



79LXX

LINEAR INTEGRATED CIRCUIT

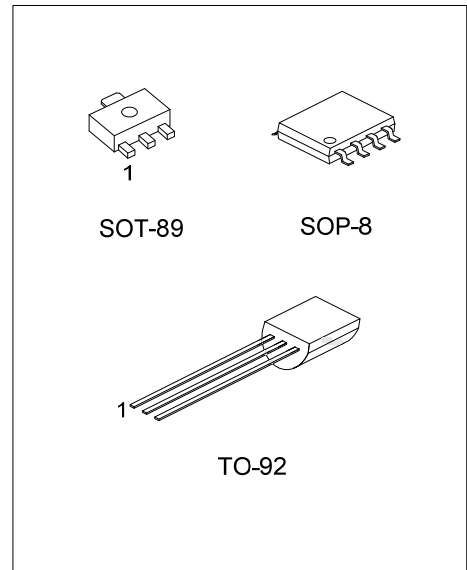
3-TERMINAL 0.1A NEGATIVE VOLTAGE REGULATOR

DESCRIPTION

The UTC **79LXX** family is monolithic fixed voltage regulator integrated circuit. They are 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, -15V, -18V and -24V available.
- * Thermal overload shutdown protection.
- * Short circuit current limiting.



ORDERING INFORMATION

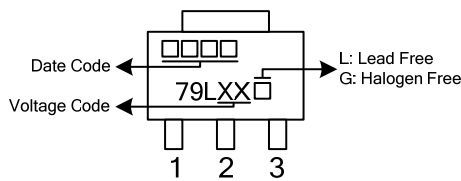
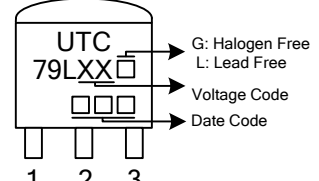
Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
79LXXL-AB3-R	79LXXG-AB3-R	SOT-89	G	I	O	-	-	-	-	-	Tape Reel
79LXXL-S08-R	79LXXG-S08-R	SOP-8	O	I	I	N	G	I	I	N	Tape Reel
79LXXL-S08-T	79LXXG-S08-T	SOP-8	O	I	I	N	G	I	I	N	Tube
79LXXL-T92-B	79LXXG-T92-B	TO-92	G	I	O	-	-	-	-	-	Tape Box
79LXXL-T92-K	79LXXG-T92-K	TO-92	G	I	O	-	-	-	-	-	Bulk
79LXXL-T92-R	79LXXG-T92-R	TO-92	G	I	O	-	-	-	-	-	Tape Reel

Notes: 1. XX: Output Voltage, refer to Marking Information.

2. Note: Pin Assignment: I:V_{IN} O:V_{OUT} G:GND

<p>79LXXL-AB3-R</p>	<p>(1) Packing Type (2) Package Type (3) Lead Free (4) Output Voltage Code</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel, T: Tube (2) AB3: SOT-89, S08: SOP-8, T92: TO-92 (3) L: Lead Free, G: Halogen Free (4) XX: refer to Marking Information</p>
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MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-89	05:-5.0V 06:-6.0V 08:-8.0V 09:-9.0V	 <p>Diagram of SOT-89 package marking. The top surface has a date code (four digits) and a voltage code (three digits). The part number '79LXX' is printed in the center. The bottom surface has three pins labeled 1, 2, and 3. A legend indicates 'L: Lead Free' and 'G: Halogen Free'.</p>
TO-92	10:-10V 12:-12V 15:-15V 18:-18V 24:-24V	 <p>Diagram of TO-92 package marking. The top surface has 'UTC' and '79LXX' printed. The bottom surface has a date code (four digits) and a voltage code (three digits). The part number '79LXX' is printed in the center. The bottom surface has three pins labeled 1, 2, and 3. A legend indicates 'G: Halogen Free' and 'L: Lead Free'.</p>

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	VALUE	UNIT
Input Voltage	$V_{OUT} = -5 \sim -9V$	V_{IN}	-30	V
	$V_{OUT} = -12 \sim -15V$		-35	V
	$V_{OUT} = -18 \sim -24V$		-35	V
Power Dissipation	SOT-89	P_D	350	mW
	SOP-8		300	mW
	TO-92		625	mW
Operating Temperature		T_{OPR}	-40 ~ +85	°C
Storage Temperature		T_{STG}	-40 ~ +125	°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.

