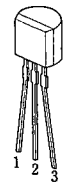
3-TERMINAL NEGATIVE VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM79L00 series of 3-Terminal Negative Voltage Regulators is constructed using the New JRC Planar epitaxial process. These regulators employ internal current-limiting and thermal-shutdown, making them essentially indestructible. If adequeate heat sinking is provided, they can deliver up to 100mA output current. They are intended as fixed voltage regulators in a wide range of applications including local or on-card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power pass elements to make high-current voltage regulators. The NJM79L00 used as a Zener diode/resistor combination replacement, offers an effective output impedance improvement of typically two orders of magnitude, along with lower quiescent current and lower noise.

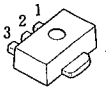
■ PACKAGE OUTLINE

(TO-92)



NJM79L00A

(SOT-89)



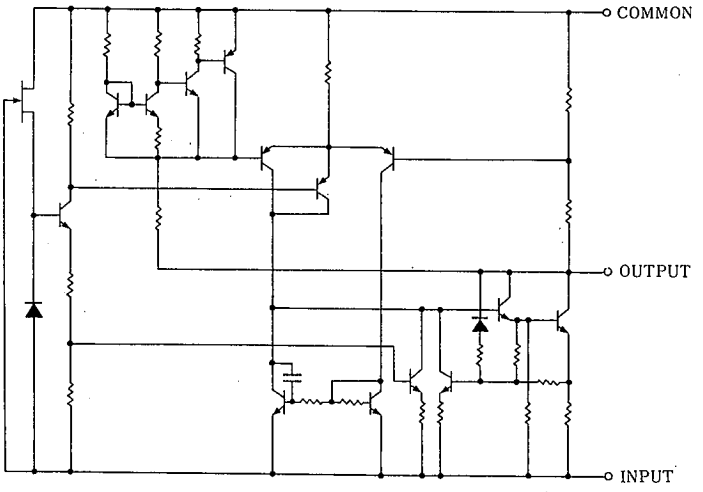
NJM79L00UA

1. COMMON
2. IN
3. OUT

■ FEATURES

- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Excellent Ripple Rejection
- Guarantee'd 100mA Output Current
- Package Outline TO-92, SOT-89
- Bipolar Technology

■ EQUIVALENT CIRCUIT



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■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	(79L03A～79L09A)－30	V
		(79L12A～79L15A)－35	V
		(79L18A～79L24A)－40	V
Operating Temperature Range	T_{opr}	－40～＋85	℃
Storage Temperature Range	T_{stg}	－40～+125	℃
Power Dissipation	P_D	(TO92) 500	mW
		(SOT89) 350	mW

■ ELECTRICAL CHARACTERISTICS (C_{IN}=0.33 μF, Co=1.0 μF. Tj=25℃) Measurement is to be conducted in pulse testing.

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
NJM79L03A						
Output Voltage	V_O	V_{IN}=－10V, I_O=40mA	－2.88	－3.0	－3.12	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=－7～－20V, I_O=40mA	—	10	60	mV
Load Regulation	ΔV_O-I_O	V_{IN}=－10V, I_O=1～100mA	—	4	72	mV
Quiescent Current	I_Q	V_{IN}=－10V, I_O=0mA	—	3.5	6.0	mA
Ripple Rejection	RR	V_{IN}=－8～－18V, I_O=40mA,e_{in}=1$V_{P\text{-}P}$, f=120Hz	45	72	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=－10V,BW=10Hz～100kHz,I_O=40mA	—	70	—	μV
NJM79L05A						
Output Voltage	V_O	V_{IN}=－10V, I_O=40mA	－4.8	－5.0	－5.2	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=－7～－20V, I_O=40mA	—	15	150	mV
Load Regulation	ΔV_O-I_O	V_{IN}=－10V, I_O=1～100mA	—	7	60	mV
Quiescent Current	I_Q	V_{IN}=－10V, I_O=0mA	—	3.5	6.0	mA
Ripple Rejection	RR	V_{IN}=－8～－18V, I_O=40mA, e_{in}=1$V_{P\text{-}P}$, f=120Hz	41	71	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=－10V,BW=10Hz～100kHz,I_O=40mA	—	120	—	μV

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■ ELECTRICAL CHARACTERISTICS (C_{IN}=0.33 μF, C_O=1.0 μF. Tj=25℃) Measurement is to be conducted in pulse testing.

