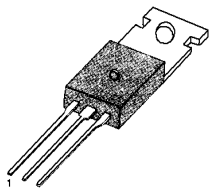
LM79XX/A (KA79XX, MC79XX) FIXED VOLTAGE REGULATOR (NEGATIVE)

3-TERMINAL 1A NEGATIVE VOLTAGE REGULATORS

The LM79XX series of three-terminal negative regulators are available in TO-220 package and with several fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible.

TO-220



1: GND 2: Input 3: Output

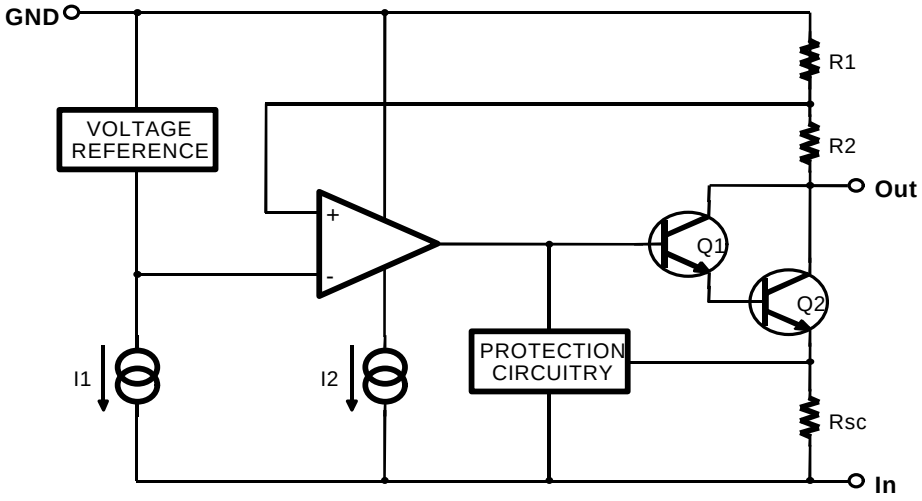
FEATURES

- Output Current in Excess of 1A
- Output Voltages of -5, -6, -8, -12, -15, -18, -24V
- Internal Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe-Area Compensation

ORDERING INFORMATION

Device	Output Voltage Tolerance	Package	Operating Temperature
LM79XXCT	± 4%	TO-220	0 ~ +125 °C
LM79XXAT	± 2%		

BLOCK DIAGRAM



FAIRCHILD SEMICONDUCTOR TM

Rev. B

ABSOLUTE MAXIMUM RATINGS (T_A=+25°C, unless otherwise specified)

Characteristic	Symbol	Value	Unit
Input Voltage	V_I	-35	V
Thermal Resistance Junction-Cases Junction-Air	$R_{\theta JC}$ $R_{\theta JA}$	5 65	°C / W °C /W
Operating Temperature Range	T_{OPR}	0 ~ +125	°C
Storage Temperature Range	T_{STG}	- 65 ~ +150	°C

LM7905 ELECTRICAL CHARACTERISTICS

(V_I = 10V, I_O = 500mA, 0°C ≤T_J≤ +125°C, C_I =2.2µF, C_O =1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+25°C	- 4.8	- 5.0	- 5.2	V
		I_O = 5mA to 1A, P_O 15W V_I = -7 to -20V	- 4.75	-5.0	- 5.25	
Line Regulation	ΔV_O	T_J =25°C, V_I = -7 to -20V, I_O=1A		5	50	mV
		T_J =25°C, V_I = -8 to -12V, I_O=1A		2	25	
		V_I = -7.5 to -25V		7	50	
		V_I= -8 to -12V I_O=1A		7	50	
Load Regulation	ΔV_O	I_O = 5mA to 1.5A		10	100	mV
		T_J =+25°C I_O = 250 to 750mA		3	50	
Quiescent Current	I_Q	T_J =+25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		0.05	0.5	mA
		V_I = -8 to -25V		0.1	0.8	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		- 0.4		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25°C		40		µV
Ripple Rejection	RR	f = 120Hz, I_O = -35V ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J=+25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J =+25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J =+25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7906 ELECTRICAL CHARACTERISTICS

