FAIRCHILD
A Schlumberger Company

μA79M00 Series 3-Terminal Negative Voltage Regulators

Linear Division Voltage Regulators

Description

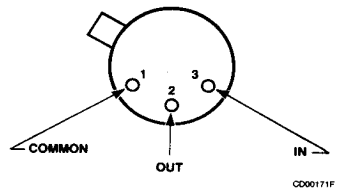
The μA79M00 series of 3-Terminal Medium Current Negative Voltage Regulators are constructed using the Fairchild Planar Epitaxial process. These regulators employ internal current-limiting, thermal shutdown, and safe-area compensation making them essentially indestructible. If adequate heat sinking is provided, they can deliver up to 0.5 A output current. They are intended as fixed voltage regulators in a wide range of applications including local (on-card) regulation for elimination of noise and distribution problems associated with single-point regulation. In addition to use as fixed voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents.

- **Output Current In Excess Of 0.5 A**
- **Internal Thermal Overload Protection**
- **Internal Short Circuit Current-Limiting**
- **Output Transistor Safe-Area Compensation**
- **Available In JEDEC TO-220 And TO-39 Packages**
- **Output Voltages Of −5 V, −8 V, −12 V, and −15 V**

Absolute Maximum Ratings

Storage Temperature Range	
TO-39 Metal Can	−65°C to +175°C
TO-220 Package	−65°C to +150°C
Operating Junction Temperature Range	
Extended (μA79M00M)	−55°C to +150°C
Commercial (μA79M00AC)	0°C to +150°C
Lead Temperature	
TO-39 Metal Can (soldering, 60 s)	300°C
TO-220 Package (soldering, 60 s)	265°C
Power Dissipation	Internally Limited
Input Voltage	
−5.0 V to −15 V	−35 V

Connection Diagram TO-39 Package (Top View)

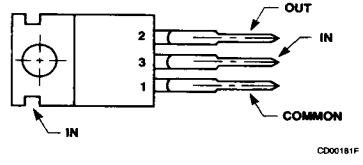


Lead 3 connected to case.

Order Information

Device Code	Package Code	Package Description
μA79M05HM	FC	Metal
μA79M08HM	FC	Metal
μA79M12HM	FC	Metal
μA79M15HM	FC	Metal
μA79M05AHC	FC	Metal
μA79M08AHC	FC	Metal
μA79M12AHC	FC	Metal
μA79M15AHC	FC	Metal

Connection Diagram TO-220 Package (Top View)

