



79LXX

LINEAR INTEGRATED CIRCUIT

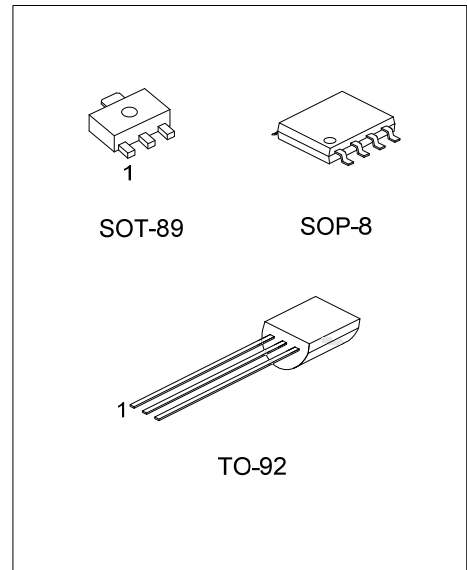
3-TERMINAL 0.1A NEGATIVE VOLTAGE REGULATOR

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.



Lead-free: 79LXXL
Halogen-free: 79LXXG

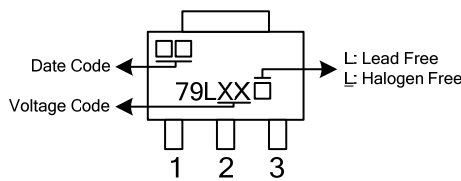
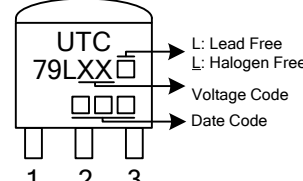
ORDERING INFORMATION

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

Notes: 1. xx: Output Voltage, refer to Marking Information.
2. Note: Pin Assignment: I:VIN O:VOUT G:GND

<p>79LxxL-AB3-R</p>	<p>(1) Packing Type (2) Package Type (3) Lead Plating (4) Output Voltage Code</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel, T: Tube (2) AB3: S0T-89, S08: SOP-8, T92: TO-92 (3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn (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>The diagram shows a top-down view of an SOT-89 package. It has three pins labeled 1, 2, and 3. On the top surface, there are two small squares representing the Date Code. Below them is the text '79LXX' followed by another small square representing the Voltage Code. To the right of the package, there are two labels: 'L: Lead Free' and 'L: Halogen Free'.</p>
TO-92	10:-10V 12:-12V 15:-15V 18:-18V 24:-24V	 <p>The diagram shows a top-down view of a TO-92 package. It has three pins labeled 1, 2, and 3. On the top surface, the text 'UTC' is printed above '79LXX', which is followed by a small square representing the Voltage Code. Below this is another small square representing the Date Code. To the right of the package, there are two labels: 'L: Lead Free' and 'L: Halogen 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 Junction Temperature Range		T_{OPR}	-30 ~ +125	°C
Storage Temperature Range		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	$V_{IN}=-12\sim-22\text{V}$, $I_{OUT}=40\text{mA}$ $e_{in}=1\text{Vp-p}$, $f=150\text{Hz}$	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	$V_{IN}=-15\sim-25\text{V}$, $I_{OUT}=40\text{mA}$ $e_{in}=1\text{Vp-p}$, $f=190\text{Hz}$	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	$V_{IN}=-18.5\sim-28.5\text{V}$, $I_{OUT}=40\text{mA}$ $e_{in}=1\text{Vp-p}$, $f=230\text{Hz}$	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)

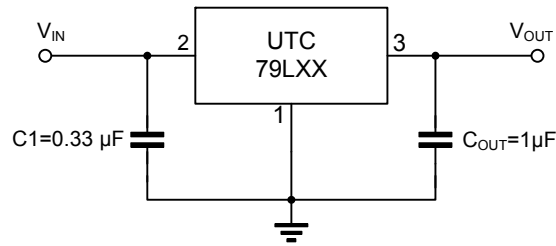
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	V_{OUT}	$V_{IN}=-27\text{V}$, $I_{OUT}=40\text{mA}$	-17.28	-18.0	-18.72	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-20.5\sim-33\text{V}$, $I_{OUT}=40\text{mA}$		54	300	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-27\text{V}$, $I_{OUT}=1\sim 100\text{mA}$		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	$V_{IN}=-23\sim-33\text{V}$, $I_{OUT}=40\text{mA}$ $e_{in}=1\text{Vp-p}$, $f=270\text{Hz}$	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.)

