

**SANYO**

No.2609B

**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

**[Common to L78M00T series]**

**Maximum Ratings at Ta=25°C**

Maximum Supply Voltage	V <sub>CC</sub> max	Pin 1	35	V
Allowable Power Dissipation	Pd max	No fin	1.0	W
Operating Temperature	T <sub>opr</sub>		-20 to +80	°C
Storage Temperature	T <sub>stg</sub>		-40 to +150	°C

**[L78M05T]**

**Recommended Operating Conditions at Ta=25°C**

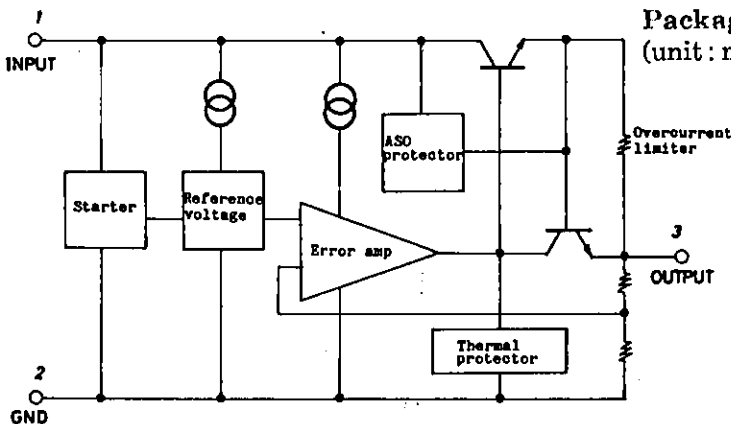
Input Voltage	V <sub>IN</sub>	7.5 to 20	V
Output Current	I <sub>OUT</sub>	5 to 500	mA

**Operating Characteristics at Ta=25°C, V<sub>IN</sub>=10V, I<sub>OUT</sub>=350mA,  
See specified Test Circuit.**

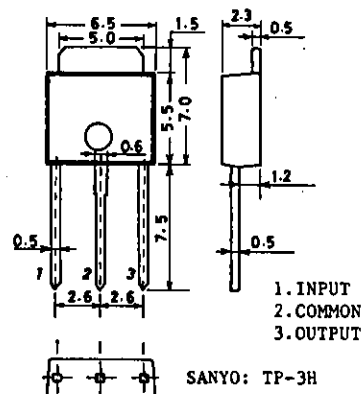
Output Voltage	V <sub>OUT</sub>	T <sub>j</sub> =25°C	4.8	5.0	5.2	V
Line Regulation	ΔV <sub>oline</sub>	T <sub>j</sub> =25°C, 7V ≤ V <sub>IN</sub> ≤ 25V, I <sub>OUT</sub> =200mA	3.0	50		mV
		T <sub>j</sub> =25°C, 8V ≤ V <sub>IN</sub> ≤ 20V, I <sub>OUT</sub> =200mA	1.0	25		mV

Continued on next page.

**Equivalent Circuit**



**Package Dimensions 3110 (unit: mm)**



L78M00T Series

Continued from preceding page.

			min	typ	max	unit
Load Regulation	$\Delta V_{\text{oload}}$	$T_j=25^\circ\text{C}, 5\text{mA} \leq I_{\text{OUT}} \leq 500\text{mA}$ $T_j=25^\circ\text{C}, 5\text{mA} \leq I_{\text{OUT}} \leq 200\text{mA}$			100	mV
Output Voltage	$V_{\text{OUT}}$	$7\text{V} \leq V_{\text{IN}} \leq 20\text{V}, 5\text{mA} \leq I_{\text{OUT}} \leq 350\text{mA}$	4.75		5.25	V
Current Dissipation	$I_{\text{CC}}$	$T_j=25^\circ\text{C}$		4.5	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{\text{CCline}}$	$8\text{V} \leq V_{\text{IN}} \leq 25\text{V}, I_{\text{OUT}}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{\text{CCload}}$	$5\text{mA} \leq I_{\text{OUT}} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_{\text{NO}}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		40		$\mu\text{V}$
Ripple Rejection	$R_{\text{rej}}$	$f=120\text{Hz}$ $8\text{V} \leq V_{\text{IN}} \leq 19\text{V}$ $T_j=25^\circ\text{C}$	62		80	dB
Minimum Input-Output Voltage Drop	$V_{\text{drop}}$	$I_{\text{OUT}}=350\text{mA}$			2.0	V
Short Current	$I_{\text{OS}}$	$T_j=25^\circ\text{C}, V_{\text{IN}}=35\text{V}, \text{to GND}$			300	mA
Peak Output Current	$I_{\text{op}}$	$T_j=25^\circ\text{C}$			0.7	A

