



## LM79XXA

## LINEAR INTEGRATED CIRCUIT

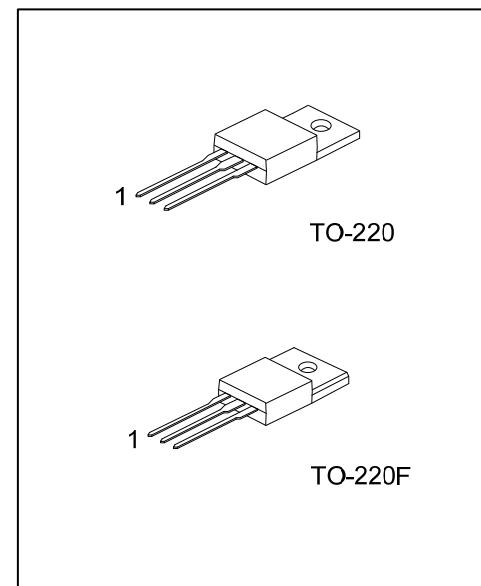
## 3 TERMINAL 1.5A NEGATIVE VOLTAGE REGULATOR

## ■ DESCRIPTION

The UTC **LM79XXA** series of three-terminal negative regulators is available several fixed output voltage, making them useful in a wide range of application. Each type employs internal current limiting, thermal shut-down and safe area protection, making it essentially indestructible.

## ■ FEATURES

- \* Output Current Up to 1.5A
- \* -5V, -7V, -7.5V, -12V, -15V Output Voltage Available
- \* Thermal Overload Protection



## ■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
LM79XXAL-TA3-T	LM79XXAG-TA3-T	TO-220	G	I	O	Tube
LM79XXAL-TF3-T	LM79XXAG-TF3-T	TO-220F	G	I	O	Tube

Note: O: Output    I: Input    G: GND

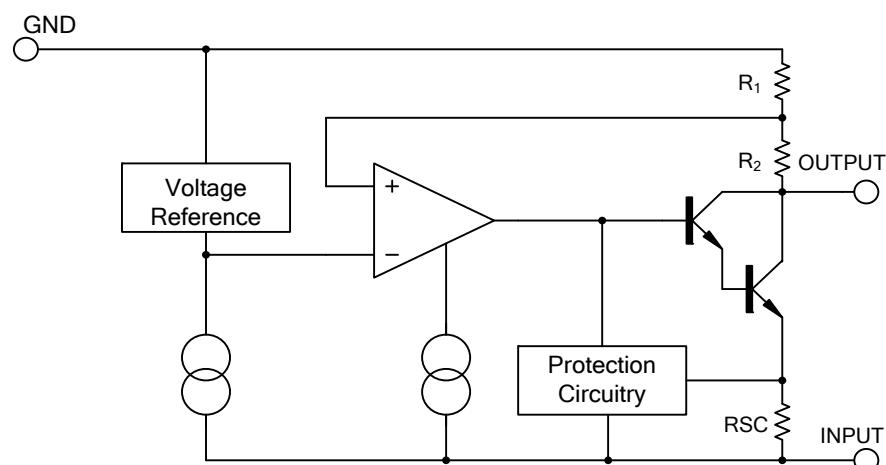
	(1)Packing Type (2)Package Type (3)Green Package (4)Output Voltage Code	(1) T: Tube (2) TA3: TO-220, TF3: TO-220F (3) G: Halogen Free and Lead Free, L: Lead Free (4) xx: refer to Marking Information
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■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-220 TO-220F	05: -5.0V 07: -7.0V 7P5: -7.5V 12: -12V 15: -15V	
		UTC LM79□□□A□ □□ □□□□ 1

