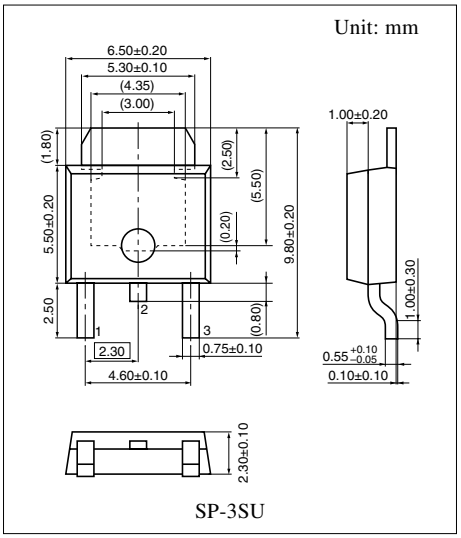
AN78MxxNSP Series

3-pin positive output voltage regulator (500 mA type)

■ Overview

The AN78MxxNSP series is a 3-pin fixed positive output type monolithic voltage regulator housed in surface mounting package. Stabilized fixed output voltage is obtained from unstable DC input voltage with using minimum external components. 9 types of fixed output voltage are available; 5 V, 6 V, 7 V, 8 V, 9 V, 10 V, 12 V, 15 V and 18 V. They can be used widely in power circuits with current capacity up to 500 mA.

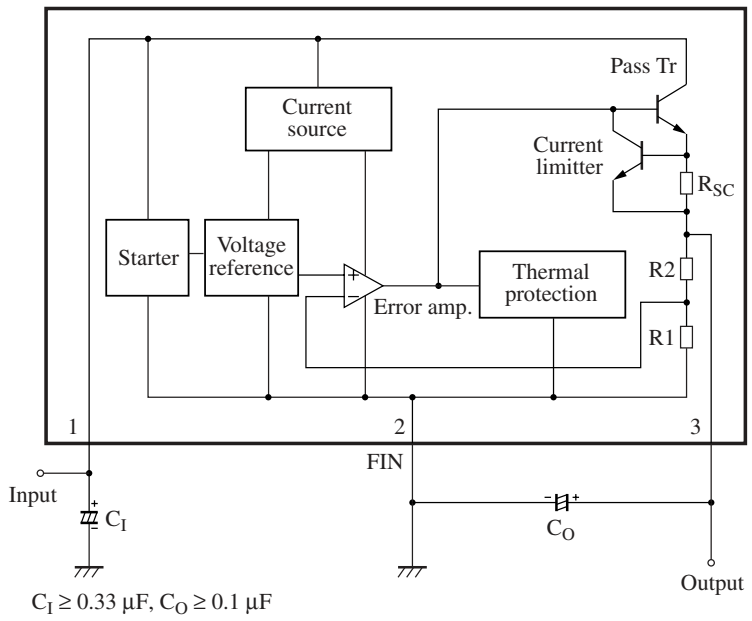


Note) The package of this product will be changed to lead-free type (SP-3SUA). See the new package dimensions section later of this datasheet.

■ Features

- Output voltage: 5 V, 6 V, 7 V, 8 V, 9 V, 10 V, 12 V, 15 V, 18 V
- Built-in overcurrent limit circuit
- Built-in thermal overload protection circuit
- Built-in ASO (area of safe operation) protection circuit

■ Block Diagram



$C_I \geq 0.33\ \mu F$, $C_O \geq 0.1\ \mu F$

■ Pin Descriptions

Pin No.	Description	
1	Input	Input voltage pin
2	GND	Ground pin (FIN)
3	Output	Output voltage pin

■ Absolute Maximum Ratings

Parameter	Symbol	Range	Unit
Supply voltage *2	V_{CC}	35	V
Supply current *3	I_{CC}	—	mA
Power dissipation *4	P_D	—	mW
Operating ambient temperature *1	T_{opr}	−30 to +85	°C
Storage temperature *1	T_{stg}	−55 to +150	°C

Note) 1. *1: Except for the operating ambient temperature and storage temperature, all ratings are for T_a = 25°C.
*2: When V_{CC} of 35 V is applied, the overvoltage protection of ASO protection circuit may shut off the output.
*3: Since this IC has incorporated a current limiter, the current value does not exceed the rating.
*4: When Tj exceeds 150°C (designed value), the internal circuit cuts off the output. Note that the relationship between IC power dissipation and the ambient temperature must follow the derating curve.
2. This IC is not suitable for car electronics equipment.

