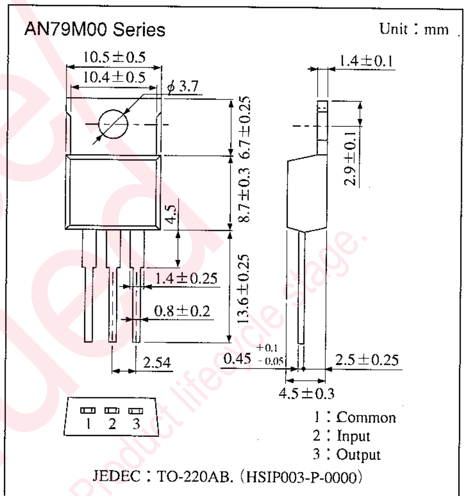
3-pin Negative Output Voltage Regulators (500mA Type)

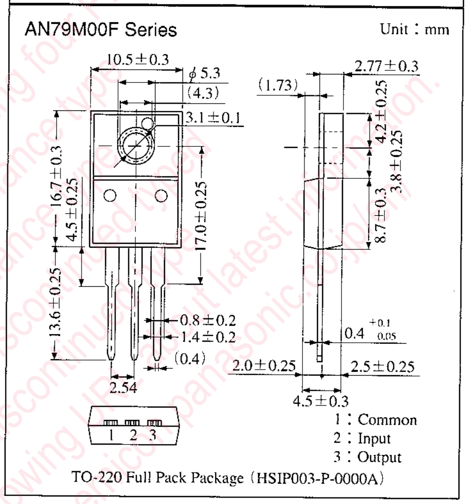
■ Overview

The AN79M00 and the AN79M00F series are 3-pin fixed negative output voltage regulators. Stabilized fixed output voltage is obtained from unstable DC input voltage without using any external components. 12 types of output voltage are available ; −5V, −5.2V, −6V, −7V, −8V, −9V, −10V, −12V, −15V, −18V, −20V and −24V. They can be used widely in power circuits with current capacitance up to 500mA.

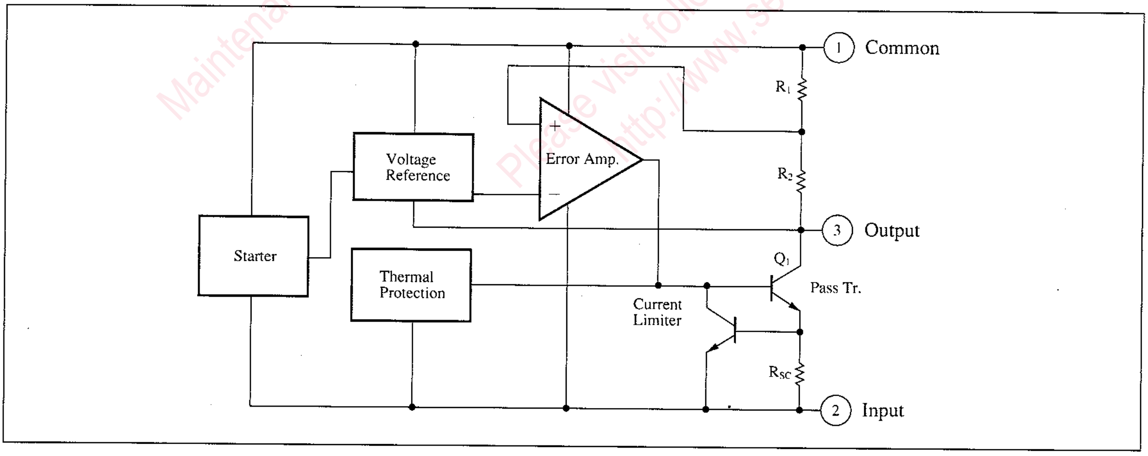
■ Features

- No external components
- Output voltage : −5V, −5.2V, −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





■ Block Diagram



■ Absolute Maximum Ratings (Ta=25℃)

Parameter		Symbol	Rating	Unit
Input voltage		V_I	−35 *1	V
			−40 *2	V
Power dissipation	AN79M00 Series	P_D	15 *3	W
	AN79M00F Series		10.25 *3	
Operating ambient temperature		T_{opr}	−20 to +80	℃
Storage temperature		T_{stg}	−55 to +150	℃

*1 AN79M05/F, AN79M52/F, AN79M06/F, AN79M07/F, AN79M08/F, AN79M09/F, AN79M10/F, AN79M12/F, AN79M15/F, AN79M18/F
*2 AN79M20/F, AN79M24/F
*3 Follow the derating curve. When T_j exceeds 150℃, the internal circuit cuts off the output.