■ ELECTRICAL CHARACTERISTICS

79L05($T_J=25^\circ C$, $C_1=0.33\mu F$, $C_{OUT}=1\mu F$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-10V$, $I_{OUT}=40mA$	-4.8	-5.0	-5.2	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-7 \sim -20V$, $I_{OUT}=40mA$		15	150	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-10V$, $I_{OUT}=1 \sim 100mA$		7	60	mV
Quiescent current	I_Q	$V_{IN}=-10V$, $I_{OUT}=40mA$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-8 \sim -18V$, $I_{OUT}=40mA$, $e_{IN}=1V_{P-P}$, $f=120Hz$	41	71		dB
Output Voltage Noise	eN	$V_{IN}=-10V$, $I_{OUT}=40mA$ $BW=10Hz \sim 100kHz$		120		μV

79L06($T_J=25^\circ C$, $C_1=0.33\mu F$, $C_{OUT}=1\mu F$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-12V$, $I_{OUT}=40mA$	-5.76	-6.0	-6.24	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-8.5 \sim -20V$, $I_{OUT}=40mA$		15	150	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-12V$, $I_{OUT}=1 \sim 100mA$		7	60	mV
Quiescent current	I_Q	$V_{IN}=-12V$, $I_{OUT}=40mA$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-9 \sim -19V$, $I_{OUT}=40mA$ $e_{IN}=1V_{P-P}$, $f=120Hz$	41	71		dB
Output Voltage Noise	eN	$V_{IN}=-12V$, $I_{OUT}=40mA$ $BW=10Hz \sim 100kHz$		120		μV

79L08($T_J=25^\circ C$, $C_1=0.33\mu F$, $C_{OUT}=1\mu F$, unless otherwise specified)

PARAMETER	SYMBOL	Test conditions	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-14V$, $I_{OUT}=40mA$	-7.68	-8.0	-8.32	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-10.5 \sim -23V$, $I_{OUT}=40mA$		24	175	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-14V$, $I_{OUT}=1 \sim 100mA$		10	80	mV
Quiescent current	I_Q	$V_{IN}=-14V$, $I_{OUT}=40mA$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-11 \sim -21V$, $I_{OUT}=40mA$ $e_{IN}=1V_{P-P}$, $f=140Hz$	39	68		dB
Output Voltage Noise	eN	$V_{IN}=-14V$, $I_{OUT}=40mA$ $BW=10Hz \sim 100kHz$		190		μV

■ ELECTRICAL CHARACTERISTICS(Cont.)

79L09($T_J=25^\circ\text{C}$, $C_1=0.33\mu\text{F}$, $C_{OUT}=1\mu\text{F}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-15\text{V}$, $I_{OUT}=40\text{mA}$	-8.64	-9.0	-9.36	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-12.5\sim-24\text{V}$, $I_{OUT}=40\text{mA}$		27	200	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-15\text{V}$, $I_{OUT}=1\sim 100\text{mA}$		12	90	mV
Quiescent current	I_Q	$V_{IN}=-15\text{V}$, $I_{OUT}=40\text{mA}$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-12\sim-22\text{V}$, $I_{OUT}=40\text{mA}$ $e_{IN}=1V_{P-P}$, $f=150\text{Hz}$	37	64		dB
Output Voltage Noise	eN	$V_{IN}=-15\text{V}$, $I_{OUT}=40\text{mA}$ $BW=10\text{Hz}\sim 100\text{kHz}$		210		μV

79L12($T_J=25^\circ\text{C}$, $C_1=0.33\mu\text{F}$, $C_{OUT}=1\mu\text{F}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-19\text{V}$, $I_{OUT}=40\text{mA}$	-11.52	-12.0	-12.48	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-14.5\sim-27\text{V}$, $I_{OUT}=40\text{mA}$		36	250	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-19\text{V}$, $I_{OUT}=1\sim 100\text{mA}$		16	100	mV
Quiescent current	I_Q	$V_{IN}=-19\text{V}$, $I_{OUT}=40\text{mA}$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-15\sim-25\text{V}$, $I_{OUT}=40\text{mA}$ $e_{IN}=1V_{P-P}$, $f=190\text{Hz}$	37	64		dB
Output Voltage Noise	eN	$V_{IN}=-19\text{V}$, $I_{OUT}=40\text{mA}$ $BW=10\text{Hz}\sim 100\text{kHz}$		210		μV

