

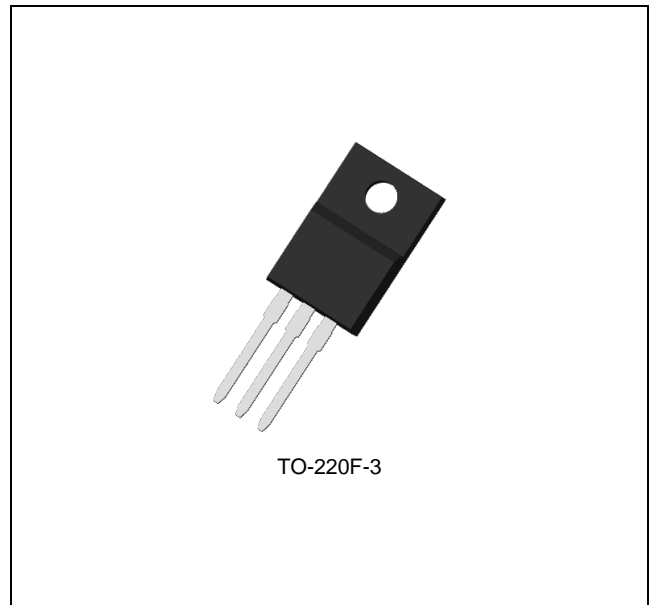
## FEATURES

- Output Current Up to 0.5A
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limiting
- Output Transistor Safe-Area Compensation
- Output Voltage of -5V, -6V, -8V, -9V, -12V, -15V, -18V, -20V, and -24V

## DESCRIPTION

The series of fixed-negative voltage monolithic integrated circuit voltage regulator is designed to complement LM79Mxx series in a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation.

Each of these regulators can deliver up to 0.5A of output current. The internal limiting and thermal shutdown features of these regulators make them essentially immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and current and also as the power pass element in precision regulators.



TO-220F-3

## ORDERING INFORMATION

Device	Package
LM79MxxTP	TO-220F-3L

xx: Output Voltage

## ABSOLUTE MAXIMUM RATINGS <sup>(Note 1)</sup>

CHARACTERISTIC		SYMBOL	MIN	MAX	UNIT
Input Voltage	All (except $V_{OUT} = -24V$ )	$V_{IN}$	-	-35	V
	$V_{OUT} = -24V$		-	-40	
Maximum Junction Temperature		$T_J$	0	150	°C
Storage Temperature		$T_{STG}$	-65	150	°C

Note 1. Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under *Recommended Operating Conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

## RECOMMENDED OPERATING RATINGS (Note 2)

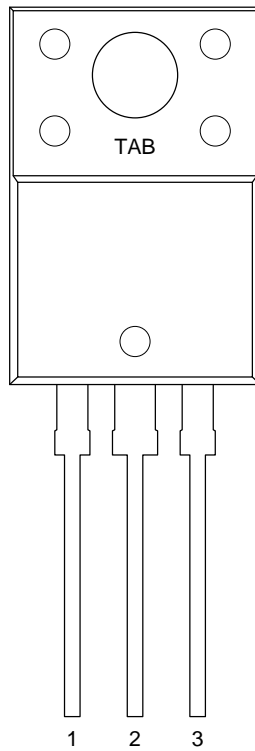
CHARACTERISTIC		SYMBOL	MIN	MAX	UNIT
Input Voltage	$V_{OUT} = -5.0V$	$V_{IN}$	-7.0	-25	V
	$V_{OUT} = -6.0V$		-8.0	-25	
	$V_{OUT} = -8.0V$		-10.5	-25	
	$V_{OUT} = -9.0V$		-11.5	-25	
	$V_{OUT} = -12V$		-14.5	-30	
	$V_{OUT} = -15V$		-17.5	-30	
	$V_{OUT} = -18V$		-21	-33	
	$V_{OUT} = -20V$		-23	-34	
	$V_{OUT} = -24V$		-27	-38	
Output Current		$I_{OUT}$	0	0.5	A
Operating Junction Temperature Range		$T_J$	0	125	°C

Note 2. The device is not guaranteed to function outside its operating ratings.

