NJM79L00

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.

■ Absolute Maximum Ratings

Input Voltage	V_{IN} (79L03A~79L09A)	−30V
	(79L12A~79L15A)	−35V
	(79L18A~79L24A)	−40V
Output Current	I_O	100mA
Power Dissipation	P_D (TO-92)	500mW
	(SOT-89)	350mW
Operating Temperature Range	T_{opr}	−30~+75°C
Storage Temperature Range	T_{stg}	−40~+125°C

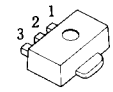
■ Package Outline

(TO-92)

NJM79LXXA

1. COMMON
2. IN
3. OUT

(SOT-89)



NJM79LXXUA

1. COMMON
2. IN
3. OUT

■ Electrical Characteristics (C_{IN}=0.33μF, Co=1.0μF, Tj=25°C)

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	—	—	60	mV
Load Regulation	ΔV_o-I_o	V_{IN}=−10V, I_o=1~100mA	—	—	72	mV
Quiescent Current	I_Q	V_{IN}=−10V, I_o=0mA	—	—	6.0	mA
Ripple Rejection	RR	V_{IN}=−8~−18V, I_O=40mA, e_{in}=1V_{p-p}, f=120Hz	45	51	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−10V, BW=10Hz~100kHz, I_O=40mA	—	30	—	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	—	—	150	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−10V, I_O=1~100mA	—	—	60	mV
Quiescent Current	I_Q	V_{IN}=−10V, I_O=0mA	—	—	6.0	mA
Ripple Rejection	RR	V_{IN}=−8~−18V, I_O=40mA, e_{in}=1V_{p-p}, f=120Hz	41	49	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−10V, BW=10Hz~100kHz, I_O=40mA	—	40	—	μV

■ Electrical Characteristics (C_{IN}=0.33μF, Co=1.0μF, Tj=25°C)

Measurement is to be conducted in pulse testing.

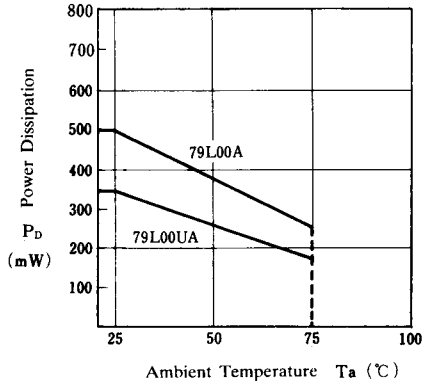
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
NJM79L06A						
Output Voltage	V_O	V_{IN}=−12V, I_O=40mA	−5.76	−6.0	−6.24	V
Line Regulation	ΔV_O-V_{IN}	V_{IN}=−8.5~−20V, I_O=40mA	—	—	150	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−12V, I_O=1~100mA	—	—	70	mV
Quiescent Current	I_Q	V_{IN}=−12V, I_O=0mA	—	—	6.0	mA
Ripple Rejection	RR	V_{IN}=−9~−19V, I_O=40mA, e_{in}=1$V_{p\text{-}p}$, f=120Hz	40	48	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−12V, BW=10Hz~100kHz, I_O=40mA	—	50	—	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	—	—	175	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−14V, I_O=1~100mA	—	—	80	mV
Quiescent Current	I_Q	V_{IN}=−14V, I_O=0mA	—	—	6.0	mA
Ripple Rejection	RR	V_{IN}=−11~−21V, I_O=40mA, e_{in}=1$V_{p\text{-}p}$, f=120Hz	39	45	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−14V, BW=10Hz~100kHz, I_O=40mA	—	60	—	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	—	—	200	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−15V, I_O=1~100mA	—	—	90	mV
Quiescent Current	I_Q	V_{IN}=−15V, I_O=0mA	—	—	6.0	mA
Ripple Rejection	RR	V_{IN}=−12~−22V, I_O=40mA, e_{in}=1$V_{p\text{-}p}$, f=120Hz	38	44	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−15V, BW=10Hz~100kHz, I_O=40mA	—	70	—	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	—	—	250	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−19V, I_O=1~100mA	—	—	100	mV
Quiescent Current	I_Q	V_{IN}=−19V, I_O=0mA	—	—	6.5	mA
Ripple Rejection	RR	V_{IN}=−15~−25V, I_O=40mA, e_{in}=1$V_{p\text{-}p}$, f=120Hz	37	42	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−19V, BW=10Hz~100kHz, I_O=40mA	—	80	—	μV

■ Electrical Characteristics (C_{IN}=0.33μF, Co=1.0μF, T_j=25°C)

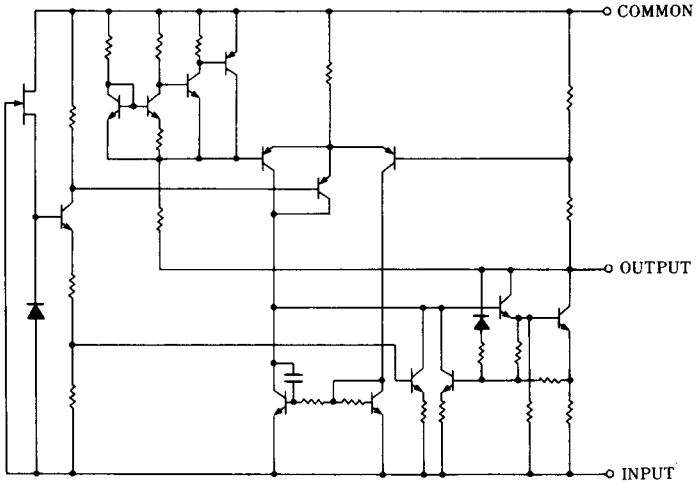
Measurement is to be conducted in pulse testing.

