



79DXXA

LINEAR INTEGRATED CIRCUIT

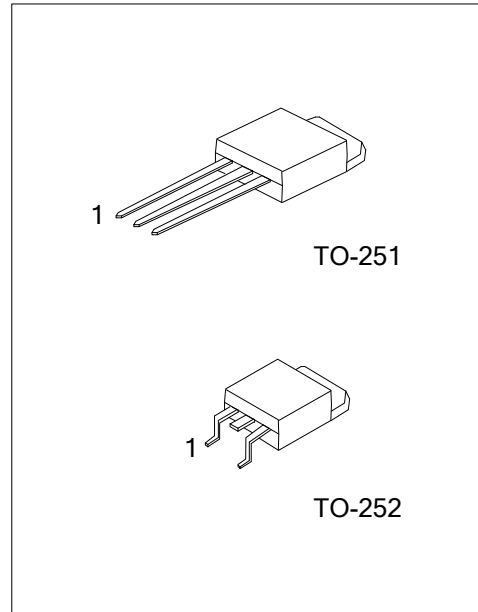
3 TERMINAL 1A NEGATIVE VOLTAGE REGULATOR

DESCRIPTION

The UTC 79DXXA 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, making it essentially indestructible.

FEATURES

- * Output current up to 1A
- * -5V, -6V, -7V, -8V, -9V, -12V, -15V, -18V, -24V output voltage available
- * Thermal overload protection



NORDERING INFORMATIO

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
79DXXAL-TM3-T	79DXXAG-TM3-T	TO-251	G	I	O	Tube
79DXXAL-TN3-T	79DXXAG-TN3-T	TO-252	G	I	O	Tube
79DXXAL-TN3-R	79DXXAG-TN3-R	TO-252	G	I	O	Tape Reel

Note: Pin Assignment: G: GND I: Input O: Output

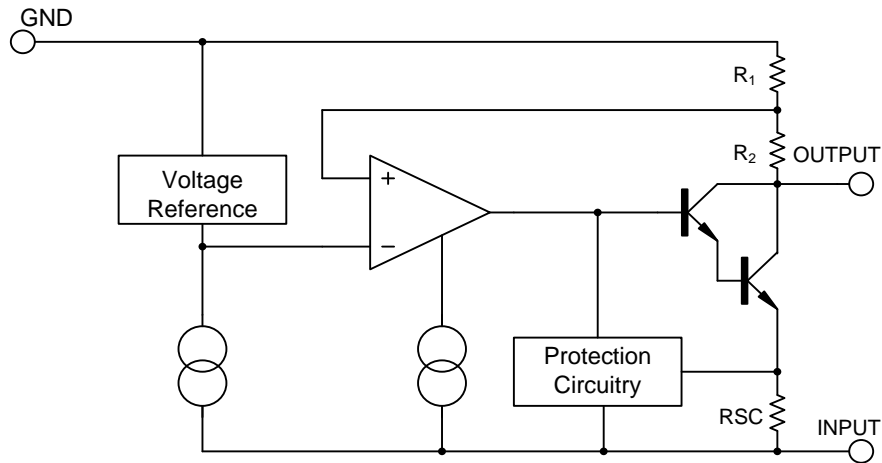
<p>79DXXAG-TM3-T</p>	<p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p> <p>(4)Output Voltage Code</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TM3: TO-251, TN3: TO-252</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> <p>(4) xx: refer to Marking Information</p>
----------------------	--	---



MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-251 TO-252	05:-5V	<p>UTC 7 9 D □ □ A □ Voltage Code ← → L: Lead Free Lot Code ← → G: Halogen Free Date Code</p>
	06:-6V	
	07:-7V	
	08:-8V	
	09:-9V	
	12:-12V	
	15:-15V	
	18:-18V	
24:-24V		

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Input Voltage	V _{IN}	-35	V
Output Current	I _{OUT}	1	A
Power Dissipation	P _D	0.89	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	θ _{JA}	112	°C/W
Junction to Case	θ _{JC}	12.5	°C/W