## ORDERING INFORMATION

V <sub>OUT</sub>	Package	Order No.	Description	Supplied As	Status
-5.0V	TO-220F-3L	LM79M05TP	0.5A, FullPAK	Tube	Active
-6.0V	TO-220F-3L	LM79M06TP	0.5A, FullPAK	Tube	Contact us
-8.0V	TO-220F-3L	LM79M08TP	0.5A, FullPAK	Tube	Contact us
-9.0V	TO-220F-3L	LM79M09TP	0.5A, FullPAK	Tube	Contact us
-12V	TO-220F-3L	LM79M12TP	0.5A, FullPAK	Tube	Contact us
-15V	TO-220F-3L	LM79M15TP	0.5A, FullPAK	Tube	Contact us
-18V	TO-220F-3L	LM79M18TP	0.5A, FullPAK	Tube	Contact us
-20V	TO-220F-3L	LM79M20TP	0.5A, FullPAK	Tube	Contact us
-24V	TO-220F-3L	LM79M24TP	0.5A, FullPAK	Tube	Contact us

## PIN CONFIGURATION

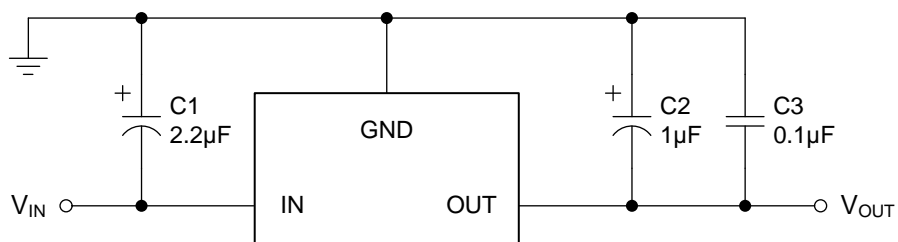
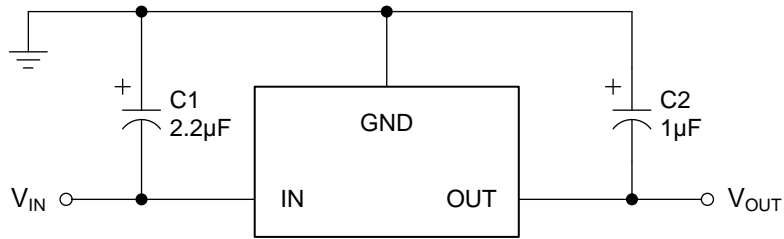


TO-220F (FullPAK)

## PIN DESCRIPTION

Pin No.	Pin Name	Pin Function
1	GND	Ground
2	IN	Input Voltage
3	OUT	Output Voltage
TAB	TAB	No Connection. Electrically Isolated.

## TYPICAL APPLICATION CIRCUITS



- \*  $C1$  required for stability. Value given may be increased.
- \*\*  $C2$  required for stability. Value given may be increased.
- \*\*\*  $C3$  considered improving the transient response.

## ELECTRICAL CHARACTERISTICS: LM79M05

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -10\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-4.80	-5.0	-5.20	V
		$-20\text{V} \leq V_{IN} \leq -7.0\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-4.75</b>	<b>-5.0</b>	<b>-5.25</b>	
Line Regulation	$\Delta V_{LINE}$	$-25\text{V} \leq V_{IN} \leq -7.0\text{V}$	-	12.5	50	mV
		$-12\text{V} \leq V_{IN} \leq -8.0\text{V}$	-	4.0	15	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	5.0	50	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	15	100	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-0.4</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	125	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-18\text{V} \leq V_{IN} \leq -8.0\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	1.5	2.0	mA
Bias Current Change	$\Delta I_B$	$-25\text{V} \leq V_{IN} \leq -7.0\text{V}$	-	<b>0.15</b>	<b>0.5</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.08</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## ELECTRICAL CHARACTERISTICS: LM79M06

