

Negative-Voltage Regulators



Rev.1. Jan. 2010.



VSP MIKRON

79LXX

- 3-Terminal Regulators
- Output Current Up to 100mA
- No External Components
- Internal Thermal Overload Protection
- Internal Short-Circuit Limiting
- Direct Replacement for Motorola MC79L00 Series

DESCRIPTION

This series of fixed-voltage monolithic integrated circuit voltage regulators is designed for a wide range of applications. These applications include 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. Each of these regulators can deliver up to 100mA of output current. The internal limiting and thermal shutdown features of these regulators make them essentially immune to overload. When used as a replacement for a Zener diode-resistor combination, an effective improvement in output impedance can be obtained together with lower-bias current.

Nominal output voltage	Regulator
-5V	79L05
-6V	79L06
-8V	79L08
-12V	79L12
-15V	79L15
-18V	79L18
-24V	79L24



Absolute maximum ratings over operating temperature range (unless otherwise noted)

	79L05 thru 79L08	79L12 thru 79L18	79L24	UNIT
Input voltage	-30	-35	-40	V
Operating free-air, case, or virtual junction temperature range	0 to 150	0 to 150	0 to 150	°C
Storage temperature range	-65 to 150	-65 to 150	-65 to 150	
Lead temperature 1.6 mm (1/16 inch) from case for 10 seconds	260	260	260	

Recommended operating conditions

Parameter	MIN	MAX	UNIT	
Input voltage, V_I	79L05	-7	-20	V
	79L06	-8	-20	
	79L08	-10.5	-23	
	79L12	-14.5	-27	
	79L15	-17.5	-30	
	79L18	-20.5	-33	
	79L24	-27	-38	
Output current, I_o		100	mA	
Operating virtual junction temperature, T_J	0	125	°C	

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79LXX

79L05 electrical characteristics at specified virtual junction temperature, $V_I=-10V$, $I_O=40mA$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		79L05			UNIT
			MIN	TYP	MAX	
Output voltage**		25°C	-4.8	-5	-5.2	V
	$I_O=1mA$ to 40mA $V_I=-7V$ to -20V	0 to 125 °C	-4.75	-5	-5.25	
	$I_O=1mA$ to 70mA		-4.75	-5	-5.25	
Input regulation	$V_I=-7V$ to -20V	25°C		15	150	mV
	$V_I=-8V$ to -20V			12	100	
Ripple rejection	$V_I=-8V$ to -18V, $f=120Hz$	25°C	41	49		dB
Output regulation	$I_O=1mA$ to 100mA	25°C		20	60	mV
	$I_O=1mA$ to 40mA			10	30	
Output noise voltage	$f=10Hz-100Hz$	25°C		40		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C		3.8	6	mA
		125°C			5.5	
Bias current change	$V_I=-8V$ to -20V	0 to 125 °C			1.5	
	$I_O=1mA$ to 40mA				0.1	

79L06 electrical characteristics at specified virtual junction temperature, $V_I=-11V$, $I_O=40mA$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		79L06			UNIT
			MIN	TYP	MAX	
Output voltage**		25°C	-5.75	-6	-6.25	V
	$I_O=1mA$ to 40mA $V_I=-8V$ to -20V	0 to 125 °C	-5.7	-6	-6.3	
	$I_O=1mA$ to 70mA		-5.7	-6	-6.3	
Input regulation	$V_I=-8V$ to -20V	25°C		20	175	mV
	$V_I=-9V$ to -20V			15	125	
Ripple rejection	$V_I=-9V$ to -19V, $f=120Hz$	25°C	40	48		dB
Output regulation	$I_O=1mA$ to 100mA	25°C		21	80	mV
	$I_O=1mA$ to 40mA			11	40	
Output noise voltage	$f=10Hz-100Hz$	25°C		44		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C			6	mA
		125°C			5.5	
Bias current change	$V_I=-9V$ to -20V	0 to 125 °C			1.5	
	$I_O=1mA$ to 40mA				0.1	

*Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33µF capacitor across the input and a 0.1µF capacitor across the output.

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Negative-Voltage Regulators



VSP MIKRON

79LXX

79L08 electrical characteristics at specified virtual junction temperature, $V_I = -14V$, $I_O = 40mA$

(unless otherwise noted)

PARAMETER	TEST CONDITIONS*		79L08			UNIT
			MIN	TYP	MAX	
Output voltage**		25°C	-7.7	-8	-8.3	V
	$I_O = 1mA$ to 40mA $V_I = -10.5V$ to -23V	0 to 125 °C	-7.6	-8	-8.4	
	$I_O = 1mA$ to 70mA		-7.6	-8	-8.4	
Input regulation	$V_I = -10.5V$ to -23V	25°C		42	200	mV
	$V_I = -11V$ to -23V			36	150	
Ripple rejection	$V_I = -13V$ to -23V, $f = 120Hz$	25°C	37	46		dB
Output regulation	$I_O = 1mA$ to 100mA	25°C		30	100	mV
	$I_O = 1mA$ to 40mA			15	50	
Output noise voltage	$f = 10Hz - 100Hz$	25°C		54		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C			6	mA
		125°C			5.5	
Bias current change	$V_I = -11V$ to -23V	0 to 125 °C			1.5	
	$I_O = 1mA$ to 40mA				0.1	

79L12 electrical characteristics at specified virtual junction temperature, $V_I = -19V$, $I_O = 40mA$

(unless otherwise noted)

