Product Specification

AUSHKXIN Type

78LXX

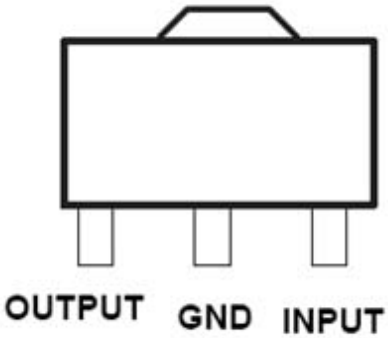
Features

- 3-Terminal Regulators
- Output Current Up to 100mA
- No External Components
- Internal Thermal Overload Protection
- Internal Short-Circuit Limiting
- Direct Replacement for Fairchild uA78LXX Series

Nominal output voltage	Regulator
3.0V	78L03
3.3V	78L33
5.0V	78L05
6.0V	78L06
8.0V	78L08
9.0V	78L09
10V	78L10
12V	78L12
15V	78L15
18V	78L18
24V	78L24

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 termal 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.



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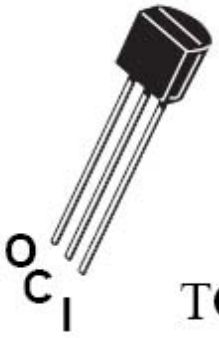

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Absolute maximum ratings over operating temperature range (unless othervr-ise noted)

	78L03 thru 78L10	78L12 thru 78L18	78L24	UNIT
Input voltage	30	35	40	V
Operating free-air,case.or virtual junction temperature range	-40 to 125	-40 to 125	-40 to 125	℃
Storage temperature range	-65 to 150	-65 to 150	-65 to 150	
Lead temperature 1.6mm(1/16inch) from case for 10 seconde	260	260	260	

Recommended operating conditions

Parameter		MIN	MAX	UNIT
Input voltage (Vin)	78L03	5.5	18	V
	78L33	5.5	18	
	78L05	7	20	
	78L06	8	20	
	78L08	10.5	23	
	78L09	11.5	24	
	78L10	12.5	25	
	78L12	14.5	27	
	78L15	17.5	30	
	78L18	20.5	33	
	78L24	26.5	39	
Output cunrent(Io)			100	mA
Operating virtual junction temperature (Tj)		0	125	℃