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP.	MAX.	UNIT
NJM79L06A						
Output Voltage	V_O	V_{IN}=−12V, I_O=40mA	−5.76	−6.0	−6.24	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−8.5~−20V, I_O=40mA	—	18	150	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−12V, I_O=1~100mA	—	8	70	mV
Quiescent Current	I_Q	V_{IN}=−12V, I_O=0mA	—	3.5	6.0	mA
Ripple Rejection	RR	V_{IN}=−9~−19V, I_O=40mA, e_{in}=1V_{P-P} f=120Hz	40	68	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−12V,BW=10Hz~100kHz,I_O=40mA	—	140	—	μV
NJM79L08A						
Output Voltage	V_O	V_{IN}=−14V, I_O=40mA	−7.68	−8.0	−8.32	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−10.5~−23V, I_O=40mA	—	24	175	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−14V, I_O=1~100mA	—	10	80	mV
Quiescent Current	I_Q	V_{IN}=−14V, I_O=0mA	—	3.5	6.0	mA
Ripple Rejection	RR	V_{IN}=−11~−21V, I_O=40mA, e_{in}=1V_{P-P} f=120Hz	39	68	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−14V,BW=10Hz~100kHz,I_O=40mA	—	190	—	μV
NJM79L09A						
Output Voltage	V_O	V_{IN}=−15V, I_O=40mA	−8.64	−9.0	−9.36	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−11.5~−24V, I_O=40mA	—	27	200	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−15V, I_O=1~100mA	—	12	90	mV
Quiescent Current	I_Q	V_{IN}=−15V, I_O=0mA	—	3.5	6.0	mA
Ripple Rejection	RR	V_{IN}=−12~−22V, I_O=40mA, e_{in}=1V_{P-P} f=120Hz	38	67	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−15V,BW=10Hz~100kHz,I_O=40mA	—	210	—	μV
NJM79L12A						
Output Voltage	V_O	V_{IN}=−19V, I_O=40mA	−11.5	−12.0	−12.5	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−14.5~−27V,I_O=40mA	—	36	250	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−19V, I_O=1~100mA	—	16	100	mV
Quiescent Current	I_Q	V_{IN}=−19V, I_O=0mA	—	3.5	6.5	mA
Ripple Rejection	RR	V_{IN}=−15~−25V, I_O=40mA, e_{in}=1V_{P-P}, f=120Hz	37	64	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−19V,BW=10Hz~100kHz,I_O=40mA	—	210	—	μV

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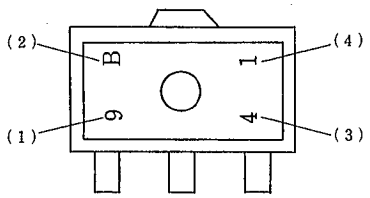
■ ELECTRICAL CHARACTERISTICS (C_{IN}=0.33 μF, Co=1.0 μF, Tj=25℃) Measurement is to be conducted in pulse testing.

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
NJM79L15A						
Output Voltage	V_O	V_{IN}=−23V, I_O=40mA	−14.4	−15.0	−15.6	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−17.5~−30V, I_O=40mA	—	45	300	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−23V, I_O=1~100mA	—	20	150	mV
Quiescent Current	I_Q	V_{IN}=−23V, I_O=0mA	—	3.5	6.5	mA
Ripple Rejection	RR	V_{IN}=−18.5~−28.5V, I_O=40mA, e_{in}=1V_{P-P} f=120Hz	34	63	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−23V,BW=10Hz~100kHz,I_O=40mA	—	340	—	μV
NJM79L18A						
Output Voltage	V_O	V_{IN}=−27V, I_O=40mA	−17.3	−18.0	−18.7	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−20.7~−33V, I_O=40mA	—	54	325	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−27V, I_O=1~100mA	—	23	170	mV
Quiescent Current	I_Q	V_{IN}=−27V, I_O=0mA	—	3.5	6.5	mA
Ripple Rejection	RR	V_{IN}=−23~−33V, I_O=40mA, e_{in}=1V_{P-P}, f=120Hz	33	60	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−27V,BW=10Hz~100Kz, I_O=40mA	—	410	—	μV
NJM79L24A						
Output Voltage	V_O	V_{IN}=−33V, I_O=40mA	−23.0	−24.0	−25.0	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−27~−38V, I_O=40mA	—	72	350	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−33V, I_O=1~100mA	—	30	200	mV
Quiescent Current	I_Q	V_{IN}=−33V, I_O=0mA	—	3.5	6.5	mA
Ripple Rejection	RR	V_{IN}=−29~−35V, I_O=40mA, e_{in}=1V_{P-P}, f=120Hz	31	55	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−33V,BW=10Hz~100kHz,I_O=40mA	—	550	—	μV

