

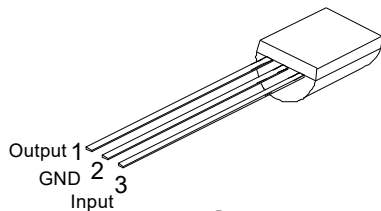
1.Description

The UMW 78LXX series of fixed voltage monolithic integrated circuit voltage regulators are suitable for applications that required supply up to 100mA.

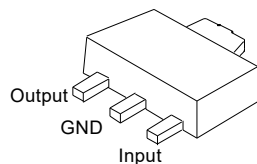
2.Features

- Maximum output current of 100mA
- Output voltage of 3.3V,5V,6V,8V,9V,10V, 12V, 15V, 18V and 24V
- Thermal overload protection
- Short circuit current limiting

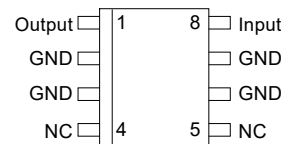
3.Pinning information



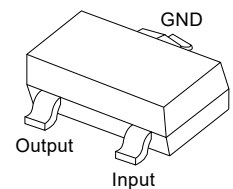
TO-92



SOT-89

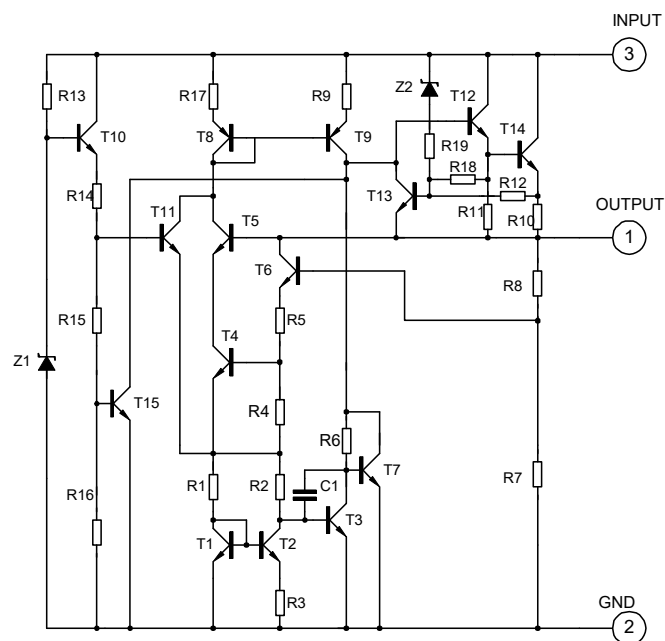


SOP-8



SOT-23

4.Block Diagram





5. Absolute Maximum Ratings

Characteristics	Symbol	Value		Units
Input voltage (for $V_O=3.3$ to 18V) (for $V_O=24V$)	V_I	35		V
		40		V
Power Dissipation	P_d	TO-92	700	mW
		SOT-23	300	mW
		SOT-89	400	mW
		SOP-8	400	mW
Junction Temperature Range	T_{OPR}	-20 to 120		°C
Storage Temperature Range	T_{STG}	-55 to 150		°C



6.1 Electrical Characteristics (78L33)

($V_i=8.3V$, $I_o=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_J=25^{\circ}C$	3.168	3.3	3.432	V
		$5.3V \leq V_i \leq 20V, I_o=1mA \sim 40mA$	3.135		3.465	V
		$I_o=1mA \sim 70mA$	3.135		3.465	V (note 2)
Load Regulation	ΔV_o	$T_J=25^{\circ}C$, $I_o=1mA \sim 100mA$		10	60	mV
		$T_J=25^{\circ}C$, $I_o=1mA \sim 40mA$		7	30	mV
Line regulation	ΔV_o	$5.3V \leq V_i \leq 20V, T_J=25^{\circ}C$		7	150	mV
		$6.3V \leq V_i \leq 20V, T_J=25^{\circ}C$		4	100	mV
Quiescent Current	I_q	$T_J=25^{\circ}C$		2	5.5	mA
Quiescent Current Change	ΔI_q	$6.3V \leq V_i \leq 20V$			1.5	mA
	ΔI_q	$1mA \leq I_o \leq 80mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$, $T_J=25^{\circ}C$		40		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		0.45		mV/ $^{\circ}C$
Ripple Rejection	RR	$6.3V \leq V_i \leq 16.3V, f=120Hz, T_J=25^{\circ}C$	40	49		dB
Dropout Voltage	V_d			1.7		V



