

## 3-Terminal 0.1A Negative Voltage Regulators

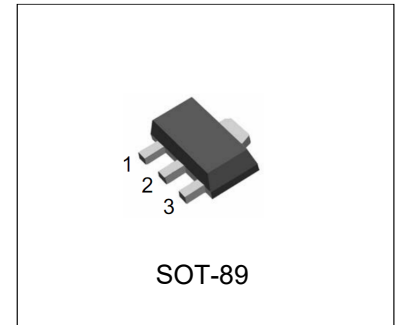
# LR79LXXB

### DESCRIPTION

The LRC LR79LXXB is monolithic fixed voltage regulator integrated circuit. The LR79LXXB is suitable for applications that required supply current up to 100mA.

### FEATURES

- \*Output current up to 100mA
- \*Fixed output voltage of -5V,-6V,-8V,-9V,-12V and -15V.
- \*Thermal overload shutdown protection
- \*Short circuit current limiting
- \*We declare that material of product compliance with ROHS requirements.



1:GND 2:Input 3:Output

### ORDERING INFORMATION

Device	Marking	Shipping
LR79L05B	L79L05B	5000/Tape&Reel
LR79L06B	L79L06B	5000/Tape&Reel
LR79L08B	L79L08B	5000/Tape&Reel
LR79L09B	L79L09B	5000/Tape&Reel
LR79L12B	L79L12B	5000/Tape&Reel
LR79L15B	L79L15B	5000/Tape&Reel

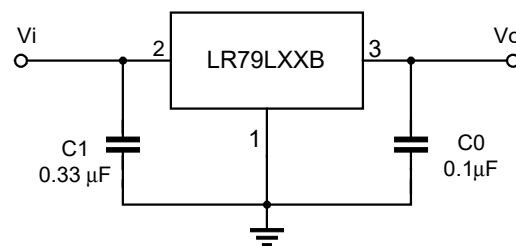
### ABSOLUTE MAXIMUM RATINGS

(Operating temperature range applies unless otherwise specified)

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Input voltage	$V_i$		-30	V
Output Current	$I_o$		100	mA
Power Dissipation	PD		500	mW
Operating Junction Temperature	$T_J$	-40	+150	°C
Operating Ambient Temperature	$T_{OPR}$	-40	+125	°C
Storage Temperature Range	$T_{STG}$	-55	+150	°C

ESD: HBM 2000V

### APPLICATION CIRCUIT



Note 1: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

**LR79L05B ELECTRICAL CHARACTERISTICS**

 (T<sub>J</sub>=25°C, C<sub>1</sub>=0.33μF, C<sub>o</sub>=1.0μF, unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>o</sub>	V <sub>IN</sub> =-10V, I <sub>o</sub> =40mA	-4.8	-5.0	-5.2	V
Line Regulation	V <sub>o</sub> -V <sub>IN</sub>	V <sub>IN</sub> =-7~-20V, I <sub>o</sub> =40mA		15	150	mV
Load Regulation	V <sub>o</sub> -I <sub>o</sub>	V <sub>IN</sub> =-10V, I <sub>o</sub> =1~100mA		7	60	mV
Quiescent current	I <sub>q</sub>	V <sub>IN</sub> =-10V, I <sub>o</sub> =40mA		2.0	6.0	mA
Ripple Rejection	RR	V <sub>IN</sub> =-8~-18V, I <sub>o</sub> =40mA, E <sub>in</sub> =1V <sub>p-p</sub> , f=120Hz	41	71		dB
Output Noise Voltage	V <sub>NO</sub>	V <sub>IN</sub> =-10V, BW=10Hz~100kHz, I <sub>o</sub> =40mA		120		μV

**LR79L06B ELECTRICAL CHARACTERISTICS**

 (T<sub>J</sub>=25°C, C<sub>1</sub>=0.33μF, C<sub>o</sub>=1.0μF, unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>o</sub>	V <sub>IN</sub> =-12V, I <sub>o</sub> =40mA	-5.76	-6.0	-6.24	V
Line Regulation	V <sub>o</sub> -V <sub>IN</sub>	V <sub>IN</sub> =-8.5~-20V, I <sub>o</sub> =40mA		18	160	mV
Load Regulation	V <sub>o</sub> -I <sub>o</sub>	V <sub>IN</sub> =-12V, I <sub>o</sub> =1~100mA		8	72	mV
Quiescent current	I <sub>q</sub>	V <sub>IN</sub> =-12V, I <sub>o</sub> =40mA		2.0	6.0	mA
Ripple Rejection	RR	V <sub>IN</sub> =-9~-19V, I <sub>o</sub> =40mA, E <sub>in</sub> =1V <sub>p-p</sub> , f=120Hz	40	70		dB
Output Noise Voltage	V <sub>NO</sub>	V <sub>IN</sub> =-12V, BW=10Hz~100kHz, I <sub>o</sub> =40mA		144		μV