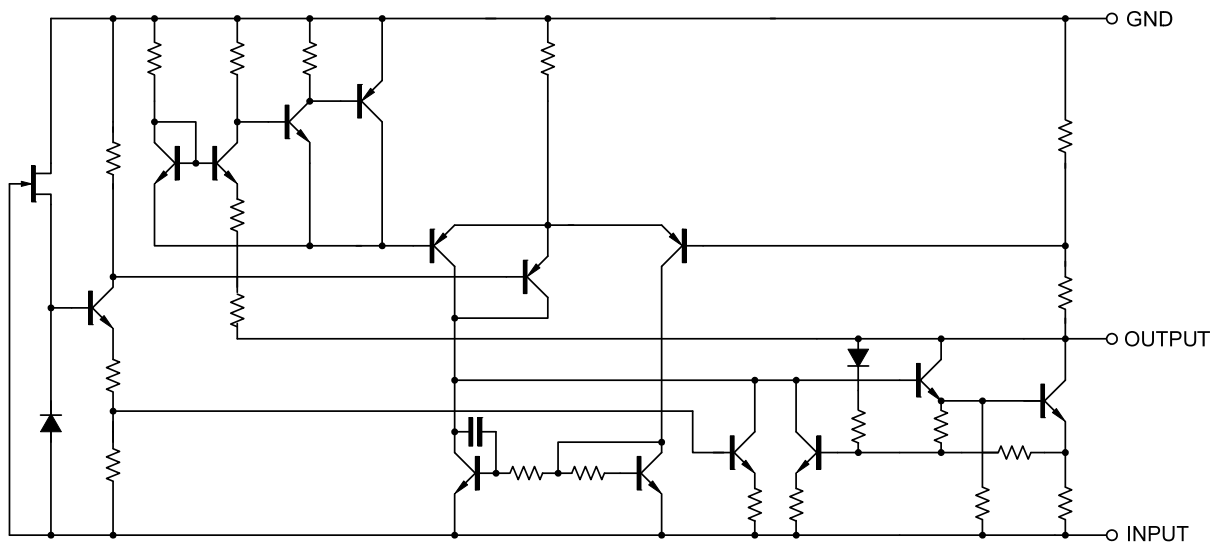
79L24(T_J=25°C, C₁=0.33μF, C_{OUT}=1μF, unless otherwise specified)

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} =1Vp-p, f=330Hz	31	55		dB
Output Voltage Noise	eN	V _{IN} =-33V, I _{OUT} =40mA BW=10Hz~100kHz		550		μV

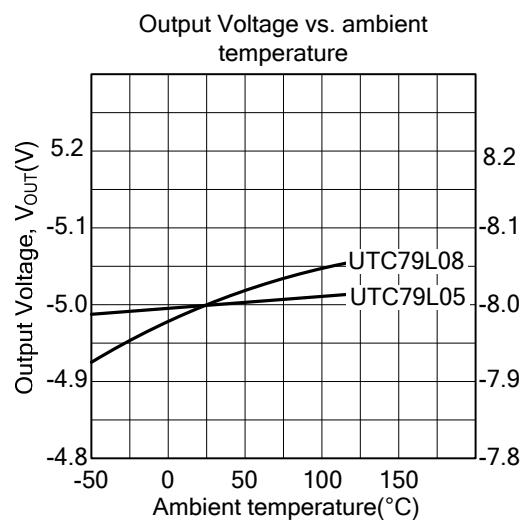
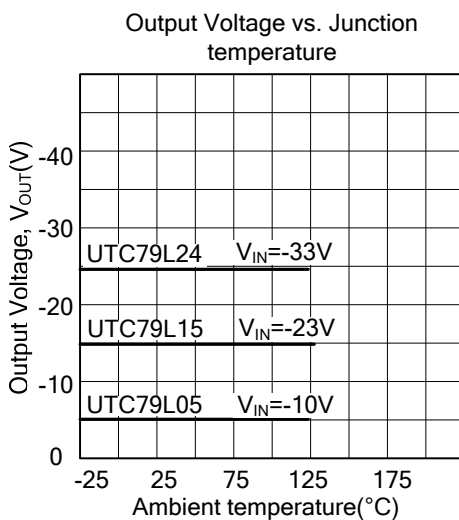
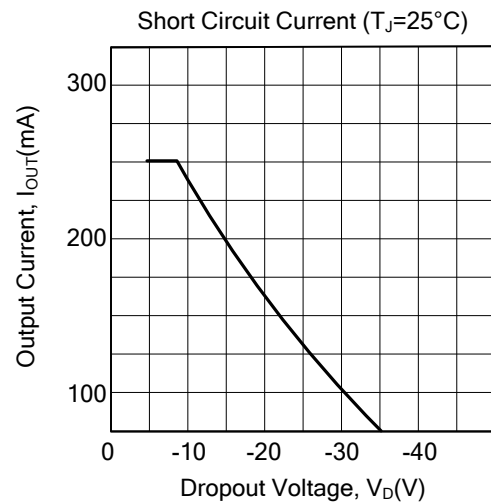
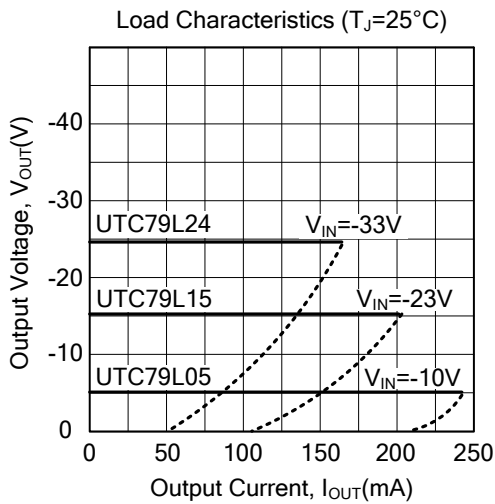
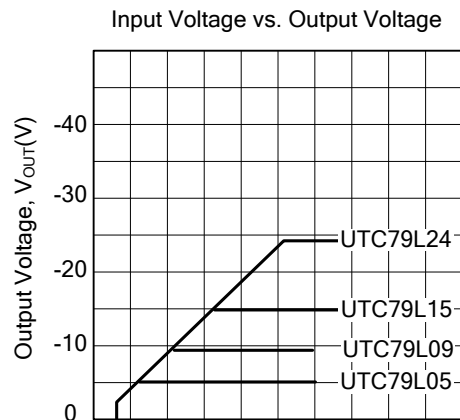
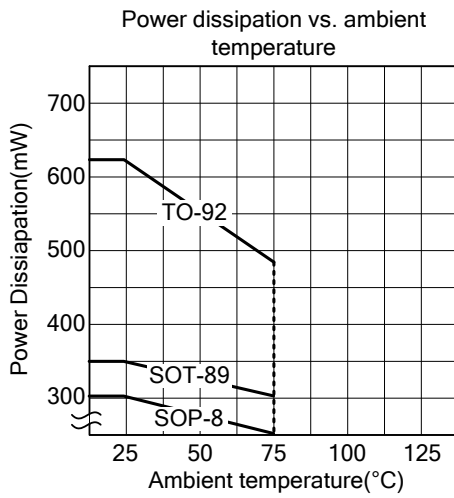
■ APPLICATION CIRCUIT



