

Positive Voltage Regulator

(Pb) Lead(Pb)-Free

General Description:

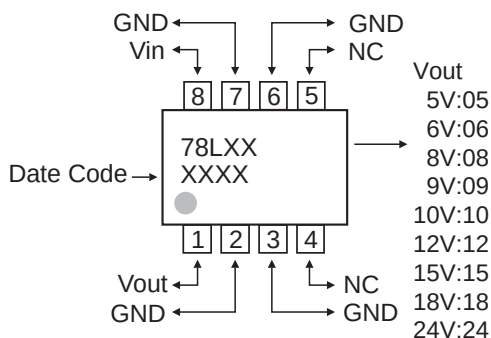
The WT78LXX series of positive regulators are available in the SOP-8 package and with 5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V and 24V fixed output voltages, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shut-down and safe operating area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 100mA output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents. WT78LXX is characterized for operation from 0°C to +125°C.

Features:

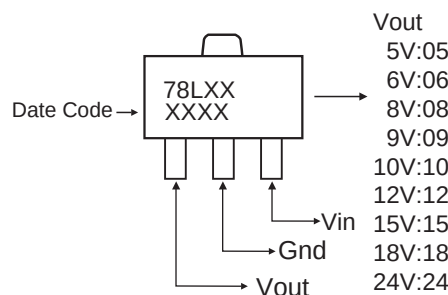
- * Internal Short-Circuit Current Limiting.
- * Internal Thermal Overload Protection.
- * No External Components Required.

Connection Diagrams

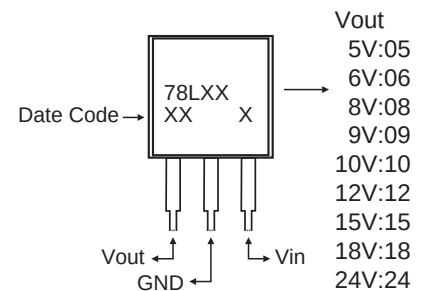
SOP-8 Package (Top View)



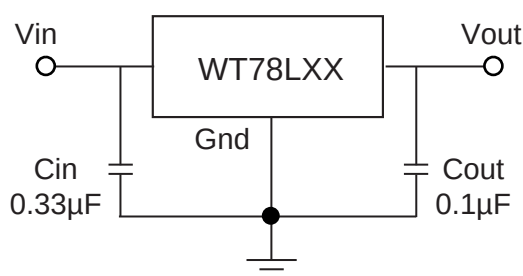
SOT-89 Package (Top View)



TO-92 Package (Top View)



Typical Application



Ordering Information

Ordering Number	Output Voltage	Package	Shipping
WT78L05G	5V	TO-92	500 Units/Bag
WT78L05K	5V	SOT-89	1,000 Units/Tape&Reel
WT78L05M	5V	SOP-8	3,000 Units/Tape&Reel
WT78L06G	6V	TO-92	500 Units/Bag
WT78L06K	6V	SOT-89	1,000 Units/Tape&Reel
WT78L06M	6V	SOP-8	3,000 Units/Tape&Reel
WT78L08G	8V	TO-92	500 Units/Bag
WT78L08K	8V	SOT-89	1,000 Units/Tape&Reel
WT78L08M	8V	SOP-8	3,000 Units/Tape&Reel
WT78L09G	9V	TO-92	500 Units/Bag
WT78L09K	9V	SOT-89	1,000 Units/Tape&Reel
WT78L09M	9V	SOP-8	3,000 Units/Tape&Reel
WT78L10G	10V	TO-92	500 Units/Bag
WT78L10K	10V	SOT-89	1,000 Units/Tape&Reel
WT78L10M	10V	SOP-8	3,000 Units/Tape&Reel
WT78L12G	12V	TO-92	500 Units/Bag
WT78L12K	12V	SOT-89	1,000 Units/Tape&Reel
WT78L12M	12V	SOP-8	3,000 Units/Tape&Reel
WT78L15G	10V	TO-92	500 Units/Bag
WT78L15K	10V	SOT-89	1,000 Units/Tape&Reel
WT78L15M	10V	SOP-8	3,000 Units/Tape&Reel
WT78L18G	12V	TO-92	500 Units/Bag
WT78L18K	12V	SOT-89	1,000 Units/Tape&Reel
WT78L18M	12V	SOP-8	3,000 Units/Tape&Reel
WT78L24G	24V	TO-92	500 Units/Bag
WT78L24K	24V	SOT-89	1,000 Units/Tape&Reel
WT78L24M	24V	SOP-8	3,000 Units/Tape&Reel