[L78M06T]

Recommended Operating Conditions at $T_a=25^\circ\text{C}$			unit
Input Voltage	$V_{\text{IN}}$	8.5 to 21	V
Output Current	$I_{\text{OUT}}$	5 to 500	mA

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

			min	typ	max	unit
Output Voltage	$V_{\text{OUT}}$	$T_j=25^\circ\text{C}$	5.75	6.0	6.25	V
Line Regulation	$\Delta V_{\text{oline}}$	$T_j=25^\circ\text{C}, 8\text{V} \leq V_{\text{IN}} \leq 25\text{V}, I_{\text{OUT}}=200\text{mA}$ $T_j=25^\circ\text{C}, 9\text{V} \leq V_{\text{IN}} \leq 20\text{V}, I_{\text{OUT}}=200\text{mA}$		5.0	60	mV
Load Regulation	$\Delta V_{\text{oload}}$	$T_j=25^\circ\text{C}, 5\text{mA} \leq I_{\text{OUT}} \leq 500\text{mA}$ $T_j=25^\circ\text{C}, 5\text{mA} \leq I_{\text{OUT}} \leq 200\text{mA}$		1.5	30	mV
Output Voltage	$V_{\text{OUT}}$	$8\text{V} \leq V_{\text{IN}} \leq 21\text{V}, 5\text{mA} \leq I_{\text{OUT}} \leq 350\text{mA}$	5.7		6.3	V
Current Dissipation	$I_{\text{CC}}$	$T_j=25^\circ\text{C}$		4.5	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{\text{CCline}}$	$9\text{V} \leq V_{\text{IN}} \leq 25\text{V}, I_{\text{OUT}}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{\text{CCload}}$	$5\text{mA} \leq I_{\text{OUT}} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_{\text{NO}}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		45		$\mu\text{V}$
Ripple Rejection	$R_{\text{rej}}$	$f=120\text{Hz}$ $9\text{V} \leq V_{\text{IN}} \leq 20\text{V}$ $T_j=25^\circ\text{C}$	59		80	dB
Minimum Input-Output Voltage Drop	$V_{\text{drop}}$	$I_{\text{OUT}}=350\text{mA}$			2.0	V
Short Current	$I_{\text{OS}}$	$T_j=25^\circ\text{C}, V_{\text{IN}}=35\text{V}, \text{to GND}$			300	mA
Peak Output Current	$I_{\text{op}}$	$T_j=25^\circ\text{C}$			0.7	A

[L78M07T]

Recommended Operating Conditions at $T_a=25^\circ\text{C}$			unit
Input Voltage	$V_{\text{IN}}$	9.5 to 22	V
Output Current	$I_{\text{OUT}}$	5 to 500	mA

## L78M00T Series

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

			min	typ	max	unit
Output Voltage	$V_{OUT}$	$T_j=25^\circ\text{C}$	6.72	7.0	7.28	V
Line Regulation	$\Delta V_{oline}$	$T_j=25^\circ\text{C}$ , $9\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$		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	$\Delta V_{oload}$	$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			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)	$\Delta I_{CCline}$	$10\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CCload}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_{NO}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		48		$\mu\text{V}$
Ripple Rejection	$R_{rej}$	$f=120\text{Hz}$	58			dB
		$10\text{V} \leq V_{IN} \leq 21\text{V}$		58	80	dB
		$T_j=25^\circ\text{C}$				
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  $T_a=25^\circ\text{C}$**