■ TEST CIRCUIT

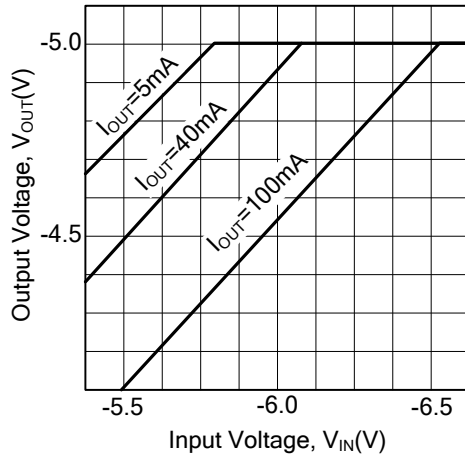


TYPICAL CHARACTERISTICS

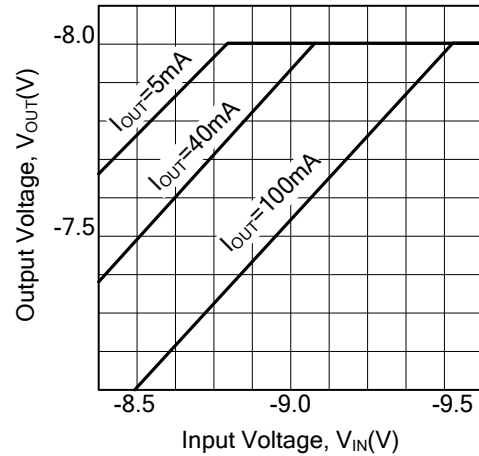


■ TYPICAL CHARACTERISTICS(Cont.)

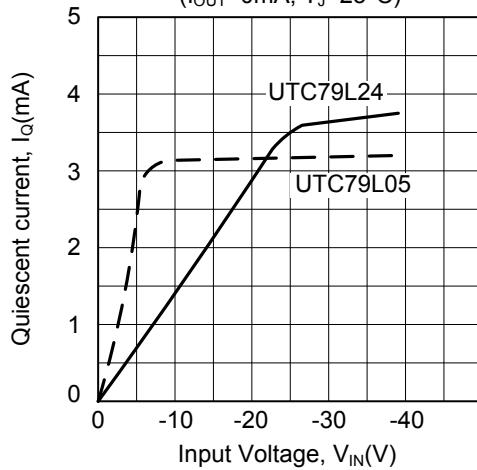
UTC79L05 Dropout Characteristics
($T_J=25^\circ\text{C}$)



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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