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	—	—	300	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−23V, I_O=1~100mA	—	—	150	mV
Quiescent Current	I_Q	V_{IN}=−23V, I_O=0mA	—	—	6.5	mA
Ripple Rejection	RR	V_{IN}=−18.5~−28.5V, I_O=40mA, e_{in}=1$V_{p\text{-}p}$, f=120Hz	34	39	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−23V, BW=10Hz~100kHz, I_O=40mA	—	90	—	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	—	—	325	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−27V, I_O=1~100mA	—	—	170	mV
Quiescent Current	I_Q	V_{IN}=−27V, I_O=0mA	—	—	6.5	mA
Ripple Rejection	RR	V_{IN}=−23~−33V, I_O=40mA, e_{in}=1$V_{p\text{-}p}$, f=120Hz	33	48	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−27V, BW=10Hz~100kHz, I_O=40mA	—	150	—	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	—	—	350	mV
Load Regulation	ΔV_O-I_O	V_{IN}=−33V, I_O=1~100mA	—	—	200	mV
Quiescent Current	I_Q	V_{IN}=−33V, I_O=0mA	—	—	6.5	mA
Ripple Rejection	RR	V_{IN}=−29~−35V, I_O=40mA, e_{in}=1$V_{p\text{-}p}$, f=120Hz	31	47	—	dB
Output Noise Voltage	V_{NO}	V_{IN}=−33V, BW=10Hz~100kHz, I_O=40mA	—	200	—	μV

■ **Power Dissipation vs. Ambient Temperature**



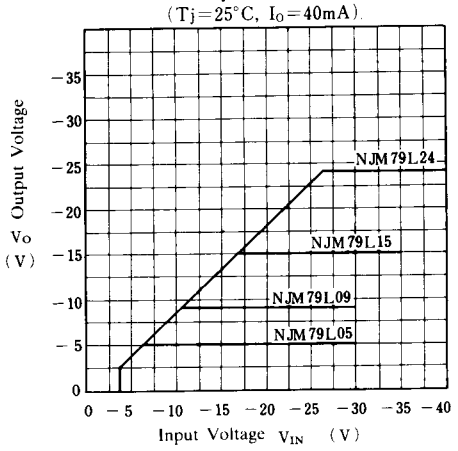
■ **Equivalent Circuit**



■ Typical Characteristics

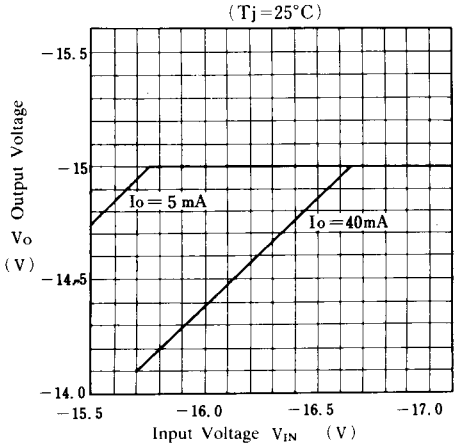
NJM79L00 Input Voltage vs. Output Voltage

(Tj=25°C, Io=40mA)



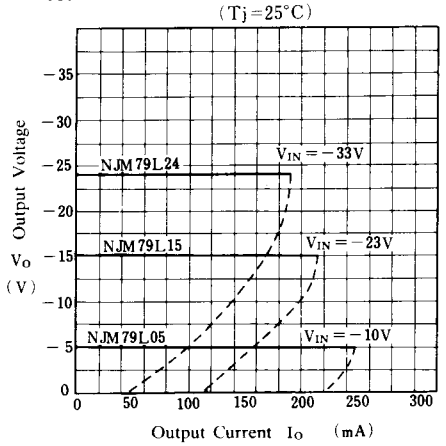
NJM79L15 Output Voltage vs. Low Input Voltage

(Tj=25°C)



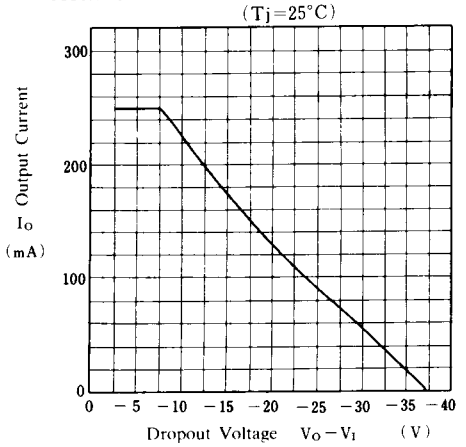
NJM79L05/15/24 Load Characteristics

(Tj=25°C)

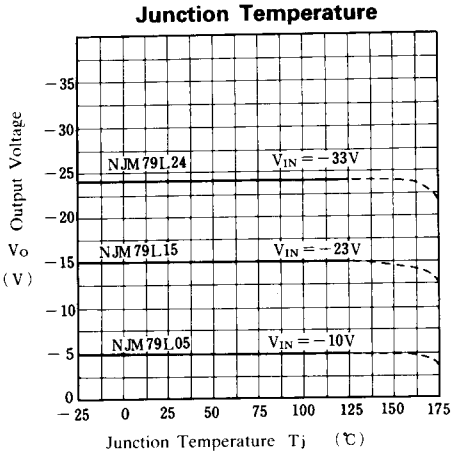


NJM79L00 Series Short Circuit Current

(Tj=25°C)



NJM79L05/12/24 Output Voltage vs. Junction Temperature



NJM79L05/15/24 Ripple Rejection vs. Frequency

(Io=40mA, ein=2Vp-p, Tj=25°C)