■ ELECTRICAL CHARACTERISTICS

(I_{OUT}=0.5A, T_J=0°C~125°C, C_I=2.2uF, C_O=1uF, unless otherwise specified)

For UTC 79D05A (V_{IN}=-10V)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V _{OUT}	T _J =25°C	-4.80	-5.0	-5.20	V
		V _{IN} =-7V~-20V, I _{OUT} =5mA~1A	-4.75		-5.25	V
Dropout Voltage	V _D	I _{OUT} =1A T _J =25°C		2		V
Line Regulation	ΔV _{OUT}	V _{IN} =-7V~-25V T _J =25°C		10	100	mV
		V _{IN} =-8V~-12V T _J =25°C		5	60	mV
Load Regulation	ΔV _{OUT}	I _{OUT} =5mA~1A T _J =25°C		10	100	mV
		I _{OUT} =250mA~750mA T _J =25°C		3	50	mV
Quiescent Current	I _Q	T _J =25°C		3	6	mA
Quiescent Current Change	ΔI _Q	I _{OUT} =5mA~1A		0.05	0.5	mA
		V _{IN} =-7V~-25V		0.1	1.3	mA
Output Noise Voltage	e _N	f=10Hz~100kHz T _A =25°C		100		μV
Output Voltage Drift	ΔV _{OUT} /ΔT	I _{OUT} =5mA		-0.4		mV/°C
Ripple Rejection	RR	V _{IN} =-8V~-18V, f=120Hz	54	60		dB
Peak Current	I _{PEAK}	T _J =25°C		2.2		A

For UTC 79D06A (V_{IN}=-11V)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V _{OUT}	T _J =25°C	-5.76	-6.00	-6.24	V
		V _{IN} =-8V~-21V, I _{OUT} =5mA~1A	-5.70		-6.30	V
Dropout Voltage	V _D	I _{OUT} =1.0A T _J =25°C		2		V
Line Regulation	ΔV _{OUT}	V _{IN} =-8V~-25V T _J =25°C		10	120	mV
		V _{IN} =-9V~-13V T _J =25°C		5	60	mV
Load Regulation	ΔV _{OUT}	I _{OUT} =5mA~1A T _J =25°C		10	120	mV
		I _{OUT} =250mA~750mA T _J =25°C		3	60	mV
Quiescent Current	I _Q	T _J =25°C		3	6	mA
Quiescent Current Change	ΔI _Q	I _{OUT} =5mA~1A		0.05	0.5	mA
		V _{IN} =-8V~-25V		0.1	1.3	mA
Output Noise Voltage	e _N	f=10Hz~100kHz T _A =25°C		130		μV
Output Voltage Drift	ΔV _{OUT} /ΔT	I _{OUT} =5mA		-0.5		mV/°C
Ripple Rejection	RR	V _{IN} =-9V~-19V, f=120Hz	54	60		dB
Peak Current	I _{PEAK}	T _J =25°C		2.2		A

■ ELECTRICAL CHARACTERISTICS(Cont.)

For UTC 79D07A ($V_{IN}=-13V$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	-6.72	-7.0	-7.28	V
		$V_{IN}=-10.5V\sim-23V, I_{OUT}=5mA\sim 1A$	-6.65		-7.35	V
Dropout Voltage	V_D	$I_{OUT}=1A, T_J=25^{\circ}C$		2		V
Line Regulation	ΔV_{OUT}	$V_{IN}=-10.5V\sim-25V, T_J=25^{\circ}C$		10	140	mV
		$V_{IN}=-11.5V\sim-17V, T_J=25^{\circ}C$		5	70	mV
Load Regulation	ΔV_{OUT}	$I_{OUT}=5mA\sim 1A, T_J=25^{\circ}C$		12		mV
		$I_{OUT}=250mA\sim 750mA, T_J=25^{\circ}C$		4		mV
Quiescent Current	I_Q	$T_J=25^{\circ}C$		3	6	mA
Quiescent Current Change	ΔI_Q	$I_{OUT}=5mA\sim 1A$		0.05	0.5	mA
		$V_{IN}=-11.5V\sim-25V$		0.1	1.3	mA
Output Noise Voltage	eN	$f=10Hz\sim 100kHz, T_A=25^{\circ}C$		175		μV
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$		-0.6		$mV/^{\circ}C$
Ripple Rejection	RR	$V_{IN}=-11.5V\sim-21.5V, f=120Hz$	54	60		dB
Peak Current	I_{PEAK}	$T_J=25^{\circ}C$		2.2		A