6.2 Electrical Characteristics (78L05)

($V_i=10V$, $I_o=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_J=25^{\circ}C$	4.8	5	5.2	V
		$7.5V \leq V_i \leq 20V, I_o=1mA \sim 40mA$	4.75		5.25	V
		$7.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	4.75		5.25	V (note 2)
Output Voltage(note 3)	V_o	$T_J=25^{\circ}C$	4.9	5	5.1	V
		$7.5V \leq V_i \leq 20V, I_o=1mA \sim 40mA$	4.85		5.15	V
		$7.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	4.85		5.15	V (note 2)
Load Regulation	ΔV_o	$T_J=25^{\circ}C, I_o=1mA \sim 100mA$		11	60	mV
		$T_J=25^{\circ}C, I_o=1mA \sim 40mA$		5	30	mV
Line regulation	ΔV_o	$7V \leq V_i \leq 20V, T_J=25^{\circ}C$		8	150	mV
		$8V \leq V_i \leq 20V, T_J=25^{\circ}C$		6	100	mV
Quiescent Current	I_q			2	5.5	mA
Quiescent Current Change	ΔI_q	$8V \leq V_i \leq 20V$			1.5	mA
	ΔI_q	$1mA \leq I_o \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		40		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		0.65		$mV/^{\circ}C$
Ripple Rejection	RR	$8V \leq V_i \leq 20V, f=120Hz, T_J=25^{\circ}C$	40	49		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V



6.3 Electrical Characteristics (78L06)

($V_I=12V$, $I_O=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_O=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_O	$T_J=25^{\circ}C$	5.76	6	6.24	V
		$8.5V \leq V_I \leq 20V, I_O=1mA \sim 40mA$	5.7		6.3	V
		$8.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$	5.7		6.3	V (note 2)
Output Voltage(note 3)	V_O	$T_J=25^{\circ}C$	5.88	6	6.12	V
		$8.5V \leq V_I \leq 20V, I_O=1mA \sim 40mA$	5.82		6.18	V
		$8.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$	5.82		6.18	V (note 2)
Load Regulation	ΔV_O	$T_J=25^{\circ}C, I_O=1mA \sim 100mA$		12.8	80	mV
		$T_J=25^{\circ}C, I_O=1mA \sim 70mA$		5.8	40	mV
Line regulation	ΔV_O	$8.5V \leq V_I \leq 20V, T_J=25^{\circ}C$		64	175	mV
		$9V \leq V_I \leq 20V, T_J=25^{\circ}C$		54	125	mV
Quiescent Current	I_q			2	5.5	mA
Quiescent Current Change	ΔI_q	$9V \leq V_I \leq 20V$			1.5	mA
	ΔI_q	$1mA \leq I_O \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		49		μV
Temperature coefficient of V_O	$\Delta V_O / \Delta T$	$I_O=5mA$		0.75		$mV/^{\circ}C$
Ripple Rejection	RR	$10V \leq V_I \leq 20V, f=120Hz, T_J=25^{\circ}C$	38	46		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V



6.4 Electrical Characteristics (78L08)

($V_i=14V$, $I_o=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_J=25^{\circ}C$	7.68	8	8.32	V
		$10.5V \leq V_i \leq 23V, I_o=1mA \sim 40mA$	7.6		8.4	V
		$10.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	7.6		8.4	V (note 2)
Output Voltage(note 3)	V_o	$T_J=25^{\circ}C$	7.84	8	8.16	V
		$10.5V \leq V_i \leq 23V, I_o=1mA \sim 40mA$	7.76		8.24	V
		$10.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	7.76		8.24	V (note 2)
Load Regulation	ΔV_o	$T_J=25^{\circ}C, I_o=1mA \sim 100mA$		15	80	mV
		$T_J=25^{\circ}C, I_o=1mA \sim 70mA$		8	40	mV
Line regulation	ΔV_o	$10.5V \leq V_i \leq 23V, T_J=25^{\circ}C$		10	175	mV
		$11V \leq V_i \leq 23V, T_J=25^{\circ}C$		8	125	mV
Quiescent Current	I_q			2	5.5	mA
Quiescent Current Change	ΔI_q	$11V \leq V_i \leq 23V$			1.5	mA
	ΔI_q	$1mA \leq I_o \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		49		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		0.75		$mV/^{\circ}C$
Ripple Rejection	RR	$11V \leq V_i \leq 23V, f=120Hz, T_J=25^{\circ}C$	36	45		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V



6.5 Electrical Characteristics (78L09)

($V_i=15V$, $I_o=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_J=25^{\circ}C$	8.64	9	9.36	V
		$11.5V \leq V_i \leq 24V, I_o=1mA \sim 40mA$	8.55		9.45	V
		$11.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	8.55		9.45	V (note 2)
Output Voltage(note 3)	V_o	$T_J=25^{\circ}C$	8.82	9	9.18	V
		$11.5V \leq V_i \leq 24V, I_o=1mA \sim 40mA$	8.73		9.27	V
		$11.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	8.73		9.27	V (note 2)
Load Regulation	ΔV_o	$T_J=25^{\circ}C, I_o=1mA \sim 100mA$		20	90	mV
		$T_J=25^{\circ}C, I_o=1mA \sim 40mA$		10	45	mV
Line regulation	ΔV_o	$11.5V \leq V_i \leq 24V, T_J=25^{\circ}C$		90	200	mV
		$13V \leq V_i \leq 24V, T_J=25^{\circ}C$		100	150	mV
Quiescent Current	I_q			2	5.5	mA
Quiescent Current Change	ΔI_q	$13V \leq V_i \leq 24V$			1.5	mA
	ΔI_q	$1mA \leq I_o \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		49		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		0.75		$mV/^{\circ}C$
Ripple Rejection	RR	$12V \leq V_i \leq 23V, f=120Hz, T_J=25^{\circ}C$	36	44		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V