**LR79L08B ELECTRICAL CHARACTERISTICS**

 (T<sub>J</sub>=25°C, C<sub>1</sub>=0.33μF, C<sub>o</sub>=1.0μF, unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>o</sub>	V <sub>IN</sub> =-14V, I <sub>o</sub> =40mA	-7.68	-8.0	-8.32	V
Line Regulation	V <sub>o</sub> -V <sub>IN</sub>	V <sub>IN</sub> =-10.5~-23V, I <sub>o</sub> =40mA		24	175	mV
Load Regulation	V <sub>o</sub> -I <sub>o</sub>	V <sub>IN</sub> =-14V, I <sub>o</sub> =1~100mA		10	80	mV
Quiescent current	I <sub>q</sub>	V <sub>IN</sub> =-14V, I <sub>o</sub> =40mA		2.0	6.0	mA
Ripple Rejection	RR	V <sub>IN</sub> =-11~-21V, I <sub>o</sub> =40mA, E <sub>in</sub> =1V <sub>p-p</sub> , f=140Hz	39	68		dB
Output Noise Voltage	V <sub>NO</sub>	V <sub>IN</sub> =-14V, BW=10Hz~100kHz, I <sub>o</sub> =40mA		190		μV

**LR79L09B ELECTRICAL CHARACTERISTICS**

 (T<sub>J</sub>=25°C, C<sub>1</sub>=0.33μF, C<sub>o</sub>=1.0μF, unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>o</sub>	V <sub>IN</sub> =-15V, I <sub>o</sub> =40mA	-8.64	-9.0	-9.36	V
Line Regulation	V <sub>o</sub> -V <sub>IN</sub>	V <sub>IN</sub> =-12.5~-24V, I <sub>o</sub> =40mA		27	200	mV
Load Regulation	V <sub>o</sub> -I <sub>o</sub>	V <sub>IN</sub> =-15V, I <sub>o</sub> =1~100mA		12	90	mV
Quiescent current	I <sub>q</sub>	V <sub>IN</sub> =-15V, I <sub>o</sub> =40mA		2.0	6.0	mA
Ripple Rejection	RR	V <sub>IN</sub> =-12~-22V, I <sub>o</sub> =40mA, E <sub>in</sub> =1V <sub>p-p</sub> , f=150Hz	38	67		dB
Output Noise Voltage	V <sub>NO</sub>	V <sub>IN</sub> =-15V, BW=10Hz~100kHz, I <sub>o</sub> =40mA		210		μV

**LR79L12B ELECTRICAL CHARACTERISTICS**

 (T<sub>J</sub>=25°C, C<sub>1</sub>=0.33μF, C<sub>o</sub>=1.0μF, unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>o</sub>	V <sub>IN</sub> =-19V, I <sub>o</sub> =40mA	-11.5	-12.0	-12.5	V
Line Regulation	V <sub>o</sub> -V <sub>IN</sub>	V <sub>IN</sub> =-14.5~-27V, I <sub>o</sub> =40mA		36	250	mV
Load Regulation	V <sub>o</sub> -I <sub>o</sub>	V <sub>IN</sub> =-19V, I <sub>o</sub> =1~100mA		16	100	mV
Quiescent current	I <sub>q</sub>	V <sub>IN</sub> =-19V, I <sub>o</sub> =40mA		2.0	6.0	mA
Ripple Rejection	RR	V <sub>IN</sub> =-15~-25V, I <sub>o</sub> =40mA, E <sub>in</sub> =1V <sub>p-p</sub> , f=190Hz	36	65		dB
Output Noise Voltage	V <sub>NO</sub>	V <sub>IN</sub> =-19V, BW=10Hz~100kHz, I <sub>o</sub> =40mA		290		μV

