



## 79LXX

## LINEAR INTEGRATED CIRCUIT

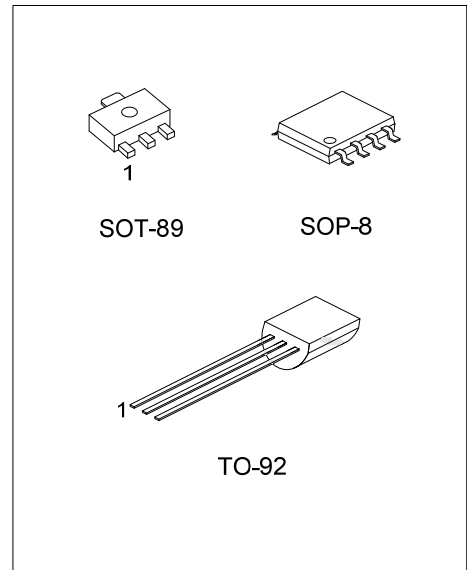
### 3-TERMINAL 0.1A NEGATIVE VOLTAGE REGULATOR

#### 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

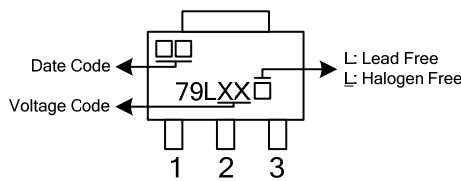
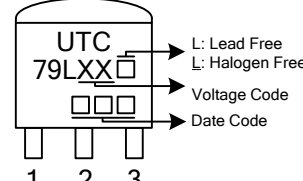
Ordering Number			Pin Assignment								Package	Packing
Normal	Lead Free Plating	Halogen Free	1	2	3	4	5	6	7	8		
79Lxx-AB3-R	79LxxL-AB3-R	79LxxG-AB3-R	G	I	O	-	-	-	-	-	SOT-89	Tape Reel
79Lxx-S08-R	79LxxL-S08-R	79LxxG-S08-R	O	I	I	N	G	I	I	N	SOP-8	Tape Reel
79Lxx-T92-B	79LxxL-T92-B	79LxxG-T92-B	G	I	O	-	-	-	-	-	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 SOT-89 package with three pins labeled 1, 2, and 3. The top surface has a date code (two squares) and a voltage code (two squares) to the left of the '79LXX' marking. To the right of the marking are two squares representing '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 TO-92 package with three pins labeled 1, 2, and 3. The top surface has 'UTC' and '79LXX' markings. To the right of '79LXX' are two squares representing 'L: Lead Free' and 'L: Halogen Free'. Below these are two squares representing 'Voltage Code' and 'Date Code'.</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		$T_{OPR}$	-40 ~ +85	°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~100kHz		120		$\mu V$

**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~100kHz		120		$\mu V$

**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~100kHz		190		$\mu V$

■ 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		$\mu\text{V}$

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		$\mu\text{V}$

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		$\mu\text{V}$

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

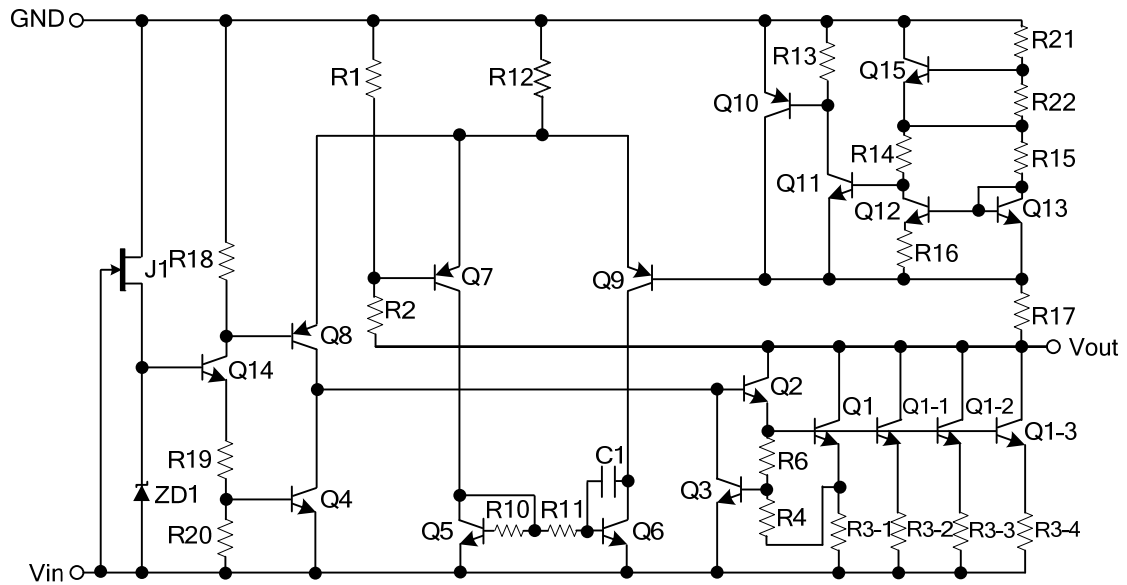
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=-27\text{V}$ , $I_{OUT}=40\text{mA}$	-17.28	-18.0	-18.72	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-20.5\sim-33\text{V}$ , $I_{OUT}=40\text{mA}$		54	300	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-27\text{V}$ , $I_{OUT}=1\sim 100\text{mA}$		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		$\mu\text{V}$