6.6 Electrical Characteristics (78L10)

($V_i=15V$, $I_o=40mA$, $0<T_J<25^\circ C$, $C_1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_J=25^\circ C$	9.6	10	10.4	V
		$12.5V \leq V_i \leq 24V, I_o=1mA \sim 40mA$	9.55	10	10.45	V
		$12.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	9.55		10.45	V (note 2)
Output Voltage(note 3)	V_o	$T_J=25^\circ C$	9.8	10	10.2	V
		$12.5V \leq V_i \leq 24V, I_o=1mA \sim 40mA$	9.7		10.3	V
		$12.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	9.7		10.3	V (note 2)
Load Regulation	ΔV_o	$T_J=25^\circ C, I_o=1mA \sim 100mA$		20	90	mV
		$T_J=25^\circ C, I_o=1mA \sim 40mA$		10	45	mV
Line regulation	ΔV_o	$12.5V \leq V_i \leq 24V, T_J=25^\circ C$		90	200	mV
		$13V \leq V_i \leq 24V, T_J=25^\circ C$		100	150	mV
Quiescent Current	I_q			2	5.5	mA
Quiescent Current Change	ΔI_q	$13V \leq V_i \leq 24V$			0.1	mA
	ΔI_q	$1mA \leq I_o \leq 40mA$				mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		49		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		0.75		$mV/^\circ C$
Ripple Rejection	RR	$12V \leq V_i \leq 23V, f=120Hz, T_J=25^\circ C$	36	44		dB
Dropout Voltage	V_d	$T_J=25^\circ C$		1.7		V



6.7 Electrical Characteristics (78L12)

($V_i=19V$, $I_o=40mA$, $0<T_j<25^{\circ}C$, $C1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_j=25^{\circ}C$	11.52	12	12.48	V
		$14.5V \leq V_i \leq 27V, I_o=1mA \sim 40mA$	11.4		12.6	V
		$14.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	11.4		12.6	V (note 2)
Output Voltage(note 3)	V_o	$T_j=25^{\circ}C$	11.76	12	12.24	V
		$14.5V \leq V_i \leq 27V, I_o=1mA \sim 40mA$	11.64		12.36	V
		$14.5V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	11.64		12.36	V (note 2)
Load Regulation	ΔV_o	$T_j=25^{\circ}C, I_o=1mA \sim 100mA$		25	150	mV
		$T_j=25^{\circ}C, I_o=1mA \sim 40mA$		12	75	mV
Line regulation	ΔV_o	$14.5V \leq V_i \leq 27V, T_j=25^{\circ}C$		25	300	mV
		$16V \leq V_i \leq 27V, T_j=25^{\circ}C$		20	250	mV
Quiescent Current	I_q			2	5.5	mA
Quiescent Current Change	ΔI_q	$16V \leq V_i \leq 27V$			15	mA
	ΔI_q	$1mA \leq I_o \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		80		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		1		$mV/^{\circ}C$
Ripple Rejection	RR	$15V \leq V_i \leq 25V, f=120Hz, T_j=25^{\circ}C$	36	42		dB
Dropout Voltage	V_d	$T_j=25^{\circ}C$		1.7		V



6.8 Electrical Characteristics (78L15)

($V_I=23V$, $I_O=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_O=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_O	$T_J=25^{\circ}C$	14.4	15	15.6	V
		$17.5V \leq V_I \leq 30V, I_O=1mA \sim 40mA$	14.25		15.75	V
		$17.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$	14.25		15.75	V (note 2)
Output Voltage(note 3)	V_O	$T_J=25^{\circ}C$	14.7	15	15.3	V
		$17.5V \leq V_I \leq 30V, I_O=1mA \sim 40mA$	14.55		15.45	V
		$17.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$	14.55		15.45	V (note 2)
Load Regulation	ΔV_O	$T_J=25^{\circ}C, I_O=1mA \sim 100mA$		20	150	mV
		$T_J=25^{\circ}C, I_O=1mA \sim 70mA$		25	150	mV
Line regulation	ΔV_O	$17.5V \leq V_I \leq 30V, T_J=25^{\circ}C$		25	150	mV
		$20V \leq V_I \leq 30V, T_J=25^{\circ}C$		15	75	mV
Quiescent Current	I_q			2.2	6	mA
Quiescent Current Change	ΔI_q	$20V \leq V_I \leq 30V$			1.5	mA
	ΔI_q	$1mA \leq I_O \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		90		μV
Temperature coefficient of V_O	$\Delta V_O / \Delta T$	$I_O=5mA$		1.3		$mV/^{\circ}C$
Ripple Rejection	RR	$18.5V \leq V_I \leq 28.5V, f=120Hz, T_J=25^{\circ}C$	33	39		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V