			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.**

			min	typ	max	unit
Output Voltage	$V_{OUT}$	$T_j=25^\circ\text{C}$	7.7	8.0	8.3	V
Line Regulation	$\Delta V_{oline}$	$T_j=25^\circ\text{C}$ , $10.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$		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	$\Delta V_{oload}$	$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			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)	$\Delta I_{CCline}$	$11\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CCload}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_{NO}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		50		$\mu\text{V}$
Ripple Rejection	$R_{rej}$	$f=120\text{Hz}$	56			dB
		$11.5\text{V} \leq V_{IN} \leq 22\text{V}$		56	80	dB
		$T_j=25^\circ\text{C}$				
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

### [L78M09T]

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

			unit
Input Voltage	$V_{IN}$	12 to 25	V
Output Current	$I_{OUT}$	5 to 500	mA

## L78M00T Series

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

			min	typ	max	unit
Output Voltage	$V_{OUT}$	$T_j=25^\circ\text{C}$	8.6	9.0	9.4	V
Line Regulation	$\Delta V_{oline}$	$T_j=25^\circ\text{C}$ , $11.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$		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	$\Delta V_{oload}$	$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			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)	$\Delta I_{CCline}$	$12.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CCload}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_{NO}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		60		$\mu\text{V}$
Ripple Rejection	$R_{rej}$	$f=120\text{Hz}$		56		dB
		$12\text{V} \leq V_{IN} \leq 23\text{V}$		56	80	dB
		$T_j=25^\circ\text{C}$				
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  $T_a=25^\circ\text{C}$**

			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.**

			min	typ	max	unit
Output Voltage	$V_{OUT}$	$T_j=25^\circ\text{C}$	9.6	10.0	10.4	V
Line Regulation	$\Delta V_{oline}$	$T_j=25^\circ\text{C}$ , $12.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$		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	$\Delta V_{oload}$	$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			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)	$\Delta I_{CCline}$	$13.5\text{V} \leq V_{IN} \leq 25\text{V}$ , $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CCload}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_{NO}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		65		$\mu\text{V}$
Ripple Rejection	$R_{rej}$	$f=120\text{Hz}$		55		dB
		$13\text{V} \leq V_{IN} \leq 25\text{V}$		55	80	dB
		$T_j=25^\circ\text{C}$				
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]

<b>Recommended Operating Conditions at Ta=25°C</b>				unit
Input Voltage	V <sub>IN</sub>	15 to 25	V	
Output Current	I <sub>OUT</sub>	5 to 500	mA	

