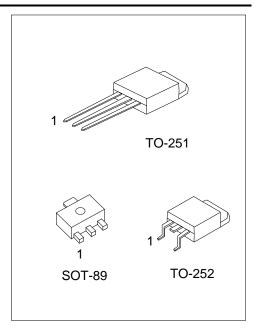
3 TERMINAL 0.5A NEGATIVE VOLTAGE REGULATOR

DESCRIPTION

The UTC 79DXX series of three-terminal negative regulators are available 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 0.5A
- * -5V, -6V, -8V, -9V, -12V, -15V, -18V, -24V output voltage available
- * Thermal overload protection
- * Short circuit protection

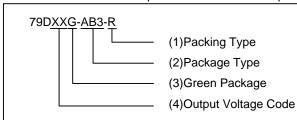


ORDERING INFORMATION

Orderir	Dookogo	Pin /	Assign	Dooking		
Lead Free	Halogen Free	Package	1	2	3	Packing
79DXXL-AB3-R	79DXXG-AB3-R	SOT-89	0	G	I	Tape Reel
79DXXL-AB3-T	79DXXG-AB3-T	TO-251	G	I	0	Tube
79DXXL-TM3-T	79DXXG-TM3-T	TO-251	G	I	0	Tube
79DXXL-TN3-T	79DXXG-TN3-T	TO-252	G	I	0	Tube
79DXXL-TN3-R	79DXXG-TN3-R	TO-252	G	1	0	Tape Reel

Notes: 1. xx: output voltage, refer to Marking Information

2. Pin Code: I: Input G: GND O: Output



(1) R: Tape Reel, T: Tube

(2) AB3: SOT-89, TM3: TO-251, TN3: TO-252

(3) G: Halogen Free and Lead Free, L: Lead Free

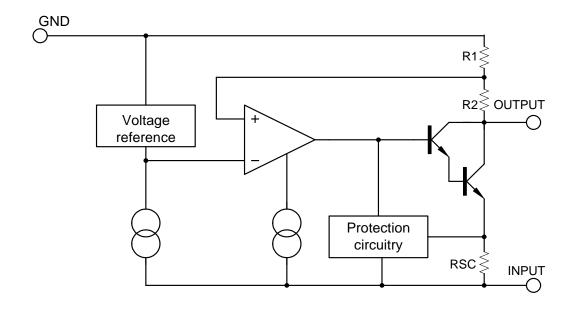
(4) xx: refer to Marking Information

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■ MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
TO-251 TO-252	05:-5V 06:-6V 08:-8V 09:-9V	Voltage Code UTC 79DXX□ C:Lead Free G: Halogen Free Date Code 1 2 3
SOT-89	12:-12V 15:-15V 18:-18V 24:-24V	Date Code Voltage Code Voltage Code T9DXX Pin Code L: Lead Free G: Halogen Free 1 2 3

■ BLOCK DIAGRAM



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

PARAMETER		SYMBOL	RATINGS	UNIT
V _{OUT} = -5 ~ -18V		1/	-35	V
Input Voltage	V _{OUT} = -20 ~ -24V	V_{IN}	-40	V
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	RATINGS	UNIT
Thermal Resistance	SOT-89	0	180	°C/W
Junction-Air	TO-251/TO-252	θ _{JA}	112	°C/W
Thermal Resistance	SOT-89	0	50	°C/W
Junction-Cases	TO-251/TO-252	θυς	12.5	°C/W

■ **ELECTRICAL CHARACTERISTICS** (0<T_J<125°C, unless otherwise specified)

For 79D05 (V_{IN} =-10V, I_{OUT} =500mA, C_I =33uF, C_O =1uF)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
PARAIVIETER	STIVIBUL					_
		T _J =25°C	-4.80	-5.0	-5.20	V
Output Voltage	Vout	5.0mA <i<sub>OUT<0.5A</i<sub>			- 0-	.,
		V _{IN} =-7V ~ -20V	-4.75		-5.25	V
Line Degulation	ΔV_OUT	T _J =25°C, V _{IN} =-7V ~ -25V		10	100	mV
Line Regulation	ΔVOUT	T _J =25°C, V _{IN} =-8V ~ -12V		5	60	mV
Load Degulation	i avoui i	T _J =25°C, I _{OUT} =5.0mA ~ 0.5A		10	100	mV
Load Regulation		T _J =25°C, I _{OUT} =5.0mA ~ 200mA		3	50	mV
Quiescent Current	IQ	T _J =25°C		4.3	8	mA
Quiaccant Current Change	4.1	I _{OUT} =5mA ~ 0.5A		0.05	0.5	mA
Quiescent Current Change	ΔI_Q	V _{IN} =-7V ~ -25V		0.1	1.3	mA
Temperature Coefficient of Vout	$\Delta V_{OUT}/\Delta T$	I _{OUT} =5mA		-0.4		mV/°C
Output Noise Voltage	V_N	f=10Hz ~ 100kHz, Ta=25°C		100		μV
Ripple Rejection	RR	f=120Hz, V _{IN} =-8V ~ -18V	54	60		dB
Dropout Voltage	V_D	I _{OUT} =0.5A, T _J =25°C		2		V

