

MC79L00A Series

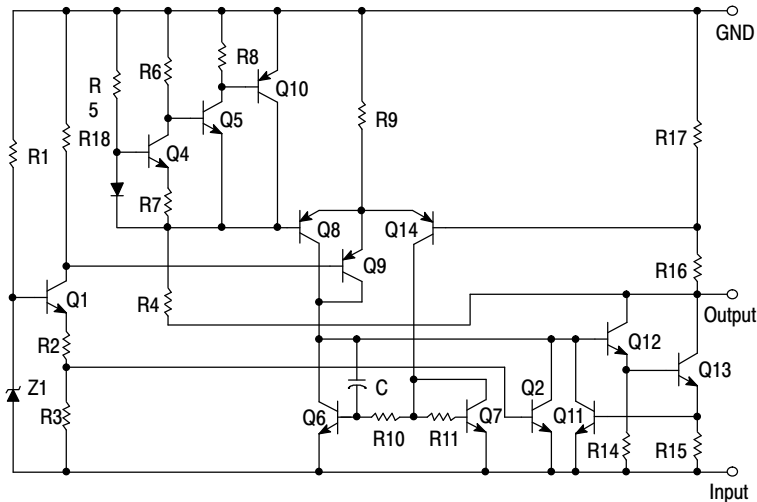
100 mA Negative Voltage Regulators

The MC79L00A Series negative voltage regulators are inexpensive, easy-to-use devices suitable for numerous applications requiring up to 100 mA. Like the higher powered MC7900 Series negative regulators, this series features thermal shutdown and current limiting, making them remarkably rugged. In most applications, no external components are required for operation.

The MC79L00A devices are useful for on-card regulation or any other application where a regulated negative voltage at a modest current level is needed. These regulators offer substantial advantage over the common resistor/Zener diode approach.

Features

- No External Components Required
- Internal Short Circuit Current Limiting
- Internal Thermal Overload Protection
- Low Cost
- Complementary Positive Regulators Offered (MC78L00 Series)
- Pb-Free Packages are Available



* Automotive temperature range selections are available with special test conditions and additional tests in 5, 12 and 15 V devices. Contact your local ON Semiconductor sales office for information.

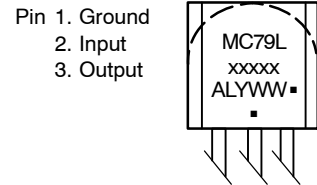
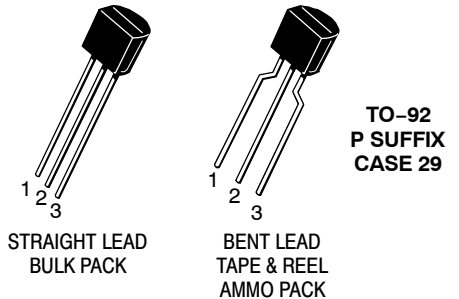
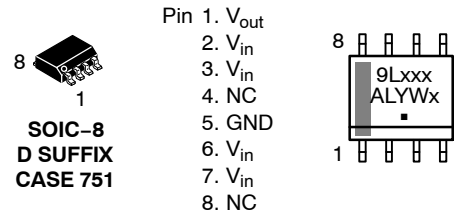
Figure 1. Representative Schematic Diagram



ON Semiconductor®

THREE-TERMINAL LOW CURRENT NEGATIVE FIXED VOLTAGE REGULATORS

MARKING DIAGRAMS



- xxx = Specific Device Code
- A = Assembly Location
- L = Wafer Lot
- Y = Year
- W, WW = Work Week
- y = B or C
- = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

MC79L00A Series

MAXIMUM RATINGS ($T_A = +25^\circ\text{C}$, unless otherwise noted.)

Rating	Symbol	Value	Unit
Input Voltage (-5 V) (-12, -15, -18 V) (-24 V)	V_I	-30 -35 -40	Vdc
Power Dissipation Case 29 (TO-92 Type) $T_A = 25^\circ\text{C}$ Thermal Resistance, Junction-to-Ambient Thermal Resistance, Junction-to-Case Case 751 (SOIC-8 Type) (Note 1) $T_A = 25^\circ\text{C}$ Thermal Resistance, Junction-to-Ambient Thermal Resistance, Junction-to-Case	PD $R_{\theta JA}$ $R_{\theta JC}$ PD $R_{\theta JA}$ $R_{\theta JC}$	Internally Limited 160 83 Internally Limited 180 45	W $^\circ\text{C/W}$ $^\circ\text{C/W}$ W $^\circ\text{C/W}$ $^\circ\text{C/W}$
Storage Temperature Range	T_{stg}	-65 to +150	$^\circ\text{C}$
Junction Temperature	T_J	+150	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

- SOIC-8 Junction-to-Ambient Thermal Resistance is for minimum recommended pad size. Refer to Figure 9 for Thermal Resistance variation versus pad size.