6.9 Electrical Characteristics (78L18)

($V_i=27V$, $I_o=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_J=25^{\circ}C$	17.28	18	18.72	V
		$21V \leq V_i \leq 33V, I_o=1mA \sim 40mA$	17.1		18.9	V
		$21V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	17.1		18.9	V (note 2)
Output Voltage(note 3)	V_o	$T_J=25^{\circ}C$	17.64	18	18.36	V
		$21V \leq V_i \leq 33V, I_o=1mA \sim 40mA$	17.46		18.54	V
		$21V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	17.46		18.54	V (note 2)
Load Regulation	ΔV_o	$T_J=25^{\circ}C, I_o=1mA \sim 100mA$		30	170	mV
		$T_J=25^{\circ}C, I_o=1mA \sim 40mA$		15	85	mV
Line regulation	ΔV_o	$21V \leq V_i \leq 33V, T_J=25^{\circ}C$		145	300	mV
		$22V \leq V_i \leq 33V, T_J=25^{\circ}C$		135	250	mV
Quiescent Current	I_q			2.2	6	mA
Quiescent Current Change	ΔI_q	$21V \leq V_i \leq 33V$			1.5	mA
	ΔI_q	$1mA \leq I_o \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		150		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		1.8		$mV/^{\circ}C$
Ripple Rejection	RR	$23V \leq V_i \leq 33V, f=120Hz, T_J=25^{\circ}C$	32	38		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V



6.10 Electrical Characteristics (78L24)

($V_i=33V$, $I_o=40mA$, $0<T_J<25^{\circ}C$, $C_1=0.33\mu F$, $C_o=0.1\mu F$, unless otherwise specified) (Note 1)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Output Voltage	V_o	$T_J=25^{\circ}C$	23.04	24	24.96	V
		$27V \leq V_i \leq 38V, I_o=1mA \sim 40mA$	22.8		25.2	V
		$27V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	22.8		25.2	V (note 2)
Output Voltage(note 3)	V_o	$T_J=25^{\circ}C$	23.52	24	24.48	V
		$27V \leq V_i \leq 38V, I_o=1mA \sim 40mA$	23.22		24.72	V
		$27V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$	23.22		24.72	V (note 2)
Load Regulation	ΔV_o	$T_J=25^{\circ}C, I_o=1mA \sim 100mA$		40	200	mV
		$T_J=25^{\circ}C, I_o=1mA \sim 40mA$		20	100	mV
Line regulation	ΔV_o	$27V \leq V_i \leq 38V, T_J=25^{\circ}C$		160	300	mV
		$28V \leq V_i \leq 38V, T_J=25^{\circ}C$		150	250	mV
Quiescent Current	I_q			2.2	6.0	mA
Quiescent Current Change	ΔI_q	$27V \leq V_i \leq 38V$			1.5	mA
	ΔI_q	$1mA \leq I_o \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		200		μV
Temperature coefficient of V_o	$\Delta V_o / \Delta T$	$I_o=5mA$		2		mV/ $^{\circ}C$
Ripple Rejection	RR	$27V \leq V_i \leq 38V, f=120Hz, T_J=25^{\circ}C$	30	37		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V

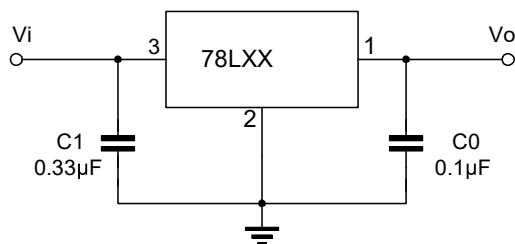
Note 1: The Maximum steady state usable output current and input voltage are very dependent on the heating sinking and/or lead temperature length of the package. The data above represent pulse test conditions with junction temperatures as indicated at the initiation of test.

Note 2: Power dissipation $< 0.75W$.