For UTC 79D08A ($V_{IN}=-14V$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	-7.68	-8.0	-8.32	V
		$V_{IN}=-10.5V\sim-23V, I_{OUT}=5mA\sim 1A$	-7.60		-8.40	V
Dropout Voltage	V_D	$I_{OUT}=1A, T_J=25^{\circ}C$		2		V
Line Regulation	ΔV_{OUT}	$V_{IN}=-10.5V\sim-25V, T_J=25^{\circ}C$		10	160	mV
		$V_{IN}=-11.5V\sim-17V, T_J=25^{\circ}C$		5	80	mV
Load Regulation	ΔV_{OUT}	$I_{OUT}=5mA\sim 1A, T_J=25^{\circ}C$		12	160	mV
		$I_{OUT}=250mA\sim 750mA, T_J=25^{\circ}C$		4	80	mV
Quiescent Current	I_Q	$T_J=25^{\circ}C$		3	6	mA
Quiescent Current Change	ΔI_Q	$I_{OUT}=5mA\sim 1A$		0.05	0.5	mA
		$V_{IN}=-11.5V\sim-25V$		0.1	1.0	mA
Output Noise Voltage	eN	$f=10Hz\sim 100kHz, T_A=25^{\circ}C$		175		μV
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$		-0.6		$mV/^{\circ}C$
Ripple Rejection	RR	$V_{IN}=-11.5V\sim-21.5V, f=120Hz$	54	60		dB
Peak Current	I_{PEAK}	$T_J=25^{\circ}C$		2.2		A

For UTC 79D09A ($V_{IN}=-15V$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	-8.64	-9.0	-9.36	V
		$V_{IN}=-11.5V\sim-23V, I_{OUT}=5mA\sim 1A$	-8.55		-9.45	V
Dropout Voltage	V_D	$I_{OUT}=1A, T_J=25^{\circ}C$		2		V
Line Regulation	ΔV_{OUT}	$V_{IN}=-11.5V\sim-26V, T_J=25^{\circ}C$		10	180	mV
		$V_{IN}=-12V\sim-18V, T_J=25^{\circ}C$		5	90	mV
Load Regulation	ΔV_{OUT}	$I_{OUT}=5mA\sim 1A, T_J=25^{\circ}C$		12	180	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	ΔI_Q	$I_{OUT}=5mA\sim 1A$		0.05	0.5	mA
		$V_{IN}=-11.5V\sim-26V$		0.1	1.0	mA
Output Noise Voltage	eN	$f=10Hz\sim 100kHz, T_A=25^{\circ}C$		175		μV
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$		-0.6		$mV/^{\circ}C$
Ripple Rejection	RR	$V_{IN}=-12.5V\sim-22.5V, f=120Hz$	54	60		dB
Peak Current	I_{PEAK}	$T_J=25^{\circ}C$		2.2		A

■ ELECTRICAL CHARACTERISTICS(Cont.)

For UTC 79D12A ($V_{IN}=-18V$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	-11.52	-12.0	-12.48	V
		$V_{IN}=-14.5V\sim-27V, I_{OUT}=5mA\sim 1A$	-11.40		-12.60	V
Dropout Voltage	V_D	$I_{OUT}=1A, T_J=25^{\circ}C$		2		V
Line Regulation	ΔV_{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	ΔV_{OUT}	$I_{OUT}=5mA\sim 1A, T_J=25^{\circ}C$		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	ΔI_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	eN	$f=10Hz\sim 100kHz, T_A=25^{\circ}C$		200		μV
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 79D15A ($V_{IN}=-23V$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	-14.40	-15.0	-15.60	V
		$V_{IN}=-17.5V\sim-30V, I_{OUT}=5mA\sim 1A$	-14.25		-15.75	V
Dropout Voltage	V_D	$I_{OUT}=1A, T_J=25^{\circ}C$		2		V
Line Regulation	ΔV_{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	ΔV_{OUT}	$I_{OUT}=5mA\sim 1A, T_J=25^{\circ}C$		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	ΔI_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	eN	$f=10Hz\sim 100kHz, T_A=25^{\circ}C$		250		μV
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