For 79D06 (V_{IN} =-11V, I_{OUT} =500mA, C_I =2.2uF, C_0 =1uF)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		T _J =25°C	-5.76	-6.0	-6.24	V
Output Voltage	V _{OUT}	$5.0\text{mA} < I_{\text{OUT}} < 0.5\text{A},$ $V_{\text{IN}} = -8\text{V} \sim -21\text{V}$	-5.70		-6.30	V
Line Degulation	ΔV_OUT	T _J =25°C, V _{IN} =-8V ~ -25V		10	120	mV
Line Regulation	ΔVOUT	T _J =25°C, V _{IN} =-9V ~ -13V		5	60	mV
Load Degulation	41/	$T_J = 25^{\circ}C$, $I_{OUT} = 5.0$ mA ~ 0.5A		10	120	mV
Load Regulation	ΔV_{OUT}	T _J =25°C, I _{OUT} =5.0mA ~ 200mA		3	60	mV
Quiescent Current	ΙQ	T _J =25°C		4.3	8	mA
Quiaccent Current Change	41	I_{OUT} =5mA ~ 0.5A			0.5	mA
Quiescent Current Change	Δl_Q	V _{IN} =-8V ~ -25V			1.3	mA
Temperature Coefficient of Vout	$\Delta V_{OUT}/\Delta T$	I _{OUT} =5mA		-0.5		mV/°C
Output Noise Voltage	eN	F=10Hz ~ 100kHz, Ta=25°C		130		μV
Ripple Rejection	RR	F=120Hz, V _{IN} =-9V ~ -19V	54	60		dB
Dropout Voltage	V_D	I _{OUT} =0.5A, T _J =25°C		2		V

■ ELECTRICAL CHARACTERISTICS (Cont.)

For 79D08 (V_{IN} =-14V, I_{OUT} =500mA, C_I =2.2uF, C_O =1uF)

("" , ""	, . ,	- ,				
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		T _J =25°C	-7.68	-8.0	-8.32	V
Output Voltage	V _{OUT}	5.0mA <i<sub>OUT<0.5A V_{IN}=-10.5V ~ -23V</i<sub>	-7.60		-8.40	V
Line Description	41/	T _J =25°C, V _{IN} =-10.5V ~ -25V		10	100	mV
Line Regulation	ΔV_{OUT}	T _J =25°C, V _{IN} =-11.5V ~ -17V		5	80	mV
	ΛV_{OUT}	T _J =25°C, I _{OUT} =5.0mA ~ 0.5A		12	160	mV
Load Regulation		T _J =25°C, I _{OUT} =5.0mA ~ 200mA		4	80	mV
Quiescent Current	ΙQ	T _J =25°C		4.3	8	mA
Quiagoant Current change	A.I	I _{OUT} =5mA ~ 0.5A		0.05	0.5	mA
Quiescent Current change	ΔlQ	V _{IN} =-11.5V ~ -25V		0.1	1.0	mA
Temperature Coefficient of Vout	ΔV _{OUT} /ΔΤ	I _{OUT} =5mA		-0.6		mV/°C
Output Noise Voltage	eN	f=10Hz ~ 100kHz, Ta=25°C		175		μV
Ripple Rejection	RR	f=120Hz, V _{IN} =-11.5V ~ -21.5V	54	60		dB
Dropout Voltage	V_D	I _{OUT} =0.5A, T _J =25°C		2		V

For 79D09 (V_{IN}=-15V, I_{OUT}=500mA, C_I=2.2uF,Co=1uF)