■ Electrical Characteristics (Ta=25℃)

• AN79M05/AN79M05F (−5V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−4.8	−5	−5.2	V
Output voltage tolerance	V_O	V_I=−7 to −25V, I_O=5 to 350mA, P_D≦*	−4.75	—	−5.25	V
Line regulation	REG_{IN}	V_I=−7 to −25V, T_j=25℃	—	3	50	mV
		V_I=−8 to −18V, T_j=25℃	—	1	30	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	20	100	mV
		I_O=5 to 350mA, T_j=25℃	—	10	50	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−8 to −25V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	125	—	μV
Ripple rejection ratio	RR	V_I=−8 to −18V, I_O=100mA, f=120Hz, Ta=25℃	60	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	I_O=5mA, T_j=0 to 125℃	—	−0.4	—	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=−10V, I_O=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃
* AN79M05 : 15W, AN79M05F : 10.25W

■ Electrical Characteristics (Ta=25℃)

• AN79M52/AN79M52F (−5.2V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−5.0	−5.2	−5.4	V
Output voltage tolerance	V_O	V_I=−7 to −25V, I_O=5 to 350mA, P_D≦*	−4.94	—	−5.46	V
Line regulation	REG_{IN}	V_I=−7 to −25V, T_j=25℃	—	—	50	mV
		V_I=−8 to −18V, T_j=25℃	—	—	30	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	—	100	mV
		I_O=5 to 350mA, T_j=25℃	—	—	50	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−8 to −25V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	130	—	μV
Ripple rejection ratio	RR	V_I=−8 to −18V, f=120Hz, I_O=100mA	60	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	ΔV_O/Ta	I_O=5mA, T_j=0 to 125℃	—	−0.4	—	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=−10V, I_O=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃
* AN79M52 : 15W, AN79M52F : 10.25W

• AN79M06/AN79M06F (−6V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−5.75	−6	−6.25	V
Output voltage tolerance	V_O	V_I=−8 to −25V, I_O=3 to 350mA, P_D≦*	−5.7	—	−6.3	V
Line regulation	REG_{IN}	V_I=−8 to −25V, T_j=25℃	—	5	60	mV
		V_I=−9 to −19V, T_j=25℃	—	1.5	40	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	20	120	mV
		I_O=5 to 350mA, T_j=25℃	—	10	60	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−9 to −25V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	150	—	μV
Ripple rejection ratio	RR	V_I=−9 to −19V, I_O=100mA, f=120Hz, Ta=25℃	60	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	ΔV_O/Ta	I_O=5mA, T_j=0 to 125℃	—	−0.4	—	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=−11V, I_O=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃
* AN79M06 : 15W, AN79M06F : 10.25W

■ Electrical Characteristics (Ta=25℃)

• AN79M07/AN79M07F (−7V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−6.7	−7	−7.3	V
Output voltage tolerance	V_O	V_I=−9 to −25V, I_O=5 to 350mA, P_D≦*	−6.65	—	−7.35	V
Line regulation	REG_{IN}	V_I=−9 to −25V, T_j=25℃	—	6	70	mV
		V_I=−10 to −20V, T_j=25℃	—	2	35	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	20	140	mV
		I_O=5 to 350mA, T_j=25℃	—	10	70	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−10 to −25V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	175	—	μV
Ripple rejection ratio	RR	V_I=−10 to −20V, I_O=100mA, f=120Hz, Ta=25℃	59	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	I_O=5mA, T_j=0 to 125℃	—	−0.5	—	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=−12V, I_O=350mA, C_I=2 μF, C_O=1 μF and T_j=0 to 125℃
* AN79M07 : 15W, AN79M07F : 10.25W