■ Electrical Characteristics at T_a = 25°C

• AN78M05NSP (5 V type)

The specified condition T_j = 25°C means that the test should be carried out within so short a test time (within 10 ms) that the characteristic value drift due to the chip junction temperature rise can be ignored.
Unless otherwise specified, V_I = 10 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	4.8	5	5.2	V
Output voltage tolerance	V_{O2}	V_I = 7.5 V to 20 V, I_O = 5 mA to 350 mA T_j = 25°C	4.75	—	5.25	V
Line regulation 1	REG_{IN1}	V_I = 7.5 V to 25 V, T_j = 25°C	—	3	100	mV
Line regulation 2	REG_{IN2}	V_I = 8 V to 25 V, T_j = 25°C	—	1	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	20	100	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	50	mV
Bias current	I_{Bias}	T_j = 25°C	—	4	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 8 V to 25 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 8 V to 18 V, I_O = 100 mA, f = 120 Hz	62	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	40	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M06NSP (6 V type)

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

Unless otherwise specified, V_I = 11 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	5.75	6	6.25	V
Output voltage tolerance	V_{O2}	V_I = 8.5 V to 21 V, I_O = 5 mA to 350 mA T_j = 25°C	5.7	—	6.3	V
Line regulation 1	REG_{IN1}	V_I = 8.5 V to 25 V, T_j = 25°C	—	5	100	mV
Line regulation 2	REG_{IN2}	V_I = 9 V to 25 V, T_j = 25°C	—	1.5	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	20	120	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	60	mV
Bias current	I_{Bias}	T_j = 25°C	—	4	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 9 V to 25 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 9 V to 19 V, I_O = 100 mA, f = 120 Hz	59	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	45	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M07NSP (7 V type)

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

Unless otherwise specified, V_I = 12 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	6.7	7	7.3	V
Output voltage tolerance	V_{O2}	V_I = 9.5 V to 22 V, I_O = 5 mA to 350 mA T_j = 25°C	6.65	—	7.35	V
Line regulation 1	REG_{IN1}	V_I = 9.5 V to 25 V, T_j = 25°C	—	6	100	mV
Line regulation 2	REG_{IN2}	V_I = 10 V to 25 V, T_j = 25°C	—	2	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	20	140	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	70	mV
Bias current	I_{Bias}	T_j = 25°C	—	4	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 10 V to 25 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 10 V to 20 V, I_O = 100 mA, f = 120 Hz	57	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	48	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M08NSP (8 V type)

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

Unless otherwise specified, V_I = 14 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	7.7	8	8.3	V
Output voltage tolerance	V_{O2}	V_I = 10.5 V to 22 V, I_O = 5 mA to 350 mA T_j = 25°C	7.6	—	8.4	V
Line regulation 1	REG_{IN1}	V_I = 10.5 V to 25 V, T_j = 25°C	—	6	100	mV
Line regulation 2	REG_{IN2}	V_I = 11 V to 25 V, T_j = 25°C	—	2	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	25	160	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	80	mV
Bias current	I_{Bias}	T_j = 25°C	—	4.1	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 10.5 V to 25 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 11.5 V to 21.5 V, I_O = 100 mA, f = 120 Hz	56	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	48	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M09NSP (9 V type)

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

Unless otherwise specified, V_I = 15 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	8.65	9	9.35	V
Output voltage tolerance	V_{O2}	V_I = 11.5 V to 24 V, I_O = 5 mA to 350 mA T_j = 25°C	8.55	—	9.45	V
Line regulation 1	REG_{IN1}	V_I = 11.5 V to 25 V, T_j = 25°C	—	7	100	mV
Line regulation 2	REG_{IN2}	V_I = 12 V to 25 V, T_j = 25°C	—	2	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	25	180	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	90	mV
Bias current	I_{Bias}	T_j = 25°C	—	4.1	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 12 V to 25 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 12 V to 22 V, I_O = 100 mA, f = 120 Hz	56	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	60	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M10NSP (10 V type)

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

Unless otherwise specified, V_I = 16 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	9.6	10	10.4	V
Output voltage tolerance	V_{O2}	V_I = 12.5 V to 25 V, I_O = 5 mA to 350 mA T_j = 25°C	9.5	—	10.5	V
Line regulation 1	REG_{IN1}	V_I = 12.5 V to 30 V, T_j = 25°C	—	7	100	mV
Line regulation 2	REG_{IN2}	V_I = 13 V to 25 V, T_j = 25°C	—	2	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	25	200	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	100	mV
Bias current	I_{Bias}	T_j = 25°C	—	4.1	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 13 V to 25 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 13 V to 23 V, I_O = 100 mA, f = 120 Hz	56	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	65	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M12NSP (12 V type)

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

Unless otherwise specified, V_I = 19 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	11.5	12	12.5	V
Output voltage tolerance	V_{O2}	V_I = 14.5 V to 27 V, I_O = 5 mA to 350 mA T_j = 25°C	11.4	—	12.6	V
Line regulation 1	REG_{IN1}	V_I = 14.5 V to 30 V, T_j = 25°C	—	8	100	mV
Line regulation 2	REG_{IN2}	V_I = 16 V to 30 V, T_j = 25°C	—	2	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	25	240	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	120	mV
Bias current	I_{Bias}	T_j = 25°C	—	4.3	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 14.5 V to 30 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 15 V to 25 V, I_O = 100 mA, f = 120 Hz	55	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	75	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M15NSP (15 V type)