■ ELECTRICAL CHARACTERISTICS(Cont.)

For UTC 79D18A ($V_{IN}=-27V$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	-17.28	-18.0	-18.72	V
		$V_{IN}=-21V\sim-33V, I_{OUT}=5mA\sim 1A$	-17.10		-18.90	V
Dropout Voltage	V_D	$I_{OUT}=1A, T_J=25^{\circ}C$		2		V
Line Regulation	ΔV_{OUT}	$V_{IN}=-21V\sim-33V, T_J=25^{\circ}C$		15	360	mV
		$V_{IN}=-24V\sim-30V, T_J=25^{\circ}C$		8	180	mV
Load Regulation	ΔV_{OUT}	$I_{OUT}=5mA\sim 1A, T_J=25^{\circ}C$		15	360	mV
		$I_{OUT}=250mA\sim 750mA, T_J=25^{\circ}C$		5.0	180	mV
Quiescent Current	I_Q	$T_J=25^{\circ}C$		3	6	mA
Quiescent Current Change	ΔI_Q	$I_{OUT}=5mA\sim 1A$		0.05	0.5	mA
		$V_{IN}=-21V\sim-32V$		0.1	1.0	mA
Output Noise Voltage	eN	$f=10Hz\sim 100kHz, T_A=25^{\circ}C$		300		μV
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$		-1		$mV/^{\circ}C$
Ripple Rejection	RR	$V_{IN}=-22V\sim-32V, f=120Hz$	54	60		dB
Peak Current	I_{PEAK}	$T_J=25^{\circ}C$		2.2		A

For UTC 79D24A ($V_{IN}=-33V$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$T_J=25^{\circ}C$	-23.04	-24	-24.96	V
		$V_{IN}=-27V\sim-38V, I_{OUT}=5mA\sim 1A$	-22.80		-25.20	V
Dropout Voltage	V_D	$I_{OUT}=1.0A, T_J=25^{\circ}C$		2		V
Line Regulation	ΔV_{OUT}	$V_{IN}=-27V\sim-38V, T_J=25^{\circ}C$		15	480	mV
		$V_{IN}=-30V\sim-36V, T_J=25^{\circ}C$		8	240	mV
Load Regulation	ΔV_{OUT}	$I_{OUT}=5mA\sim 1A, T_J=25^{\circ}C$		15	480	mV
		$I_{OUT}=250mA\sim 750mA, T_J=25^{\circ}C$		5.0	240	mV
Quiescent Current	I_Q	$T_J=25^{\circ}C$		3	6	mA
Quiescent Current Change	ΔI_Q	$I_{OUT}=5mA\sim 1A$		0.05	0.5	mA
		$V_{IN}=-27V\sim-38V$		0.1	1.0	mA
Output Noise Voltage	eN	$f=10Hz\sim 100kHz, T_A=25^{\circ}C$		400		μV
Output Voltage Drift	$\Delta V_{OUT}/\Delta T$	$I_{OUT}=5mA$		-1		$mV/^{\circ}C$
Ripple Rejection	RR	$V_{IN}=-28V\sim-38V, f=120Hz$	54	60		dB
Peak Current	I_{PEAK}	$T_J=25^{\circ}C$		2.2		A

Note: 1. Thermal resistance test board.