78L03 electrical characteristics at specified virtual junction temperature, Vi=8V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L03			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	2.8	3.0	3.2	V
	Io=1mA to 40mA Vin=5.5v to 18v	0 to 125℃	2.8	3.0	3.2	
	Io=1mA to 70mA		2.8	3.0	3.2	
Input regulation	Vin=5.5v to 18v	25℃		28	120	mV
	Vin=6v to 18v			23	80	
Ripple rejection	Vin=6v to 16v f=120Hz		43	51		dB
Output regulation	Io=1mA to 100mA			13	50	mV
	Io=1mA to 40mA			7	35	
Output noltage voltage	F=10-100Hz			40		uV
Dropout voltage				1.7		V
Bias current				2.4	6.0	mV
		125℃			5.5	
Bias current change	Vin=6v to 18v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L03 electrical characteristics at specified virtual junction temperature, Vi=8.5V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L03			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	3.1	3.3	3.5	V
	Io=1mA to 40mA Vin=5.5v to 18v	0 to 125℃	3.1	3.3	3.5	
	Io=1mA to 70mA		3.1	3.3	3.5	
Input regulation	Vin=5.5v to 18v	25℃		30	130	mV
	Vin=7v to 18v			25	90	
Ripple rejection	Vin=7v to 16v f=120Hz		42	50		dB
Output regulation	Io=1mA to 100mA			14	55	mV
	Io=1mA to 40mA			7	35	
Output noltage voltage	F=10-100Hz			41		uV
Dropout voltage				1.7		V
Bias current				2.5	6	mV
		125℃			5.5	
Bias current change	Vin=7v to 18v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L05 electrical characteristics at specified virtual junction temperature, Vi=10V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L05			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	4.8	5.0	5.2	V
	Io=1mA to 40mA Vin=7v to 20v	0 to 125℃	4.7	5.0	5.3	
	Io=1mA to 70mA		4.7	5.0	5.3	
Input regulation	Vin=7v to 20v	25℃		32	150	mV
	Vin=8v to 20v			26	100	
Ripple rejection	Vin=8v to 18v f=120Hz		41	49		dB
Output regulation	Io=1mA to 100mA			15	60	mV
	Io=1mA to 40mA			8	30	
Output noltage voltage	F=10-100Hz			42		uV
Dropout voltage				1.7		V
Bias current				2.6	6	mV
		125℃			5.5	
Bias current change	Vin=8v to 20v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L06 electrical characteristics at specified virtual junction temperature, Vi=11V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L06			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	5.7	6.0	6.3	V
	Io=1mA to 40mA Vin=8v to 20v	0 to 125℃	5.7	6.0	6.3	
	Io=1mA to 70mA		5.7	6.0	6.3	
Input regulation	Vin=8v to 20v	25℃		35	175	mV
	Vin=9v to 20v			29	125	
Ripple rejection	Vin=9v to 19v f=120Hz		40	48		dB
Output regulation	Io=1mA to 100mA			16	80	mV
	Io=1mA to 40mA			9	40	
Output noltage voltage	F=10-100Hz			46		uV
Dropout voltage				1.7		V
Bias current				2.7	6	mV
		125℃			5.5	
Bias current change	Vin=9v to 20v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L08 electrical characteristics at specified virtual junction temperature, Vi=14V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L08			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	7.7	8.0	8.3	V
	Io=1mA to 40mA Vin=10.5v to 23v	0 to 125℃	7.6	8.0	8.4	
	Io=1mA to 70mA		7.6	8.0	8.4	
Input regulation	Vin=10.5v to 23v	25℃		42	175	mV
	Vin=11v to 23v			36	125	
Ripple rejection	Vin=13v to 23v f=120Hz		37	46		dB
Output regulation	Io=1mA to 100mA			18	80	mV
	Io=1mA to 40mA			10	40	
Output noltage voltage	F=10-100Hz			54		uV
Dropout voltage				1.7		V
Bias current				2.8	6	mV
		125℃			5.5	
Bias current change	Vin=11v to 23v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L09 electrical characteristics at specified virtual junction temperature, Vi=16V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L09			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	8.6	9.0	9.4	V
	Io=1mA to 40mA Vin=12v to 24v	0 to 125℃	8.5	9.0	9.5	
	Io=1mA to 70mA		8.5	9.0	9.5	
Input regulation	Vin=12v to 24v	25℃		45	175	mV
	Vin=13v to 24v			40	125	
Ripple rejection	Vin=15v to 25v f=120Hz		38	45		dB
Output regulation	Io=1mA to 100mA			19	90	mV
	Io=1mA to 40mA			11	40	
Output noltage voltage	F=10-100Hz			58		uV
Dropout voltage				1.7		V
Bias current				2.9	6.0	mV
		125℃			5.5	
Bias current change	Vin=13v to 24v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L10 electrical characteristics at specified virtual junction temperature, Vi=17V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L10			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	9.6	10	10.4	V
	Io=1mA to 40mA Vin=13v to 25v	0 to 125℃	9.5	10	10.5	
	Io=1mA to 70mA		9.5	10	10.5	
Input regulation	Vin=13v to 25v	25℃		51	175	mV
	Vin=14v to 25v			42	125	
Ripple rejection	Vin=15v to 25v f=120Hz		37	44		dB
Output regulation	Io=1mA to 100mA			20	90	mV
	Io=1mA to 40mA			11	40	
Output noltage voltage	F=10-100Hz			62		uV
Dropout voltage				1.7		V
Bias current				3.0	6.0	mV
		125℃			5.5	
Bias current change	Vin=14v to 25v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L12 electrical characteristics at specified virtual junction temperature, Vi=19V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L12			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	11.5	12	12.5	V
	Io=1mA to 40mA Vin=14v to 27v	0 to 125℃	11.4	12	12.6	
	Io=1mA to 70mA		11.4	12	12.6	
Input regulation	Vin=14v to 27v	25℃		55	250	mV
	Vin=16v to 27v			49	200	
Ripple rejection	Vin=15v to 25v f=120Hz		37	42		dB
Output regulation	Io=1mA to 100mA			22	100	mV
	Io=1mA to 40mA			13	50	
Output noltage voltage	F=10-100Hz			70		uV
Dropout voltage				1.7		V
Bias current				3.1	6.5	mV
		125℃			6.0	
Bias current change	Vin=16v to 27v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L15 electrical characteristics at specified virtual junction temperature, Vi=23V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L15			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	14.4	15	15.6	V
	Io=1mA to 40mA Vin=17.5v to 30v	0 to 125℃	14.2	15	15.8	
	Io=1mA to 70mA		14.2	15	15.8	
Input regulation	Vin=17.5v to 30v	25℃		65	300	mV
	Vin=19v to 30v			58	250	
Ripple rejection	Vin=18.5v to 28.5v f=120Hz		34	39		dB
Output regulation	Io=1mA to 100mA			25	150	mV
	Io=1mA to 40mA			15	75	
Output noltage voltage	F=10-100Hz			82		uV
Dropout voltage				1.7		V
Bias current				3.4	6.5	mV
		125℃			6.0	
Bias current change	Vin=19v to 30v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L18 electrical characteristics at specified virtual junction temperature, Vi=26V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L18			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	17.3	18	18.7	V
	Io=1mA to 40mA Vin=20.5v to 33v	0 to 125℃	17.1	18	18.9	
	Io=1mA to 70mA		17.1	18	18.9	
Input regulation	Vin=20.5v to 33v	25℃		70	360	mV
	Vin=22v to 33v			64	300	
Ripple rejection	Vin=21.5v to 31.5v f=120Hz		32	36		dB
Output regulation	Io=1mA to 100mA			27	180	mV
	Io=1mA to 40mA			19	90	
Output noltage voltage	F=10-100Hz			89		uV
Dropout voltage				1.7		V
Bias current				3.5	6.5	mV
		125℃			6.0	
Bias current change	Vin=22v to 33v	0 to 125℃			1.5	
	Io=1mA to 40mA				0.1	