**Operating Characteristics at Ta=25°C, V<sub>IN</sub>=19V, I<sub>OUT</sub>=350mA,**  
See specified Test Circuit.

			min	typ	max	unit
Output Voltage	V <sub>OUT</sub>	T <sub>j</sub> =25°C	11.5	12.0	12.5	V
Line Regulation	ΔV <sub>oline</sub>	T <sub>j</sub> =25°C, 14.5V ≤ V <sub>IN</sub> ≤ 30V, I <sub>OUT</sub> =200mA	8.0	100		mV
Load Regulation	ΔV <sub>oload</sub>	T <sub>j</sub> =25°C, 16V ≤ V <sub>IN</sub> ≤ 25V, I <sub>OUT</sub> =200mA	2.0	50		mV
		T <sub>j</sub> =25°C, 5mA ≤ I <sub>OUT</sub> ≤ 500mA			240	mV
Output Voltage	V <sub>OUT</sub>	T <sub>j</sub> =25°C, 5mA ≤ I <sub>OUT</sub> ≤ 200mA		120		mV
Output Voltage	V <sub>OUT</sub>	14.5V ≤ V <sub>IN</sub> ≤ 27V, 5mA ≤ I <sub>OUT</sub> ≤ 350mA	11.4		12.6	V
Current Dissipation	I <sub>CC</sub>	T <sub>j</sub> =25°C	4.8	6.0		mA
Current Dissipation Variation (Line)	ΔI <sub>CCline</sub>	15V ≤ V <sub>IN</sub> ≤ 30V, I <sub>OUT</sub> =200mA			0.8	mA
Current Dissipation Variation (Load)	ΔI <sub>CCload</sub>	5mA ≤ I <sub>OUT</sub> ≤ 350mA			0.5	mA
Output Noise Voltage	V <sub>NO</sub>	10Hz ≤ f ≤ 100kHz		75		μV
Ripple Rejection	R <sub>rej</sub>	f=120Hz		55		dB
		15V ≤ V <sub>IN</sub> ≤ 25V, T <sub>j</sub> =25°C	I <sub>OUT</sub> =100mA	55	80	dB
Minimum Input-Output Voltage Drop	V <sub>drop</sub>	I <sub>OUT</sub> =350mA	2.0			V
Short Current	I <sub>OS</sub>	T <sub>j</sub> =25°C, V <sub>IN</sub> =35V, to GND	300			mA
Peak Output Current	I <sub>op</sub>	T <sub>j</sub> =25°C	0.7			A

### [L78M15T]

<b>Recommended Operating Conditions at Ta=25°C</b>				unit
Input Voltage	V <sub>IN</sub>	18 to 30	V	
Output Current	I <sub>OUT</sub>	5 to 500	mA	

**Operating Characteristics at Ta=25°C, V<sub>IN</sub>=23V, I<sub>OUT</sub>=350mA,**  
See specified Test Circuit.

			min	typ	max	unit
Output Voltage	V <sub>OUT</sub>	T <sub>j</sub> =25°C	14.4	15.0	15.6	V
Line Regulation	ΔV <sub>oline</sub>	T <sub>j</sub> =25°C, 17.5V ≤ V <sub>IN</sub> ≤ 30V, I <sub>OUT</sub> =200mA	10.0	100		mV
Load Regulation	ΔV <sub>oload</sub>	T <sub>j</sub> =25°C, 19V ≤ V <sub>IN</sub> ≤ 30V, I <sub>OUT</sub> =200mA	3.0	50		mV
		T <sub>j</sub> =25°C, 5mA ≤ I <sub>OUT</sub> ≤ 500mA			300	mV
Output Voltage	V <sub>OUT</sub>	T <sub>j</sub> =25°C, 5mA ≤ I <sub>OUT</sub> ≤ 200mA		150		mV
Output Voltage	V <sub>OUT</sub>	17.5V ≤ V <sub>IN</sub> ≤ 30V, 5mA ≤ I <sub>OUT</sub> ≤ 350mA	14.25		15.75	V
Current Dissipation	I <sub>CC</sub>	T <sub>j</sub> =25°C	4.8	6.0		mA
Current Dissipation Variation (Line)	ΔI <sub>CCline</sub>	17.5V ≤ V <sub>IN</sub> ≤ 30V, I <sub>OUT</sub> =200mA			0.8	mA
Current Dissipation Variation (Load)	ΔI <sub>CCload</sub>	5mA ≤ I <sub>OUT</sub> ≤ 350mA			0.5	mA
Output Noise Voltage	V <sub>NO</sub>	10Hz ≤ f ≤ 100kHz		90		μV
Ripple Rejection	R <sub>rej</sub>	f=120Hz		54		dB
		18.5V ≤ V <sub>IN</sub> ≤ 28.5V, T <sub>j</sub> =25°C	I <sub>OUT</sub> =100mA	54	70	dB
Minimum Input-Output Voltage Drop	V <sub>drop</sub>	I <sub>OUT</sub> =350mA	2.0			V
Short Current	I <sub>OS</sub>	T <sub>j</sub> =25°C, V <sub>IN</sub> =35V, to GND	300			mA
Peak Output Current	I <sub>op</sub>	T <sub>j</sub> =25°C	0.7			A