Absolute Maximum Ratings

Parameter		Ratings	Unit
Input Voltage	WT78L05~10	30	V
	WT78L12~18	35	
	WT78L24	40	
Output Current		100	mA
Power Dissipation		750*	mW
Operating Junction Temperature Range		0 ~ +125	°C
Storage temperature range		-55 ~ +150	°C

*When test in free air conftion, without heat sinking.

Electrical Characteristics

WT78L05 (Refer to the test circuits, $T_j=0\sim 125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=10\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol		Min	Typ	Max	Unit
Output Voltage $V_{in}=10\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $7\text{V} \leq V_{in} \leq 20\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $7\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O	A-Rank(3%)	4.85	5.0	5.15	V
		B-Rank(5%)	4.75	-	5.25	
Line Regulation $7\text{V} \leq V_{in} \leq 20\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $8\text{V} \leq V_{in} \leq 20\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O		- -	18 10	75 54	mV
Load Regulation $V_{in}=10\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in}=10\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O		- -	20 5	60 30	mV
Quiescent Current $V_{in}=10\text{V}$, $I_O=0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q		-	3.0	5.0	mA
Quiescent Current Change $V_{in}=10\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $8\text{V} \leq V_{in} \leq 20\text{V}$, $I_O=40\text{mA}$	ΔI_Q		- -	- -	0.1 1.0	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n		-	40	-	μV
Ripple Rejection $8\text{V} \leq V_{in} \leq 20\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR		47	62	-	dB
Dropout Voltage $I_O=100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D		-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O=5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$		-	-0.65	-	mV/°C

WT78L06 (Refer to the test circuits, $T_j=0\sim 125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=12\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=12\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $8.5\text{V} \leq V_{in} \leq 20\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $8.5\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	5.82 5.70	6.0 -	6.18 6.30	V
Line Regulation $8.5\text{V} \leq V_{in} \leq 20\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $9\text{V} \leq V_{in} \leq 20\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	64 54	175 125	mV
Load Regulation $V_{in} = 12\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 12\text{V}$, $1\text{mA} \leq I_O \leq 70\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	12.8 5.8	80 40	mV
Quiescent Current $V_{in} = 12\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	3.9	6.0	mA
Quiescent Current Change $V_{in} = 12\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $9\text{V} \leq V_{in} \leq 20\text{V}$, $I_O=40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	49	-	μV
Ripple Rejection $10\text{V} \leq V_{in} \leq 20\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	40	46	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O = 5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$	-	0.75	-	$\text{mV}/^{\circ}\text{C}$

WT78L08 (Refer to the test circuits, $T_j=0\sim 125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=14\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=14\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $10.5\text{V} \leq V_{in} \leq 23\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $10.5\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	7.76 7.60	8.0 -	8.24 8.40	V
Line Regulation $10.5\text{V} \leq V_{in} \leq 23\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $11\text{V} \leq V_{in} \leq 23\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	10 8	175 125	mV
Load Regulation $V_{in} = 14\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 14\text{V}$, $1\text{mA} \leq I_O \leq 70\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	15 8	80 40	mV
Quiescent Current $V_{in} = 14\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	2.0	5.5	mA
Quiescent Current Change $V_{in} = 14\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $11\text{V} \leq V_{in} \leq 23\text{V}$, $I_O = 40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	49	-	μV
Ripple Rejection $11\text{V} \leq V_{in} \leq 21\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	39	45	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O = 5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$	-	0.75	-	$\text{mV}/^{\circ}\text{C}$

