

KA78LXXA/KA78L05AA

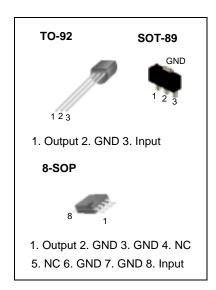
3-Terminal 0.1A Positive Voltage Regulator

Features

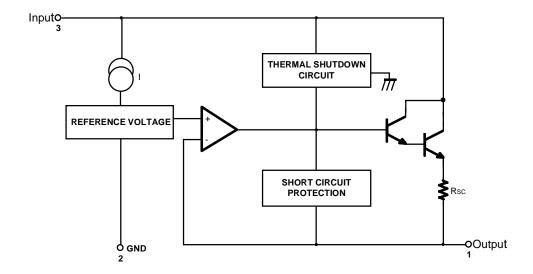
- Maximum Output Current of 100mA
- Output Voltage of 5V, 6V, 8V, 9V,10V, 12V, 15V, 18V and 24V
- Thermal Overload Protection
- · Short Circuit Current Limiting
- Output Voltage Offered in ±5% Tolerance

Description

The KA78LXXA/KA78L05AA series of fixed voltage monolithic integrated circuit voltage regulators are suitable for application that required supply current up to 100mA.



Internal Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage (for V _O = 5V, 8V)	VI	30	V
(for V _O = 12V to 18V)		35	V
(for $V_O = 24V$		40	V
Operating Junction Temperature Range	TJ	0 ~ +150	°C
Storage Temperature Range	TSTG	-65 ~ +150	°C

Electrical Characteristics(KA78L05A)

(VI = 10V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note1)

Parameter		Symbol	Coi	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		4.8	5.0	5.2	V
Line Regulation (Not	Line Regulation (Note1)		TJ = 25°C	7V ≤ V _I ≤ 20V	-	8	150	mV
	,	ΔVο	1J = 25 C	8V ≤ V _I ≤ 20V	-	6	100	mV
Load Population (No	sto1)	ΔVO	TJ = 25°C	1mA ≤ I _O ≤ 100mA	-	11	60	mV
Load Regulation (No	ne i)		1J = 25 C	$1mA \le IO \le 40mA$	-	5.0	30	mV
			7V ≤ VI ≤ 20V	$1mA \le IO \le 40mA$	-	-	5.25	V
Output Voltage		Vo	7V ≤V _I ≤ V _M AX (Note 2)	1mA ≤ I _O ≤ 70mA	4.75	-	5.25	V
Quiescent Current		IQ	T _J = 25°C		-	2.0	5.5	mA
Quiescent Current	with line	ΔlQ	8V ≤VI ≤ 20V		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40 m	nA	-	-	0.1	mA
Output Noise Voltag	е	VN	T _A = 25°C, 10H;	z ≤ f ≤ 100kHz	-	40	-	μV/Vo
Temperature Coeffic	cient of Vo	ΔV _O /ΔT	IO = 5mA		-	-0.65	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 8V ≤	V _I ≤ 18V, T _J = 25°C	41	80	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Electrical Characteristics(KA78L06A) (Continued)

(VI = 12V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter		Symbol	Co	onditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		5.75	6.0	6.25	V
Line Regulation (No	ote1)	ΔVο	T _J = 25°C	8.5V ≤ V _I ≤ 20V	-	64	175	mV
		ΔνΟ	1J = 25 C	9V ≤ V _I ≤ 20V	-	54	125	mV
Load Degulation (Note1)		ΔVΩ	T _J = 25°C	1mA ≤ I _O ≤ 100mA	-	12.8	80	mV
Load Regulation (N	ole i)	ΔνΟ	1J = 25 C	$1mA \le I_O \le 70mA$	-	5.8	40	mV
Output Voltage		Vo	$8.5 \le V_I \le 20V, 1$	$mA \le I_O \le 40mA$	5.7	-	6.3	V
Output Voltage		8.5 \leq V _I \leq V _{MAX} (Note), 1mA \leq I _O \leq 70mA 5		5.7	-	6.3	V	
Quiescent Current		lo	T _J = 25°C		-	-	5.5	mA
Quiescent Current		IQ	T _J = 125°C		-	3.9	6.0	mA
Quiescent Current	with line	ΔlQ	$9 \le V_I \le 20V$		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ Io ≤ 40m/	4	-	-	0.1	mA
Output Noise Voltag	ge	VN	$T_A = 25^{\circ}C, 10Hz \le f \le 100kHz$		-	40	-	μV/Vo
Temperature Coeffi	Temperature Coefficient of VO		IO = 5mA		-	0.75	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 10V ≤ V _I ≤ 20V, T _J = 25°C		40	46	-	dB
Dropout Voltage		VD	TJ = 25°C		ı	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Electrical Characteristics(KA78L08A) (Continued)

