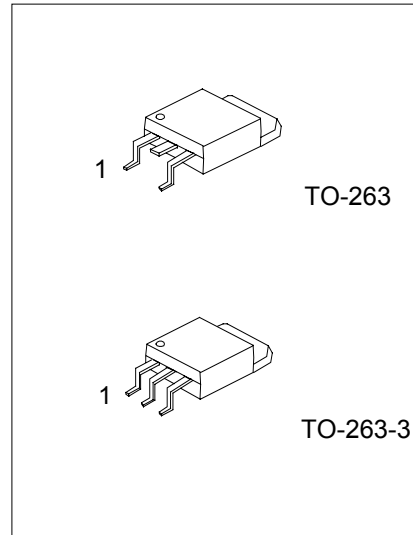# UTC 79TXXA LINEAR INTEGRATED CIRCUIT

3 TERMINAL 1A NEGATIVE VOLTAGE REGULATOR

DESCRIPTION

The UTC 79TXXA series of three-terminal negative regulators are available in TO-263 package and with 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.
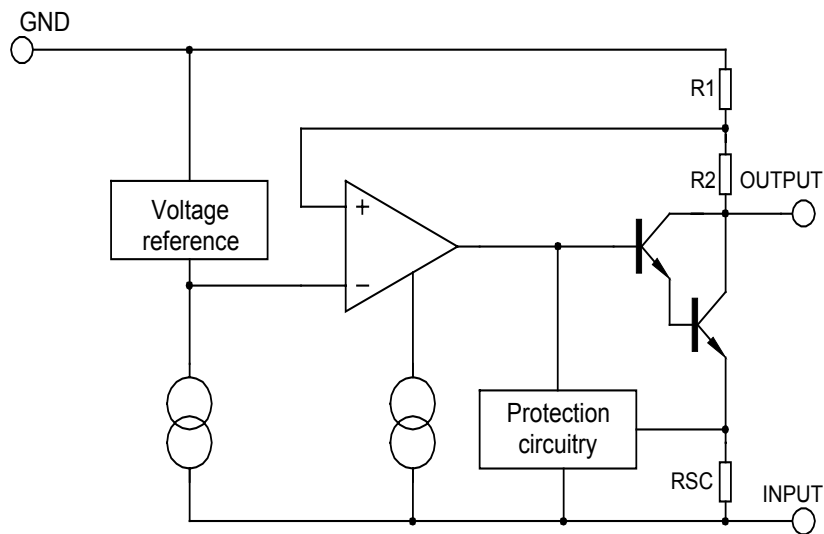
FEATURES

*Output current up to 1A
*-5V, -6V, -8V, -9V, -12V, -15V, -18V, -24V output voltage
 available
*Thermal overload protection
*Short circuit protection

TO-263

TO-263-3

1:GND   2:Input   3:Output

BLOCK DIAGRAM

UTC 79TXXA   LINEAR INTEGRATED CIRCUIT

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Input voltage	V$_I$	-35	V
Output Current	I o	1	A
Power Dissipation	P$_D$	Internally Limited	W
Thermal Resistance Junction-Air	R θ JA	65	°C/W
Thermal Resistance Junction-Cases	R θ JC	5	°C/W
Operating Junction Temperature Range	T$_{opr}$	0 ~ +125	°C
Storage Temperature Range	T$_{stg}$	-65 ~ +150	°C

UTC79T05A ELECTRICAL CHARACTERISTICS
(Refer to test circuits, 0<Tj<125°C,Io=500mA,Vi=-10V,Ci=33uF,Co=1uF, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output voltage	Vo	Tj=25°C	-4.80	-5.0	-5.20	V
		5.0mA<Io<1.0A,Po≦15W Vi=-7V to -20V	-4.75		-5.25	V
Line regulation	ΔVo	Tj=25°C,Vi=-7V to -25V		10	100	mV
		Tj=25°C,Vi=-8V to -12V				mV
Load regulation	ΔVo	Tj=25°C,Io=5.0mA to 1.0A		10	100	mV
		Tj=25°C,Io=250mA to 750mA		3	50	mV
Quiescent current	IQ	Tj=25°C		3	6	mA
Quiescent current change	ΔIQ	Io=5mA to 1.0A		0.05	0.5	mA
		Vi=-7V to -25V		0.1	1.3	mA
Output voltage drift	ΔVo/ΔT	Io=5mA		-0.4		mV/°C
Output noise voltage	VN	f=10hz to 100kHz,Ta=25°C		100		μV
Ripple rejection	RR	f=120Hz, Vi=-8V to -18V	54	60		dB
Dropout voltage	Vo	Io=1.0A,Tj=25°C		2		V
Short circuit current	Isc	Vi=-35V,Ta=25°C		300		mA
peak current	Ipk	Tj=25°C		2.2		A