79L15($T_J=25^\circ\text{C}$, $C_1=0.33\mu\text{F}$, $C_{OUT}=1\mu\text{F}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-23\text{V}$, $I_{OUT}=40\text{mA}$	-14.4	-15.0	-15.6	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-17.5\sim-30\text{V}$, $I_{OUT}=40\text{mA}$		45	300	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-23\text{V}$, $I_{OUT}=1\sim 100\text{mA}$		20	150	mV
Quiescent current	I_Q	$V_{IN}=-23\text{V}$, $I_{OUT}=40\text{mA}$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-18.5\sim-28.5\text{V}$, $I_{OUT}=40\text{mA}$ $e_{IN}=1V_{P-P}$, $f=230\text{Hz}$	34	63		dB
Output Voltage Noise	eN	$V_{IN}=-23\text{V}$, $I_{OUT}=40\text{mA}$ $BW=10\text{Hz}\sim 100\text{kHz}$		340		μV

79L18($T_J=25^\circ\text{C}$, $C_1=0.33\mu\text{F}$, $C_{OUT}=1\mu\text{F}$, unless otherwise specified)

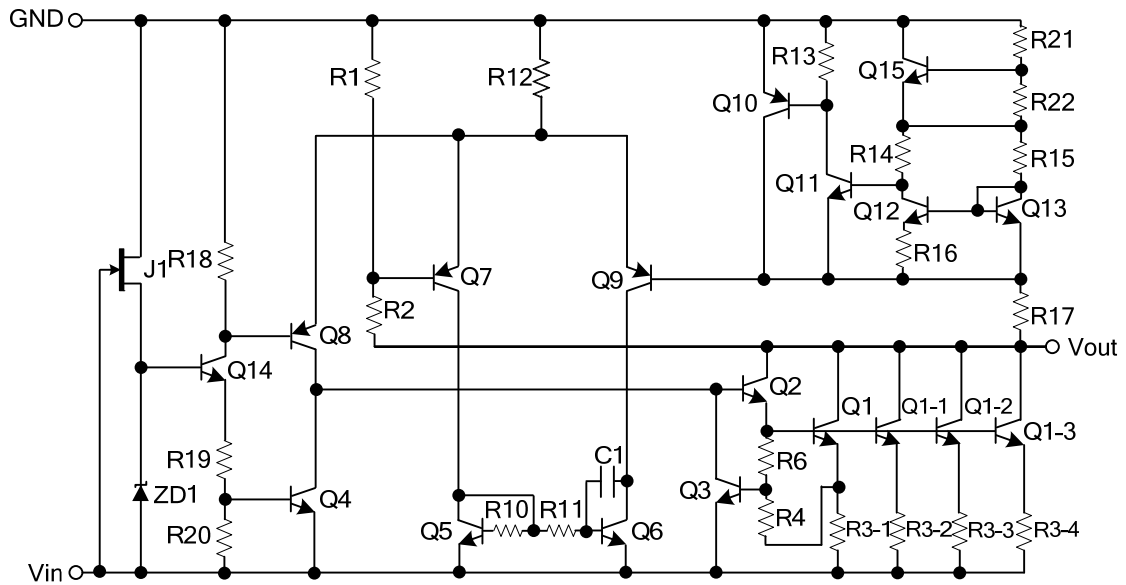
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-27\text{V}$, $I_{OUT}=40\text{mA}$	-17.28	-18.0	-18.72	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-20.5\sim-33\text{V}$, $I_{OUT}=40\text{mA}$		54	300	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-27\text{V}$, $I_{OUT}=1\sim 100\text{mA}$		23	170	mV
Quiescent current	I_Q	$V_{IN}=-27\text{V}$, $I_{OUT}=40\text{mA}$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-23\sim-33\text{V}$, $I_{OUT}=40\text{mA}$ $e_{IN}=1V_{P-P}$, $f=270\text{Hz}$	33	60		dB
Output Voltage Noise	eN	$V_{IN}=-27\text{V}$, $I_{OUT}=40\text{mA}$ $BW=10\text{Hz}\sim 100\text{kHz}$		410		μV

■ ELECTRICAL CHARACTERISTICS(Cont.)