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -11\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-5.75	-6.0	-6.25	V
		$-21\text{V} \leq V_{IN} \leq -8.0\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-5.70</b>	<b>-6.0</b>	<b>-6.30</b>	
Line Regulation	$\Delta V_{LINE}$	$-25\text{V} \leq V_{IN} \leq -8.0\text{V}$	-	12.5	120	mV
		$-13\text{V} \leq V_{IN} \leq -9.0\text{V}$	-	4.0	60	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	5.0	60	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	15	120	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-0.4</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	150	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-19\text{V} \leq V_{IN} \leq -9.0\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	1.5	2.0	mA
Bias Current Change	$\Delta I_B$	$-25\text{V} \leq V_{IN} \leq -8.0\text{V}$	-	<b>0.15</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.08</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## ELECTRICAL CHARACTERISTICS: LM79M08

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -14\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-7.70	-8.0	-8.30	V
		$-23\text{V} \leq V_{IN} \leq -10.5\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-7.60</b>	<b>-8.0</b>	<b>-8.40</b>	
Line Regulation	$\Delta V_{LINE}$	$-25\text{V} \leq V_{IN} \leq -10.5\text{V}$	-	12.5	160	mV
		$-17\text{V} \leq V_{IN} \leq -11\text{V}$	-	4.0	80	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	5.0	80	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	15	160	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-0.6</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	200	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-21.5\text{V} \leq V_{IN} \leq -11.5\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	1.5	2.0	mA
Bias Current Change	$\Delta I_B$	$-25\text{V} \leq V_{IN} \leq -10.5\text{V}$	-	<b>0.15</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.08</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## ELECTRICAL CHARACTERISTICS: LM79M09

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -15\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-8.64	-9.0	-9.36	V
		$-25\text{V} \leq V_{IN} \leq -11.5\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-8.55</b>	<b>-9.0</b>	<b>-9.45</b>	
Line Regulation	$\Delta V_{LINE}$	$-25\text{V} \leq V_{IN} \leq -11.5\text{V}$	-	12.5	180	mV
		$-22\text{V} \leq V_{IN} \leq -14.5\text{V}$	-	4.0	90	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	5.0	90	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	15	180	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-0.8</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	225	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-24\text{V} \leq V_{IN} \leq -12.5\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	1.5	2.0	mA
Bias Current Change	$\Delta I_B$	$-25\text{V} \leq V_{IN} \leq -11.5\text{V}$	-	<b>0.15</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.08</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.



## ELECTRICAL CHARACTERISTICS: LM79M12

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -19\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-11.5	-12	-12.5	V
		$-27\text{V} \leq V_{IN} \leq -14.5\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-11.4</b>	<b>-12</b>	<b>-12.6</b>	
Line Regulation	$\Delta V_{LINE}$	$-30\text{V} \leq V_{IN} \leq -14.5\text{V}$	-	12.5	240	mV
		$-22\text{V} \leq V_{IN} \leq -16\text{V}$	-	4.0	120	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	5.0	120	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	15	240	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-0.8</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	300	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-25\text{V} \leq V_{IN} \leq -15\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	2.0	3.0	mA
Bias Current Change	$\Delta I_B$	$-30\text{V} \leq V_{IN} \leq -14.5\text{V}$	-	<b>0.15</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.08</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## ELECTRICAL CHARACTERISTICS: LM79M15

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -23\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-14.4	-15	-15.6	V
		$-30\text{V} \leq V_{IN} \leq -17.5\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-14.25</b>	<b>-15</b>	<b>-15.75</b>	
Line Regulation	$\Delta V_{LINE}$	$-30\text{V} \leq V_{IN} \leq -17.5\text{V}$	-	12.5	300	mV
		$-26\text{V} \leq V_{IN} \leq -20\text{V}$	-	4.0	150	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	5.0	150	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	15	300	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-1.0</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	375	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-28.5\text{V} \leq V_{IN} \leq -18.5\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	2.0	3.0	mA
Bias Current Change	$\Delta I_B$	$-30\text{V} \leq V_{IN} \leq -17.5\text{V}$	-	<b>0.15</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.08</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## ELECTRICAL CHARACTERISTICS: LM79M18