UTC79T06A ELECTRICAL CHARACTERISTICS
(Refer to test circuits, 0<Tj<125°C,Io=500mA,Vi=-11V,Ci=2.2uF,Co=1uF,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output voltage	Vo	Tj=25°C	-5.76	-6.00	-6.24	V
		5.0mA<Io<1.0A,Po≦15W Vi=-8V to -21V	-5.70		-6.30	V
Line regulation	ΔVo	Tj=25°C,Vi=-8V to -25V		10	120	mV
		Tj=25°C,Vi=-9V to -13V		5	60	mV
Load regulation	ΔVo	Tj=25°C,Io=5.0mA to 1.0A		10	120	mV
		Tj=25°C,Io=250mA to 750mA		3	60	mV
Quiescent current	IQ	Tj=25°C		3	6	mA
Quiescent current change	ΔIQ	Io=5mA to 1.0A			0.5	mA
		Vi=-8V to -25V			1.3	mA
Output voltage drift	ΔVo/ΔT	Io=5mA		-0.5		mV/°C
Output noise voltage	VN	f=10hz to 100kHz,Ta=25°C		130		μV
Ripple rejection	RR	f=120Hz, Vi=-9V to -19V	54	60		dB
Dropout voltage	Vo	Io=1.0A,Tj=25°C		2		V
Short circuit current	Isc	Vi=-35V,Ta=25°C		300		mA
peak current	Ipk	Tj=25°C		2.2		A

UTC UNISONIC TECHNOLOGIES CO., LTD.   2

UTC 79TXXA   LINEAR INTEGRATED CIRCUIT

UTC79T08A ELECTRICAL CHARACTERISTICS
(Refer to test circuits, 0<Tj<125°C,Io=500mA,Vi=-14V,Ci=2.2uF,Co=1uF,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output voltage	Vo	Tj=25°C	-7.68	-8.0	-8.32	V
		5.0mA<Io<1.0A,Po≦15W Vi=-10.5V to -23V	-7.60		-8.40	V
Line regulation	ΔVo	Tj=25°C,Vi=-10.5V to -25V		10	100	mV
		Tj=25°C,Vi=-11.5V to -17V		5	80	mV
Load regulation	ΔVo	Tj=25°C,Io=5.0mA to 1.0A		12	160	mV
		Tj=25°C,Io=250mA to 750mA		4	80	mV
Quiescent current	IQ	Tj=25°C		3	6	mA
Quiescent current change	ΔIQ	Io=5mA to 1.0A		0.05	0.5	mA
		Vi=-11.5V to -25V		0.1	1.0	mA
Output voltage drift	ΔVo/ΔT	Io=5mA		-0.6		mV/°C
Output noise voltage	VN	f=10hz to 100kHz,Ta=25°C		175		μV
Ripple rejection	RR	f=120Hz, Vi=-11.5V to -21.5V	54	60		dB
Dropout voltage	Vo	Io=1.0A,Tj=25°C		2		V
Short citcuit current	Isc	Vi=-35V,Ta=25°C		300		mA
peak current	Ipk	Tj=25°C		2.2		A

UTC 79T09A ELECTRICAL CHARACTERISTICS
(Refer to test circuits, 0<Tj<125°C,Io=500mA,Vi=-15V,Ci=2.2uF,Co=1uF,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	Vo	Tj=25°C	-8.64	-9.0	-9.36	V
		5.0mA<Io<1.0A,PD≦15W VI =-11.5V to -23V	-8.55		-9.45	V
Line regulation	ΔVo	Tj=25°C , VI =-11.5V to -26 V		10	180	mV
		Tj=25°C , VI =-12V to -18V		5	90	mV
Load Regulation	ΔVo	Tj=25°C,IO=5mA - 1.0A		12	180	mV
		Tj=25°C,IO=0.25A - 0.75A		4	90	mV
Quiescent Current	Iq	Tj=25°C		3	6	mA
Quiescent Current Change	ΔIq	IO=5mA – 1.0A		0.05	0.5	mA
		VI =-11.5V to -26V		0.1	1.0	mA
Temperature coefficient of Vo	ΔVo/ΔT	Io=5mA		-0.6		mV/°C
Output Noise Voltage	VN	f=10Hz to 100kHz,Ta=25°C		175		μV
Ripple Rejection	RR	f=120Hz,Tj=25°C, VI =-12.5V to -22.5V	54	60		dB
Dropout Voltage	Vd	Io=1.0A,Tj=25°C		2.0		V
Short-Circuit Current	ISC	Vi=-35V,Ta=25°C		300		mA
Peak Output Current	IPK	Tj=25°C		2.2		A