Voltage Code ←      L: Lead Free  
 Lot Code ←      G: Halogen Free  
 Date Code

■ BLOCK DIAGRAM



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### ■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Input Voltage	$V_{IN}$	-35	V
Output Current	$I_{OUT}$	1.5	A
Power Dissipation	$P_D$	Internally Limited	W
Operating Temperature	$T_{OPR}$	-40 ~ +125	°C
Storage Temperature	$T_{STG}$	-65 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ THERMAL DATA

PARAMETER	SYMBOL	RATING	UNIT
Junction to Ambient	$\theta_{JA}$	65	°C/W

### ■ ELECTRICAL CHARACTERISTICS

( $I_{OUT}=0.5\text{A}$ ,  $T_J=0^\circ\text{C} \sim 125^\circ\text{C}$ ,  $C_L=2.2\mu\text{F}$ ,  $C_o=1\mu\text{F}$ , unless otherwise specified)

#### For UTC LM7905A ( $V_{IN}=-10\text{V}$ )

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
			$T_J=25^\circ\text{C}$				
Output Voltage	$V_{OUT}$	$V_{IN}=-7\text{V} \sim -20\text{V}$ , $I_{OUT}=5\text{mA} \sim 1\text{A}$ , $P_D \leq 15\text{W}$		-4.80	-5.0	-5.20	V
				-4.75		-5.25	V
Dropout Voltage	$V_D$	$I_{OUT}=1.5\text{A}$	$T_J=25^\circ\text{C}$		2		V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=-7\text{V} \sim -20\text{V}$	$T_J=25^\circ\text{C}$		10	100	mV
		$V_{IN}=-8\text{V} \sim -12\text{V}$	$T_J=25^\circ\text{C}$		5	60	mV
Load Regulation	$\Delta V_{OUT}$	$I_{OUT}=5\text{mA} \sim 1.5\text{A}$	$T_J=25^\circ\text{C}$		10	100	mV
		$I_{OUT}=250\text{mA} \sim 750\text{mA}$	$T_J=25^\circ\text{C}$		3	50	mV
Quiescent Current	$I_Q$		$T_J=25^\circ\text{C}$		3	6	mA
Quiescent Current Change	$\Delta I_Q$	$I_{OUT}=5\text{mA} \sim 1\text{A}$			0.05	0.5	mA
		$V_{IN}=-7\text{V} \sim -20\text{V}$			0.1	1.3	mA
Output Noise Voltage	$e_N$	$f=10\text{Hz} \sim 100\text{kHz}$	$T_A=25^\circ\text{C}$		100		$\mu\text{V}$
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5\text{mA}$			-0.4		$\text{mV}/^\circ\text{C}$
Ripple Rejection	$RR$	$V_{IN}=-8\text{V} \sim -18\text{V}$ , $f=120\text{Hz}$		54	60		dB
Peak Current	$I_{PEAK}$		$T_J=25^\circ\text{C}$		2.2		A



# LM79XXA

## LINEAR INTEGRATED CIRCUIT

### ■ ELECTRICAL CHARACTERISTICS (Cont.)

For UTC LM7907A ( $V_{IN}=-13V$ )

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$		$T_J=25^\circ C$	-6.72	-7.0	-7.28	V
		$V_{IN}=-9V \sim -22V$ , $I_{OUT}=5mA \sim 1A$ , $P_D \leq 15W$		-6.65		-7.35	V
Dropout Voltage	$V_D$	$I_{OUT}=1.5A$	$T_J=25^\circ C$		2		V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=-9V \sim -25V$	$T_J=25^\circ C$		10	140	mV
		$V_{IN}=-10V \sim -15V$	$T_J=25^\circ C$		5	70	mV
Load Regulation	$\Delta V_{OUT}$	$I_{OUT}=5mA \sim 1.5A$	$T_J=25^\circ C$		12	170	mV
		$I_{OUT}=250mA \sim 750mA$	$T_J=25^\circ C$		4	90	mV
Quiescent Current	$I_Q$		$T_J=25^\circ C$		3	6	mA
Quiescent Current Change	$\Delta I_Q$	$I_{OUT}=5mA \sim 1A$			0.05	0.5	mA
		$V_{IN}=-9V \sim -25V$			0.1	1.0	mA
Output Noise Voltage	$e_N$	$f=10Hz \sim 100kHz$	$T_A=25^\circ C$		175		$\mu V$
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$			-0.6		$mV/^\circ C$
Ripple Rejection	RR	$V_{IN}=-10V \sim -20V$ , $f=120Hz$		54	60		dB
Peak Current	$I_{PEAK}$		$T_J=25^\circ C$		2.2		A