78L24 electrical characteristics at specified virtual junction temperature, Vi=32V, Io=40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS*		78L24			UNIT
			MIN	TYP	MAX	
Output voltage**		25℃	23	24	25	V
	Io=1mA to 40mA Vin=26.5v to 39v	0 to 125℃	22.8	24	25.2	
	Io=1mA to 70mA		22.8	24	25.2	
Input regulation	Vin=26.5v to 39v	25℃		95	480	mV
	Vin=29v to 39v			78	400	
Ripple rejection	Vin=27.5v to 37.5v f=120Hz		30	33		dB
Output regulation	Io=1mA to 100mA			41	240	mV
	Io=1mA to 40mA			28	120	
Output noltage voltage	F=10-100Hz			97		uV
Dropout voltage				1.7		V
Bias current				3.6	6.5	mV
		125℃			6.0	
Bias current change	Vin=28v to 39v	0 to 125℃			1.5	
	Io=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 0.33uF capacitor across the input and a 0.1uF capacitor across the output.

**This specification applies only for dc power dissipation permitted by absolute maximum ratings.

APPLIC ATION INFORMA TION

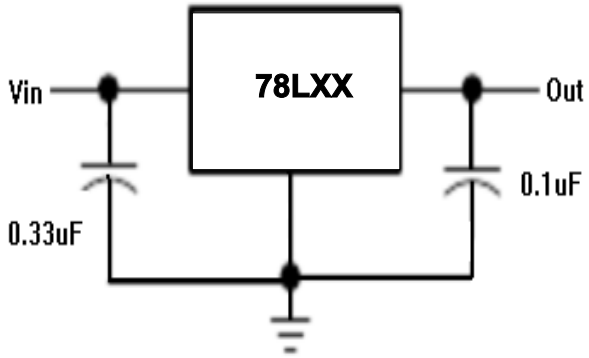

Figure 1.Fixed Output Regulator

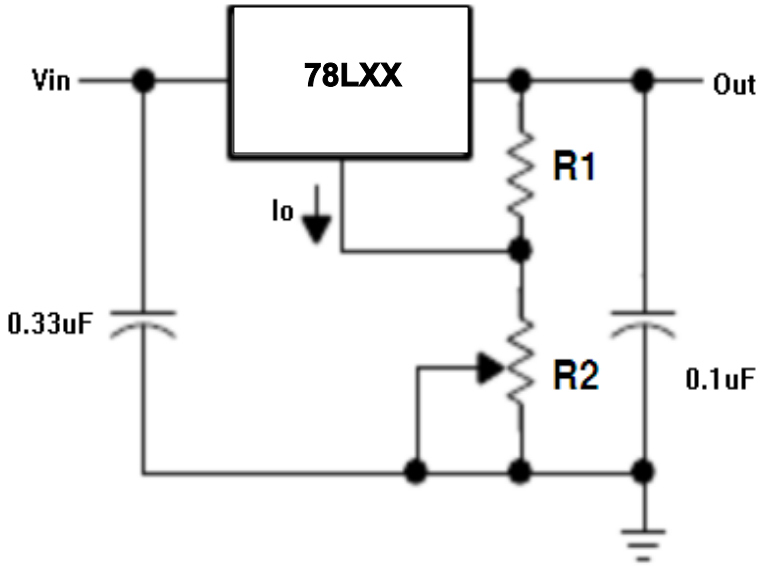

Figure 2. Adjustable OutPut Regulator

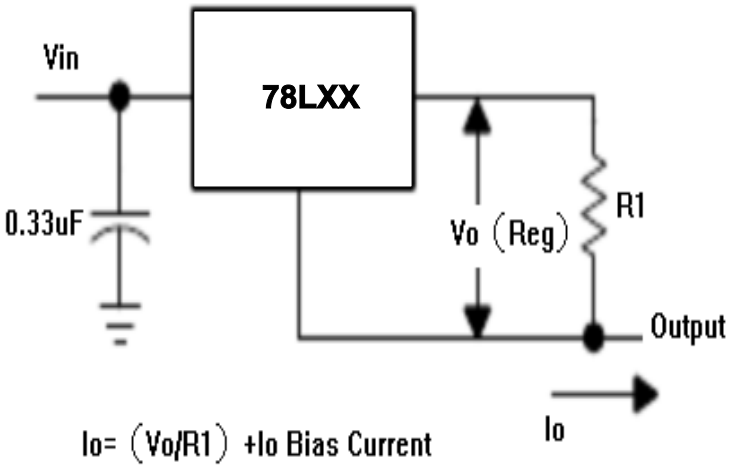

Figure 3. Current Regulator