(VI = 14V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter		Symbol	Сог	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		7.7	8.0	8.3	V
Line Regulation (Not	te1)	ΔVο	T _J = 25°C	10.5V ≤ V _I ≤ 23V	-	10	175	mV
		ΔνΟ	1J = 25 C	11V ≤ V _I ≤ 23V	-	8	125	mV
Load Population (No	sto1)	ΔVΩ	T _J = 25°C	$1mA \le IO \le 100mA$	-	15	80	mV
Load Regulation (No	ne i)	ΔνΟ	1J = 25 C	$1mA \le IO \le 40mA$	-	8.0	40	mV
			$10.5 \text{V} \leq \text{V}_{\text{I}} \leq 23 \text{V}$	$1mA \le IO \le 40mA$	7.6	-	8.4	V
Output Voltage		Vo	10.5V ≤ V _I ≤ VMAX (Note 2)	1mA ≤ I _O ≤ 70mA	7.6	-	8.4	V
Quiescent Current		IQ	T _J = 25°C		-	2.0	5.5	mA
Quiescent Current	with line	ΔlQ	$11 \text{V} \leq \text{V}_{\text{I}} \leq 23 \text{V}$		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40m	A	-	-	0.1	mA
Output Noise Voltag	е	VN	T _A = 25°C, 10H;	z ≤ f ≤100kHz	-	60	-	μV/Vo
Temperature Coeffic	Temperature Coefficient of Vo		IO = 5mA		-	-0.8	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 11V s	≤ V _I ≤ 21V, T _J = 25°C	39	70	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Electrical Characteristics(KA78L09A) (Continued)

(VI = 15V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter		Symbol	Coi	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		8.64	9.0	9.36	V
Line Regulation (Not	te1)	ΔVο	T _J = 25°C	11.5V ≤ V _I ≤ 24V	-	90	200	mV
		ΔνΟ	1J = 25 C	13V ≤ V _I ≤ 24V	-	100	150	mV
Load Population (No	sto1)	ΔVο	T _J = 25°C	$1mA \le IO \le 100mA$	-	20	90	mV
Load Regulation (No	ne i)	ΔνΟ	1J = 25 C	$1mA \le IO \le 40mA$	-	10	45	mV
			11.5V ≤ V _I ≤ 24V	$1mA \le IO \le 40mA$	8.55	-	9.45	V
Output Voltage		Vo	11.5V ≤ V _I ≤ VMAX (Note 2)	1mA ≤ I _O ≤ 70mA	8.55	-	9.45	V
Quiescent Current		IQ	T _J = 25°C		-	2.1	6.0	mA
Quiescent Current	with line	ΔlQ	13V ≤ V _I ≤ 24V		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40m	A	-	-	0.1	mA
Output Noise Voltag	е	VN	T _A = 25°C, 10H;	z ≤ f ≤ 100kHz	-	70	-	μV/Vo
Temperature Coefficient of VO		ΔV0/ΔΤ	IO = 5mA		-	-0.9	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 12V s	≤ V _I ≤ 22V, T _J = 25°C	38	44	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Electrical Characteristics(KA78L10A) (Continued)

(VI = 16V, IO = 40mA, $0 \, ^{\circ}\text{C} \le \text{TJ} \le 125 \, ^{\circ}\text{C}$, CI = $0.33 \, \mu\text{F}$, CO = $0.1 \mu\text{F}$, unless otherwise specified. (Note 1)