WT78L09 (Refer to the test circuits, $T_j=0\sim 125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=15\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=15\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $11.5\text{V} \leq V_{in} \leq 24\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $11.5\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	8.73 8.55	9.0 -	9.27 9.45	V
Line Regulation $11.5\text{V} \leq V_{in} \leq 24\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $13\text{V} \leq V_{in} \leq 24\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	90 100	200 150	mV
Load Regulation $V_{in} = 15\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 15\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	20 10	90 45	mV
Quiescent Current $V_{in} = 15\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	2.0	6.0	mA
Quiescent Current Change $V_{in} = 15\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $13\text{V} \leq V_{in} \leq 24\text{V}$, $I_O=40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	49	-	μV
Ripple Rejection $12\text{V} \leq V_{in} \leq 23\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	38	44	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O = 5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$	-	0.75	-	$\text{mV}/^{\circ}\text{C}$

WT78L10 (Refer to the test circuits, $T_j=0\sim 125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=17\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=17\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $13\text{V} \leq V_{in} \leq 25\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $13\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	9.70 9.50	10.0 -	10.30 10.50	V
Line Regulation $13\text{V} \leq V_{in} \leq 25\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $14\text{V} \leq V_{in} \leq 25\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	51 42	175 125	mV
Load Regulation $V_{in} = 17\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 17\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	20 11	90 40	mV
Quiescent Current $V_{in} = 17\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	4.2	6.0	mA
Quiescent Current Change $V_{in} = 17\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $14\text{V} \leq V_{in} \leq 25\text{V}$, $I_O=40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	62	-	μV
Ripple Rejection $15\text{V} \leq V_{in} \leq 25\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	37	44	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V

WT78L12 (Refer to the test circuits, $T_j=0\sim 125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=19\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=19\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $14.5\text{V} \leq V_{in} \leq 27\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $14.5\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	11.64 11.40	12.0 -	12.36 12.60	V
Line Regulation $14.5\text{V} \leq V_{in} \leq 27\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $16\text{V} \leq V_{in} \leq 27\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	25 20	300 250	mV
Load Regulation $V_{in} = 19\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 19\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	25 12	150 75	mV
Quiescent Current $V_{in} = 19\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	2.0	6.0	mA
Quiescent Current Change $V_{in} = 19\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $16\text{V} \leq V_{in} \leq 27\text{V}$, $I_O=40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	80	-	μV
Ripple Rejection $15\text{V} \leq V_{in} \leq 25\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	37	65	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O = 5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$	-	-1.0	-	mV/ $^{\circ}\text{C}$

WT78L15 (Refer to the test circuits, $T_j=0\sim 125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=23\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=23\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $17.5\text{V} \leq V_{in} \leq 30\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $17.5\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	14.55 14.25	15.0 -	15.45 15.75	V
Line Regulation $17.5\text{V} \leq V_{in} \leq 30\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $20\text{V} \leq V_{in} \leq 30\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	25 15	150 75	mV
Load Regulation $V_{in} = 23\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 23\text{V}$, $1\text{mA} \leq I_O \leq 70\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	20 25	150 150	mV
Quiescent Current $V_{in} = 23\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	2.2	6.5	mA
Quiescent Current Change $V_{in} = 23\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $20\text{V} \leq V_{in} \leq 30\text{V}$, $I_O=40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	90	-	μV
Ripple Rejection $18.5\text{V} \leq V_{in} \leq 28.5\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	34	63	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O = 5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$	-	-1.3	-	mV/ $^{\circ}\text{C}$

WT78L18 (Refer to the test circuits, $T_j=0\sim125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=27\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=27\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $21\text{V} \leq V_{in} \leq 33\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $21\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	17.46 17.10	18.0 -	18.54 18.90	V
Line Regulation $21\text{V} \leq V_{in} \leq 33\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $22\text{V} \leq V_{in} \leq 33\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	145 135	300 250	mV
Load Regulation $V_{in} = 27\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 27\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	30 15	170 85	mV
Quiescent Current $V_{in} = 27\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	2.0	6.0	mA
Quiescent Current Change $V_{in} = 27\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $21\text{V} \leq V_{in} \leq 33\text{V}$, $I_O=40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	150	-	μV
Ripple Rejection $23\text{V} \leq V_{in} \leq 33\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	34	48	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O = 5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$	-	-1.8	-	$\text{mV}/^{\circ}\text{C}$