101 13003 (VIN-13V, 1001-3001117	1, O -2.2ui ,C	00= rui <i>)</i>				
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		T _J =25°C	-8.64	-9.0	-9.36	V
Output Voltage	V _{OUT}	5.0mA <i<sub>OUT<0.5A V_{IN} =-11.5V ~ -24V</i<sub>	-8.55		-9.45	٧
Line regulation	41/	T _J =25°C, V _{IN} =-11.5V ~ - 25 V		10	180	mV
Line regulation	ΔV_{OUT}	T _J =25°C, V _{IN} =-12.5V ~ - 18V		5	90	mV
Load Deculation	ΔV_{OUT}	T _J =25°C, I _{OUT} =5.0mA ~ 0.5A		12	180	mV
Load Regulation		T _J =25°C, I _{OUT} =5.0mA ~ 200mA		4	90	mV
Quiescent Current	ΙQ	T _J =25°C		4.3	8	mA
Quiescent Current Change	41	I_{OUT} =5mA ~ 0.5A		0.05	0.5	mA
Quiescent Current Change	Δl_Q	V _{IN} =-11.5V ~ -26V		0.1	1.0	mA
Temperature Coefficient of V _{OUT}	ΔVOUT/ΔΤ	I _{OUT} =5mA		-0.6		mV/°C
Output Noise Voltage	eN	f=10Hz ~ 100kHz, Ta=25°C		175		μV
Ripple Rejection	RR	f=120Hz V _{IN} =-12.5V ~ -22.5V	54	60		dB
Dropout Voltage	V_D	I _{OUT} =0.5A,T _J =25°C		2		V

For 79D12 (V_{IN}=-18V, I_{OUT}=500mA, C_I=2.2uF,Co=1uF)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		T _J =25°C	-11.52	-12.0	-12.48	V
Output Voltage	V _{OUT}	5.0mA <i<sub>OUT<0.5A V_{IN}=-14.5V ~ -27V</i<sub>	-11.40		-12.60	٧
Line Regulation	41/	T _J =25°C, V _{IN} =-14.5V ~ -30V		12	240	mV
Line Regulation	ΔV_{OUT}	T _J =25°C, V _{IN} =-16V ~ -22V		6	120	mV
Load Pagulation	ΔV_{OUT}	T _J =25°C, I _{OUT} =5.0mA ~ 0.5A		12	240	mV
Load Regulation		T _J =25°C, I _{OUT} =5.0mA ~ 200mA		4	120	mV
Quiescent Current	IQ	T _J =25°C		4.3	8	mA
Quiacoant Current Change	41-	I _{OUT} =5mA ~ 0.5A		0.05	0.5	mA
Quiescent Current Change	ΔlQ	V _{IN} =-14.5V ~ -30V		0.1	1.0	mΑ
Temperature Coefficient of V _{OUT}	$\Delta V_{OUT}/\Delta T$	I _{OUT} =5mA		-0.8		mV/°C
Output Noise Voltage	eN	f=10Hz ~ 100kHz, Ta=25°C		200		μV
Ripple Rejection	RR	f=120Hz, V _{IN} =-15V ~ -25V	54	60		dB
Dropout Voltage	V_D	I _{OUT} =0.5A, T _J =25°C		2		V

■ ELECTRICAL CHARACTERISTICS (Cont.)

For 79D15 (V_{IN}=-23V, I_{OUT}=500mA, C_I=2.2uF, Co=1uF)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		T _J =25°C	-14.40	-15.0	-15.60	V
Output Voltage	V _{OUT}	5.0mA <i<sub>OUT<0.5A Vi=-17.5V ~ -30V</i<sub>	-14.25		-15.75	V
Line Degulation	41/	T _J =25°C, V _{IN} =-17.5V ~ -30V		12	300	mV
Line Regulation	ΔV_{OUT}	T _J =25°C, V _{IN} =-20V ~ -26V		6	150	mV
Load Degulation	AVOUT 1	T _J =25°C, I _{OUT} =5.0mA ~ 0.5A		12	300	mV
Load Regulation		T _J =25°C, I _{OUT} =5.0mA ~ 200mA		4	150	mV
Quiescent Current	IQ	T _J =25°C		4.3	8	mΑ
Quiaccant Current Change	4.1	I _{OUT} =5mA ~ 0.5A		0.05	0.5	mΑ
Quiescent Current Change	ΔI_Q	V _{IN} =-17.5V ~ -30.5V		0.1	1.0	MA
Temperature Coefficient of Vout	$\Delta V_{OUT}/\Delta T$	I _{OUT} =5mA		-0.9		mV/°C
Output Noise Voltage	eN	f=10Hz ~ 100kHz, Ta=25°C		250		μV
Ripple Rejection	RR	f=120Hz, V _{IN} =-18.5V ~ -28.5V	54	60		dB
Dropout Voltage	Vd	I _{OUT} =0.5A, T _J =25°C		2		V