Parameter		Symbol	С	onditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		9.6	10.0	10.4	V
Line Regulation (Not	te1)	41/0	T,j = 25°C	12.5 ≤ V _I ≤ 25V	-	100	220	mV
		ΔVο	1J = 25°C	14V ≤ V _I ≤ 25V	-	100	170	mV
Load Regulation (No	sto1\	41/0	TJ = 25°C	1mA ≤ I _O ≤ 100mA	-	20	94	mV
Load Regulation (No	ne i)	ΔVO		$1mA \le I_O \le 70mA$	-	10	47	mV
			12.5V ≤ V _I ≤ 25	V, 1mA ≤ I _O ≤ 40mA	9.5	-	10.5	
Output Voltage		Vo		12.5V ≤ V _I ≤ V _{MAX} (Note2) 1mA ≤ I _O ≤ 70mA		-	10.5	V
Ouissant Current		lo.	T _J = 25°C		-	-	6.0	A
Quiescent Current		IQ	T _J =125°C		-	4.2	6.5	mA
Quiescent Current	with line	ΔlQ	12.5 ≤ V _I ≤ 25°	V	-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40	mA	-	-	0.1	mA
Output Noise Voltag	е	VN	T _A = 25°C, 10Hz ≤ f ≤ 100kHz		-	74	-	μV/Vo
Temperature Coeffic	Temperature Coefficient of Vo		I _O = 5mA		-	0.95	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 15\	/ ≤ V _I ≤ 25V, T _J = 25°C	38	43	-	dB
Dropout Voltage		VD	T _J = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $P_D \le 0.75W$.

Electrical Characteristics(KA78L12A) (Continued)

(VI = 19V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter		Symbol	Сог	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		11.5	12	12.5	V
Line Regulation (Not	te1)	ΔVο	T _J = 25°C	14.5V ≤ V _I ≤ 27V	-	20	250	mV
		ΔνΟ	1J = 25 C	16V ≤ V _I ≤ 27V	-	15	200	mV
Load Population (No	sto1)	ΔVο	TJ = 25°C	$1mA \le IO \le 100mA$	-	20	100	mV
Load Regulation (No	ne i)	ΔνΟ		$1mA \le IO \le 40mA$	-	10	50	mV
			14.5V ≤ V _I ≤ 27V	$1mA \le IO \le 40mA$	11.4	-	12.6	V
Output Voltage		Vo	14.5V ≤ V _I ≤ VMAX (Note 2)	1mA ≤ I _O ≤ 70mA	11.4	-	12.6	V
Quiescent Current		IQ	T _J = 25°C		-	2.1	6.0	mA
Quiescent Current	with line	ΔlQ	16V ≤ V _I ≤ 27V		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40m	A	-	-	0.1	mA
Output Noise Voltag	e	VN	T _A = 25°C, 10Hz ≤ f ≤ 100kHz		-	80	-	μV/Vo
Temperature Coefficient of VO		ΔV0/ΔΤ	IO = 5mA		-	-1.0	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 15V s	≤ V _I ≤ 25V, T _J = 25°C	37	65	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Electrical Characteristics(KA78L15A) (Continued)

(VI = 23V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter		Symbol	Co	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		14.4	15	15.6	V
Line Regulation (No	te1)	ΔVο	T. 25°C	17.5V ≤ V _I ≤ 30V	-	25	300	mV
		ΔνΟ	T _J = 25°C	20V ≤ V _I ≤ 30V	-	20	250	mV
Load Population (N	oto1)	ΔVΩ	T _J = 25°C	1mA ≤ Io ≤ 100mA	-	25	150	mV
Load Regulation (N	ole i)	ΔνΟ	1J = 25 C	1mA ≤ I _O ≤ 40mA	-	12	75	mV
			17.5V ≤ V _I ≤ 30V	$1mA \le IO \le 40mA$	14.25	-	15.75	V
Output Voltage		Vo	17.5V ≤ V _I ≤ VMAX (Note 2)	1mA ≤ IO ≤ 70mA	14.25	-	15.75	V
Quiescent Current		lQ	T _J = 25°C		-	2.1	6.0	mA
Quiescent Current	with line	ΔlQ	$20V \le V_I \le 30V$		-	-	1.5	mA
Change	with load	ΔlQ	$1mA \le IO \le 40mA$	1	-	-	0.1	mA
Output Noise Voltag	ge	VN	T _A = 25°C, 10Hz ≤ f ≤ 100kHz		-	90	-	μV/Vo
Temperature Coefficient of Vo		ΔV0/ΔΤ	IO = 5mA		-	-1.3	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 18.5V	≤ V _I ≤ 28.5V, T _J = 25°C	34	60	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Electrical Characteristics(KA78L18A) (Continued)