(V_I = 11V, I_O = 500mA, 0°C ≤T_J≤ +125°C, C_I =2.2µF, C_O = 1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J = +25°C	- 5.75	- 6	- 6.25	V
		I_O = 5mA to 1A, P_O 15W V_I = - 9 to - 21V	- 5.7	- 6	- 6.3	
Line Regulation	ΔV_O	T_J = 25°C, V_I = - 8 to - 25V		10	120	mV
		T_J = 25°C, V_I= - 9 to -12V		5	60	
Load Regulation	ΔV_O	T_J =+ 25°C I_O = 5mA to 1.5A		10	120	mV
		T_J =+ 25°C I_O = 250 to 750mA		3	60	
Quiescent Current	I_Q	T_J =+ 25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A			0.5	mA
		V_I = -9 to -25V			1.3	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		-0.5		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+ 25°C		130		µV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J=+ 25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J= +25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J= +25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7908 ELECTRICAL CHARACTERISTICS

(V_I = 14V, I_O = 500mA, 0°C ≤T_J ≤ +125°C, C_I =2.2µF, C_O = 1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+ 25°C	- 7.7	- 8	- 8.3	V
		I_O = 5mA to 1A, P_O 15W V_I = -1.5 to -23V	- 7.6	- 8	- 8.4	
Line Regulation	ΔV_O	T_J = 25°C, V_I = -10.5 to -25V		10	100	mV
		T_J = 25°C, V_I= -11 to -17V		5	80	
Load Regulation	ΔV_O	T_J =+ 25°C I_O = 5mA to 1.5A		12	160	mV
		T_J =+ 25°C I_O = 250 to 750mA		4	80	
Quiescent Current	I_Q	T_J =+ 25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		0.05	0.5	mA
		V_I = -11.5 to -25V		0.1	1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		-0.6		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+ 25°C		175		µV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J=+ 25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J=+ 25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J=+ 25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7909 ELECTRICAL CHARACTERISTICS

(V_I = 14V, I_O = 500mA, 0°C ≤T_J ≤+ 125°C, C_I =2.2µF, C_O = 1µF, unless otherwise specified)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+ 25°C	- 8.7	- 9.0	- 9.3	V
		I_O = 5mA to 1A, P_O 15W V_I = -1.5 to -23V	- 8.6	- 9.0	- 9.4	
Line Regulation	ΔV_O	T_J = 25°C, V_I = -10.5 to -25V		10	180	mV
		T_J = 25°C, V_I= -11 to -17V		5	90	
Load Regulation	ΔV_O	T_J =+ 25°C I_O = 5mA to 1.5A		12	180	mV
		T_J =+ 25°C I_O = 250 to 750mA		4	90	
Quiescent Current	I_Q	T_J =+ 25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		0.05	0.5	mA
		V_I = -11.5 to -25V		0.1	1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		-0.6		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+ 25°C		175		µV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J=+ 25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J= +25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J =+25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7912 ELECTRICAL CHARACTERISTICS

(V_I= 18V, I_O =500mA, 0°C ≤T_J≤ +125°C, C_I =2.2µF, C_O = 1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J = +25°C	-11.5	-12	-12.5	V
		I_O = 5mA to 1A, P_O 15W V_I = -15.5 to -27V	-11.4	-12	-12.6	
Line Regulation	ΔV_O	T_J = 25°C, V_I = -14.5 to -30V		12	240	mV
		T_J = 25°C, V_I= -16 to -22V		6	120	
Load Regulation	ΔV_O	T_J =+ 25°C I_O = 5mA to 1.5A		12	240	mV
		T_J =+ 25°C I_O = 250 to 750mA		4	120	
Quiescent Current	I_O	T_J =+ 25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		0.05	0.5	mA
		V_I = -15 to -30V		0.1	1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		-0.8		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+ 25°C		200		µV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J= +25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J=+ 25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J=+ 25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7915 ELECTRICAL CHARACTERISTICS