■ ELECTRICAL CHARACTERISTICS(Cont.)

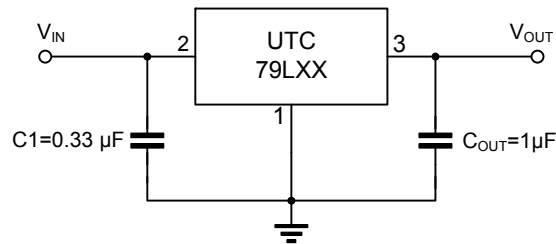
79L24(T<sub>J</sub>=25°C, C<sub>1</sub>=0.33μF, C<sub>OUT</sub>=1μF, unless otherwise specified)

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

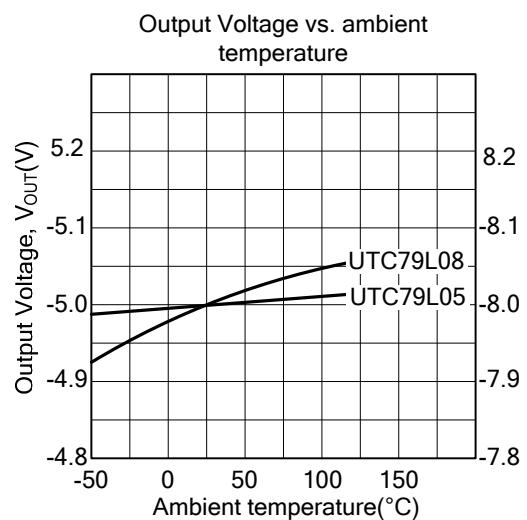
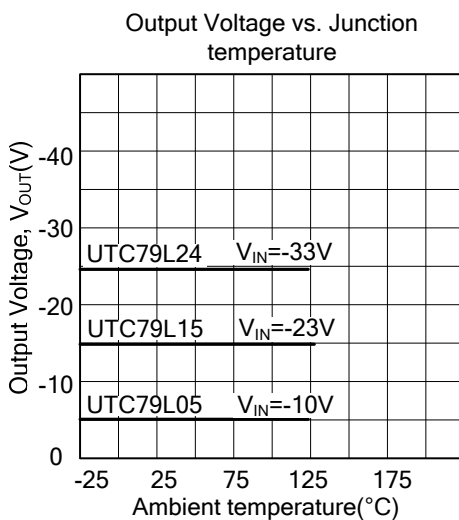
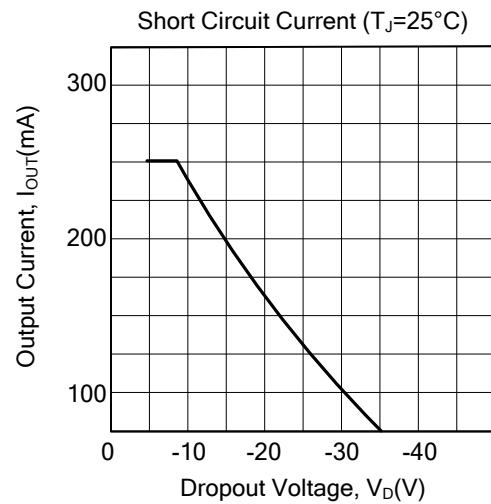
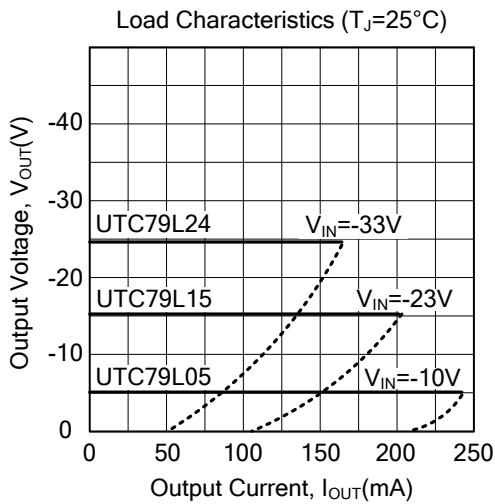
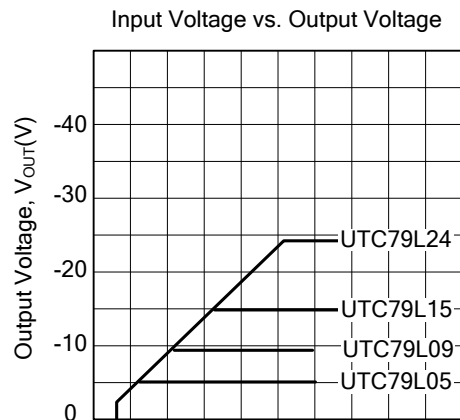
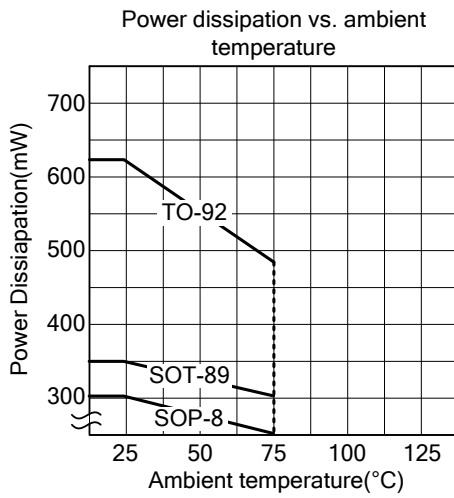
■ BLOCK DIAGRAM