• AN79M08/AN79M08F (−8V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−7.7	−8	−8.3	V
Output voltage tolerance	V_O	V_I=−10.5 to −25V, I_O=5 to 350mA, P_D≦*	−7.6	—	−8.4	V
Line regulation	REG_{IN}	V_I=−10.5 to −25V, T_j=25℃	—	6	80	mV
		V_I=−11 to −21V, T_j=25℃	—	2	40	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	25	160	mV
		I_O=5 to 350mA, T_j=25℃	—	10	80	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−10.5 to −25V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	200	—	μV
Ripple rejection ratio	RR	V_I=−11.5 to −21.5V, I_O=100mA, f=120Hz, Ta=25℃	59	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	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=−14V, I_O=350mA, C_I=2 μF, C_O=1 μF and T_j=0 to 125℃
* AN79M08 : 15W, AN79M08F : 10.25W

■ Electrical Characteristics (Ta=25℃)

• AN79M09/AN79M09F (−9V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−8.65	−9	−9.35	V
Output voltage tolerance	V_O	V_I=−11.5 to −26V, I_O=5 to 350mA, P_D≦*	−8.55	—	−9.45	V
Line regulation	REG_{IN}	V_I=−11.5 to −26V, T_j=25℃	—	7	80	mV
		V_I=−12 to −22V, T_j=25℃	—	2	50	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	25	180	mV
		I_O=5 to 350mA, T_j=25℃	—	10	90	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−11.5 to −26V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	225	—	μV
Ripple rejection ratio	RR	V_I=−12 to −22V, I_O=100mA, f=120Hz, Ta=25℃	58	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	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=−15V, I_O=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃
* AN79M09 : 15W, AN79M09F : 10.25W

• AN79M10/AN79M10F (−10V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−9.6	−10	−10.4	V
Output voltage tolerance	V_O	V_I=−12.5 to −27V, I_O=5 to 350mA, P_D≦*	−9.5	—	−10.5	V
Line regulation	REG_{IN}	V_I=−12.5 to −27V, T_j=25℃	—	7	80	mV
		V_I=−13 to −23V, T_j=25℃	—	2	50	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	25	200	mV
		I_O=5 to 350mA, T_j=25℃	—	10	100	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−12.5 to −27V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	250	—	μV
Ripple rejection ratio	RR	V_I=−13 to −23V, I_O=100mA, f=120Hz, Ta=25℃	58	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	I_O=5mA, T_j=0 to 125℃	—	−0.7	—	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=−16V, I_O=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃
* AN79M10 : 15W, AN79M10F : 10.25W

■ Electrical Characteristics (Ta=25℃)

• AN79M12/AN79M12F (−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 −30V, I_O=5 to 350mA, P_D≦*	−11.4	—	−12.6	V
Line regulation	REG_{IN}	V_I=−14.5 to −30V, T_j=25℃	—	8	80	mV
		V_I=−15 to −25V, T_j=25℃	—	2	50	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	25	240	mV
		I_O=5 to 350mA, T_j=25℃	—	10	120	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−14.5 to −30V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	300	—	μV
Ripple rejection ratio	RR	V_I=−15 to −25V, I_O=100mA, f=120Hz, Ta=25℃	57	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	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=−19V, I_O=350mA, C_I=2 μF, C_O=1 μF and T_j=0 to 125℃
* AN79M12 : 15W, AN79M12F : 10.25W

• AN79M15/AN79M15F (−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 350mA, P_D≦*	−14.25	—	−15.75	V
Line regulation	REG_{IN}	V_I=−17.5 to −30V, T_j=25℃	—	10	80	mV
		V_I=−18 to −28V, T_j=25℃	—	3	50	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	25	240	mV
		I_O=5 to 350mA, T_j=25℃	—	10	120	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−17.5 to −30V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	375	—	μV
Ripple rejection ratio	RR	V_I=−18 to −28V, I_O=100mA, f=120Hz, Ta=25℃	56	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	I_O=5mA, T_j=0 to 125℃	—	−0.9	—	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=350mA, C_I=2 μF, C_O=1 μF and T_j=0 to 125℃
* AN79M15 : 15W, AN79M15F : 10.25W

