



## 79LXX

## LINEAR INTEGRATED CIRCUIT

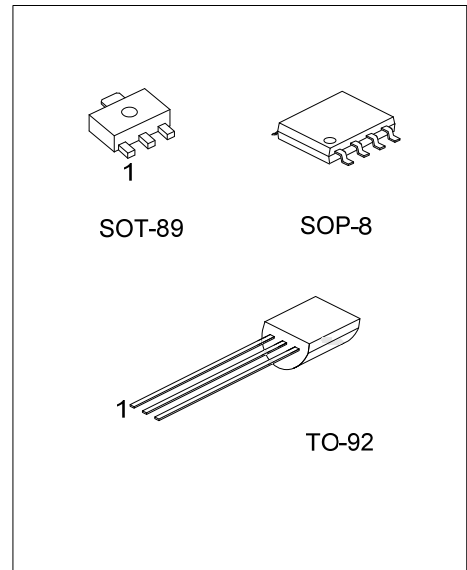
### 3-TERMINAL 0.1A NEGATIVE VOLTAGE REGULATOR

#### 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, -10V, -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-T92-B	79LXXG-T92-B	TO-92	G	I	O	-	-	-	-	-	Tape Box
79LXXL-T92-K	79LXXG-T92-K	TO-92	G	I	O	-	-	-	-	-	Bulk

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

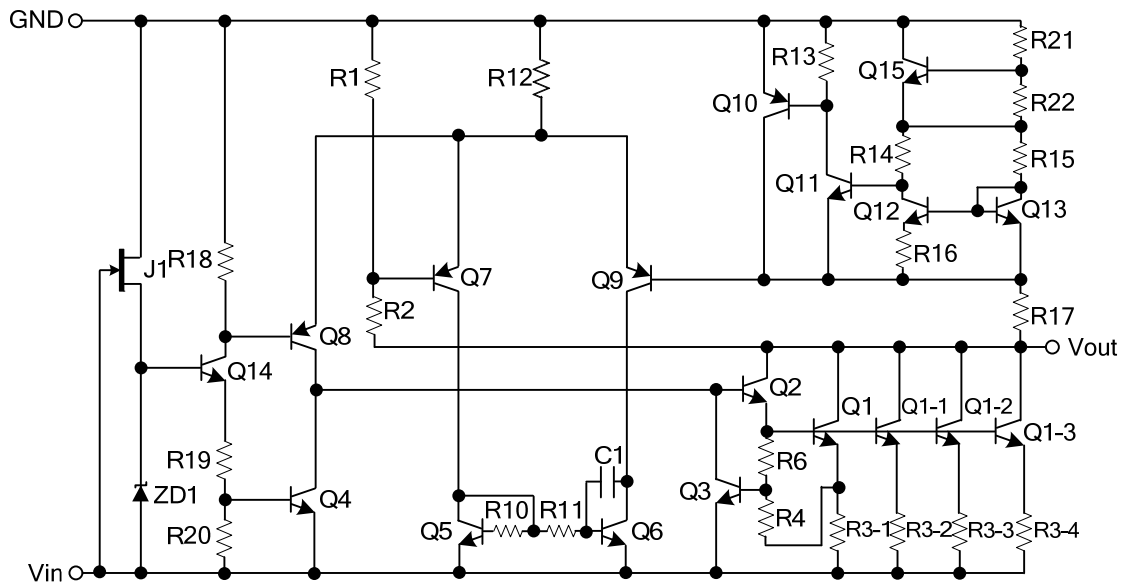
2. Note: Pin Assignment: I:V<sub>IN</sub> O:V<sub>OUT</sub> G:GND

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

PACKAGE	VOLTAGE CODE	MARKING
SOT-89		
TO-92	05:-5.0V 06:-6.0V 08:-8.0V 09:-9.0V 10:-10V 12:-12V 15:-15V 18:-18V 24:-24V	
SOP-8		

### BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT	
Input Voltage	$V_{IN}$	$V_{OUT} = -5 \sim -9V$	-30	V
		$V_{OUT} = -12 \sim -15V$	-35	V
		$V_{OUT} = -18 \sim -24V$	-35	V
Power Dissipation	$P_D$	SOT-89	350	mW
		SOP-8	300	mW
		TO-92	625	mW
Operating Junction Temperature	$T_J$	+150	°C	
Operating Temperature	$T_{OPR}$	-40 ~ +125	°C	
Storage Temperature	$T_{STG}$	-40 ~ +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.