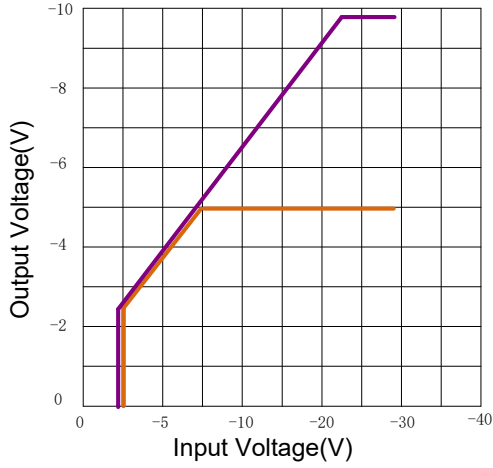
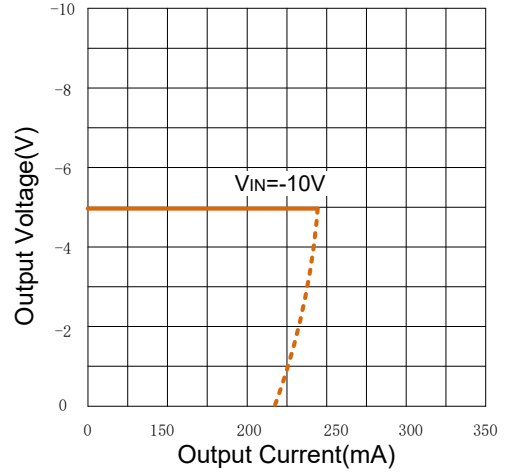
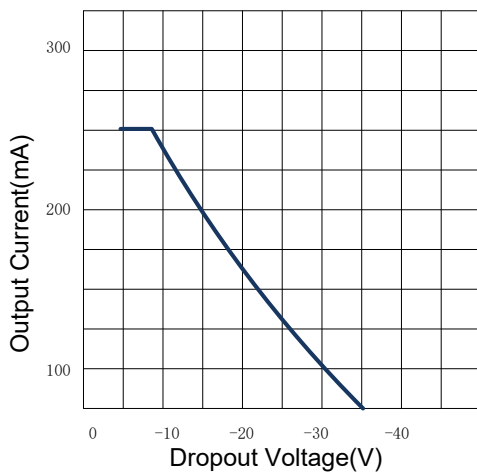
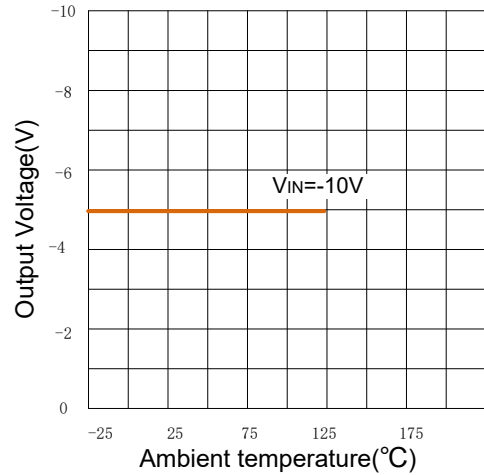
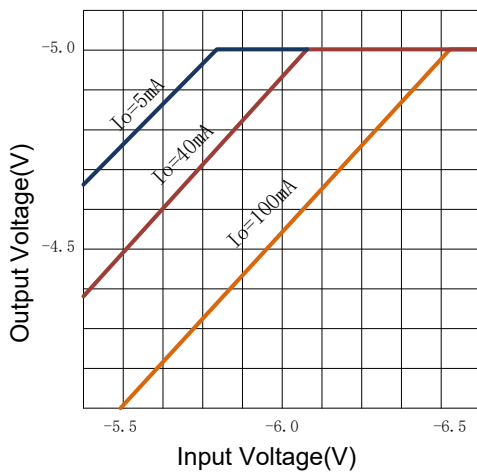
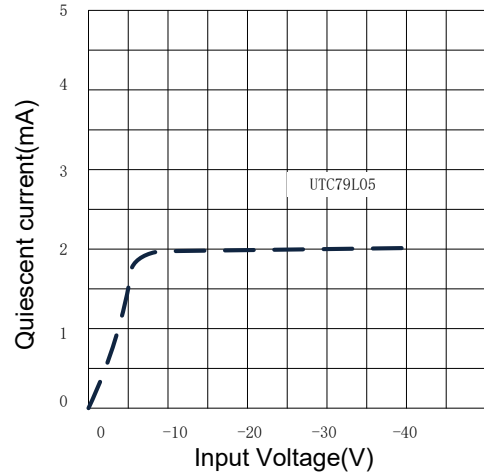
**LR79L15B ELECTRICAL CHARACTERISTICS**