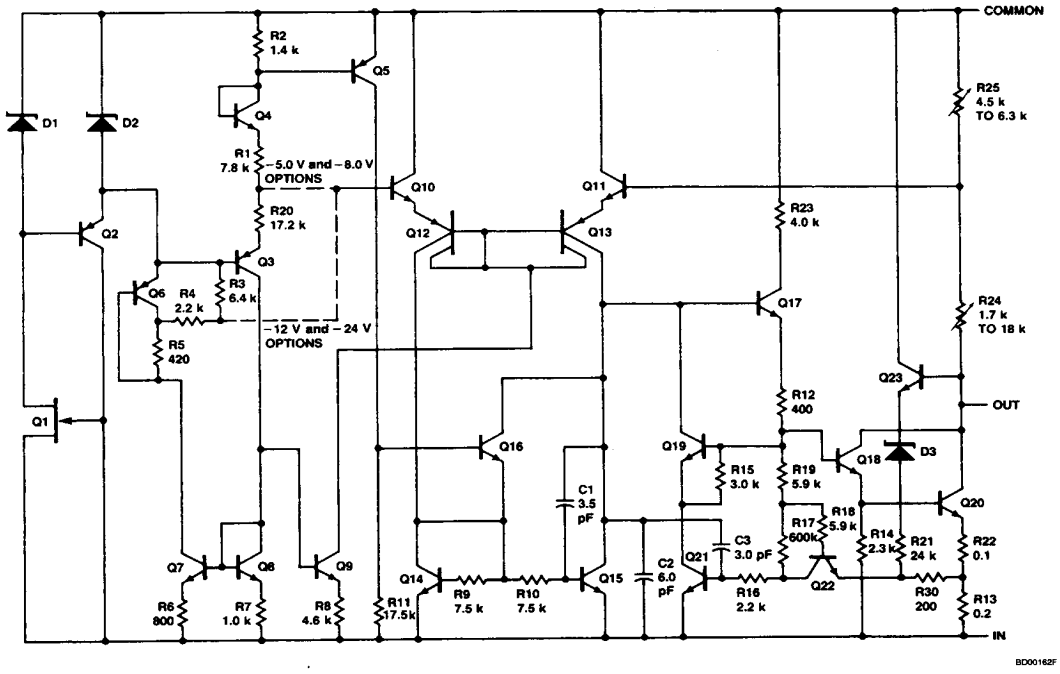


Lead 3 connected to case.

Order Information

Device Code	Package Code	Package Description
μA79M05AUC	GH	Molded Power Pack
μA79M08AUC	GH	Molded Power Pack
μA79M12AUC	GH	Molded Power Pack
μA79M15AUC	GH	Molded Power Pack

Equivalent Circuit



μA79M05H

Electrical Characteristics $-55°C \leq T_A \leq 125°C$, $V_I = -10$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage		$T_J = 25°C$		−5.2	−5.0	−4.8	V
$V_{R\ LINE}$	Line Regulation		$T_J = 25°C$	$-25\ V \leq V_I \leq -7.0\ V$		7.0	50	mV
				$-18\ V \leq V_I \leq -8.0\ V$		3.0	30	
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, $5.0\ mA \leq I_O \leq 500\ mA$			75	100	mV
			$T_J = 25°C$, $5.0\ mA \leq I_O \leq 350\ mA$			50		
V_O	Output Voltage		$-25\ V \leq V_I \leq -7.0\ V$, $5.0\ mA \leq I_O \leq 350\ mA$, $P_D \leq 4.0\ W$		−5.25		−4.75	V
I_Q	Quiescent Current		$T_J = 25°C$			1.0	2.0	mA
ΔI_Q	Quiescent Current Change	with line	$-25\ V \leq V_I \leq -8.0\ V$				0.4	mA
		with load	$5.0\ mA \leq I_O \leq 350\ mA$				0.4	
N_O	Noise		$T_A = 25°C$, $10\ Hz \leq f \leq 100\ kHz$			25	80	μV/V_O

μA79M05H (Cont.)
Electrical Characteristics $-55°C \leq T_A \leq 125°C$, $V_I = -10$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic	Condition[3]	Min	Typ	Max	Unit
$\Delta V_I/\Delta V_O$	Ripple Rejection	f = 2400 Hz, $I_O = 125$ mA, $T_J = 25°C$	50			dB
V_{DO}	Dropout Voltage	$T_J = 25°C$		1.1	2.3	V
I_{OS}	Output Short Circuit Current	$T_J = 25°C$, $V_I = -35$ V			0.6	A
I_{pk}	Peak Output Current	$V_I - V_O = 10$ V, $T_J = 25°C$	0.5	0.65	1.4	A
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage	$I_O = 5.0$ mA, $0°C \leq T_A \leq 125°C$			0.3	mV/°C/ V_O

μA79M05AC
Electrical Characteristics $-0°C \leq T_A \leq 125°C$, $V_I = -10$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage		$T_J = 25°C$		−5.2	−5.0	−4.8	V
$V_{R\ LINE}$	Line Regulation		$T_J = 25°C$	$-25\ V \leq V_I \leq -7.0$ V		7.0	50	mV
				$-18\ V \leq V_I \leq -8.0$ V		3.0	30	
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, $5.0\ mA \leq I_O \leq 500$ mA			75	100	mV
			$T_J = 25°C$, $5.0\ mA \leq I_O \leq 350$ mA				50	
V_O	Output Voltage		$-25\ V \leq V_I \leq -7.0$ V, $5.0\ mA \leq I_O \leq 350$ mA, $P_D \leq 4.0$ W		−5.25		−4.75	V
I_Q	Quiescent Current		$T_J = 25°C$			1.0	2.0	mA
ΔI_Q	Quiescent Current Change	with line	$-25\ V \leq V_I \leq -8.0$ V				0.4	mA
		with load	$5.0\ mA \leq I_O \leq 350$ mA				0.4	
N_O	Noise		$T_A = 25°C$, $10\ Hz \leq f \leq 100$ kHz			125		μV
$\Delta V_I/\Delta V_O$	Ripple Rejection		f = 2400 Hz, $I_O = 125$ mA, $T_J = 25°C$		50			dB
V_{DO}	Dropout Voltage		$T_J = 25°C$			1.1		V
I_{OS}	Output Short Circuit Current		$T_J = 25°C$, $V_I = -30$ V			140		mA
I_{pk}	Peak Output Current		$V_I - V_O = 10$ V, $T_J = 25°C$			650		mA
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage		$I_O = 5.0$ mA, $0°C \leq T_A \leq 125°C$			0.4		mV/°C