For UTC LM797P5A ( $V_{IN}=-13.5V$ )

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$		$T_J=25^\circ C$	-7.2	-7.5	-7.80	V
		$V_{IN}=-9.5V \sim -22.5V$ , $I_{OUT}=5mA \sim 1A$ , $P_D \leq 15W$		-7.125		-7.875	V
Dropout Voltage	$V_D$	$I_{OUT}=1.5A$	$T_J=25^\circ C$		2		V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=-9.5V \sim -26V$	$T_J=25^\circ C$		10	150	mV
		$V_{IN}=-10.5V \sim -15.5V$	$T_J=25^\circ C$		5	72	mV
Load Regulation	$\Delta V_{OUT}$	$I_{OUT}=5mA \sim 1.5A$	$T_J=25^\circ C$		12	187	mV
		$I_{OUT}=250mA \sim 750mA$	$T_J=25^\circ C$		4	100	mV
Quiescent Current	$I_Q$		$T_J=25^\circ C$		3	6	mA
Quiescent Current Change	$\Delta I_Q$	$I_{OUT}=5mA \sim 1A$			0.05	0.5	mA
		$V_{IN}=-9.5V \sim -26V$			0.1	1.0	mA
Output Noise Voltage	$e_N$	$f=10Hz \sim 100kHz$	$T_A=25^\circ C$		175		$\mu V$
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$			-0.6		$mV/^\circ C$
Ripple Rejection	RR	$V_{IN}=-10.5V \sim -20.5V$ , $f=120Hz$		54	60		dB
Peak Current	$I_{PEAK}$		$T_J=25^\circ C$		2.2		A



# LM79XXA

## LINEAR INTEGRATED CIRCUIT

### ■ ELECTRICAL CHARACTERISTICS (Cont.)

For UTC LM7912A ( $V_{IN}=-18V$ )

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$		$T_J=25^\circ C$	-11.52	-12.0	-12.48	V
		$V_{IN}=-14.5V \sim -27V$ $I_{OUT}=5mA \sim 1A, P_D \leq 15W$		-11.40		-12.60	V
Dropout Voltage	$V_D$	$I_{OUT}=1.5A$	$T_J=25^\circ C$		2		V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=-14.5V \sim -30V$	$T_J=25^\circ C$		12	240	mV
		$V_{IN}=-16V \sim -22V$	$T_J=25^\circ C$		6	120	mV
Load Regulation	$\Delta V_{OUT}$	$I_{OUT}=5mA \sim 1.5A$	$T_J=25^\circ C$		12	240	mV
		$I_{OUT}=250mA \sim 750mA$	$T_J=25^\circ C$		4	120	mV
Quiescent Current	$I_Q$		$T_J=25^\circ C$		3	6	mA
Quiescent Current Change	$\Delta I_Q$	$I_{OUT}=5mA \sim 1A$			0.05	0.5	mA
		$V_{IN}=-14.5V \sim -30V$			0.1	1.0	mA
Output Noise Voltage	$e_N$	$f=10Hz \sim 100kHz$	$T_A=25^\circ C$		250		$\mu V$
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$			-0.8		$mV/^\circ C$
Ripple Rejection	RR	$V_{IN}=-15V \sim -25V, f=120Hz$		54	60		dB
Peak Current	$I_{PEAK}$		$T_J=25^\circ C$		2.2		A