■ APPLICATION CIRCUITS

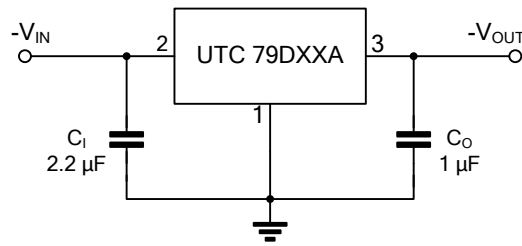


Fig.1 Fixed output regulator

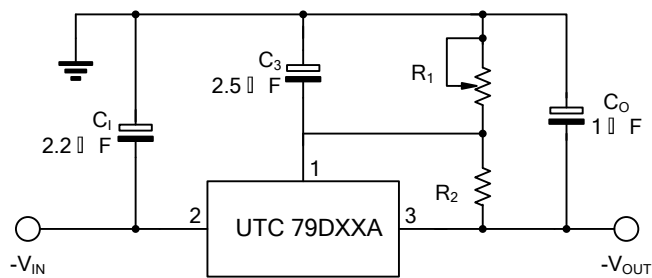
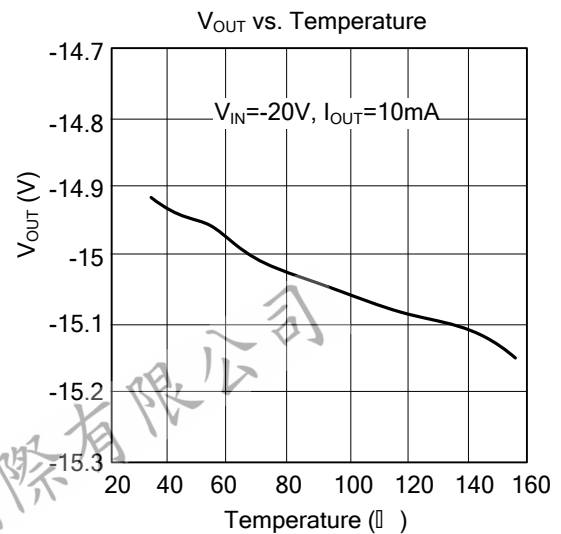
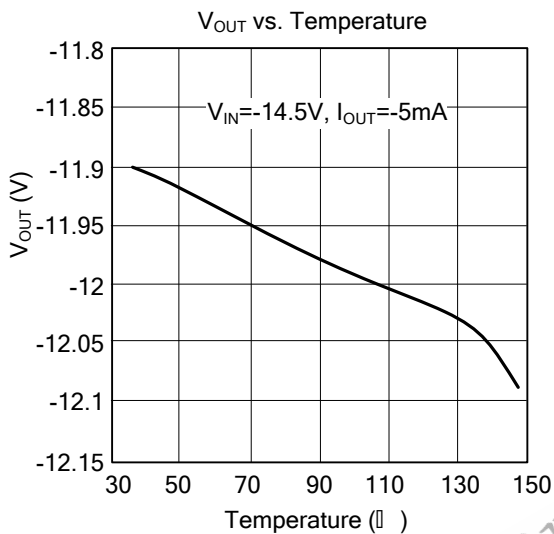
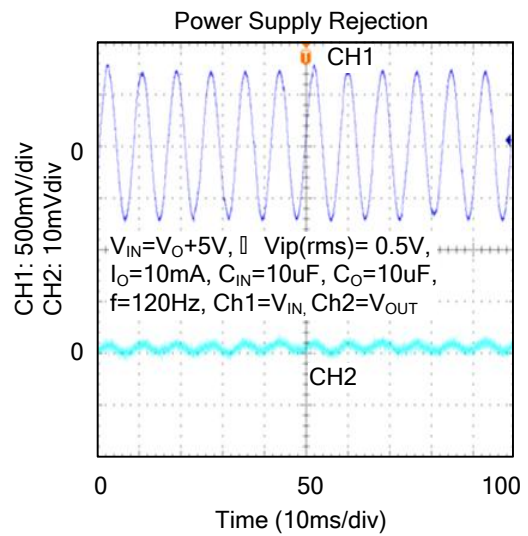