Electrical Characteristics (Ta=25℃)

• AN79M18/AN79M18F (−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 350mA, P_D≦*	−17.1	—	−18.9	V
Line regulation	REG_{IN}	V_I=−21 to −33V, T_j=25℃	—	10	80	mV
		V_I=−22 to −32V, T_j=25℃	—	5	50	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	30	300	mV
		I_O=5 to 350mA, T_j=25℃	—	10	150	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−21 to −33V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	450	—	μV
Ripple rejection ratio	RR	V_I=−22 to −32V, I_O=100mA, f=120Hz, Ta=25℃	55	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	I_O=5mA, T_j=0 to 125℃	—	−1	—	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=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃
* AN79M18 : 15W, AN79M18F : 10.25W

• AN79M20/AN79M20F (−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 350mA, P_D≦*	−19	—	−21	V
Line regulation	REG_{IN}	V_I=−23 to −35V, T_j=25℃	—	10	80	mV
		V_I=−24 to −34V, T_j=25℃	—	5	50	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	30	300	mV
		I_O=5 to 350mA, T_j=25℃	—	10	150	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−23 to −35V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	500	—	μV
Ripple rejection ratio	RR	V_I=−24 to −34V, I_O=100mA, f=120Hz, Ta=25℃	54	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	I_O=5mA, T_j=0 to 125℃	—	−1	—	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=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃
* AN79M20 : 15W, AN79M20F : 10.25W

■ Electrical Characteristics (Ta=25℃)

• AN79M24/AN79M24F (−24V Type)

Parameter	Symbol	Condition	min	typ	max	Unit
Output voltage	V_O	T_j=25℃	−23	−24	−25	V
Output voltage tolerance	V_O	V_I=−27 to −38V, I_O=5 to 350mA, P_D≦*	−22.8	—	−25.2	V
Line regulation	REG_{IN}	V_I=−27 to −38V, T_j=25℃	—	10	80	mV
		V_I=−27 to −37V, T_j=25℃	—	5	70	mV
Load regulation	REG_L	I_O=5 to 500mA, T_j=25℃	—	30	300	mV
		I_O=5 to 350mA, T_j=25℃	—	10	150	mV
Bias current	I_{Bias}	T_j=25℃	—	2	4	mA
Input bias current fluctuation	$\Delta I_{Bias(IN)}$	V_I=−27 to −38V, T_j=25℃	—	—	0.8	mA
Load bias current fluctuation	$\Delta I_{Bias(L)}$	I_O=5 to 350mA, T_j=25℃	—	—	0.4	mA
Output noise voltage	V_{no}	f=10Hz to 100kHz, Ta=25℃	—	600	—	μV
Ripple rejection ratio	RR	V_I=−28 to −38V, I_O=100mA, f=120Hz, Ta=25℃	54	—	—	dB
Minimum input/output voltage difference	$V_{DIF(min.)}$	T_j=25℃	—	1.1	—	V
Output short circuit current	$I_{O(Short)}$	V_I=−35V, T_j=25℃	—	50	—	mA
Peak output current	$I_{O(Peak)}$	T_j=25℃	—	1000	—	mA
Output voltage temperature coefficient	$\Delta V_O/Ta$	I_O=5mA, T_j=0 to 125℃	—	−1	—	mV/℃

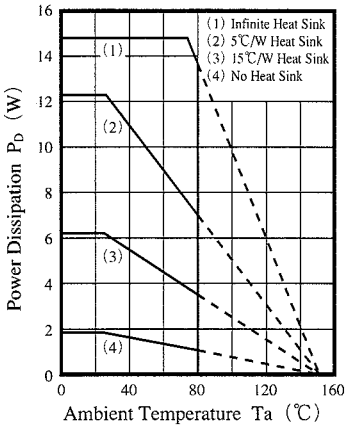
Note 1) The specified condition T_j=25℃ means that the test should be carried out with the test time so short (within 10ms) that the drift in characteristic value due to the rise in chip junction temperature can be ignored.