*This device series contains ESD protection and exceeds the following tests:

Human Body Model 2000 V per MIL_STD_883, Method 3015
Machine Model Method 200 V.

ELECTRICAL CHARACTERISTICS ($V_I = -10\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\ \mu\text{F}$, $C_O = 0.1\ \mu\text{F}$, $-40^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAB), $0^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAC)).

Characteristics	Symbol	MC79L05AC, AB			Unit
		Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	-4.8	-5.0	-5.2	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) -7.0 Vdc $\geq V_I \geq -20\text{ Vdc}$ -8.0 Vdc $\geq V_I \geq -20\text{ Vdc}$	Reg_{line}	-	-	150 100	mV
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	-	-	60 30	mV
Output Voltage -7.0 Vdc $\geq V_I \geq -20\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -10\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	-4.75 -4.75	-	-5.25 -5.25	Vdc
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	-	-	6.0 5.5	mA
Input Bias Current Change -8.0 Vdc $\geq V_I \geq -20\text{ Vdc}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	I_{IB}	-	-	1.5 0.1	mA
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_n	-	40	-	μV
Ripple Rejection ($-8.0 \geq V_I \geq -18\text{ Vdc}$, $f = 120\text{ Hz}$, $T_J = +25^\circ\text{C}$)	RR	41	49	-	dB
Dropout Voltage ($I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$)	$ V_I - V_O $	-	1.7	-	Vdc

MC79L00A Series

ELECTRICAL CHARACTERISTICS ($V_I = -19\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$, $-40^\circ\text{C} < T_J + 125^\circ\text{C}$ (for MC79LXXAB), $0^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAC)).

Characteristics	Symbol	MC79L12AC, AB			Unit
		Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	-11.5	-12	-12.5	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) -14.5 Vdc $\geq V_I \geq -27\text{ Vdc}$ -16 Vdc $\geq V_I \geq -27\text{ Vdc}$	Reg_{line}	-	-	250 200	mV
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	-	-	100 50	mV
Output Voltage -14.5 Vdc $\geq V_I \geq -27\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -19\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	-11.4 -11.4	-	-12.6 -12.6	Vdc
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	-	-	6.5 6.0	mA
Input Bias Current Change -16 Vdc $\geq V_I \geq -27\text{ Vdc}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	I_{IB}	-	-	1.5 0.2	mA
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_n	-	80	-	μV
Ripple Rejection ($-15 \leq V_I \leq -25\text{ Vdc}$, $f = 120\text{ Hz}$, $T_J = +25^\circ\text{C}$)	RR	37	42	-	dB
Dropout Voltage ($I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$)	$ V_I - V_O $	-	1.7	-	Vdc

ELECTRICAL CHARACTERISTICS ($V_I = -23\text{ V}$, $I_O = 40\text{ mA}$, $C_I = 0.33\text{ }\mu\text{F}$, $C_O = 0.1\text{ }\mu\text{F}$, $-40^\circ\text{C} < T_J + 125^\circ\text{C}$ (for MC79LXXAB), $0^\circ\text{C} < T_J < +125^\circ\text{C}$ (for MC79LXXAC)).