Note 3: Output voltage of 78LXXA



7. Typical Application

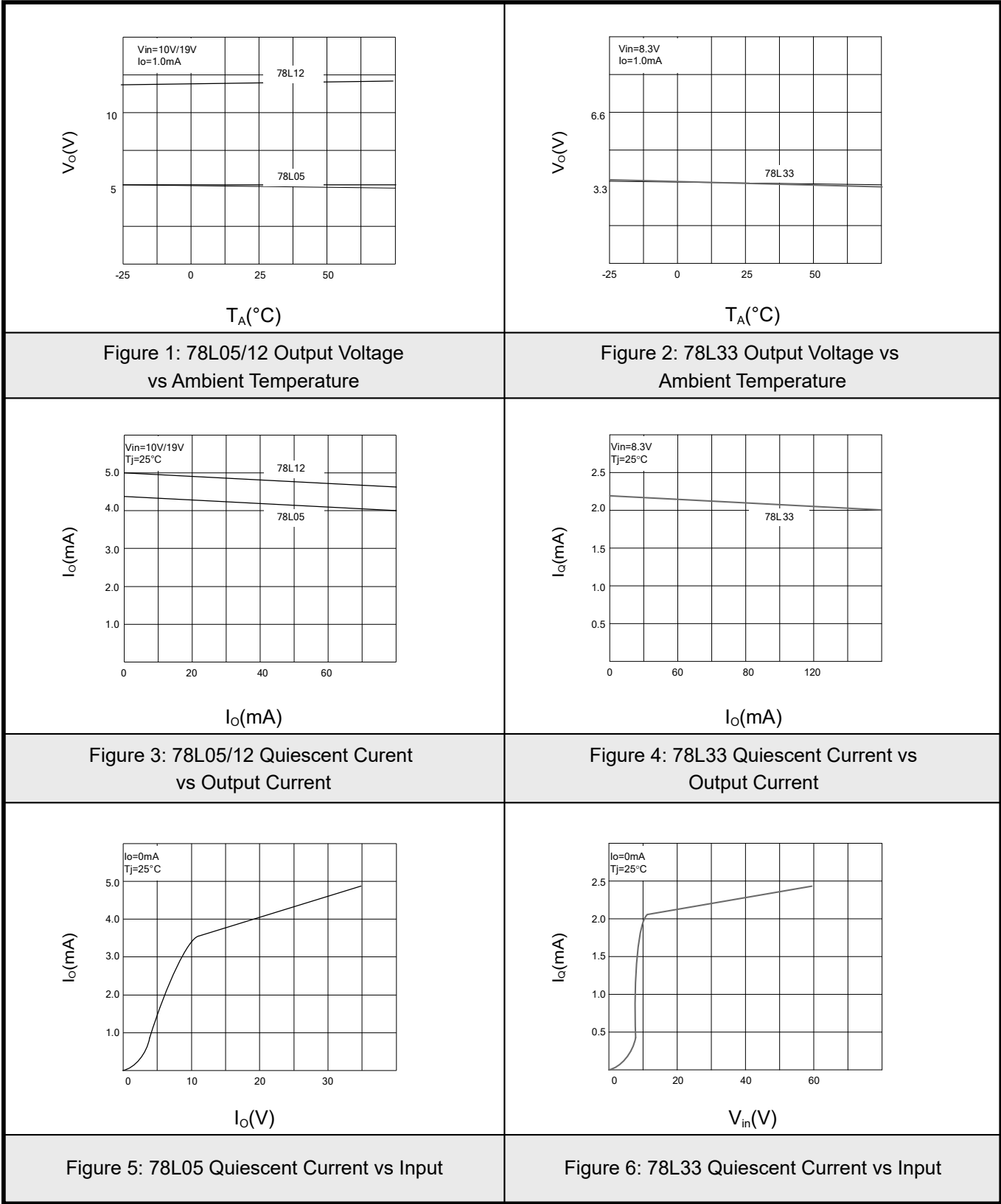


Note 1: To specify an output voltage, substitute voltage value for "XX".