(VI = 27V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter		Symbol	Coi	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C	T _J = 25°C		18	18.7	V
Line Regulation (Not	te1)	ΔVο	T _J = 25°C	21V ≤ V _I ≤ 33V	-	145	300	mV
		ΔνΟ	1J = 25 C	22V ≤ V _I ≤ 33V	-	135	250	mV
Load Population (No	sto1)	ΔVΩ	T _J = 25°C	1mA ≤ Io≤100mA	-	30	170	mV
Load Regulation (No	ne i)	ΔνΟ	1J = 25 C	$1mA \le IO \le 40mA$	-	15	85	mV
			$21 \text{V} \leq \text{V}_{\text{I}} \leq 33 \text{V}$	$1mA \le IO \le 40mA$	17.1	-	18.9	V
Output Voltage		Vo	21V ≤ V _I ≤ VMAX (Note 2)	1mA ≤ I _O ≤ 70mA	17.1	-	18.9	V
Quiescent Current		IQ	T _J = 25°C		-	2.2	6.0	mA
Quiescent Current	with line	ΔlQ	$21 \text{V} \leq \text{V}_{\text{I}} \leq 33 \text{V}$		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40m	A	-	-	0.1	mA
Output Noise Voltag	е	VN	T _A = 25°C, 10H;	z ≤ f ≤ 100kHz	-	150	-	μV/Vo
Temperature Coeffic	Temperature Coefficient of VO		IO = 5mA		-	-1.8	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 23V ≤ V _I ≤ 33V, T _J = 25°C		34	48	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Electrical Characteristics(KA78L24A) (Continued)

(VI = 33V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter		Symbol	Coi	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		23	24	25	V
Line Regulation (Not	te1)	ΔVο	T _J = 25°C	27V ≤ VI ≤ 38V	-	160	300	mV
		ΔνΟ	1J = 25 C	28V ≤ V _I ≤ 38V	-	150	250	mV
Load Regulation (No	oto1)	۸۱/۵	T _J = 25°C	1mA ≤ Io ≤ 100mA	-	40	200	mV
Load Regulation (NC	ne i)	ΔVο	1J = 25 C	$1mA \le IO \le 40mA$	-	20	100	mV
			$27 \text{V} \leq \text{V}_{\text{I}} \leq 38 \text{V}$	$1mA \le IO \le 40mA$	22.8	-	25.2	V
Output Voltage		Vo	27V ≤ V _I ≤ VMAX (Note 2)	1mA ≤ I _O ≤ 70mA	22.8	-	25.2	V
Quiescent Current		IQ	T _J = 25°C		-	2.2	6.0	mA
Quiescent Current	with line	ΔlQ	$28V \le V_I \le 38V$		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40m	A	-	-	0.1	mA
Output Noise Voltag	e	VN	T _A = 25°C, 10H;	z ≤ f ≤ 100kHz	-	200	-	μV/Vo
Temperature Coeffic	ient of Vo	ΔV0/ΔΤ	IO = 5mA		-	-2.0	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 28V ≤ V _I ≤ 38V, T _J = 25°C		34	45	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage (for V _O = 5V, 8V) (for V _O = 12V to 18V)	VI	30 35	V
(for VO = 12V to 18V)	VI	40	V
Operating Junction Temperature Range	TJ	0 ~ +150	°C
Storage Temperature Range	TSTG	-65 ~ +150	°C

Electrical Characteristics(KA78L05AA) (Continued)

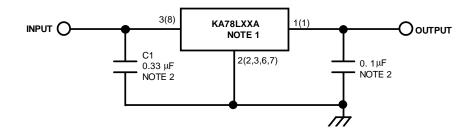
(VI = 10V, IO = 40mA, 0° C \leq TJ \leq 125 $^{\circ}$ C, CI = 0.33 μ F, CO = 0.1 μ F, unless otherwise specified. (Note 1)

Parameter	Parameter S		Coi	nditions	Min.	Тур.	Max.	Unit
Output Voltage		Vo	T _J = 25°C		4.9	5.0	5.1	V
Line Regulation (Not	te1)	4\/0	TJ = 25°C	7V ≤ V _I ≤ 20V	-	8	150	mV
	,	ΔVο	1J = 25 C	8V ≤ V _I ≤ 20V	-	6	100	mV
Load Population (No	sto1)	ΔVο	TJ = 25°C	1mA ≤ I _O ≤ 100mA	-	11	50	mV
Load Regulation (No	ne i)		1J = 25 C	$1mA \le IO \le 40mA$	-	5.0	25	mV
			7V ≤VI ≤20V	$1mA \le IO \le 40mA$	-	-	5.15	V
Output Voltage		Vo	7V ≤V _I ≤ V _M AX (Note 2)	1mA ≤ I _O ≤ 70mA	4.85	-	5.15	V
Quiescent Current		IQ	T _J = 25°C		-	2.0	5.5	mA
Quiescent Current	with line	ΔlQ	8V ≤VI ≤ 20V		-	-	1.5	mA
Change	with load	ΔlQ	1mA ≤ I _O ≤ 40 m	nA	-	-	0.1	mA
Output Noise Voltag	е	VN	T _A = 25°C, 10H;	z ≤ f ≤ 100kHz	-	40	-	μV/Vo
Temperature Coeffic	cient of Vo	ΔV _O /ΔT	IO = 5mA		-	-0.65	-	mV/°C
Ripple Rejection		RR	f = 120Hz, 8V ≤ V _I ≤ 18V, T _J = 25°C		41	80	-	dB
Dropout Voltage		VD	TJ = 25°C		-	1.7	-	V