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

Unless otherwise specified, V_I = 23 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	14.4	15	15.6	V
Output voltage tolerance	V_{O2}	V_I = 17.5 V to 30 V, I_O = 5 mA to 350 mA T_j = 25°C	14.25	—	15.75	V
Line regulation 1	REG_{IN1}	V_I = 17.5 V to 30 V, T_j = 25°C	—	10	100	mV
Line regulation 2	REG_{IN2}	V_I = 20 V to 30 V, T_j = 25°C	—	3	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	25	300	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	150	mV
Bias current	I_{Bias}	T_j = 25°C	—	4.3	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 17.5 V to 30 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 18.5 V to 28.5 V, I_O = 100 mA, f = 120 Hz	54	—	—	dB

• Design reference data

Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	90	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Electrical Characteristics at T_a = 25°C (continued)

• AN78M18NSP (18 V type)

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

Unless otherwise specified, V_I = 27 V, I_O = 350 mA, C_I = 0.33 µF and C_O = 0.1 µF

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output voltage	V_{O1}	T_j = 25°C	17.3	18	18.7	V
Output voltage tolerance	V_{O2}	V_I = 21 V to 33 V, I_O = 5 mA to 350 mA T_j = 25°C	17.1	—	18.9	V
Line regulation 1	REG_{IN1}	V_I = 21 V to 33 V, T_j = 25°C	—	10	100	mV
Line regulation 2	REG_{IN2}	V_I = 22 V to 33 V, T_j = 25°C	—	5	50	mV
Load regulation 1	REG_{L1}	I_O = 5 mA to 500 mA, T_j = 25°C	—	30	360	mV
Load regulation 2	REG_{L2}	I_O = 5 mA to 200 mA, T_j = 25°C	—	10	180	mV
Bias current	I_{Bias}	T_j = 25°C	—	4.4	6	mA
Bias current fluctuation to input	$\Delta I_{Bias(IN)}$	V_I = 21 V to 33 V, T_j = 25°C	—	—	0.8	mA
Bias current fluctuation to load	$\Delta I_{Bias(L)}$	I_O = 5 mA to 350 mA, T_j = 25°C	—	—	0.5	mA
Ripple rejection ratio	RR	V_I = 22 V to 32 V, I_O = 100 mA, f = 120 Hz	53	—	—	dB

• Design reference data

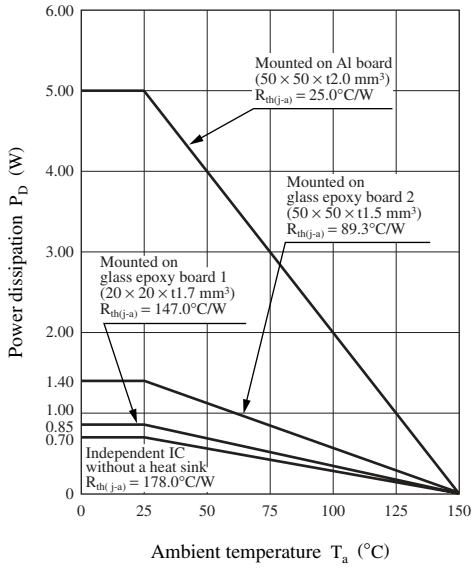
Note) The characteristics listed below are theoretical values based on the IC design and are not guaranteed.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output noise voltage	V_{NO}	f = 10 Hz to 100 kHz	—	100	—	µV
Minimum input/output voltage difference	$V_{DIF(min)}$	I_O = 500 mA, T_j = 25°C	—	2	—	V
Output short-circuit current	$I_{O(Short)}$	V_I = 35 V, T_j = 25°C	—	300	—	mA
Peak output current	$I_{O(Peak)}$	T_j = 25°C	—	1 000	—	mA
Output voltage temperature coefficient	$\Delta V_O / T_a$	I_O = 5 mA, T_j = 0°C to 125°C	—	− 0.5	—	mV/°C
Thermal protection operating temperature	$T_{j(TH)}$	I_O = 5 mA	—	150	—	°C