Note 2: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators



8.1 Typical characteristic



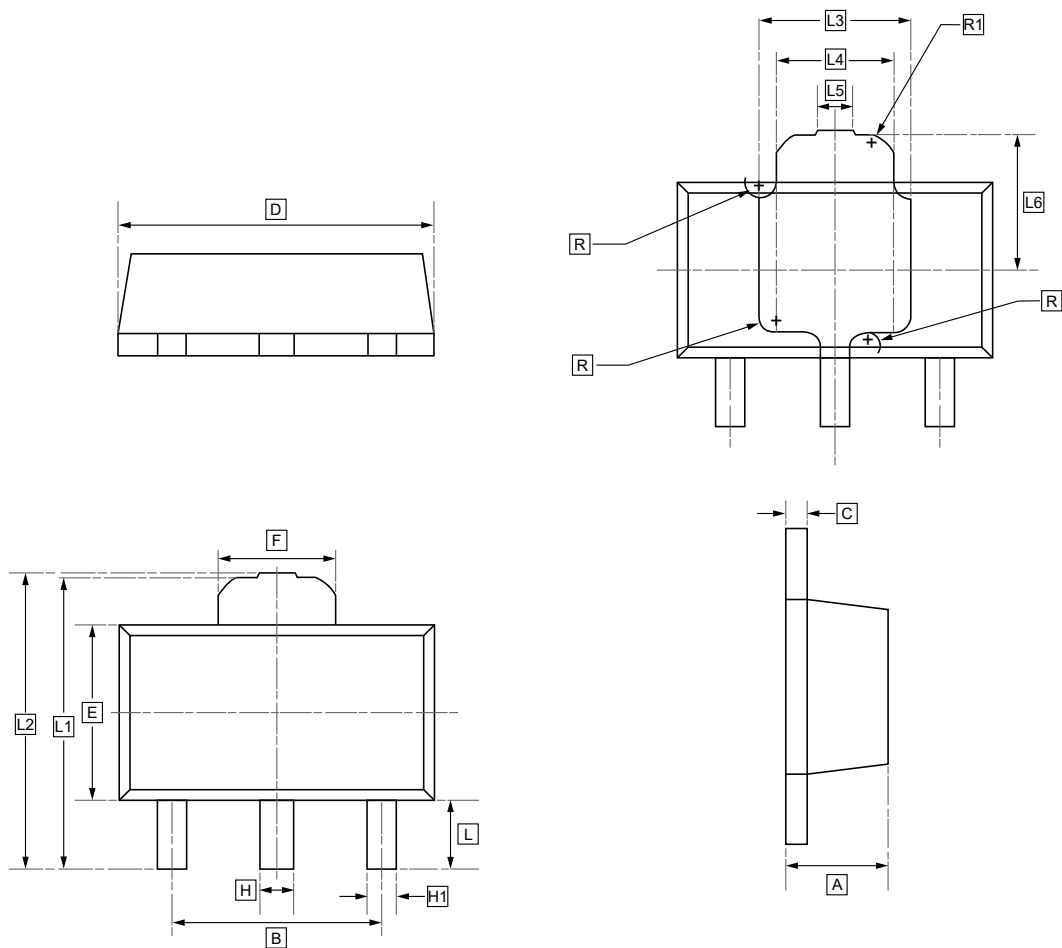


8.2 Typical characteristic

Figure 7: 78L05/12/24 Thermal Shutdown	Figure 8: 78L33 Thermal Shutdown
Figure 9: 78 L05/12/24 Output Characteristics	Figure 10: 78L33 Output Characteristics
Figure 11: 78L05 Dropout Characteristics	Figure 12: 78L33 Dropout Characteristics



9.1 SOT-89 Package Outline Dimensions



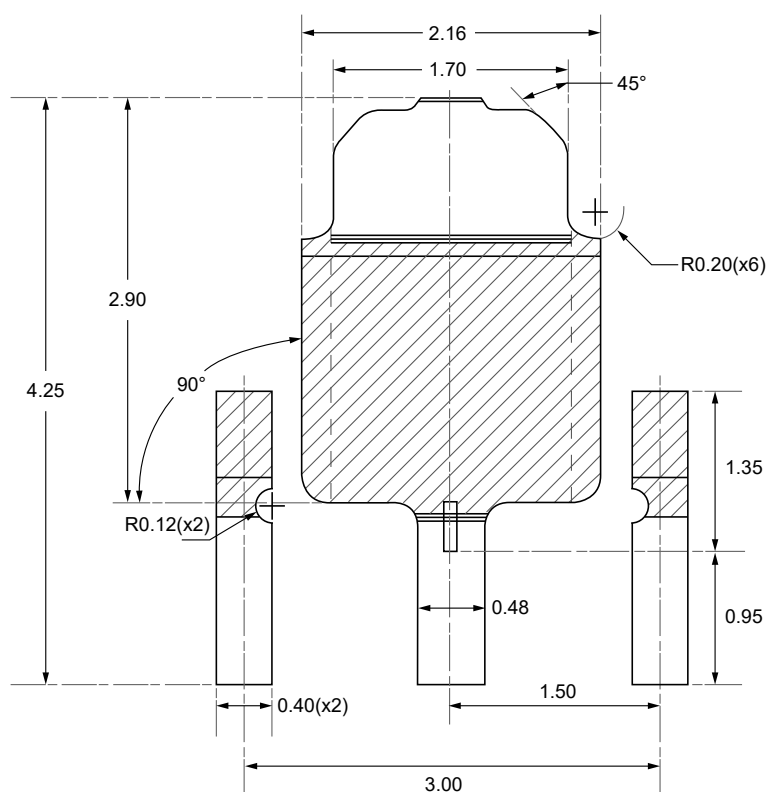
DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	F	H	H1	L	L1	L2	L3
Min	1.450	2.950	0.330	4.450	2.450	1.650	0.450	0.370	0.900	4.100	4.100	2.140
Max	1.550	3.050	0.430	4.550	2.550	1.750	0.580	0.480	1.000	4.300	4.350	2.180

