



L78M00T Series

5 to 24V 0.5A 3-Pin Voltage Regulators

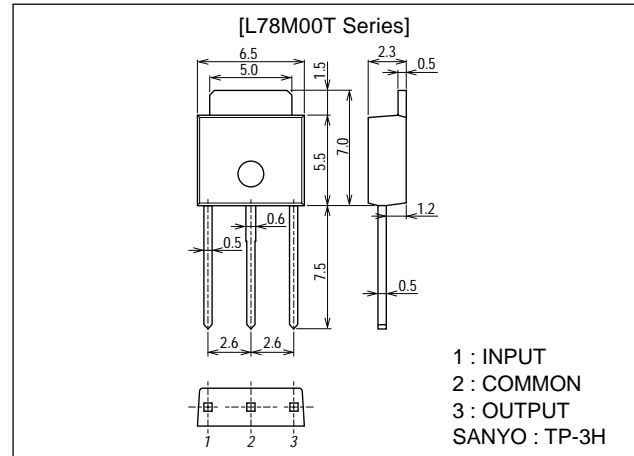
Features

- Output voltage
 L78M05T : 5V L78M06T : 6V L78M07T : 7V
 L78M08T : 8V L78M09T : 9V L78M10T : 10V
 L78M12T : 12V L78M15T : 15V L78M18T : 18V
 L78M20T : 20V L78M24T : 24V
- 500mA output.
- On-chip thermal protector.
- On-chip overcurrent limiter.
- On-chip ASO protector.
- Small-sized power package TP-3H permitting the equipment to be made compact.
- The allowable power dissipation can be increased by being surface-mounted on the board.
- Capable of being mounted in a variety of methods because of various lead forming versions available.

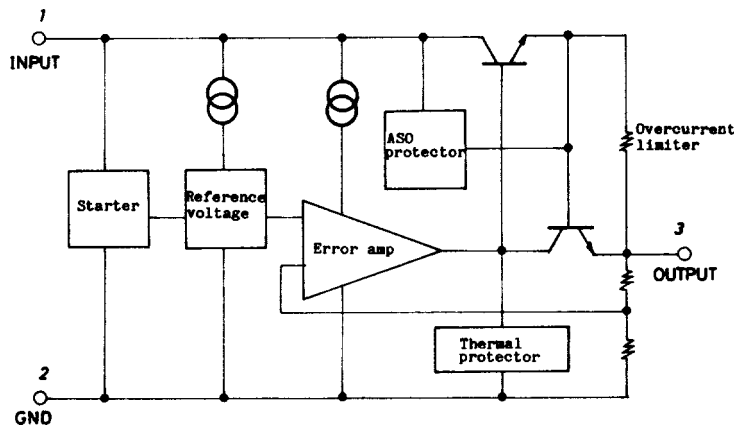
Package Dimensions

unit:mm

3110



Equivalent Circuit



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L78M00T Series

Specifications

[Common to L78M00T series]

Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum Supply Voltage	$V_{CC\ max}$	Pin 1	35	V
Allowable Power Dissipation	$P_d\ max$	No fin	1.0	W
Operating Temperature	T_{opr}		-20 to +80	$^\circ\text{C}$
Storage Temperature	T_{stg}		-40 to +150	$^\circ\text{C}$