Note 2) When not specified, V_I=−33V, I_O=350mA, C_I=2μF, C_O=1μF and T_j=0 to 125℃

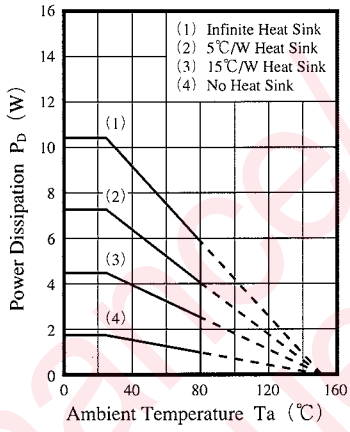
* AN79M24 : 15W, AN79M24F : 10.25W

■ Characteristics Curve

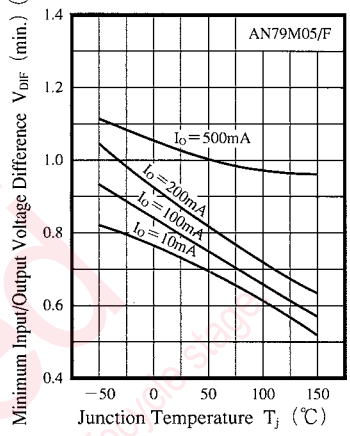
$P_D - Ta$ (AN79M00 Series)



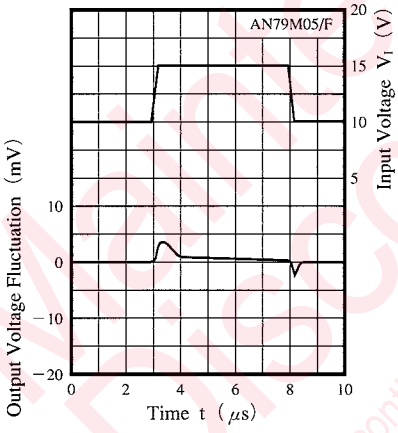
$P_D - Ta$ (AN79M00F Series)



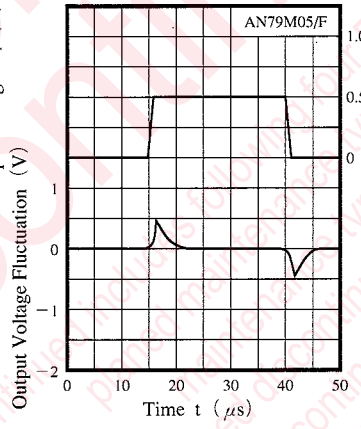
$V_{DIF(min.)} - T_j$



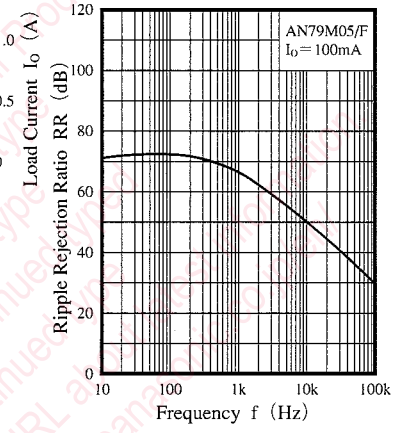
Input Transient Response



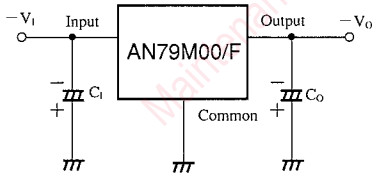
Load Transient Response



RR − f

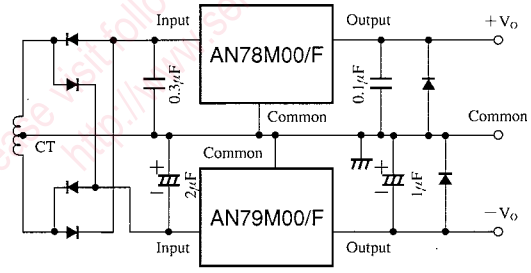


■ Basic Regulator Circuit



C_I is connected when the input line is long. 2 μF
C_O improves the transient Response. 1 μF

■ Application Circuit



Voltage Regulators

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