UTC79T12A ELECTRICAL CHARACTERISTICS
(Refer to test circuits, 0<Tj<125°C,Io=500mA,Vi=-18V,Ci=2.2uF,Co=1uF,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output voltage	Vo	Tj=25°C	-11.52	-12.0	-12.48	V
		5.0mA<Io<1.0A,Po≦15W Vi=-14.5V to -27V	-11.40		-12.60	V
Line regulation	ΔVo	Tj=25°C,Vi=-14.5V to -30V		12	240	mV

UTC79TXXA   LINEAR INTEGRATED CIRCUIT

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		Tj=25°C,Vi=-16V to -22V		6	120	mV
Load regulation	ΔVo	Tj=25°C,Io=5.0mA to 1.0A		12	240	mV
		Tj=25°C,Io=250mA to 750mA		4	120	mV
Quiescent current	IQ	Tj=25°C		3	6	mA
Quiescent current change	ΔIQ	Io=5mA to 1.0A		0.05	0.5	mA
		Vi=-14.5V to -30V		0.1	1.0	mA
Output voltage drift	ΔVo/ΔT	Io=5mA		-0.8		mV/°C
Output noise voltage	VN	f=10hz to 100kHz,Ta=25°C		200		μV
Ripple rejection	RR	f=120Hz, Vi=-15V to -25V	54	60		dB
Dropout voltage	Vo	Io=1.0A,Tj=25°C		2		V
Short circuit current	Isc	Vi=-35V,Ta=25°C		300		mA
peak current	Ipk	Tj=25°C		2.2		A

UTC79T15A ELECTRICAL CHARACTERISTICS
(Refer to test circuits, 0<Tj<125°C, Io=500mA,Vi=-23V,Ci=2.2uF,Co=1uF,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output voltage	Vo	Tj=25°C	-14.40	-15.0	-15.60	V
		5.0mA<Io<1.0A,Po≦15W Vi=-17.5V to -30V	-14.25		-15.75	V
Line regulation	ΔVo	Tj=25°C,Vi=-17.5V to -30V		12	300	mV
		Tj=25°C,Vi=-20V to -26V		6	150	mV
Load regulation	ΔVo	Tj=25°C,Io=5.0mA to 1.0A		12	300	mV
		Tj=25°C,Io=250mA to 750mA		4	150	mV
Quiescent current	IQ	Tj=25°C		3	6	mA
Quiescent current change	ΔIQ	Io=5mA to 1.0A		0.05	0.5	mA
		Vi=-17.5V to -30.5V		0.1	1.0	mA
Output voltage drift	ΔVo/ΔT	Io=5mA		-0.9		mV/°C
Output noise voltage	VN	f=10hz to 100kHz,Ta=25°C		250		μV
Ripple rejection	RR	f=120Hz, Vi=-18.5V to -28.5V	54	60		dB
Dropout voltage	Vo	Io=1.0A,Tj=25°C		2		V
Short circuit current	Isc	Vi=-35V,Ta=25°C		300		mA
peak current	Ipk	Tj=25°C		2.2		A

UTC79T18A ELECTRICAL CHARACTERISTICS
(Refer to test circuits, 0<Tj<125°C,Io=500mA,Vi=-27V,Ci=2.2uF,Co=1uF,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output voltage	Vo	Tj=25°C	-17.28	-18.0	-18.72	V
		5.0mA<Io<1.0A,Po≦15W Vi=-21V to -33V	-17.10		-18.90	V
Line regulation	ΔVo	Tj=25°C,Vi=-21V to -33V		15	360	mV
		Tj=25°C,Vi=-24V to -30V		8	180	mV
Load regulation	ΔVo	Tj=25°C,Io=5.0mA to 1.0A		15	360	mV
		Tj=25°C,Io=250mA to 750mA		5.0	180	mV
Quiescent current	IQ	Tj=25°C		3	6	mA
Quiescent current change	ΔIQ	Io=5mA to 1.0A			0.5	mA
		Vi=-21V to -32V			1.0	mA
Output voltage drift	ΔVo/ΔT	Io=5mA		-1		mV/°C
Output noise voltage	VN	f=10hz to 100kHz,Ta=25°C		300		μV
Ripple rejection	RR	f=120Hz, Vi=-22V to -32V	54	60		dB
Dropout voltage	Vo	Io=1.0A,Tj=25°C		2		V
Short circuit current	Isc	Vi=-35V,Ta=25°C		300		mA
peak current	Ipk	Tj=25°C		2.2		A