μA79M08H
Electrical Characteristics $-55°C \leq T_A \leq 125°C$, $V_I = -14$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage		$T_J = 25°C$		−8.3	−8.0	−7.7	V
$V_{R\ LINE}$	Line Regulation		$T_J = 25°C$	$-25\ V \leq V_I \leq -10.5\ V$		8.0	80	mV
				$-21\ V \leq V_I \leq -11\ V$		4.0	50	
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, $5.0\ mA \leq I_O \leq 500\ mA$			90	160	mV
			$T_J = 25°C$, $5.0\ mA \leq I_O \leq 350\ mA$			60		
V_O	Output Voltage		$-25\ V \leq V_I \leq -10.5\ V$, $5.0\ mA \leq I_O \leq 350\ mA$, $P_D \leq 4.0\ W$		−8.4		−7.6	V
I_Q	Quiescent Current		$T_J = 25°C$			1.0	2.0	mA
ΔI_Q	Quiescent Current Change	with line	$-25\ V \leq V_I \leq -10.5\ V$				0.4	mA
		with load	$5.0\ mA \leq I_O \leq 350\ mA$				0.4	
N_O	Noise		$T_A = 25°C$, $10\ Hz \leq f \leq 100\ kHz$			25	80	μV/V_O
$\Delta V_I/\Delta V_O$	Ripple Rejection		$f = 2400\ Hz$, $V_I = -13\ V$, $I_O = 125\ mA$, $T_J = 25°C$		50			dB
V_{DO}	Dropout Voltage		$T_J = 25°C$			1.1	2.3	V
I_{OS}	Output Short Circuit Current		$T_J = 25°C$, $V_I = -35\ V$				0.6	A
I_{pk}	Peak Output Current		$V_I - V_O = 10\ V$, $T_J = 25°C$		0.5	0.65	1.4	A
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage		$I_O = 5.0\ mA$, $0°C \leq T_A \leq 125°C$				0.3	mV/°C/V_O

μA79M08AC
Electrical Characteristics $0°C \leq T_A \leq 125°C$, $V_I = -14$ V, $I_O = 350$ mA, $C_I = 2$ μF, $C_O = 1$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage		$T_J = 25°C$		−8.3	−8.0	−7.7	V
$V_{R\ LINE}$	Line Regulation		$T_J = 25°C$	$-25\ V \leq V_I \leq -10.5\ V$		8.0	80	mV
				$-21\ V \leq V_I \leq -11\ V$		4.0	50	
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, $5.0\ mA \leq I_O \leq 500\ mA$			90	160	mV
			$T_J = 25°C$, $5.0\ mA \leq I_O \leq 350\ mA$			60		
V_O	Output Voltage		$-25\ V \leq V_I \leq -10.5\ V$, $5.0\ mA \leq I_O \leq 350\ mA$, $P_D \leq 4.0\ W$		−8.4		−7.6	V
I_Q	Quiescent Current		$T_J = 25°C$			1.0	2.0	mA
ΔI_Q	Quiescent Current Change	with line	$-25\ V \leq V_I \leq -10.5\ V$				0.4	mA
		with load	$5.0\ mA \leq I_O \leq 350\ mA$				0.4	
N_O	Noise		$T_A = 25°C$, $10\ Hz \leq f \leq 100\ kHz$			200		μV
$\Delta V_I/\Delta V_O$	Ripple Rejection		$f = 2400\ Hz$, $V_I = -13\ V$, $I_O = 125\ mA$, $T_J = 25°C$		50			dB