L78M00T Series

[L78M18T]

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

			min	typ	max	unit			
Output Voltage	$V_{OUT}$	$T_j=25^\circ\text{C}$	17.3	18.0	18.7	V			
Line Regulation	$\Delta V_{oline}$	$T_j=25^\circ\text{C}$ , $21\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$	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	$\Delta V_{oload}$	$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			360	mV			
		$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			180	mV			
Output Voltage	$V_{OUT}$	$21\text{V} \leq V_{IN} \leq 33\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	17.1		18.9	V			
Current Dissipation	$I_{CC}$	$T_j=25^\circ\text{C}$	4.9	6.0		mA			
Current Dissipation Variation (Line)	$\Delta I_{CCline}$	$21\text{V} \leq V_{IN} \leq 33\text{V}$ , $I_{OUT}=200\text{mA}$			0.8	mA			
Current Dissipation Variation (Load)	$\Delta I_{CCload}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA			
Output Noise Voltage	$V_{NO}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		100		$\mu\text{V}$			
Ripple Rejection	$R_{rej}$	$f=120\text{Hz}$ $22\text{V} \leq V_{IN} \leq 33\text{V}$ $T_j=25^\circ\text{C}$				$I_{OUT}=100\text{mA}$	53		dB
						$I_{OUT}=300\text{mA}$	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  $T_a=25^\circ\text{C}$  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.

			min	typ	max	unit			
Output Voltage	$V_{OUT}$	$T_j=25^\circ\text{C}$	19.2	20.0	20.8	V			
Line Regulation	$\Delta V_{oline}$	$T_j=25^\circ\text{C}$ , $23\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$	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	$\Delta V_{oload}$	$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			400	mV			
		$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			200	mV			
Output Voltage	$V_{OUT}$	$23\text{V} \leq V_{IN} \leq 35\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	19.0		21.0	V			
Current Dissipation	$I_{CC}$	$T_j=25^\circ\text{C}$	4.9	6.0		mA			
Current Dissipation Variation (Line)	$\Delta I_{CCline}$	$23\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$			0.8	mA			
Current Dissipation Variation (Load)	$\Delta I_{CCload}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA			
Output Noise Voltage	$V_{NO}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		110		$\mu\text{V}$			
Ripple Rejection	$R_{rej}$	$f=120\text{Hz}$ $24\text{V} \leq V_{IN} \leq 34\text{V}$ $T_j=25^\circ\text{C}$				$I_{OUT}=100\text{mA}$	53		dB
						$I_{OUT}=300\text{mA}$	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]

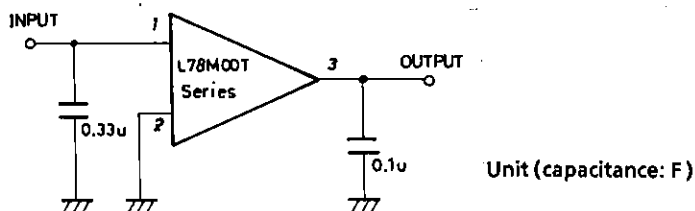
#### Recommended Operating Conditions at $T_a=25^\circ\text{C}$

Parameter	Symbol	Value	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.