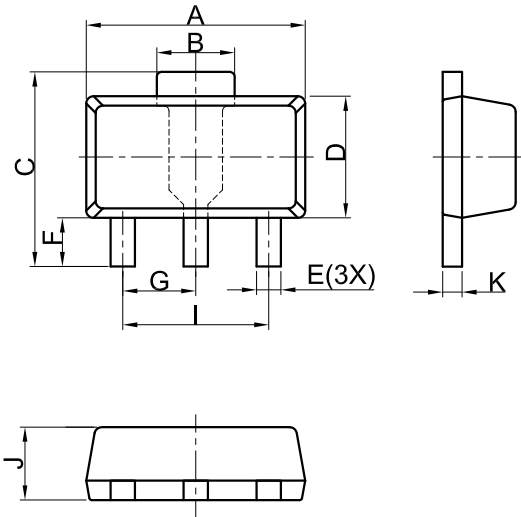
 (T<sub>J</sub>=25°C, C<sub>1</sub>=0.33μF, C<sub>o</sub>=1.0μF, unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Output Voltage	V <sub>o</sub>	V <sub>IN</sub> =-23V,I <sub>o</sub> =40mA	-14.4	-15.0	-15.6	V
Line Regulation	V <sub>o</sub> -V <sub>IN</sub>	V <sub>IN</sub> =-17~-30V,I <sub>o</sub> =40mA		65	300	mV
Load Regulation	V <sub>o</sub> -I <sub>o</sub>	V <sub>IN</sub> =-23V,I <sub>o</sub> =1~100mA		25	150	mV
Quiescent current	I <sub>Q</sub>	V <sub>IN</sub> =-19V,I <sub>o</sub> =40mA		2.0	6.5	mA
Ripple Rejection	RR	V <sub>IN</sub> =-18.5~-28.5V, I <sub>o</sub> =40mA,e <sub>in</sub> =1Vp-p ,f=190Hz	34	63		dB
Output Noise Voltage	V <sub>NO</sub>	V <sub>IN</sub> =-23V, BW=10Hz~100kHz,I <sub>o</sub> =40mA		290		μV

Note 2: The Maximum steady state usable output current is dependent on input voltage, heat sinking, lead length of the package and copper pattern of PCB. The data above represent pulse test conditions with junction temperatures specified at the initiation of test.

Note 3: Power dissipation<0.5W

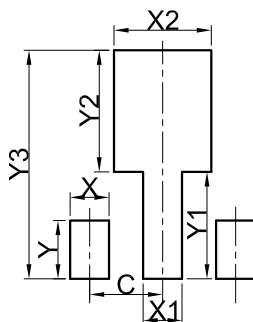
**ELECTRICAL CHARACTERISTICS CURVES**
**Fig.1 Input Voltage vs. Output Voltage**

**Fig.2 Load Characteristics (T<sub>j</sub>=25°C)**

**Fig.3 Short Circuit Current (T<sub>j</sub>=25°C)**

**Fig.4 Output Voltage vs. Junction temperature**

**Fig.5 79L05 Dropout Characteristics (T<sub>j</sub>=25°C)**

**Fig.6 Current vs. Input Voltage (I<sub>o</sub>=0mA, T<sub>j</sub>=25°C)**


**OUTLINE AND DIMENSIONS**


SOT89			
DIM	MIN	NOR	MAX
A	4.30	4.50	4.70
B	1.40	1.60	1.80
C	3.90	4.00	4.25
D	2.30	2.50	2.70
E	0.40	0.50	0.58
F	0.90	1.00	1.20
G	1.50 BSC		
I	3.00 BSC		
J	1.40	1.50	1.60
K	0.34	0.40	0.50
All Dimensions in mm			

**GENERAL NOTES**

1. Top package surface finish  $Ra0.4\pm0.2\mu m$
2. Bottom package surface finish  $Ra0.7\pm0.2\mu m$
3. Side package surface finish  $Ra0.4\pm0.2\mu m$
4. Protrusion or Gate Burrs shall not exceed 0.10mm per side.

**SOLDERING FOOTPRINT**


SOT89	
DIM	(mm)
X	0.80
Y	1.20
X1	0.80
Y1	2.20
X2	2.00
Y2	2.50
C	1.50
Y3	4.70

## REVISION HISTORY

Version	Description	Update by	Update Date
1.0	LRC ORIGINAL RELEASE.	Chen K	2021-09-17
1.1	Add device LR79L15B and electrical characteristics.	Chen S	2023-09-18
1.2	Update SOT-89 packing quantity from 1000/Reel to 5000/Reel.	Chen S	2024-08-21

**DISCLAIMER**

- Curve guarantee in the specification. The curve of test items with electric parameter is used as quality guarantee. The curve of test items without electric parameter is used as reference only.
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