μA79M08AC (Cont.)
Electrical Characteristics $0°C \leq T_A \leq 125°C$, $V_I = -14$ V, $I_O = 350$ mA, $C_I = 2$ μF, $C_O = 1$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic	Condition[3]	Min	Typ	Max	Unit
V_{DO}	Dropout Voltage	$T_J = 25°C$		1.1		V
I_{OS}	Output Short Circuit Current	$T_J = 25°C$, $V_I = -30$ V		140		mA
I_{pk}	Peak Output Current	$V_I - V_O = 10$ V, $T_J = 25°C$		650		mA
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage	$I_O = 5.0$ mA, $0°C \leq T_A \leq 125°C$		0.6		mV/°C

μA79M12H
Electrical Characteristics $-55°C \leq T_A \leq 125°C$, $V_I = -19$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage		$T_J = 25°C$		−12.5	−12	−11.5	V
$V_{R\ LINE}$	Line Regulation		$T_J = 25°C$	$-30\ V \leq V_I \leq -14.5$ V		9.0	80	mV
				$-25\ V \leq V_I \leq -15$ V		5.0	50	
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, $5.0\ mA \leq I_O \leq 500$ mA			65	240	mV
			$T_J = 25°C$, $5.0\ mA \leq I_O \leq 350$ mA			45		
V_O	Output Voltage		$-30\ V \leq V_I \leq -14.5$ V, $5.0\ mA \leq I_O \leq 350$ mA, $P_D \leq 4.0$ W		−12.6		−11.4	V
I_Q	Quiescent Current		$T_J = 25°C$			1.5	3.0	mA
ΔI_Q	Quiescent Current Change	with line	$-30\ V \leq V_I \leq -14.5$ V				0.4	mA
		with load	$5.0\ mA \leq I_O \leq 350$ mA				0.4	
N_O	Noise		$T_A = 25°C$, $10\ Hz \leq f \leq 100$ kHz			25	80	μV/V_O
$\Delta V_I - \Delta V_O$	Ripple Rejection		$V_I \leq -17$ V, f = 2400 Hz, $I_O = 125$ mA, $T_J = 25°C$		50			dB
V_{DO}	Dropout Voltage		$T_J = 25°C$			1.1	2.3	V
I_{OS}	Output Short Circuit Current		$T_J = 25°C$, $V_I = -35$ V				0.6	A
I_{pk}	Peak Output Current		$V_I - V_O = 10$ V, $T_J = 25°C$		0.5	0.65	1.4	A
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage		$I_O = 5.0$ mA, $0°C \leq T_A \leq 125°C$				0.3	mV/°C/V_O

μA79M12AC
Electrical Characteristics $0°C \leq T_A \leq 125°C$, $V_I = -19$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic	Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage	$T_J = 25°C$		−12.5	−12	−11.5	V
$V_{R\ LINE}$	Line Regulation	$T_J = 25°C$	$-30\ V \leq V_I \leq -14.5$ V		9.0	80	mV
			$-25\ V \leq V_I \leq -15$ V		5.0	50	

μA79M12AC (Cont.)
Electrical Characteristics $0°C \leq T_A \leq 125°C$, $V_I = -19$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]	Min	Typ	Max	Unit
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, 5.0 mA $\leq I_O \leq$ 500 mA		65	240	mV
			$T_J = 25°C$, 5.0 mA $\leq I_O \leq$ 350 mA		45		
V_O	Output Voltage		−30 V $\leq V_I \leq$ −14.5 V, 5.0 mA $\leq I_O \leq$ 350 mA, $P_D \leq$ 4.0 W	−12.6		−11.4	V
I_Q	Quiescent Current		$T_J = 25°C$		1.5	3.0	mA
ΔI_Q	Quiescent Current Change	with line	−30 V $\leq V_I \leq$ −14.5 V			0.4	mA
		with load	5.0 mA $\leq I_O \leq$ 350 mA			0.4	
N_O	Noise		$T_A = 25°C$, 10 Hz $\leq f \leq$ 100 kHz		300		μV
$\Delta V_I/\Delta V_O$	Ripple Rejection		V_I = −17 V, f = 2400 Hz, I_O = 125 mA, $T_J = 25°C$	50			dB
V_{DO}	Dropout Voltage		$T_J = 25°C$		1.1		V
I_{OS}	Output Short Circuit Current		$T_J = 25°C$, V_I = −30 V		140		mA
I_{pk}	Peak Output Current		$V_I - V_O$ = 10 V, $T_J = 25°C$		650		mA
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage		I_O = 5.0 mA, $0°C \leq T_A \leq 125°C$		0.8		mV/°C