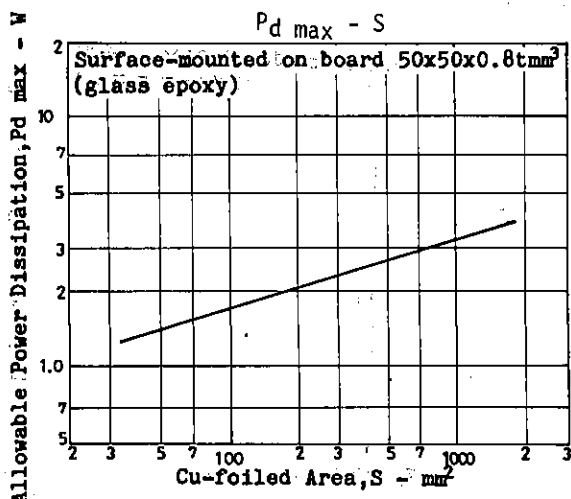
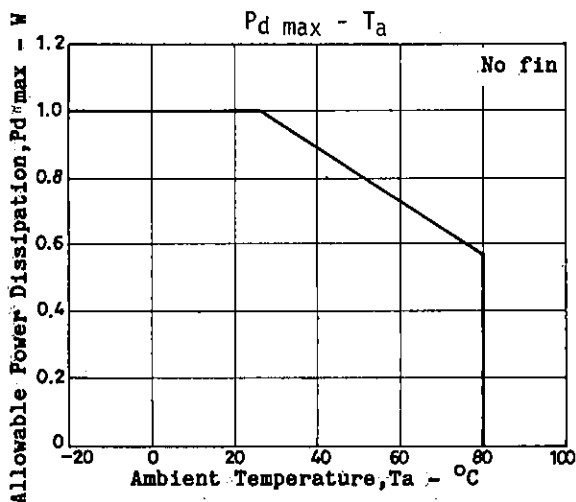
Parameter	Symbol	Conditions	min	typ	max	Unit
Output Voltage	$V_{OUT}$	$T_j=25^\circ\text{C}$	23.0	24.0	25.0	V
Line Regulation	$\Delta V_{oline}$	$T_j=25^\circ\text{C}$ , $27\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$	10.0		100	mV
		$T_j=25^\circ\text{C}$ , $28\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$	5.0		50	mV
Load Regulation	$\Delta V_{oload}$	$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 500\text{mA}$			480	mV
		$T_j=25^\circ\text{C}$ , $5\text{mA} \leq I_{OUT} \leq 200\text{mA}$			240	mV
Output Voltage	$V_{OUT}$	$27\text{V} \leq V_{IN} \leq 35\text{V}$ , $5\text{mA} \leq I_{OUT} \leq 350\text{mA}$	22.8		25.2	V
Current Dissipation	$I_{CC}$	$T_j=25^\circ\text{C}$		5.0	6.0	mA
Current Dissipation Variation (Line)	$\Delta I_{CCline}$	$27\text{V} \leq V_{IN} \leq 35\text{V}$ , $I_{OUT}=200\text{mA}$			0.8	mA
Current Dissipation Variation (Load)	$\Delta I_{CCload}$	$5\text{mA} \leq I_{OUT} \leq 350\text{mA}$			0.5	mA
Output Noise Voltage	$V_{NO}$	$10\text{Hz} \leq f \leq 100\text{kHz}$		170		$\mu\text{V}$
Ripple Rejection	$R_{rej}$	$f=120\text{Hz}$		50		dB
		$28\text{V} \leq V_{IN} \leq 35\text{V}$ , $T_j=25^\circ\text{C}$	$I_{OUT}=100\text{mA}$ $I_{OUT}=300\text{mA}$	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)



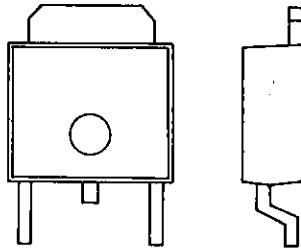
The allowable power dissipation ( $P_d \text{ max}$ ) is 1.0W ( $T_a=25^\circ\text{C}$ ) with no fin attached. When the L78M00T series are surface-mounted on a hybrid IC board or printed circuit board, a high allowable power dissipation can be obtained, though they are placed in a small-sized package.

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 ( $50 \times 50 \times 0.8 \text{mm}^3$ ).

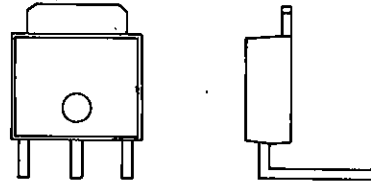


## L78M00T Series

### Lead Formings



FA forming



LR forming

- No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.
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