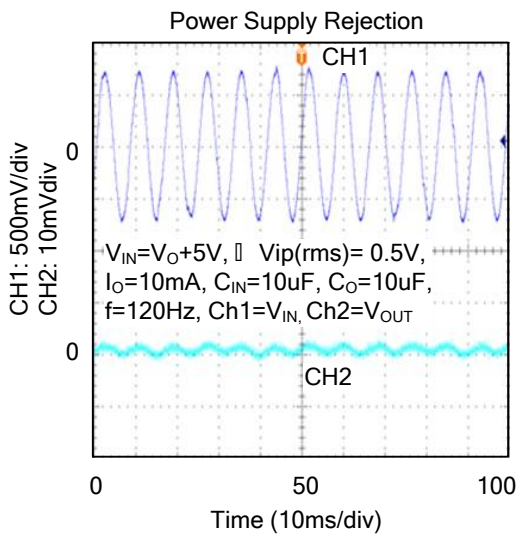
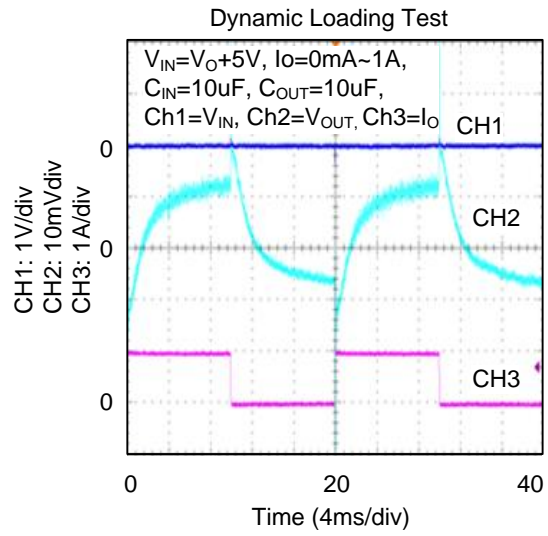
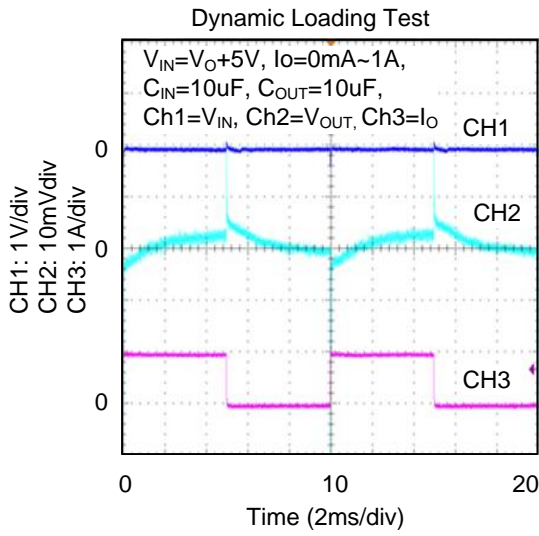
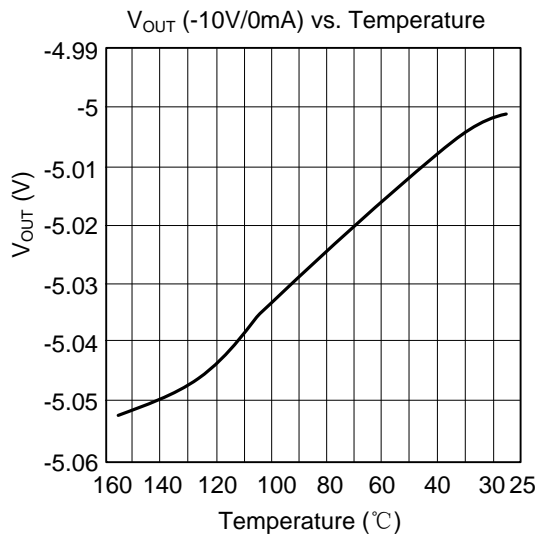


Fig.2 Circuit for increasing output voltage

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.