Symbol	L4	L5	L6	R	R1
Min	1.670	0.380	1.930	0.170	0.150
Max	1.730	0.420	1.970		



9.2 SOT-89-3L Suggested Pad Layout

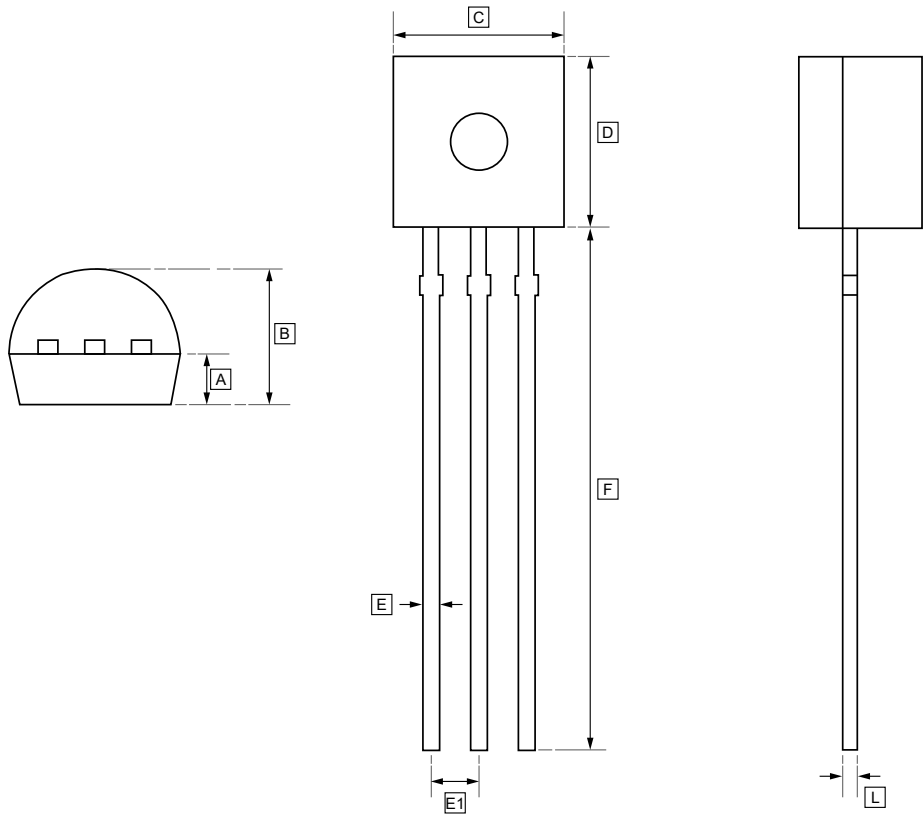


Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.



9.3 TO-92 Package Outline Dimensions

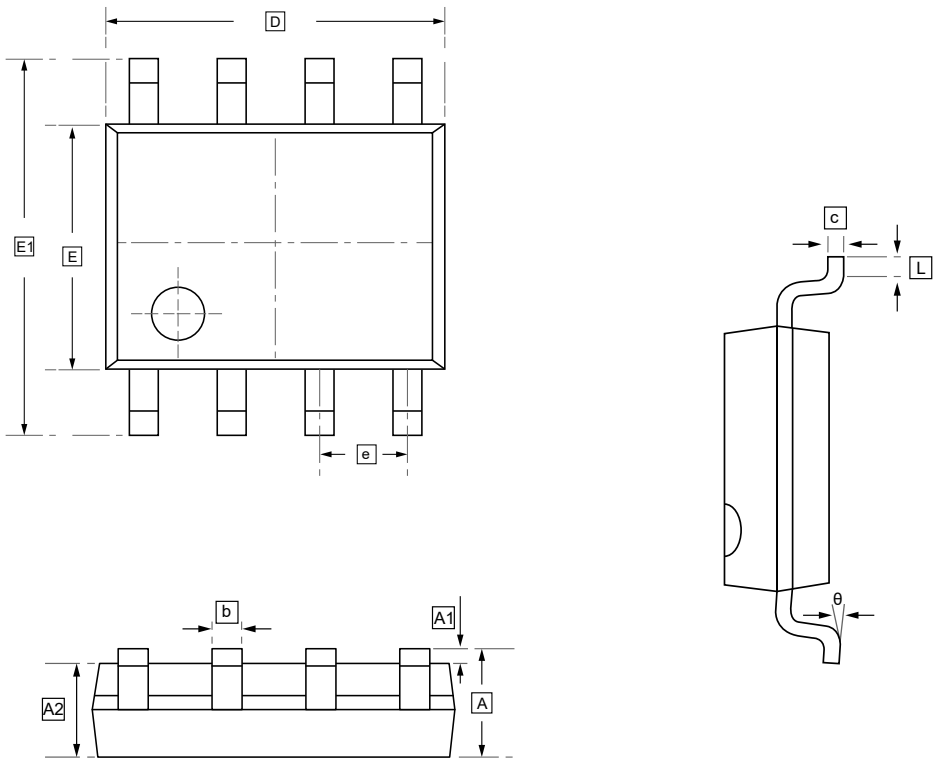


DIMENSIONS (mm are the original dimensions)

Symbol	A	B	C	D	E	E1	F	L
Min	1.10	3.50	4.50	4.40	0.35	1.27	13.50	0.35
Max	1.30	3.90	4.90	4.90	0.45	TYP	14.50	0.40