[L78M05T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		7.5 to 20	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=10\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	4.8	5.0	5.2	V
Line Regulation	$\Delta V_o\ \text{LINE}$	$T_j=25^\circ\text{C}$, $7\text{V}\leq V_{IN}\leq 25\text{V}$, $I_{OUT}=200\text{mA}$		3.0	50	mV
		$T_j=25^\circ\text{C}$, $8\text{V}\leq V_{IN}\leq 20\text{V}$, $I_{OUT}=200\text{mA}$		1.0	25	mV
Load Regulation	$\Delta V_o\ \text{LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA}\leq I_{OUT}\leq 500\text{mA}$			100	mV
		$T_j=25^\circ\text{C}$, $5\text{mA}\leq I_{OUT}\leq 200\text{mA}$			50	mV
Output Voltage	V_{OUT}	$7\text{V}\leq V_{IN}\leq 20\text{V}$, $5\text{mA}\leq I_{OUT}\leq 350\text{mA}$	4.75		5.25	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.5	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC}\ \text{LINE}$	$8\text{V}\leq V_{IN}\leq 25\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC}\ \text{LOAD}$	$5\text{mA}\leq I_{OUT}\leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz}\leq f\leq 100\text{kHz}$		40		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $8\text{V}\leq V_{IN}\leq 19\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	62			dB
		$f=120\text{Hz}$, $8\text{V}\leq V_{IN}\leq 19\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	62	80		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

[L78M06T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		8.5 to 21	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=11\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	5.75	6.0	6.25	V
Line Regulation	$\Delta V_o\ \text{LINE}$	$T_j=25^\circ\text{C}$, $8\text{V}\leq V_{IN}\leq 25\text{V}$, $I_{OUT}=200\text{mA}$		5.0	60	mV
		$T_j=25^\circ\text{C}$, $9\text{V}\leq V_{IN}\leq 20\text{V}$, $I_{OUT}=200\text{mA}$		1.5	30	mV
Load Regulation	$\Delta V_o\ \text{LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA}\leq I_{OUT}\leq 500\text{mA}$			120	mV
		$T_j=25^\circ\text{C}$, $5\text{mA}\leq I_{OUT}\leq 200\text{mA}$			60	mV
Output Voltage	V_{OUT}	$8\text{V}\leq V_{IN}\leq 21\text{V}$, $5\text{mA}\leq I_{OUT}\leq 350\text{mA}$	5.7		6.3	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.5	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC}\ \text{LINE}$	$9\text{V}\leq V_{IN}\leq 25\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC}\ \text{LOAD}$	$5\text{mA}\leq I_{OUT}\leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz}\leq f\leq 100\text{kHz}$		45		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $9\text{V}\leq V_{IN}\leq 20\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	59			dB
		$f=120\text{Hz}$, $9\text{V}\leq V_{IN}\leq 20\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	59	80		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

L78M00T Series

[L78M07T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		9.5 to 22	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=12\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	6.72	7.0	7.28	V
Line Regulation	$\Delta V_o \text{ LINE}$	$T_j=25^\circ\text{C}$, $9\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$		6.0	60	mV
		$T_j=25^\circ\text{C}$, $10\text{V} \leq V_{IN} \leq 20\text{V}$, $I_{OUT}=200\text{mA}$		2.0	30	mV
Load Regulation	$\Delta V_o \text{ LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			140	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			70	mV
Output Voltage	V_{OUT}	$9\text{V} \leq V_{IN} \leq 22\text{V}$, $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	6.6		7.4	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.6	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC} \text{ LINE}$	$10\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC} \text{ LOAD}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		48		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $10\text{V} \leq V_{IN} \leq 21\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	58			dB
		$f=120\text{Hz}$, $10\text{V} \leq V_{IN} \leq 21\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	58	80		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

[L78M08T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		10.5 to 23	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=15\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	7.7	8.0	8.3	V
Line Regulation	$\Delta V_o \text{ LINE}$	$T_j=25^\circ\text{C}$, $10.5\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$		6.0	60	mV
		$T_j=25^\circ\text{C}$, $11\text{V} \leq V_{IN} \leq 20\text{V}$, $I_{OUT}=200\text{mA}$		2.0	30	mV
Load Regulation	$\Delta V_o \text{ LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			160	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			80	mV
Output Voltage	V_{OUT}	$10.5\text{V} \leq V_{IN} \leq 23\text{V}$, $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	7.6		8.4	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.6	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC} \text{ LINE}$	$11\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC} \text{ LOAD}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		50		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $11.5\text{V} \leq V_{IN} \leq 22\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	56			dB
		$f=120\text{Hz}$, $11.5\text{V} \leq V_{IN} \leq 22\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	56	80		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