■ SOT-89 MARK



(1)9: Negative Output
(2)Vo Rank
(3)The end of A.D.
(4)Production Month
Oct. ···X
Nov.···Y
Dec. ···Z

	(1)	(2)
NJM79L03UA	9	B
NJM79L05UA	9	C
NJM79L06UA	9	E
NJM79L08UA	9	G
NJM79L09UA	9	H
NJM79L12UA	9	K
NJM79L15UA	9	L
NJM79L18UA	9	M
NJM79L24UA	9	P

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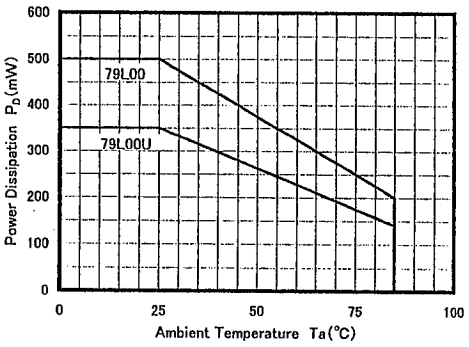
■ POWER DISSIPATION VS. AMBIENT TEMPERATURE



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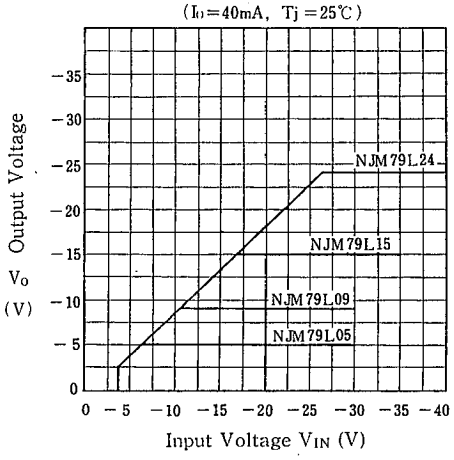
■ TYPICAL CHARACTERISTICS

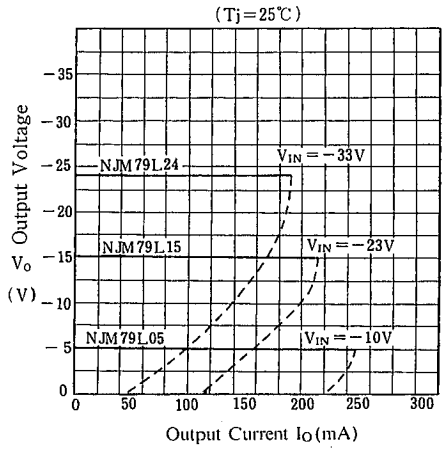
NJM79L00 Input Voltage vs.Output Voltage

(I_O=40mA, Tj=25℃)



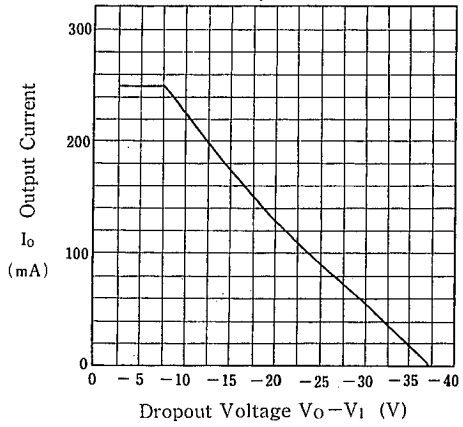
NJM79L05/15/24 Load Characteristics

(Tj=25℃)