μA79M15H
Electrical Characteristics $-55°C \leq T_A \leq 125°C$, $V_I = -23$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage		$T_J = 25°C$		−15.6	−15	−14.4	V
$V_{R\ LINE}$	Line Regulation		$T_J = 25°C$	−30 V $\leq V_I \leq$ −17.5 V		9.0	80	mV
				−28 V $\leq V_I \leq$ −18 V		7.0	50	
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, 5.0 mA $\leq I_O \leq$ 500 mA			65	240	mV
			$T_J = 25°C$, 5.0 mA $\leq I_O \leq$ 350 mA			45		
V_O	Output Voltage		−30 V $\leq V_I \leq$ −17.5 V, 5.0 mA $\leq I_O \leq$ 350 mA, $P_D \leq$ 4.0 W		−15.75		−14.25	V
I_Q	Quiescent Current		$T_J = 25°C$			1.5	3.0	mA
ΔI_Q	Quiescent Current Change	with line	−30 V $\leq V_I \leq$ −17.5 V				0.4	mA
		with load	5.0 mA $\leq I_O \leq$ 350 mA				0.4	
N_O	Noise		$T_A = 25°C$, 10 Hz $\leq f \leq$ 100 kHz			25	80	μV/V_O
$\Delta V_I/\Delta V_O$	Ripple Rejection		f = 2400 Hz, V_I = −20 V, I_O = 125 mA, $T_J = 25°C$		50			dB
V_{DO}	Dropout Voltage		$T_J = 25°C$			1.1	2.3	V
I_{OS}	Output Short Circuit Current		$T_J = 25°C$, V_I = −35 V				0.6	A
I_{pk}	Peak Output Current		$V_I - V_O$ = 10 V, $T_J = 25°C$		0.5	0.65	1.4	A

μA79M15H (Cont.)
Electrical Characteristics $-55°C \leq T_A \leq 125°C$, $V_I = -23$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic	Condition[3]	Min	Typ	Max	Unit
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage	$I_O = 5.0$ mA, $0°C \leq T_A \leq 125°C$			0.3	mV/°C/ V_O

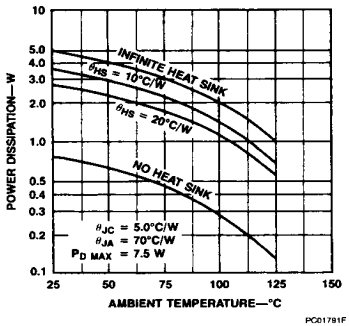
μA79M15AC
Electrical Characteristics $0°C \leq T_A \leq 125°C$, $V_I = -23$ V, $I_O = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[1,2]

Symbol	Characteristic		Condition[3]		Min	Typ	Max	Unit
V_O	Output Voltage		$T_J = 25°C$		−15.6	−15	−14.4	V
$V_{R\ LINE}$	Line Regulation		$T_J = 25°C$	$-30\ V \leq V_I \leq -17.5$ V		9.0	80	mV
				$-28\ V \leq V_I \leq -18$ V		7.0	50	
$V_{R\ LOAD}$	Load Regulation		$T_J = 25°C$, $5.0\ mA \leq I_O \leq 500$ mA			65	240	mV
			$T_J = 25°C$, $5.0\ mA \leq I_O \leq 350$ mA			45		
V_O	Output Voltage		$-30\ V \leq V_I \leq -17.5$ V, $5.0\ mA \leq I_O \leq 350$ mA, $P_D \leq 4.0$ W		−15.75		−14.25	V
I_Q	Quiescent Current		$T_J = 25°C$			1.5	3.0	mA
ΔI_Q	Quiescent Current Change	with line	$-30\ V \leq V_I \leq -17.5$ V				0.4	mA
		with load	$5.0\ mA \leq I_O \leq 350$ mA				0.4	
N_O	Noise		$T_A = 25°C$, $10\ Hz \leq f \leq 100$ kHz			375		μV
$\Delta V_I/\Delta V_O$	Ripple Rejection		$f = 2400$ Hz, $V_I = -20$ V, $I_O = 125$ mA, $T_J = 25°C$		50			dB
V_{DO}	Dropout Voltage		$T_J = 25°C$			1.1		V
I_{OS}	Output Short Circuit Current		$T_J = 25°C$, $V_I = -30$ V			140		mA
I_{pk}	Peak Output Current		$V_I - V_O = 10$ V, $T_J = 25°C$			650		mA
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage		$I_O = 5.0$ mA, $0°C \leq T_A \leq 125°C$			1.0		mV/°C