### ■ ELECTRICAL CHARACTERISTICS

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

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

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

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

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

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

■ 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	$V_{IN}=-12\sim-22\text{V}$ , $I_{OUT}=40\text{mA}$ $e_{IN}=1\text{V}_{P-P}$ , $f=150\text{Hz}$	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		$\mu\text{V}$

**79L10** ( $T_J=25^\circ\text{C}$ ,  $C_1=0.33\mu\text{F}$ ,  $C_{OUT}=1\mu\text{F}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$V_{OUT}$	$V_{IN}=-16\text{V}$ , $I_{OUT}=40\text{mA}$	-9.6	-10	-10.4	V
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{IN}=-13\sim-24\text{V}$ , $I_{OUT}=40\text{mA}$		30	220	mV
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT} \times V_{OUT}}$	$V_{IN}=-16\text{V}$ , $I_{OUT}=1\sim 100\text{mA}$		15	95	mV
Quiescent current	$I_Q$	$V_{IN}=-16\text{V}$ , $I_{OUT}=40\text{mA}$		3.5	6.0	mA
Ripple Rejection	RR	$V_{IN}=-13\sim-23\text{V}$ , $I_{OUT}=40\text{mA}$ $e_{IN}=1\text{V}_{P-P}$ , $f=150\text{Hz}$	37	64		dB
Output Voltage Noise	eN	$V_{IN}=-16\text{V}$ , $I_{OUT}=40\text{mA}$ $BW=10\text{Hz}\sim 100\text{kHz}$		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	$V_{IN}=-15\sim-25\text{V}$ , $I_{OUT}=40\text{mA}$ $e_{IN}=1\text{V}_{P-P}$ , $f=190\text{Hz}$	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		$\mu\text{V}$

**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	$V_{IN}=-18.5\sim-28.5\text{V}$ , $I_{OUT}=40\text{mA}$ $e_{IN}=1\text{V}_{P-P}$ , $f=230\text{Hz}$	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		$\mu\text{V}$

■ ELECTRICAL CHARACTERISTICS(Cont.)

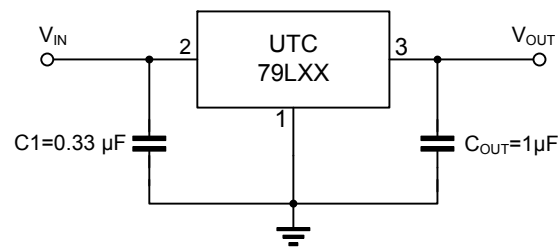
**79L18** ( $T_J=25^\circ\text{C}$ ,  $C_1=0.33\mu\text{F}$ ,  $C_{OUT}=1\mu\text{F}$ , unless otherwise specified)

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	$V_{IN}=-23\sim-33\text{V}$ , $I_{OUT}=40\text{mA}$ $e_{IN}=1\text{V}_{P-P}$ , $f=270\text{Hz}$	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		$\mu\text{V}$