9.4 SOP-8 Package Outline Dimensions

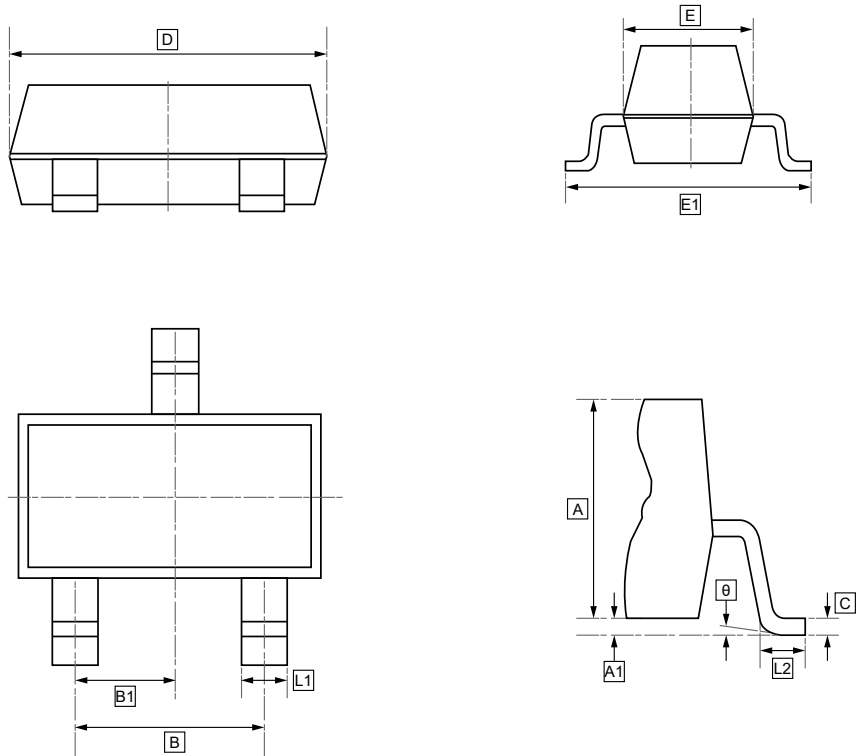


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	b	c	D	E	E1	e	L	θ
Min	1.350	0.000	1.350	0.330	0.170	4.700	3.800	5.800	1.270	0.400	0°
Max	1.750	0.100	1.550	0.510	0.250	5.100	4.000	6.200	BSC	1.270	8°



9.5 SOT-23 Package Outline Dimensions

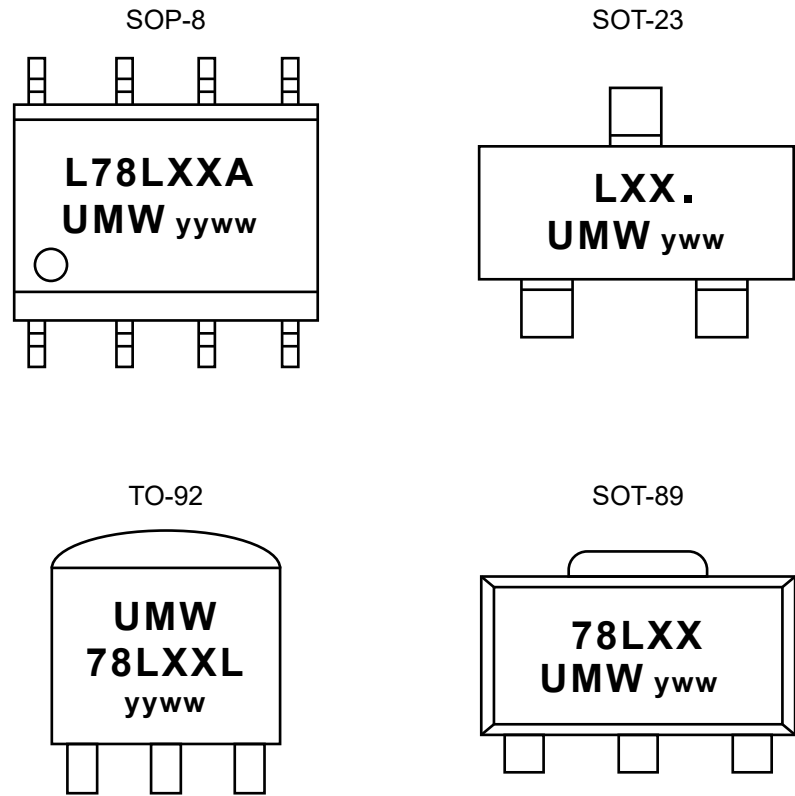


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	L1	L2	C	D	E	E1	B	B1	θ
Min	0.900	0.020	0.300	0.300	0.100	2.800	1.200	2.300	1.800	0.950	0°
Max	1.100	0.100	0.500	0.500	0.120	3.000	1.400	2.500	2.000	TYP	8°



10.Ordering Information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW L78LxxA	L78LxxA	SOP-8	2500	Tape and reel
UMW 78LxxS	LxX.	SOT-23	3000	Tape and reel
UMW 78LxxL	78LxxL	TO-92	1000	Bulk Bag
UMW 78Lxx	78Lxx	SOT-89	1000	Tape and reel



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