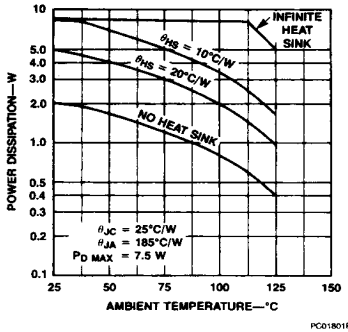
Notes
1. See Test Circuit.
2. The convention for negative regulators is the algebraic values, thus −15 V is less than −10 V.
3. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_W \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

Typical Performance Curves

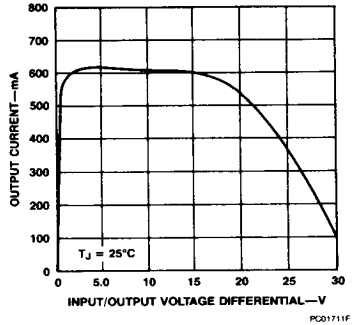
Worst Case Power Dissipation vs Ambient Temperature (TO-39)



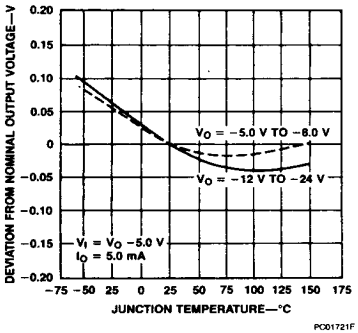
Worst Case Power Dissipation vs Ambient Temperature (TO-220)



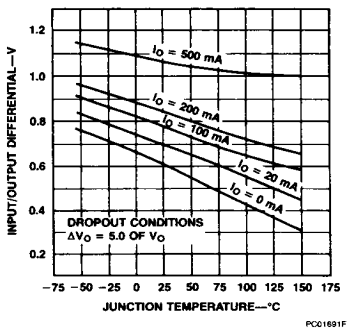
Peak Output Current vs Input/Output Voltage Differential



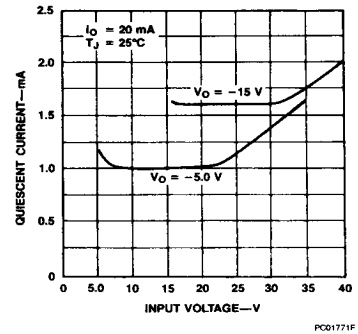
Output Voltage vs Junction Temperature



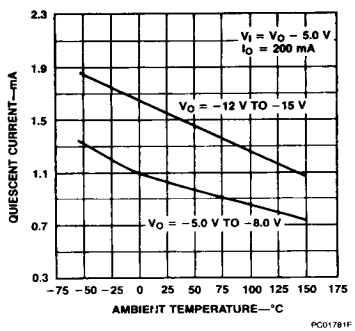
Dropout Voltage vs Junction Temperature



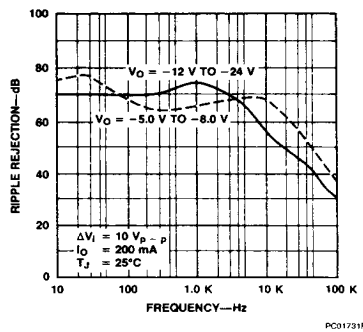
Quiescent Current vs Input Voltage



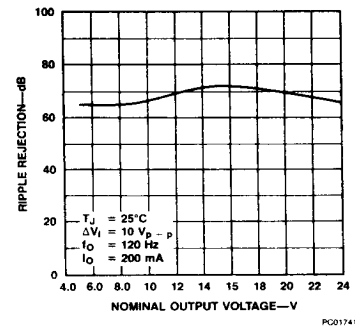
Quiescent Current vs Ambient Temperature