(V_I = 23V, I_O = 500mA, 0°C ≤T_J +125°C, C_I =2.2µF, C_O = 1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions		Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+ 25°C		-14.4	-15	-15.6	V
		I_O = 5mA to 1A, P_O 15W V_I = -18 to -30V		-14.25	-15	-15.75	
Line Regulation	ΔV_O	T_J = 25°C	V_I = -17.5 to -30V		12	300	mV
			V_I= -20 to -26V		6	150	
Load Regulation	ΔV_O	T_J =+ 25°C I_O = 5mA to 1.5A			12	300	mV
		T_J =+ 25°C I_O = 250 to 750mA			4	150	
Quiescent Current	I_Q	T_J =+ 25°C			3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A			0.05	0.5	mA
		V_I = -18.5 to -30V			0.1	1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA			-0.9		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100Khz T_A =+ 25°C			250		µV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V		54	60		dB
Dropout Voltage	V_D	T_J=+25°C I_O = 1A			2		V
Short Circuit Current	I_{SC}	T_J=+ 25°C, V_I = -35V			300		mA
Peak Current	I_{PK}	T_J=+ 25°C			2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7918 ELECTRICAL CHARACTERISTICS

(V_I = 27V, I_O = 500mA, 0°C ≤T_J ≤+125°C, C_I =2.2μF, C_O = 1μF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+ 25°C	-17.3	-18	-18.7	V
		I_O = 5mA to 1A, P_O 15W V_I = -22.5 to -33V	-17.1	-18	-18.9	
Line Regulation	ΔV_O	T_J = 25°C, V_I= -21 to -33V		15	360	mV
		T_J = 25°C, V_I= -24 to -30V		8	180	
Load Regulation	ΔV_O	T_J =+ 25°C I_O = 5mA to 1.5A		15	360	mV
		T_J =+ 25°C I_O = 250 to 750mA		5	180	
Quiescent Current	I_Q	T_J =+ 25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A			0.5	mA
		V_I = -22 to -33V			1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		-1		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+ 25°C		300		μV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J=+ 25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J=+ 25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J=+ 25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7924 ELECTRICAL CHARACTERISTICS

(V_I = 33V, I_O = 500mA, 0°C ≤T_J ≤+125°C, C_I =2.2μF, C_O = 1μF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions		Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+25°C		- 23	- 24	- 25	V
		I_O = 5mA to 1A, P_O ≤15W V_I = -27 to -38V		- 22.8	- 24	- 25.2	
Line Regulation	ΔV_O	T_J = 25°C	V_I = - 27 to - 38V		15	480	mV
			V_I= - 30 to - 36V		8	180	
Load Regulation	ΔV_O	T_J = +25°C I_O = 5mA to 1.5A			15	480	mV
		T_J =+ 25°C I_O = 250 to 750mA			5	240	
Quiescent Current	I_Q	T_J =+ 25°C			3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A				0.5	mA
		V_I = -27 to -38V				1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA			-1		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+ 25°C			400		μV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V		54	60		dB
Dropout Voltage	V_D	T_J= +25°C I_O = 1A			2		V
Short Circuit Current	I_{SC}	T_J=+ 25°C, V_I = -35V			300		mA
Peak Current	I_{PK}	T_J=+25°C			2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7905A ELECTRICAL CHARACTERISTICS