UTC   UNISONIC TECHNOLOGIES   CO., LTD.   4

UTC 79TXXA   LINEAR INTEGRATED CIRCUIT

UTC79T24A ELECTRICAL CHARACTERISTICS

(Refer to test circuits, 0<Tj<125°C,Io=500mA,Vi=-33V,Ci=2.2uF,Co=1uF,unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output voltage	Vo	Tj=25°C	-23.04	-24	-24.96	V
		5.0mA<Io<1.0A,Po≦15W Vi=-27V to -38V	-22.80		-25.20	V
Line regulation	∆Vo	Tj=25°C,Vi=-27V to -38V		15	480	mV
		Tj=25°C,Vi=-30V to -36V		8	240	mV
Load regulation	∆Vo	Tj=25°C,Io=5.0mA to 1.0A		15	480	mV
		Tj=25°C,Io=250mA to 750mA		5.0	240	mV
Quiescent current	IQ	Tj=25°C		3	6	mA
Quiescent current change	∆IQ	Io=5mA to 1.0A			0.5	mA
		Vi=-27V to -38V			1.0	mA
Output voltage drift	∆Vo/∆T	Io=5mA		-1		mV/°C
Output noise voltage	VN	f=10hz to 100kHz,Ta=25°C		400		µV
Ripple rejection	RR	f=120Hz, Vi=-28V to -38V	54	60		dB
Dropout voltage	Vo	Io=1.0A,Tj=25°C		2		V
Short circuit current	Isc	Vi=-35V,Ta=25°C		300		mA
peak current	Ipk	Tj=25°C		2.2		A

APPLICATION CIRCUITS
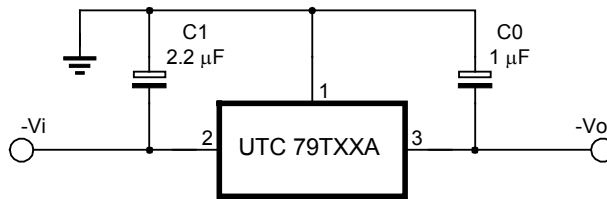
Fig.1 Fixed output regulator
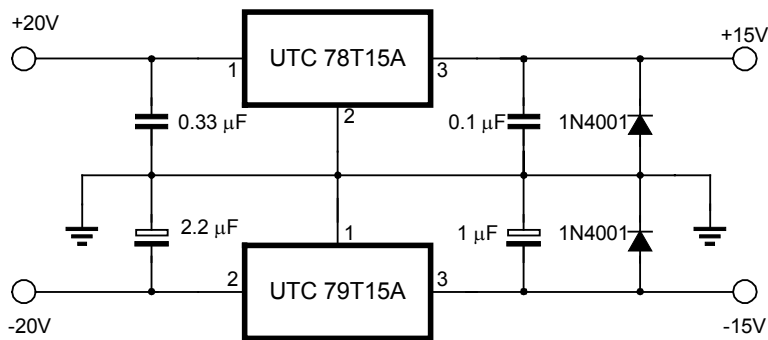
Fig.2 Split power supply(+-15V,1A)

UTC UNISONIC TECHNOLOGIES CO., LTD.   5

UTC 79TXXA   LINEAR INTEGRATED CIRCUIT
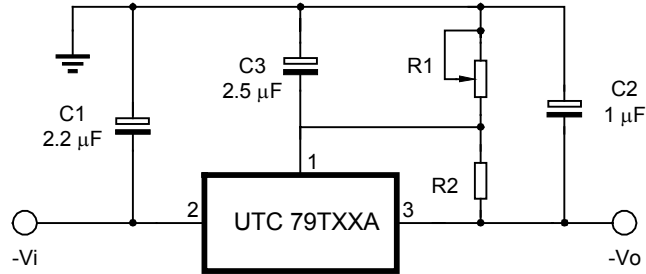
Fig.3 Circuit for increasing output voltage

UTC   UNISONIC TECHNOLOGIES   CO., LTD.

QW-R101-013,C,