Ripple Rejection vs Frequency

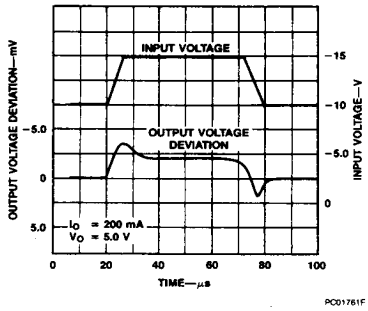


Ripple Rejection vs Output Voltages

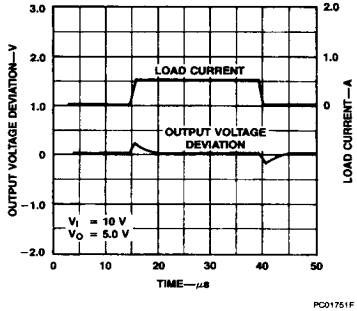


Typical Performance Curves (Cont.)

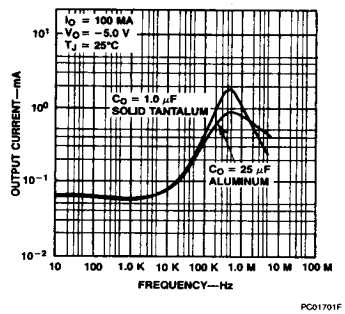
Line Transient Response



Load Transient Response



Output Impedance vs Frequency



Design Considerations

The μ79M00 fixed voltage regulator series have thermal-overload protection from excessive power, internal short-circuit protection which limits the circuit's maximum current, and output transistor safe-area compensation for reducing the output current as the voltage across the pass transistor is increased.

The safe-area protection network may cause the device to latch-up if the output is shorted and the regulator is operating with high input voltages. This mode of operation will not damage the device. However, power (input voltage or the load) must be interrupted momentarily for the device to recover from the latched condition.

Although the internal power dissipation is limited, the junction temperature must be kept below the maximum specified temperature (150°C for μA79M00, 125°C for μA79M00C and μA7900MAC) in order to meet data sheet specifications. To calculate the maximum junction temperature or heat sink required, the following thermal resistance values should be used:

Package	Typ θ_{JC}	Max θ_{JC}	Typ θ_{JA}	Max θ_{JA}
TO-39	18.0	25	120	140
TO-220	3.0	5.0	60	40

$$P_{DMAX} = \frac{T_{J\ Max} - T_A}{\theta_{JC} + \theta_{CA}} \text{ or} \qquad (1)$$

$$= \frac{T_{J\ Max} - T_A}{\theta_{JA}} \text{ (Without a heat sink)}$$

$$\theta_{CA} = \theta_{CS} + \theta_{SA}$$

Solving for T_J:

$T_J = T_A + P_D\ (\theta_{JC} + \theta_{CA})$ or

$= T_A + P_D\theta_{JA}$ (Without a heat sink)

Where:

- T_J = Junction Temperature
- T_A = Ambient Temperature
- P_D = Power Dissipation
- θ_{JC} = Junction-to-case thermal resistance
- θ_{CA} = Case-to-ambient thermal resistance
- θ_{CS} = Case-to-heat sink thermal resistance
- θ_{SA} = Heat sink-to-ambient thermal resistance
- θ_{JA} = Junction-to-ambient thermal resistance

Typical Applications

Bypass capacitors are necessary for stable operation of the μA79M00 series of regulators over the input voltage and output current ranges. Output bypass capacitors will improve the transient response of the regulator.

The bypass capacitors, (2.0 μF on the input, 1.0 μF on the output) should be ceramic or solid tantalum which have good high frequency characteristics. If aluminum electrolytics are used, their values should be 10 μF or larger. The bypass capacitors should be mounted with the shortest leads, and if possible, directly across the regulator terminals.

Fixed Output Regulator Test Circuit