■ APPLICATION CIRCUIT

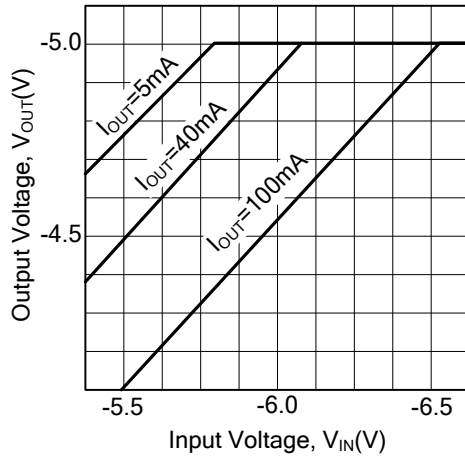


## TYPICAL CHARACTERISTICS

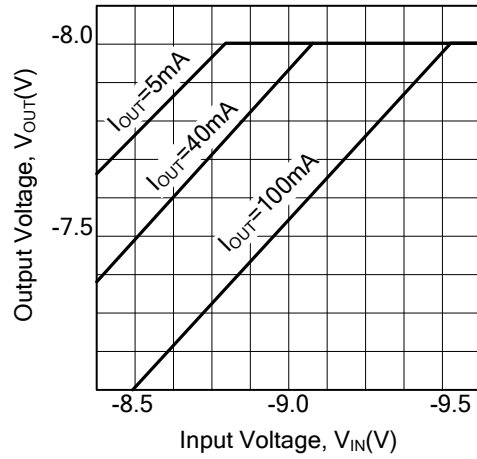


■ TYPICAL CHARACTERISTICS(Cont.)

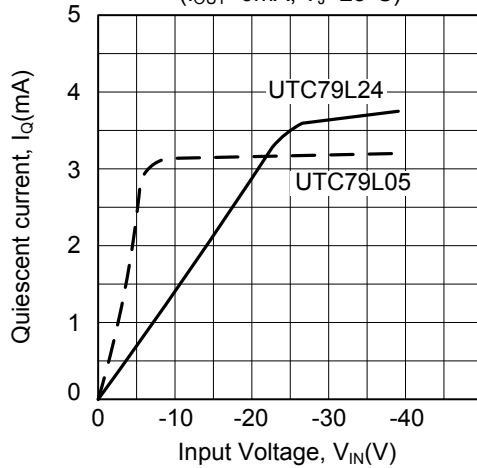
UTC79L05 Dropout Characteristics  
( $T_J=25^\circ\text{C}$ )



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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