For UTC LM7915A ( $V_{IN}=-23V$ )

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$		$T_J=25^\circ C$	-14.40	-15.0	-15.60	V
		$V_{IN}=-17.5V \sim -30V$ $I_{OUT}=5mA \sim 1A, P_D \leq 15W$		-14.25		-15.75	V
Dropout Voltage	$V_D$	$I_{OUT}=1.5A$	$T_J=25^\circ C$		2		V
Line Regulation	$\Delta V_{OUT}$	$V_{IN}=-17.5V \sim -30V$	$T_J=25^\circ C$		12	300	mV
		$V_{IN}=-20V \sim -26V$	$T_J=25^\circ C$		6	150	mV
Load Regulation	$\Delta V_{OUT}$	$I_{OUT}=5mA \sim 1.5A$	$T_J=25^\circ C$		12	300	mV
		$I_{OUT}=250mA \sim 750mA$	$T_J=25^\circ C$		4	150	mV
Quiescent Current	$I_Q$		$T_J=25^\circ C$		3	6	mA
Quiescent Current Change	$\Delta I_Q$	$I_{OUT}=5mA \sim 1A$			0.05	0.5	mA
		$V_{IN}=-17.5V \sim -30.5V$			0.1	1.0	mA
Output Noise Voltage	$e_N$	$f=10Hz \sim 100kHz$	$T_A=25^\circ C$		250		$\mu V$
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$			-0.9		$mV/^\circ C$
Ripple Rejection	RR	$V_{IN}=-18.5V \sim -28.5V, f=120Hz$		54	60		dB
Peak Current	$I_{PEAK}$		$T_J=25^\circ C$		2.2		A

## ■ APPLICATION CIRCUITS

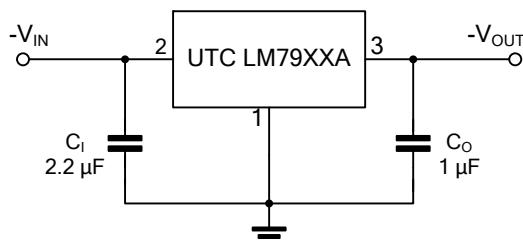


Fig.1 Fixed output regulator

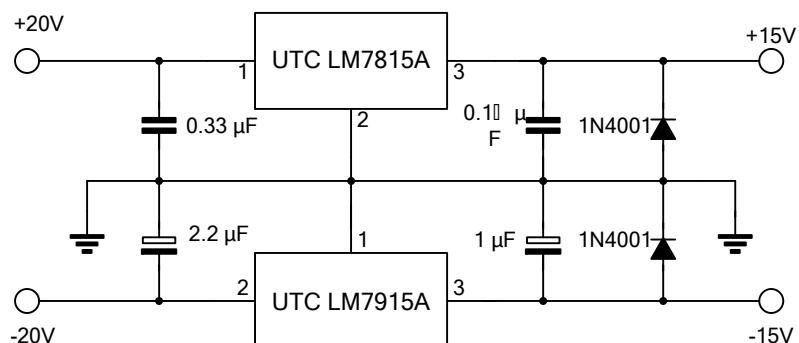


Fig.2 Split power supply(+15V,1A)

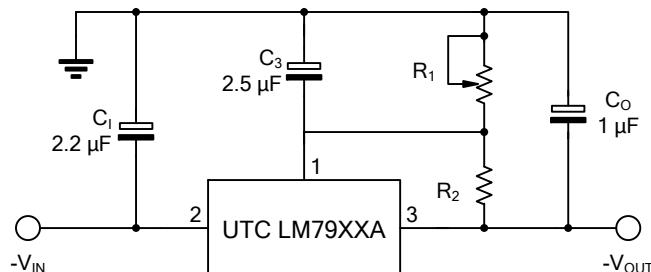


Fig.3 Circuit for increasing output voltage

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