(V_I = 10V, I_O = 500mA, 0°C ≤T_J ≤ +125°C, C_I =2.2µF, C_O =1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+ 25°C	- 4.9	- 5.0	- 5.1	V
		I_O = 5mA to 1A, P_O 15W V_I = -7 to -20V	- 4.8	-5.0	- 5.2	
Line Regulation	ΔV_O	T_J =+25°C, V_I = -7 to -20V, I_O=1A		5	50	mV
		T_J =+25°C, V_I = -8 to -12V, I_O=1A		2	25	
		V_I = -7.5 to -25V		7	50	
		V_I= -8 to -12V I_O=1A		7	50	
Load Regulation	ΔV_O	I_O = 5mA to 1.5A		10	100	mV
		T_J =+ 25°C I_O = 250 to 750mA		3	50	
Quiescent Current	I_Q	T_J = +25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		0.05	0.5	mA
		V_I = -8 to -25V		0.1	0.8	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		- 0.4		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+ 25°C		40		µV
Ripple Rejection	RR	f = 120Hz, I_O = -35V ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J=+ 25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J =+ 25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J =+ 25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

FAIRCHILD SEMICONDUCTOR TM

LM7912A ELECTRICAL CHARACTERISTICS

(V_I= 18V, I_O =500mA, 0°C ≤T_J≤ +125°C, C_I =2.2µF, C_O = 1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J =+ 25°C	-11.75	-12	-12.25	V
		I_O = 5mA to 1A, P_O 15W V_I = -15.5 to -27V	-11.5	-12	-12.5	
Line Regulation	ΔV_O	T_J =+25°C, V_I = -14.5 to -30V		12	240	mV
		T_J =+25°C, V_I= -16 to -22V		6	120	
Load Regulation	ΔV_O	T_J = +25°C I_O = 5mA to 1.5A		12	240	mV
		T_J =+ 25°C I_O = 250 to 750mA		4	120	
Quiescent Current	I_Q	T_J =+ 25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		0.05	0.5	mA
		V_I = -15 to -30V		0.1	1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		-0.8		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100Khz T_A =+ 25°C		200		µV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J=+ 25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J=+ 25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J=+ 25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

LM7915A ELECTRICAL CHARACTERISTICS

(V_I = 23V, I_O = 500mA, 0°C ≤T_J≤ +125°C, C_I =2.2µF, C_O = 1µF, unless otherwise specified.)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Output Voltage	V_O	T_J = +25°C	-14.7	-15	-15.3	V
		I_O = 5mA to 1A, P_O 15W V_I = -18 to -30V	-14.4	-15	-15.6	
Line Regulation	ΔV_O	T_J =+25°C, V_I = -17.5 to -30V		12	300	mV
		T_J =+25°C, V_I= -20 to -26V		6	150	
Load Regulation	ΔV_O	T_J =+ 25°C I_O = 5mA to 1.5A		12	300	mV
		T_J =+ 25°C I_O = 250 to 750mA		4	150	
Quiescent Current	I_Q	T_J =+ 25°C		3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 1A		0.05	0.5	mA
		V_I = -18.5 to -30V		0.1	1	
Temperature Coefficient of V_D	$\Delta V_O/\Delta T$	I_O = 5mA		-0.9		mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100KHz T_A =+25°C		250		µV
Ripple Rejection	RR	f = 120Hz ΔV_I = 10V	54	60		dB
Dropout Voltage	V_D	T_J= +25°C I_O = 1A		2		V
Short Circuit Current	I_{SC}	T_J=+ 25°C, V_I = -35V		300		mA
Peak Current	I_{PK}	T_J=+ 25°C		2.2		A

* Load and line regulation are specified at constant junction temperature. Changes in V_O due to heating effects must be taken into account separately. Pulse testing with low duty is used.