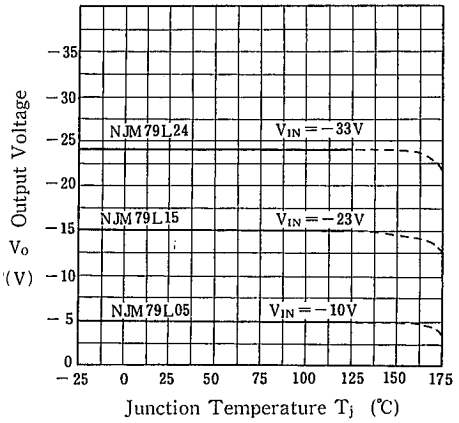


NJM79L00 Series Short Circuit Current

(Tj=25℃)

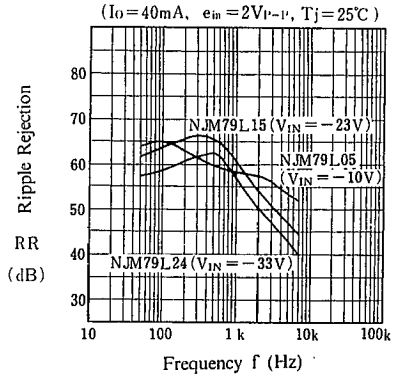


NJM79L05/12/24 Output Voltage vs. Junction Temperature



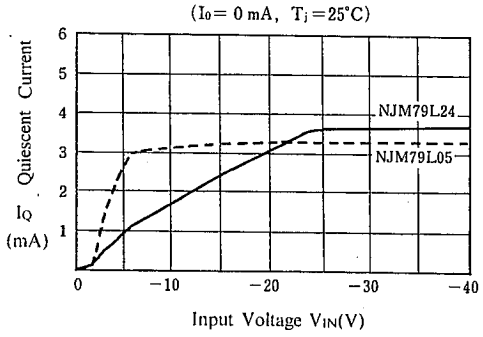
NJM79L05/15/24 Ripple Rejection vs. Frequency

(I_O=40mA, e_{in}=2V_{P-P}, Tj=25℃)



Quiescent Current vs.Input Voltage

(I_O= 0 mA, Tj=25°C)



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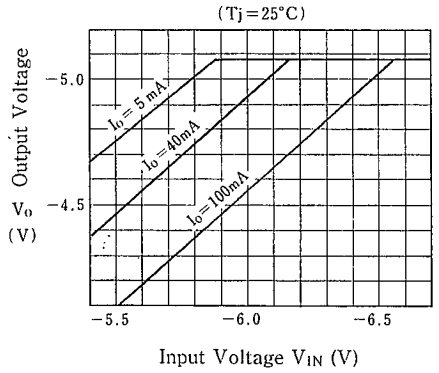
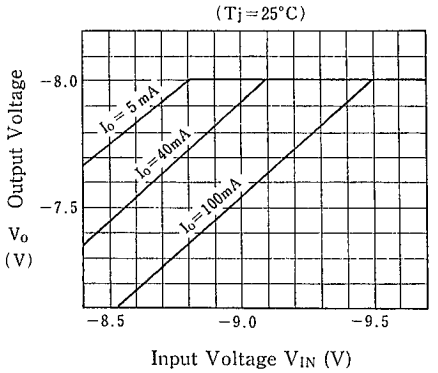
■ TYPICAL CHARACTERISTICS

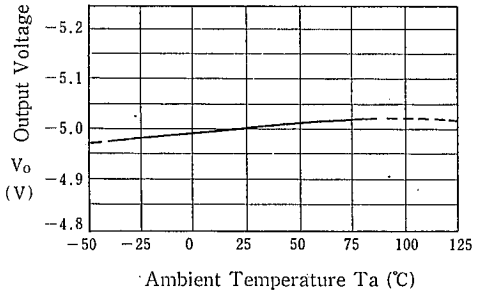
NJM79L05 Dropout Characteristics



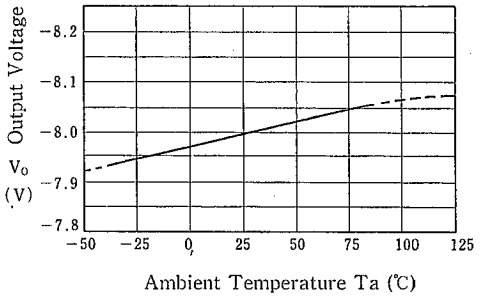
NJM79L08 Dropout Characteristics



NJM79L05 Output Voltage vs. Temperature



NJM79L08 Output Voltage vs. Temperature



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MEMO

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