L78M00T Series

[L78M09T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		12 to 25	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=16\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	8.6	9.0	9.4	V
Line Regulation	ΔV_o LINE	$T_j=25^\circ\text{C}$, $11.5\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$		6.0	100	mV
		$T_j=25^\circ\text{C}$, $12\text{V} \leq V_{IN} \leq 20\text{V}$, $I_{OUT}=200\text{mA}$		2.0	50	mV
Load Regulation	ΔV_o LOAD	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			180	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			90	mV
Output Voltage	V_{OUT}	$11.5\text{V} \leq V_{IN} \leq 24\text{V}$, $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	8.5		9.5	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.6	6.0	mA
Current Dissipation Variation (Line)	ΔI_{CC} LINE	$12.5\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	ΔI_{CC} LOAD	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		60		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $12\text{V} \leq V_{IN} \leq 23\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	56			dB
		$f=120\text{Hz}$, $12\text{V} \leq V_{IN} \leq 23\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	56	80		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

[L78M10T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		13 to 25	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=17\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	9.6	10.0	10.4	V
Line Regulation	ΔV_o LINE	$T_j=25^\circ\text{C}$, $12.5\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$		7.0	100	mV
		$T_j=25^\circ\text{C}$, $13\text{V} \leq V_{IN} \leq 22\text{V}$, $I_{OUT}=200\text{mA}$		2.0	50	mV
Load Regulation	ΔV_o LOAD	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			200	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			100	mV
Output Voltage	V_{OUT}	$12.5\text{V} \leq V_{IN} \leq 25\text{V}$, $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	9.5		10.5	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.6	6.0	mA
Current Dissipation Variation (Line)	ΔI_{CC} LINE	$13.5\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	ΔI_{CC} LOAD	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		65		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $13\text{V} \leq V_{IN} \leq 25\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	55			dB
		$f=120\text{Hz}$, $13\text{V} \leq V_{IN} \leq 25\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	55	80		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

L78M00T Series

[L78M12T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		15 to 25	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=19\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	11.5	12.0	12.5	V
Line Regulation	$\Delta V_o \text{ LINE}$	$T_j=25^\circ\text{C}$, $14.5\text{V} \leq V_{IN} \leq 30\text{V}$, $I_{OUT}=200\text{mA}$		8.0	100	mV
		$T_j=25^\circ\text{C}$, $16\text{V} \leq V_{IN} \leq 25\text{V}$, $I_{OUT}=200\text{mA}$		2.0	50	mV
Load Regulation	$\Delta V_o \text{ LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			240	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			120	mV
Output Voltage	V_{OUT}	$14.5\text{V} \leq V_{IN} \leq 27\text{V}$, $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	11.4		12.6	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.8	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC} \text{ LINE}$	$15\text{V} \leq V_{IN} \leq 30\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC} \text{ LOAD}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		75		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $15\text{V} \leq V_{IN} \leq 25\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	55			dB
		$f=120\text{Hz}$, $15\text{V} \leq V_{IN} \leq 25\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	55	80		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

[L78M15T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		18 to 30	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=23\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	14.4	15.0	15.6	V
Line Regulation	$\Delta V_o \text{ LINE}$	$T_j=25^\circ\text{C}$, $17.5\text{V} \leq V_{IN} \leq 30\text{V}$, $I_{OUT}=200\text{mA}$		10.0	100	mV
		$T_j=25^\circ\text{C}$, $19\text{V} \leq V_{IN} \leq 30\text{V}$, $I_{OUT}=200\text{mA}$		3.0	50	mV
Load Regulation	$\Delta V_o \text{ LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			300	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			150	mV
Output Voltage	V_{OUT}	$17.5\text{V} \leq V_{IN} \leq 30\text{V}$, $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	14.25		15.75	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.8	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC} \text{ LINE}$	$17.5\text{V} \leq V_{IN} \leq 30\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC} \text{ LOAD}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		90		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $18.5\text{V} \leq V_{IN} \leq 28.5\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	54			dB
		$f=120\text{Hz}$, $18.5\text{V} \leq V_{IN} \leq 28.5\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	54	70		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