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -27\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-17.3	-18	-18.7	V
		$-33\text{V} \leq V_{IN} \leq -21\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-17.1</b>	<b>-18</b>	<b>-18.9</b>	
Line Regulation	$\Delta V_{LINE}$	$-33\text{V} \leq V_{IN} \leq -21\text{V}$	-	12.5	360	mV
		$-30\text{V} \leq V_{IN} \leq -24\text{V}$	-	4.0	180	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	10	180	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	30	360	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-1.0</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	450	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-32\text{V} \leq V_{IN} \leq -22\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	2.0	3.0	mA
Bias Current Change	$\Delta I_B$	$-33\text{V} \leq V_{IN} \leq -21\text{V}$	-	<b>0.15</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.08</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## ELECTRICAL CHARACTERISTICS: LM79M20

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -31\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-19.2	-20	-20.8	V
		$-34\text{V} \leq V_{IN} \leq -23\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-19.0</b>	<b>-20</b>	<b>-21.0</b>	
Line Regulation	$\Delta V_{LINE}$	$-34\text{V} \leq V_{IN} \leq -23\text{V}$	-	5.0	400	mV
		$-31\text{V} \leq V_{IN} \leq -26\text{V}$	-	3.0	200	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	15	200	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	50	400	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-1.0</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	500	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-33\text{V} \leq V_{IN} \leq -24\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	2.0	3.0	mA
Bias Current Change	$\Delta I_B$	$-34\text{V} \leq V_{IN} \leq -23\text{V}$	-	<b>0.04</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.06</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## ELECTRICAL CHARACTERISTICS: LM79M24

Specifications with standard type face are for  $T_J = 25^\circ\text{C}$ , and those with **boldface type** apply over full operating temperature range in the *Recommended Operating Ratings*. Conditions are  $V_{IN} = -33\text{V}$ ,  $I_{OUT} = 350\text{mA}$ ,  $C_{IN} = 2.2\mu\text{F}$ ,  $C_{OUT} = 1\mu\text{F}$ , unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS <sup>(Note 3)</sup>	MIN	TYP	MAX	UNIT
Output Voltage <sup>(Note 4)</sup>	$V_{OUT}$		-23.0	-24	-25.0	V
		$-38\text{V} \leq V_{IN} \leq -27\text{V}$ , $5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$ , $P_D \leq 5.25\text{W}$	<b>-22.8</b>	<b>-24</b>	<b>-25.2</b>	
Line Regulation	$\Delta V_{LINE}$	$-38\text{V} \leq V_{IN} \leq -27\text{V}$	-	5.0	480	mV
		$-36\text{V} \leq V_{IN} \leq -30\text{V}$	-	3.0	240	
Load Regulation	$\Delta V_{LOAD}$	$5.0\text{mA} \leq I_{OUT} \leq 200\text{mA}$	-	20	240	mV
		$5.0\text{mA} \leq I_{OUT} \leq 500\text{mA}$	-	75	480	
Temperature Coefficient of Output Voltage	$\Delta V_{OUT}/\Delta T$	$I_{OUT} = 5.0\text{mA}$	-	<b>-1.0</b>	-	mV/°C
Output Noise Voltage	$V_n$	$10\text{Hz} \leq f \leq 100\text{kHz}$	-	600	-	$\mu\text{V}$
Ripple Rejection	$P_{RR}$	$-38\text{V} \leq V_{IN} \leq -28\text{V}$ , $f = 120\text{Hz}$	<b>54</b>	<b>60</b>	-	dB
Dropout Voltage	$V_D$	$I_{OUT} = 350\text{mA}$	-	1.6	-	V
Bias Current	$I_B$		-	2.0	3.0	mA
Bias Current Change	$\Delta I_B$	$-38\text{V} \leq V_{IN} \leq -27\text{V}$	-	<b>0.04</b>	<b>1.0</b>	mA
		$5.0\text{mA} \leq I_{OUT} \leq 350\text{mA}$	-	<b>0.06</b>	<b>0.5</b>	
Peak Output Current	$I_{OMAX}$		-	0.85	-	A

Note 3. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately.

Note 4. This specification applies only for DC power dissipation permitted by the *Absolute Maximum Ratings*.

## TYPICAL OPERATING CHARACTERISTICS

T.B.D.

## APPLICATION INFORMATION

T.B.D.

## REVISION NOTICE

The description in this datasheet is subject to change without any notice to describe its electrical characteristics properly.