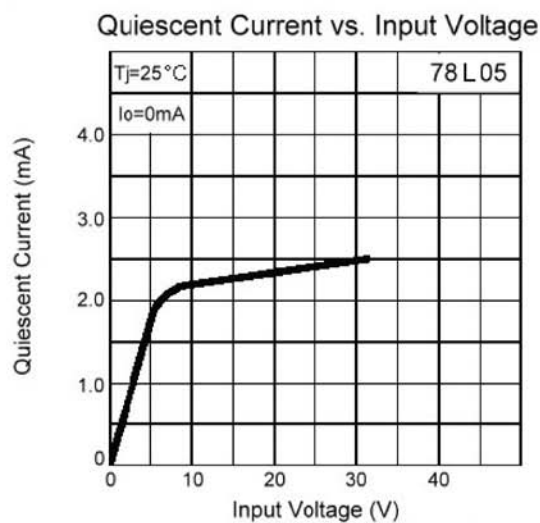
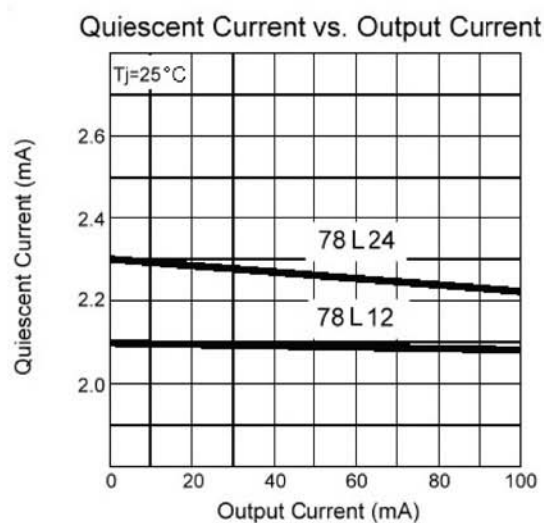
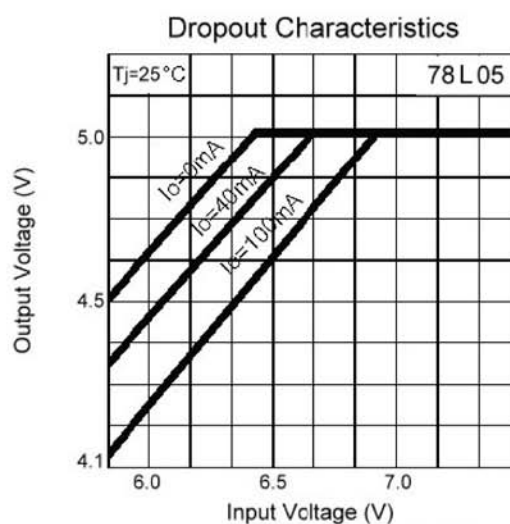
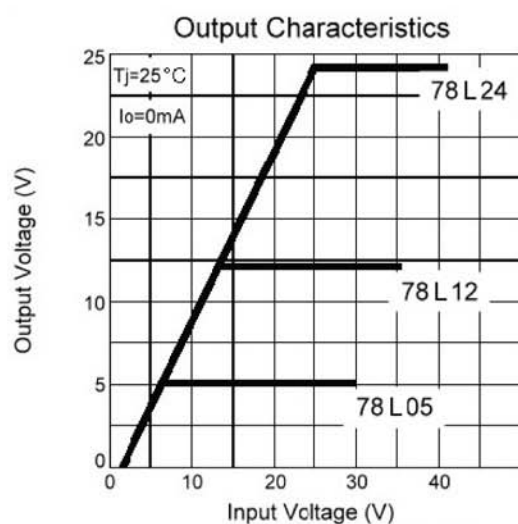
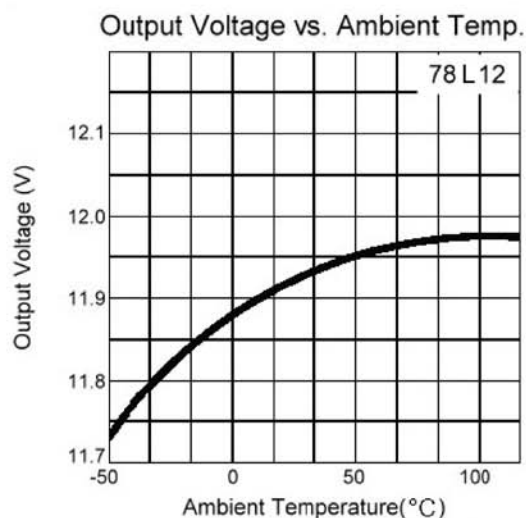
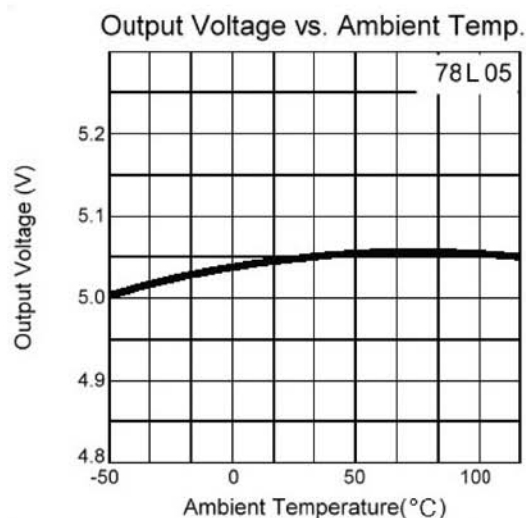
WT78L24 (Refer to the test circuits, $T_j=0\sim125^{\circ}\text{C}$, $I_O=40\text{mA}$, $V_{in}=33\text{V}$, $C_{in}=0.33\mu\text{F}$, $C_O=0.1\mu\text{F}$ unless otherwise specified)