L78M00T Series

[L78M18T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		21 to 33	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=27\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	17.3	18.0	18.7	V
Line Regulation	$\Delta V_o \text{ LINE}$	$T_j=25^\circ\text{C}$, $21\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$		10.0	100	mV
		$T_j=25^\circ\text{C}$, $22\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$		5.0	50	mV
Load Regulation	$\Delta V_o \text{ LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			360	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			180	mV
Output Voltage	V_{OUT}	$21\text{V} \leq V_{IN} \leq 33\text{V}$, $5\text{mA} \leq I_{OUT} = 350\text{mA}$	17.1		18.9	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.9	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC} \text{ LINE}$	$21\text{V} \leq V_{IN} \leq 33\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC} \text{ LOAD}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		100		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $22\text{V} \leq V_{IN} \leq 33\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	53			dB
		$f=120\text{Hz}$, $22\text{V} \leq V_{IN} \leq 33\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	53	70		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

[L78M20T]

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		23 to 35	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=29\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	19.2	20.0	20.8	V
Line Regulation	$\Delta V_o \text{ LINE}$	$T_j=25^\circ\text{C}$, $23\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$		10.0	100	mV
		$T_j=25^\circ\text{C}$, $24\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$		5.0	50	mV
Load Regulation	$\Delta V_o \text{ LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			400	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			200	mV
Output Voltage	V_{OUT}	$23\text{V} \leq V_{IN} \leq 35\text{V}$, $5\text{mA} \leq I_{OUT} = 350\text{mA}$	19.0		21.0	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		4.9	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC} \text{ LINE}$	$23\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC} \text{ LOAD}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		110		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $24\text{V} \leq V_{IN} \leq 34\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	53			dB
		$f=120\text{Hz}$, $24\text{V} \leq V_{IN} \leq 34\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	53	70		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

L78M00T Series

[L78M24T]

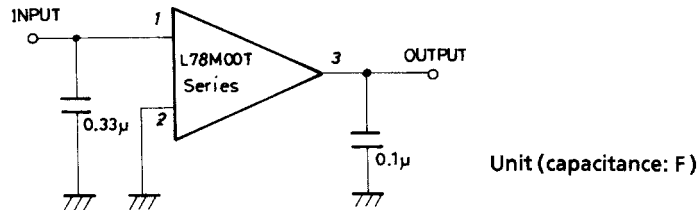
Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Input Voltage	V_{IN}		27 to 35	V
Output Current	I_{OUT}		5 to 500	mA

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{IN}=33\text{V}$, $I_{OUT}=350\text{mA}$, See specified Test Circuit.