FAIRCHILD
SEMICONDUCTOR TM

TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1 Output Voltage

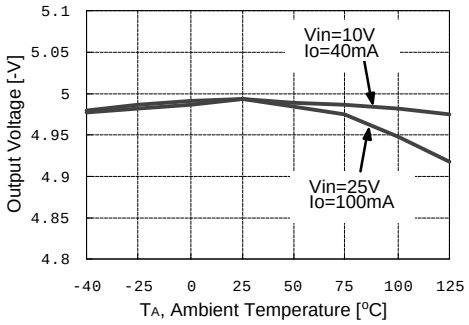


Fig. 2 Load Regulation

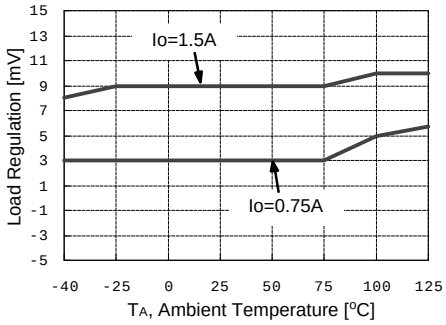


Fig.3 Quiescent Current

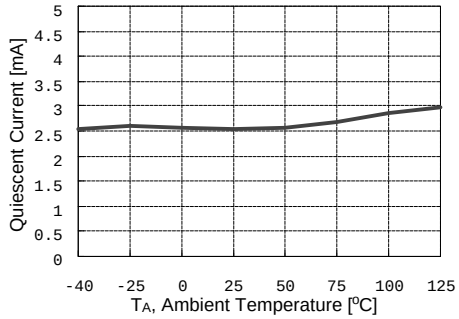


Fig. 4 Dropout Voltage

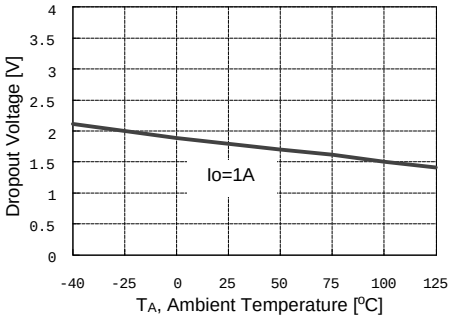
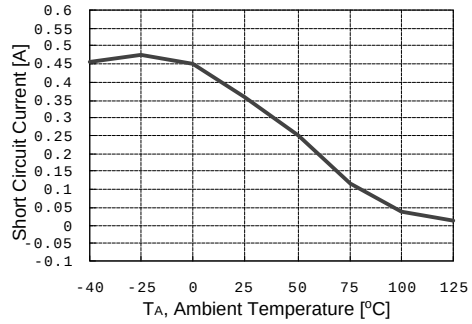


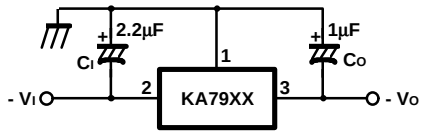
Fig.5 Short Circuit Current



FAIRCHILD
SEMICONDUCTOR TM

TYPICAL APPLICATIONS

Fig. 6 Negative Fixed output regulator



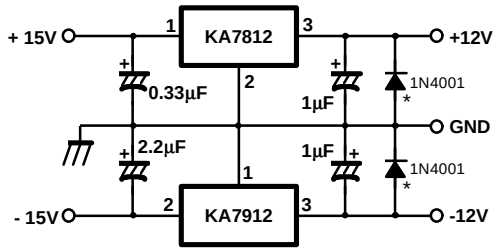
Notes:

(1) To specify an output voltage, substitute voltage value for "XX "

(2) Required for stability. For value given, capacitor must be solid tantalum. If aluminum electronics are used, at least ten times value shown should be selected. C_I is required if regulator is located an appreciable distance from power supply filter.

(3) To improve transient response. If large capacitors are used, a high current diode from input to output (1N400l or similar) should be introduced to protect the device from momentary input short circuit.

Fig. 7 Split power supply (±12V/1A)



*: Against potential latch-up problems.

TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx™
CoolFET™
CROSSVOLT™
E^2CMOS^{TM}
FACT™
FACT Quiet Series™
FAST®
FASTr™
GTO™
HiSeC™
ISOPLANAR™
MICROWIRE™
POP™
PowerTrench™
QS™
Quiet Series™
SuperSOT™-3
SuperSOT™-6
SuperSOT™-8
TinyLogic™

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.
As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.