^{1.} The maximum steady state usable output current and input voltage are very dependent on the heat sinking and/or lead length of the package. The data above represent pulse test conditions with junction temperature as indicated at the initiation of tests.

^{2.} Power dissipation $PD \le 0.75W$.

Typical Application



'()': 8SOP Type

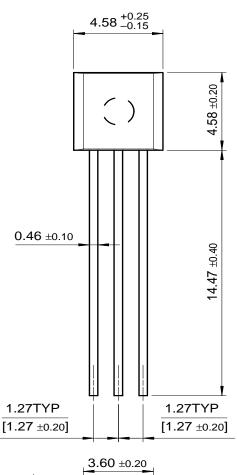
- 1. To specify an output voltage, substitute voltage value for "XX".
- 2. Bypass Capacitors are recommend for optimum stability and transient response and should be located as close as possible to the regulator

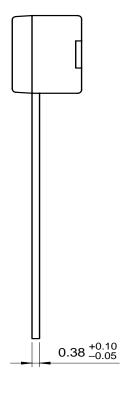
Mechanical Dimensions

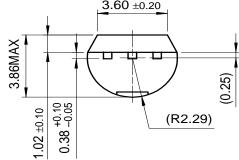
Package

Dimensions in millimeters

TO-92





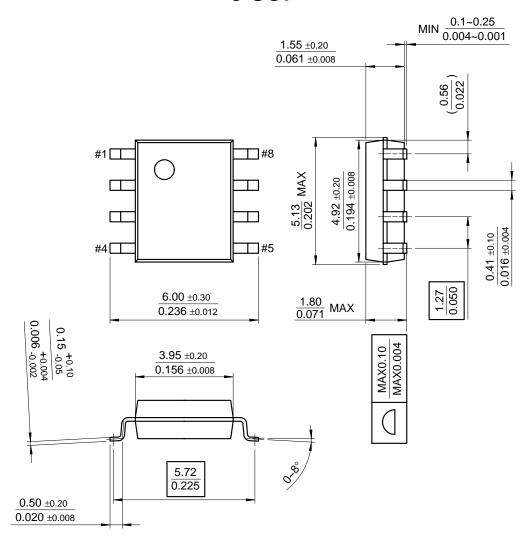


Mechanical Dimensions (Continued)

Package

Dimensions in millimeters

8-SOP

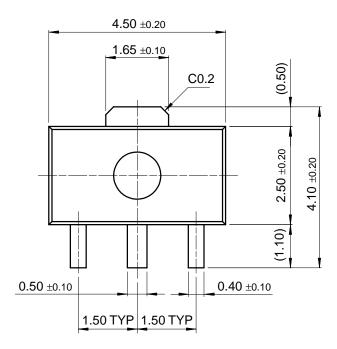


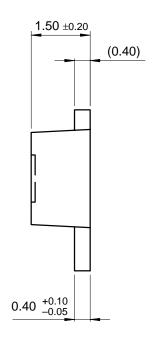
Mechanical Dimensions (Continued)

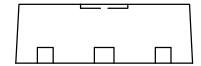
Package

Dimensions in millimeters

SOT-89







Ordering Information

Product Number	Package	Output Voltage Tolerance	Operating Temperature
KA78L05AZ	TO-92	5%	0 ~ +125 °C
KA78L06AZ			
KA78L08AZ			
KA78L09AZ			
KA78L10AZ			
KA78L12AZ			
KA78L15AZ			
KA78L18AZ			
KA78L24AZ			
KA78L05AD	8-SOP		
KA78L08AD			
KA78L12AD			
KA78L05AM	SOT-89		
KA78L08AM			
KA78L12AM			
KA78L05AAZ	TO-92	2%	

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- A critical component in 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.

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