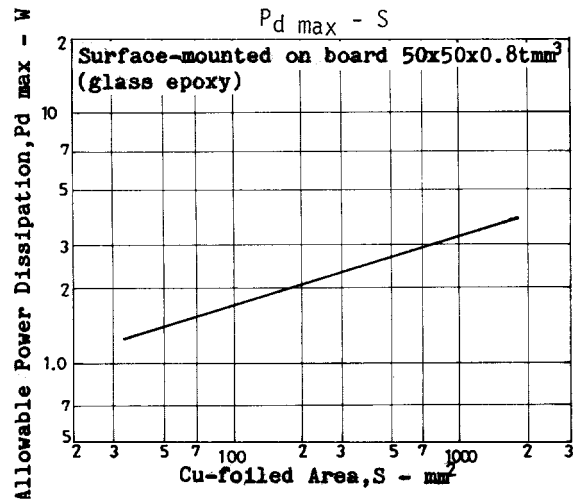
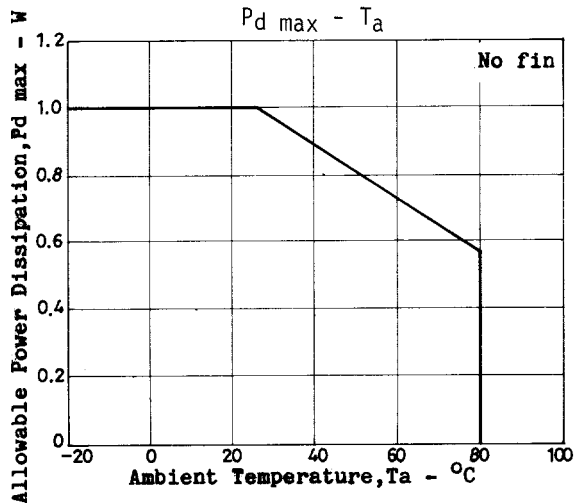
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Voltage	V_{OUT}	$T_j=25^\circ\text{C}$	23.0	24.0	25.0	V
Line Regulation	$\Delta V_o \text{ LINE}$	$T_j=25^\circ\text{C}$, $27\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$		10.0	100	mV
		$T_j=25^\circ\text{C}$, $28\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$		5.0	50	mV
Load Regulation	$\Delta V_o \text{ LOAD}$	$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			480	mV
		$T_j=25^\circ\text{C}$, $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			240	mV
Output Voltage	V_{OUT}	$27\text{V} \leq V_{IN} \leq 35\text{V}$, $5\text{mA} \leq I_{OUT} = 350\text{mA}$	22.8		25.2	V
Current Dissipation	I_{CC}	$T_j=25^\circ\text{C}$		5.0	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CC} \text{ LINE}$	$27\text{V} \leq V_{IN} \leq 35\text{V}$, $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CC} \text{ LOAD}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	V_{NO}	$10\text{Hz} \leq f \leq 100\text{kHz}$		170		μV
Ripple Rejection	Rrej	$f=120\text{Hz}$, $28\text{V} \leq V_{IN} \leq 35\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=100\text{mA}$	50			dB
		$f=120\text{Hz}$, $28\text{V} \leq V_{IN} \leq 35\text{V}$, $T_j=25^\circ\text{C}$, $I_{OUT}=300\text{mA}$	50	70		dB
Minimum Input-Output Voltage Drop	V_{DROP}	$I_{OUT}=350\text{mA}$		2.0		V
Short Current	I_{OS}	$T_j=25^\circ\text{C}$, $V_{IN}=35\text{V}$, to GND		300		mA
Peak Output Current	I_{OP}	$T_j=25^\circ\text{C}$		0.7		A

Specified Test Circuit (Common to L78M00T series)



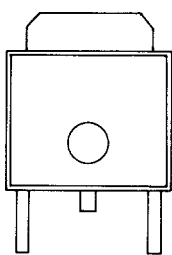
The allowable power dissipation ($P_d \text{ max}$) is 1.0W ($T_a=25^\circ\text{C}$) with no fin attached. When the L78M00T series are surface-mounted on a hybrid IC board or printed circuit board, a high allowable power dissipation can be obtained, though they are placed in a small-sized package.

Shown below is the relationship between the Cu-foiled area and the allowable power dissipation when the L78M00T series are surface-mounted on a glass epoxy board ($50 \times 50 \times 0.8\text{mm}^3$).

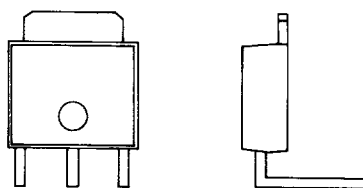


L78M00T Series

Lead Formings



FA forming



LR forming

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