■ Application Notes

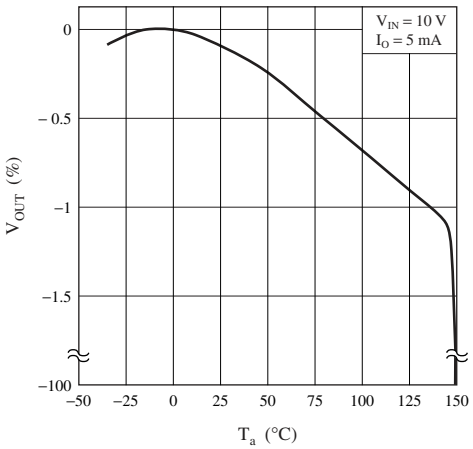
1. P_D — T_a curves of SP-3SU

P_D — T_a

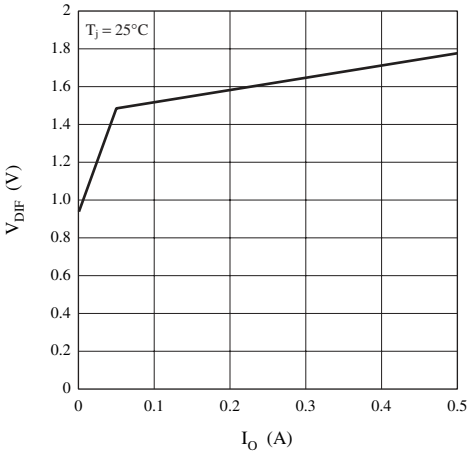


2. Main Characteristics

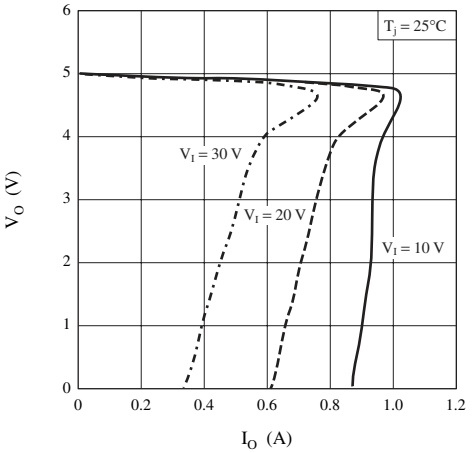
Output voltage temperature characteristic



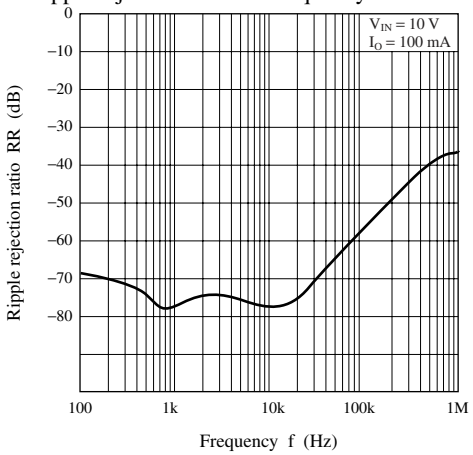
Minimum input/output voltage difference vs. load current characteristic



Current limit characteristics

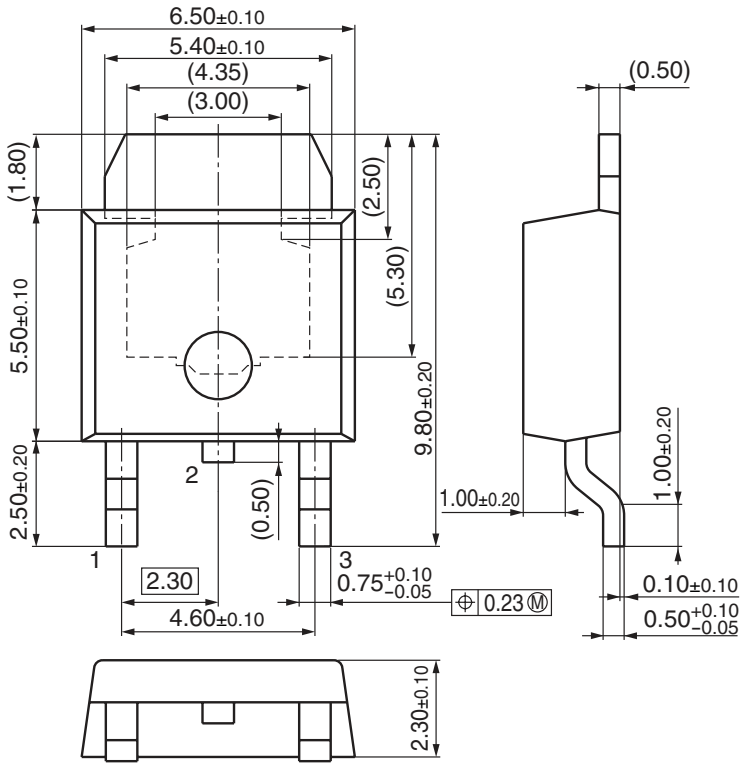


Ripple rejection ratio vs. frequency characteristic



■ New Package Dimensions (Unit: mm)

• SP-3SUA (Lead-free package)



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