For 79D18 (V_{IN}=-27V, I_{OUT}=500mA, C_I=2.2uF, Co=1uF)

FOI 19D 16 (VIN=-27 V, 10UT=300111)	1, O -2.2ui , 1	30=101)	1	1		1
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		T _J =25°C	-17.28	-18.0	-18.72	V
Output Voltage	V _{OUT}	$5.0 \text{mA} < I_{\text{OUT}} < 0.5 \text{A}$ $V_{\text{IN}} = -21 \text{V} \sim -33 \text{V}$	-17.10		-18.90	V
Line Regulation	ΔV_{OUT}	$T_J=25^{\circ}C$, $V_{IN}=-21V \sim -33V$		15	360	mV
Line Regulation	ΔVOUT	$T_J=25^{\circ}C$, $V_{IN}=-24V \sim -30V$		8	180	mV
Lood Dogulation	I AVOUT F	$T_J = 25^{\circ}C$, $I_{OUT} = 5.0$ mA ~ 0.5A		15	360	mV
Load Regulation		T _J =25°C, I _{OUT} =5.0mA ~ 200mA		5.0	180	mV
Quiescent Current	IQ	TJ=25°C		4.3	8	mΑ
Quiescent Current Change	41	I_{OUT} =5mA ~ 0.5A			0.5	mΑ
Quiescent Current Change	Δl_Q	V _{IN} =-21V ~ -32V			1.0	mΑ
Temperature Coefficient of V _{OUT}	$\Delta V_{OUT}/\Delta T$	I _{OUT} =5mA		-1		mV/°C
Output Noise Voltage	eN	f=10Hz ~ 100kHz, Ta=25°C		300		μV
Ripple Rejection	RR	f=120Hz, V _{IN} =-22V ~ -32V	54	60		dB
Dropout Voltage	V_D	I _{OUT} =0.5A, T _J =25°C		2		V

For 79D24 (V_{IN}=-33V, I_{OUT}=500mA, C_I=2.2uF, Co=1uF)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
		T _J =25°C	-23.04	-24.0	-24.96	V
Output Voltage	V _{OUT}	5.0mA <i<sub>OUT<0.5A V_{IN}=-27V ~ -38V</i<sub>	-22.80		-25.20	٧
Line Degulation	41/	T _J =25°C, V _{IN} =-27V ~ -38V		15	480	mV
Line Regulation	ΔV_{OUT}	T _J =25°C, V _{IN} =-30V ~ -36V		8	240	mV
Load Regulation	ΔV_{OUT}	T _J =25°C, I _{OUT} =5.0mA ~ 0.5A		15	480	mV
Load Regulation		T _J =25°C, I _{OUT} =5.0mA ~ 200mA		5.0	240	mV
Quiescent Current	IQ	T _J =25°C		4.3	8	mΑ
Quiescent Current Change	41-	I _{OUT} =5mA ~ 0.5A			0.5	mΑ
Quiescent Current Change	ΔlQ	V _{IN} =-27V ~ -38V			1.0	mA
Temperature Coefficient of V _{OUT}	$\Delta V_{OUT}/\Delta T$	I _{OUT} =5mA		-1		mV/°C
Output Noise Voltage	eN	f=10Hz ~ 100kHz, Ta=25°C		400		μV
Ripple Rejection	RR	f=120Hz, V _{IN} =-28V to -38V	54	60		dB
Dropout Voltage	V_D	I _{OUT} =0.5A,T _J =25°C		2		V

APPLICATION CIRCUITS

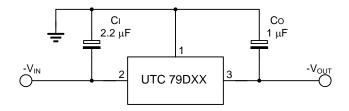


Fig.1 Fixed output regulator

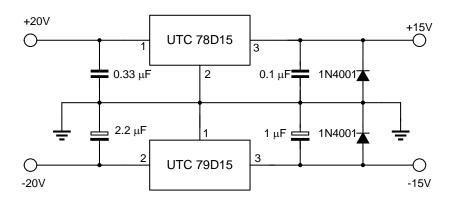


Fig.2 Split power supply (±15V, 0.5A)

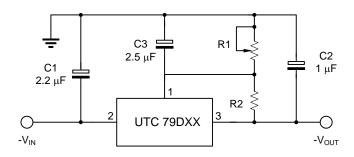


Fig.3 Circuit for increasing output voltage

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