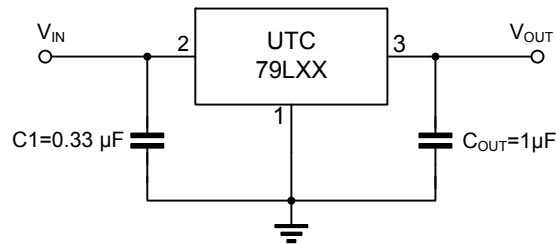
79L24(T_J=25°C, C₁=0.33μF, C_{OUT}=1μF, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V _{OUT}	V _{IN} =-33V, I _{OUT} =40mA	-23.04	-24.0	-24.96	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V _{IN} =-27~-38V, I _o =40mA		72	350	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	V _{IN} =-33V, I _{OUT} =1~100mA		30	200	mV
Quiescent current	I _Q	V _{IN} =-33V, I _{OUT} =40mA		3.5	6.0	mA
Ripple Rejection	RR	V _{IN} =-29~-35V, I _{OUT} =40mA e _{IN} =1V _{P-P} , f=330Hz	31	55		dB
Output Voltage Noise	eN	V _{IN} =-33V, I _{OUT} =40mA BW=10Hz~100kHz		550		μV

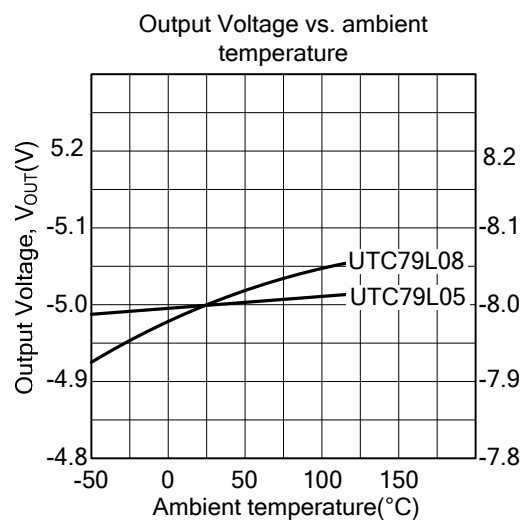
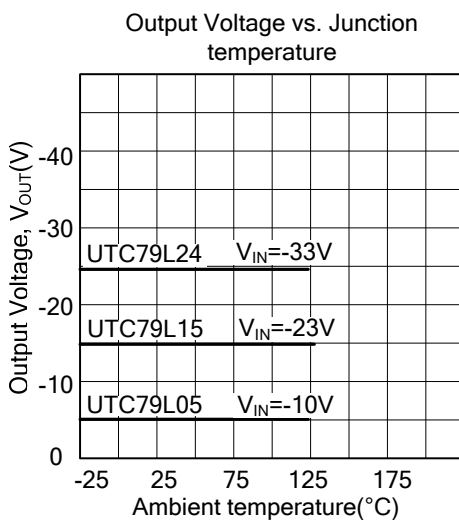
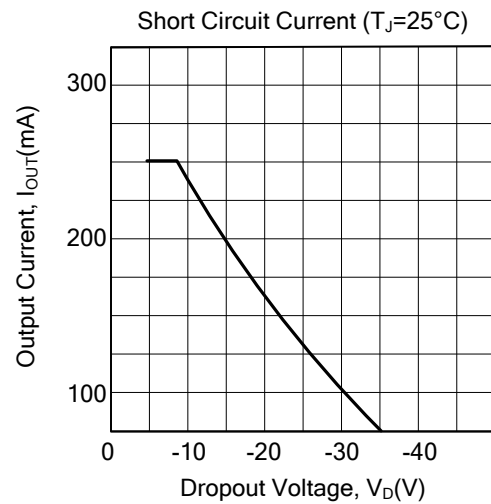
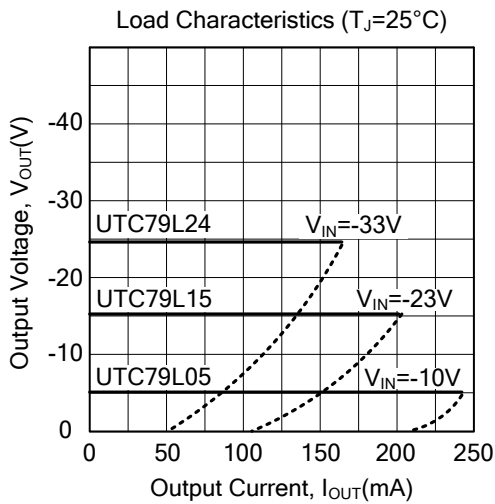
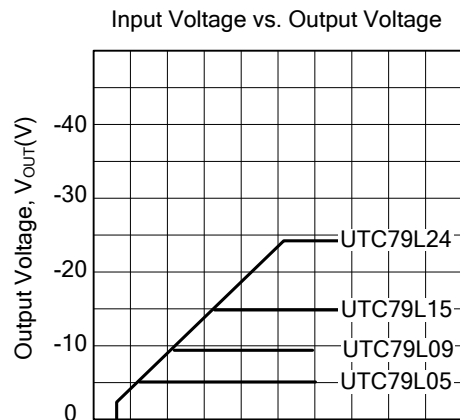
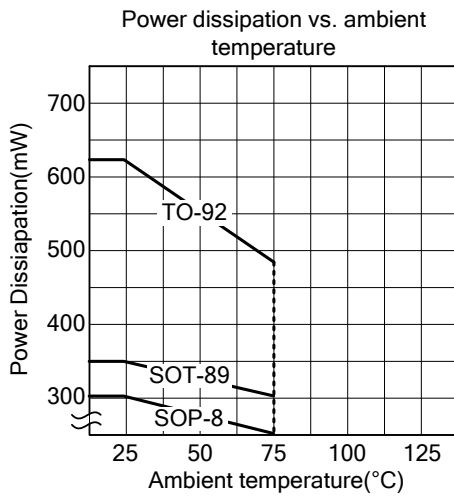
■ BLOCK DIAGRAM