PARAMETER	TEST CONDITIONS*		79L12			UNIT
			MIN	TYP	MAX	
Output voltage**		25°C	-11.5	-12	-12.5	V
	$I_O = 1mA$ to 40mA $V_I = -14V$ to -27V	0 to 125 °C	-11.4	-12	-12.6	
	$I_O = 1mA$ to 70mA		-11.4	-12	-12.6	
Input regulation	$V_I = -14V$ to -27V	25°C		50	250	mV
	$V_I = -16V$ to -27V			40	200	
Ripple rejection	$V_I = -15V$ to -25V, $f = 120Hz$	25°C	37	42		dB
Output regulation	$I_O = 1mA$ to 100mA	25°C		24	100	mV
	$I_O = 1mA$ to 40mA			15	50	
Output noise voltage	$f = 10Hz - 100Hz$	25°C		80		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C			6.5	mA
		125°C			6	
Bias current change	$V_I = -16V$ to -27V	0 to 125 °C			1.5	
	$I_O = 1mA$ to 40mA				0.1	

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VSP MIKRON

79LXX

79L15 electrical characteristics at specified virtual junction temperature, $V_I=-23V$, $I_O=40mA$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		79L15			UNIT
			MIN	TYP	MAX	
Output voltage**		25°C	-14.4	-15	-15.6	V
	$I_O=1mA$ to 40mA $V_I=-17.5V$ to -30V	0 to 125 °C	-14.25	-15	-15.75	
	$I_O=1mA$ to 70mA		-14.25	-15	-15.75	
Input regulation	$V_I=-17.5V$ to -30V	25°C		65	300	mV
	$V_I=-19V$ to -30V			50	250	
Ripple rejection	$V_I=-18.5V$ to -28.5V, $f=120Hz$	25°C	34	39		dB
Output regulation	$I_O=1mA$ to 100mA	25°C		25	150	mV
	$I_O=1mA$ to 40mA			15	75	
Output noise voltage	$f=10Hz-100Hz$	25°C		90		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C			6.5	mA
		125°C			6	
Bias current change	$V_I=-19V$ to -30V	0 to 125 °C			1.5	
	$I_O=1mA$ to 40mA				0.1	

79L18 electrical characteristics at specified virtual junction temperature, $V_I=-26V$, $I_O=40mA$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		79L18			UNIT
			MIN	TYP	MAX	
Output voltage**		25°C	-17.3	-18	-18.7	V
	$I_O=1mA$ to 40mA $V_I=-20.5V$ to -33V	0 to 125 °C	-17.1	-18	-18.9	
	$I_O=1mA$ to 70mA		-17.1	-18	-18.9	
Input regulation	$V_I=-20.5V$ to -33V	25°C		70	325	mV
	$V_I=-22V$ to -33V			60	275	
Ripple rejection	$V_I=-21.5V$ to -31.5V, $f=120Hz$	25°C	33	48		dB
Output regulation	$I_O=1mA$ to 100mA	25°C		27	170	mV
	$I_O=1mA$ to 40mA			19	85	
Output noise voltage	$f=10Hz-100Hz$	25°C		150		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C			6.5	mA
		125°C			6	
Bias current change	$V_I=-22V$ to -33V	0 to 125 °C			1.5	
	$I_O=1mA$ to 40mA				0.1	

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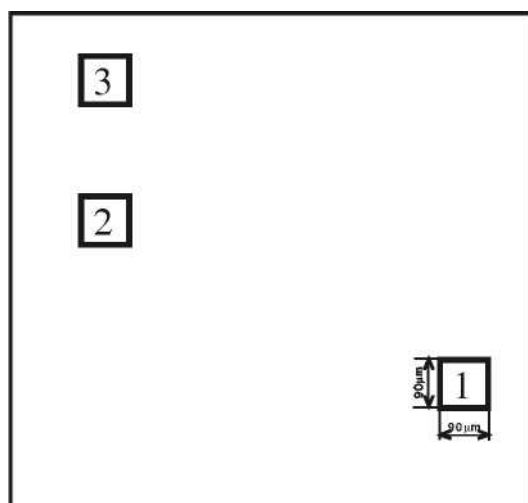
79L24 electrical characteristics at specified virtual junction temperature, $V_I=-33V$, $I_O=40mA$ (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		79L24			UNIT
			MIN	TYP	MAX	
Output voltage**		25°C	-23	-24	-25	V
	$I_O=1mA$ to 40mA $V_I=-27V$ to -38V	0 to 125 °C	-22.8	-24	-25.2	
	$I_O=1mA$ to 70mA		-22.8	-24	-25.2	
Input regulation	$V_I=-27V$ to -38V	25°C		90	350	mV
	$V_I=-28V$ to -38V			75	300	
Ripple rejection	$V_I=-29V$ to -35V, $f=120Hz$	25°C	31	47		dB
Output regulation	$I_O=1mA$ to 100mA	25°C		40	200	mV
	$I_O=1mA$ to 40mA			25	100	
Output noise voltage	$f=10Hz-100Hz$	25°C		200		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C			6.5	mA
		125°C			6	
Bias current change	$V_I=-28V$ to -38V	0 to 125 °C			1.5	
	$I_O=1mA$ to 40mA				0.1	

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Pad Location 79LXX



Chip size 1.15 x 1.35

Wafer Thickness: 460±30µm (or 350±30µm, 280±30µm)
 Top metal: AlSi
 Backside metal: - (or Ti-Ni (V)-Ag)
 Wafer size: 100 mm

Pad Location Coordinates

Pad N	Pad Name	X(µm)	Y(µm)
1	Ground	1600	160
2	Input	160	735
3	Output	160	995