Parameter	Symbol	Min	Typ	Max	Unit
Output Voltage $V_{in}=33\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $27\text{V} \leq V_{in} \leq 38\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $27\text{V} \leq V_{in} \leq V_{max}$, $1\text{mA} \leq I_O \leq 70\text{mA}$ (Note2)	V_O A-Rank(3%) B-Rank(5%)	23.28 22.80	24.0 -	24.72 25.20	V
Line Regulation $27\text{V} \leq V_{in} \leq 38\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$ $28\text{V} \leq V_{in} \leq 38\text{V}$, $I_O=40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	160 150	300 250	mV
Load Regulation $V_{in} = 33\text{V}$, $1\text{mA} \leq I_O \leq 100\text{mA}$, $T_j=25^{\circ}\text{C}$ $V_{in} = 33\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$, $T_j=25^{\circ}\text{C}$	ΔV_O	- -	40 20	200 100	mV
Quiescent Current $V_{in} = 33\text{V}$, $I_O = 0\text{mA}$, $T_j=25^{\circ}\text{C}$	I_Q	-	2.2	6.0	mA
Quiescent Current Change $V_{in} = 33\text{V}$, $1\text{mA} \leq I_O \leq 40\text{mA}$ $27\text{V} \leq V_{in} \leq 38\text{V}$, $I_O=40\text{mA}$	ΔI_Q	- -	- -	0.1 1.5	mA
Output Noise Voltage $10\text{Hz} \leq f \leq 100\text{KHz}$	V_n	-	200	-	μV
Ripple Rejection $27\text{V} \leq V_{in} \leq 38\text{V}$, $f=120\text{Hz}$, $T_j=25^{\circ}\text{C}$	RR	34	45	-	dB
Dropout Voltage $I_O = 100\text{mA}$, $T_j=25^{\circ}\text{C}$	V_D	-	1.7	-	V
Temperature Coefficient of Output Voltage $I_O = 5\text{mA}$, $0^{\circ}\text{C} \leq T_j \leq 125^{\circ}\text{C}$	$\Delta V_O / \Delta T_j$	-	-2.0	-	$\text{mV}/^{\circ}\text{C}$