Characteristics	Symbol	MC79L15AC, AB			Unit
		Min	Typ	Max	
Output Voltage ($T_J = +25^\circ\text{C}$)	V_O	-14.4	-15	-15.6	Vdc
Input Regulation ($T_J = +25^\circ\text{C}$) -17.5 Vdc $\geq V_I \geq -30\text{ Vdc}$ -20 Vdc $\geq V_I \geq -30\text{ Vdc}$	Reg_{line}	-	-	300 250	mV
Load Regulation $T_J = +25^\circ\text{C}$, $1.0\text{ mA} \leq I_O \leq 100\text{ mA}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	Reg_{load}	-	-	150 75	mV
Output Voltage -17.5 Vdc $\geq V_I \geq -\text{Vdc}$, $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$ $V_I = -23\text{ Vdc}$, $1.0\text{ mA} \leq I_O \leq 70\text{ mA}$	V_O	-14.25 -14.25	-	-15.75 -15.75	Vdc
Input Bias Current ($T_J = +25^\circ\text{C}$) ($T_J = +125^\circ\text{C}$)	I_{IB}	-	-	6.5 6.0	mA
Input Bias Current Change -20 Vdc $\geq V_I \geq -30\text{ Vdc}$ $1.0\text{ mA} \leq I_O \leq 40\text{ mA}$	ΔI_{IB}	-	-	1.5 0.1	mA
Output Noise Voltage ($T_A = +25^\circ\text{C}$, $10\text{ Hz} \leq f \leq 100\text{ kHz}$)	V_N	-	90	-	μV
Ripple Rejection ($-18.5 \leq V_I \leq -28.5\text{ Vdc}$, $f = 120\text{ Hz}$)	RR	34	39	-	dB
Dropout Voltage $I_O = 40\text{ mA}$, $T_J = +25^\circ\text{C}$	$ V_I - V_O $	-	1.7	-	Vdc

MC79L00A Series

ORDERING INFORMATION

Device	Nominal Voltage	Operating Temperature Range	Package	Shipping†	
MC79L05ABD	-5.0 V	TJ = -40° to +125°C	SOIC-8	98 Units / Rail	
MC79L05ABDG			SOIC-8 (Pb-Free)	98 Units / Rail	
MC79L05ABDR2			SOIC-8	2500 / Tape & Reel	
MC79L05ABDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel	
MC79L05ABP			TO-92	2000 Units / Bag	
MC79L05ABPG			TO-92 (Pb-Free)	2000 Units / Bag	
MC79L05ABPRA			TO-92	2000 / Tape & Reel	
MC79L05ABPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel	
MC79L05ACD			TJ = 0° to +125°C	SOIC-8	98 Units / Rail
MC79L05ACDG				SOIC-8 (Pb-Free)	98 Units / Rail
MC79L05ACDR2				SOIC-8	2500 / Tape & Reel
MC79L05ACDR2G				SOIC-8 (Pb-Free)	2500 / Tape & Reel
MC79L05ACP				TO-92	2000 Units / Bag
MC79L05ACPG				TO-92 (Pb-Free)	2000 Units / Bag
MC79L05ACPRA	TO-92	2000 / Tape & Reel			
MC79L05ACPRAG	TO-92 (Pb-Free)	2000 / Tape & Reel			
MC79L05ACPRM	TO-92	2000 / Tape & Ammo Box			
MC79L05ACPRMG	TO-92 (Pb-Free)	2000 / Tape & Ammo Box			
MC79L05ACPRP	TO-92	2000 / Tape & Ammo Box			
MC79L05ACPRPG	TO-92 (Pb-Free)	2000 / Tape & Ammo Box			
MC79L12ABD	-12 V	TJ = -40° to +125°C		SOIC-8	98 Units / Rail
MC79L12ABDG				SOIC-8 (Pb-Free)	98 Units / Rail
MC79L12ABDR2			SOIC-8	2500 / Tape & Reel	
MC79L12ABDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel	
MC79L12ABP			TO-92	2000 Units / Bag	
MC79L12ABPG			TO-92 (Pb-Free)	2000 Units / Bag	
MC79L12ABPRA			TO-92	2000 / Tape & Reel	
MC79L12ABPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel	