■ APPLICATION CIRCUIT

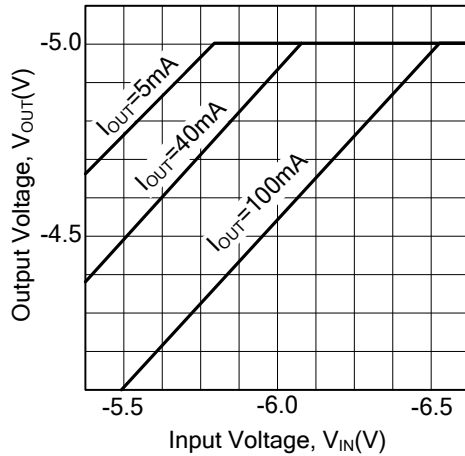


TYPICAL CHARACTERISTICS

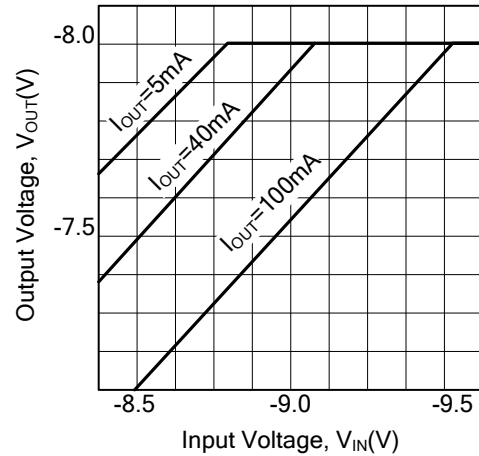


■ TYPICAL CHARACTERISTICS(Cont.)

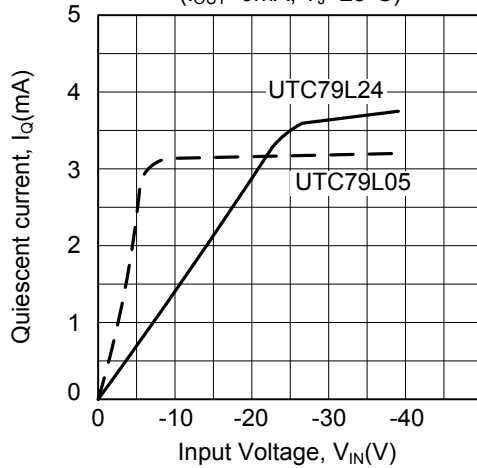
UTC79L05 Dropout Characteristics
($T_J=25^\circ\text{C}$)



UTC79L08 Dropout Characteristics
($T_J=25^\circ\text{C}$)



Current vs. Input Voltage
($I_{OUT}=0\text{mA}$, $T_J=25^\circ\text{C}$)



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