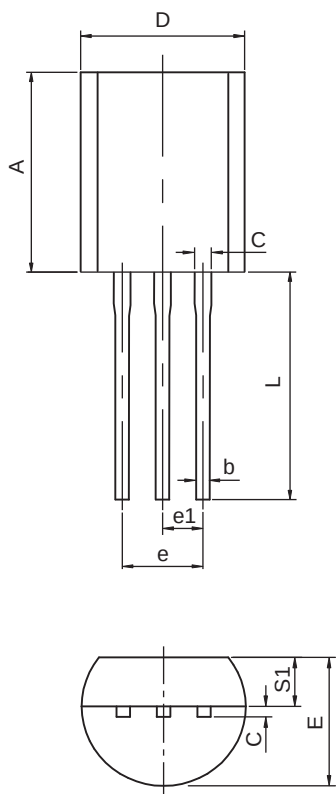
Note1: The Maximum steady state usable output current is dependent on input voltage, heat sinking, lead length of the package and copper of PCB. The data above represent pulse test conditions with junction temperatures specified at the initiation of test.

Note2: Power dissipation $< 0.75\text{W}$

Typical Performance Characteristics

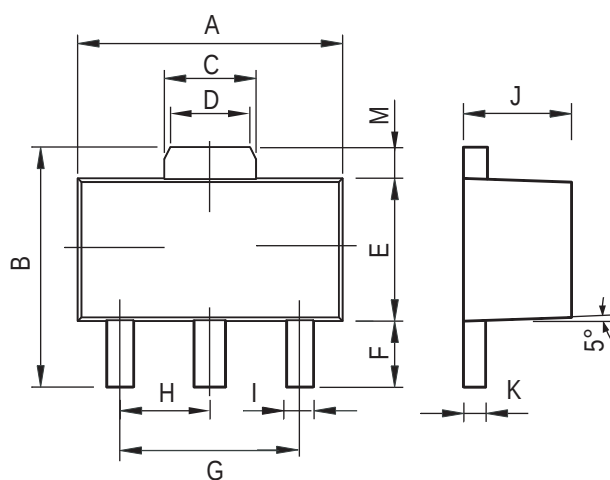


TO-92 PACKAGE OUTLINE DIMENSIONS(Unit:mm)



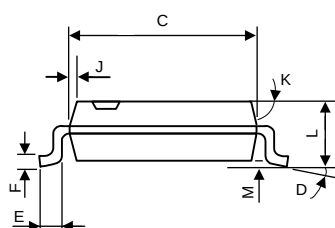
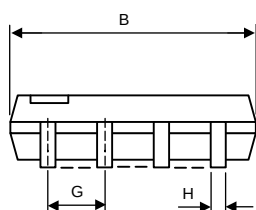
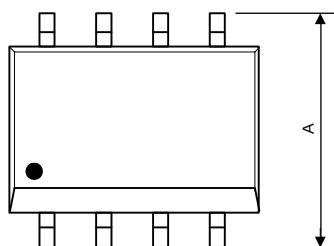
TO-92		
Dim	Min	Max
A	4.45	4.70
C	0.36	0.51
D	4.44	4.70
E	3.30	3.81
L	12.70	-
b	0.36	0.51
b1	0.36	0.76
e	2.42	2.66
e1	1.15	1.39
S1	1.02	-

SOT-89 PACKAGE OUTLINE DIMENSIONS(Unit:mm)



SOT-89		
Dim	Min	Max
A	4.40	4.60
B	4.05	4.25
C	1.50	1.70
D	1.30	1.50
E	2.40	2.60
F	0.89	1.20
G	3.00 REF	
H	1.50 REF	
I	0.40	0.52
J	1.40	1.60
K	0.35	0.41
M	0.70 REF	

SOP-8 PACKAGE OUTLINE DIMENSIONS(Unit:mm)



SOP-8		
Dim	Min	Max
A	5.80	6.20
B	4.80	5.00
C	3.80	4.00
D	0°	8°
E	0.40	0.90
F	0.19	0.25
M	0.10	0.25
H	0.35	0.49
L	1.35	1.75
J	0.375 REF	
K	45°	
G	1.27 TYP	