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

MC79L00A Series

ORDERING INFORMATION

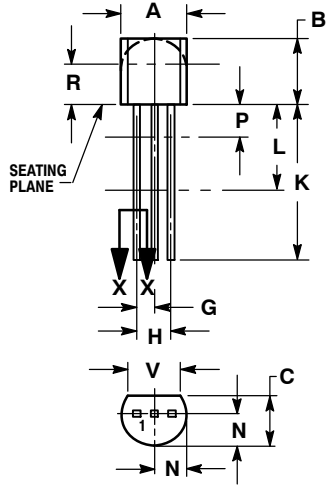
Device	Nominal Voltage	Operating Temperature Range	Package	Shipping†	
MC79L12ACD	-12 V	TJ = 0° to +125°C	SOIC-8	98 Units / Rail	
MC79L12ACDG			SOIC-8 (Pb-Free)	98 Units / Rail	
MC79L12ACDR2			SOIC-8	2500 / Tape & Reel	
MC79L12ACDR2G			SOIC-8 (Pb-Free)	2500 / Tape & Reel	
MC79L12ACP			TO-92	2000 Units / Bag	
MC79L12ACPG			TO-92 (Pb-Free)	2000 Units / Bag	
MC79L12ACPRA			TO-92	2000 / Tape & Reel	
MC79L12ACPRAG			TO-92 (Pb-Free)	2000 / Tape & Reel	
MC79L12ACPRP			TO-92	2000 / Tape & Ammo Box	
MC79L12ACPRPG			TO-92 (Pb-Free)	2000 / Tape & Ammo Box	
MC79L15ABD			-15 V	TJ = -40° to +125°C	SOIC-8
MC79L15ABDG	SOIC-8 (Pb-Free)	98 Units / Rail			
MC79L15ABDR2	SOIC-8	2500 / Tape & Reel			
MC79L15ABDR2G	SOIC-8 (Pb-Free)	2500 / Tape & Reel			
MC79L15ABP	TO-92	2000 Units / Bag			
MC79L15ABPG	TO-92 (Pb-Free)	2000 Units / Bag			
MC79L15ABPRP	TO-92	2000 / Tape & Ammo Box			
MC79L15ABPRPG	TO-92 (Pb-Free)	2000 / Tape & Ammo Box			
MC79L15ACD	TJ = 0° to +125°C	SOIC-8			98 Units / Rail
MC79L15ACDG		SOIC-8 (Pb-Free)			98 Units / Rail
MC79L15ACDR2		SOIC-8			2500 / Tape & Reel
MC79L15ACDR2G		SOIC-8 (Pb-Free)	2500 / Tape & Reel		
MC79L15ACP		TO-92	2000 Units / Bag		
MC79L15ACPG		TO-92 (Pb-Free)	2000 Units / Bag		
MC79L15ACPRA		TO-92	2000 / Tape & Reel		
MC79L15ACPRAG		TO-92 (Pb-Free)	2000 / Tape & Reel		
MC79L15ACPRE		TO-92	2000 / Tape & Reel		
MC79L15ACPREG		TO-92 (Pb-Free)	2000 / Tape & Reel		
MC79L15ACPRP		TO-92	2000 / Tape & Ammo Box		
MC79L15ACPRPG		TO-92 (Pb-Free)	2000 / Tape & Ammo Box		

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

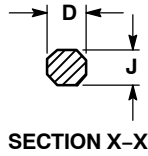
MC79L00A Series

PACKAGE DIMENSIONS

TO-92 (TO-226)
CASE 29-11
ISSUE AM



STRAIGHT LEAD
BULK PACK

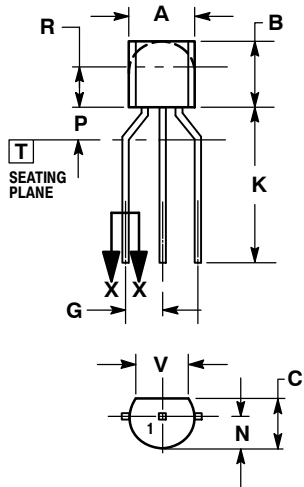


SECTION X-X

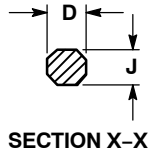
NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.45	5.20
B	0.170	0.210	4.32	5.33
C	0.125	0.165	3.18	4.19
D	0.016	0.021	0.407	0.533
G	0.045	0.055	1.15	1.39
H	0.095	0.105	2.42	2.66
J	0.015	0.020	0.39	0.50
K	0.500	---	12.70	---
L	0.250	---	6.35	---
N	0.080	0.105	2.04	2.66
P	---	0.100	---	2.54
R	0.115	---	2.93	---
V	0.135	---	3.43	---



BENT LEAD
TAPE & REEL
AMMO PACK



SECTION X-X

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. CONTOUR OF PACKAGE BEYOND DIMENSION R IS UNCONTROLLED.
4. LEAD DIMENSION IS UNCONTROLLED IN P AND BEYOND DIMENSION K MINIMUM.

DIM	MILLIMETERS	
	MIN	MAX
A	4.45	5.20
B	4.32	5.33
C	3.18	4.19
D	0.40	0.54
G	2.40	2.80
J	0.39	0.50
K	12.70	---
N	2.04	2.66
P	1.50	4.00
R	2.93	---
V	3.43	---