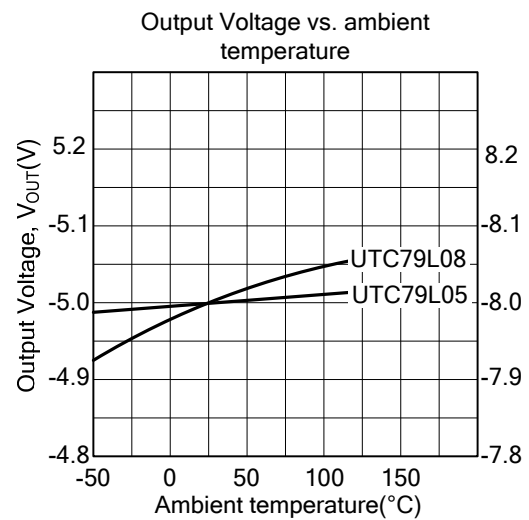
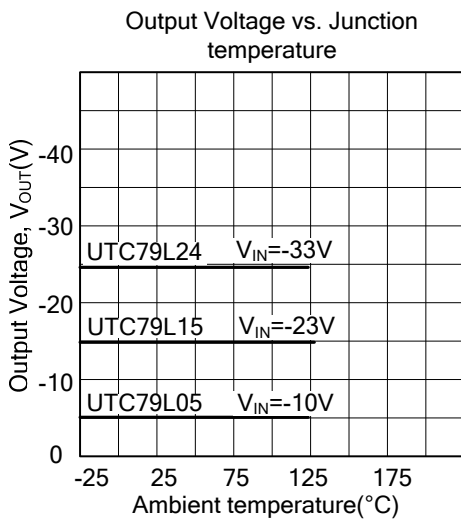
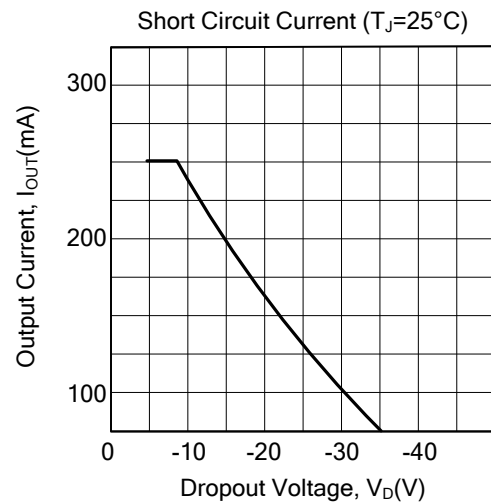
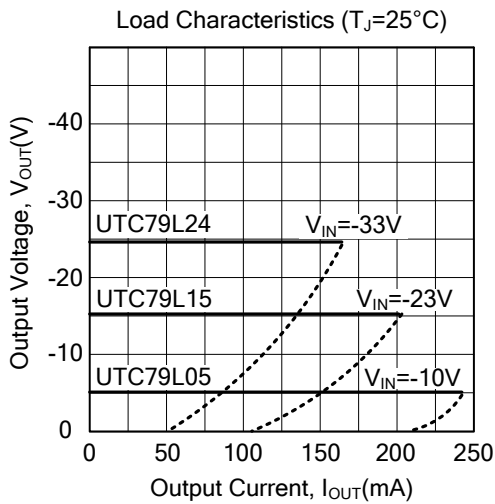
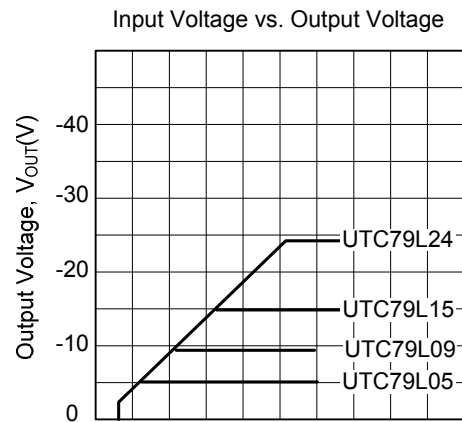
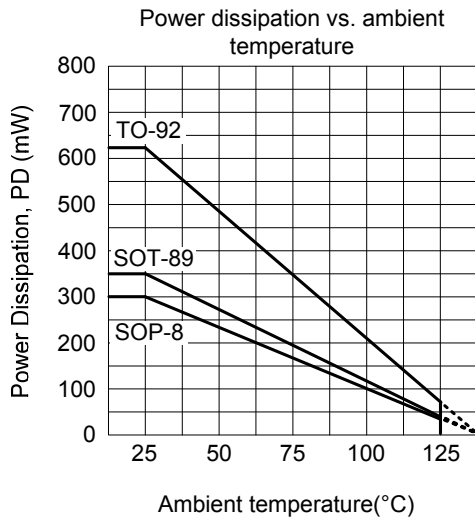
**79L24** ( $T_J=25^\circ\text{C}$ ,  $C_1=0.33\mu\text{F}$ ,  $C_{OUT}=1\mu\text{F}$ , unless otherwise specified)

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

### ■ APPLICATION CIRCUIT

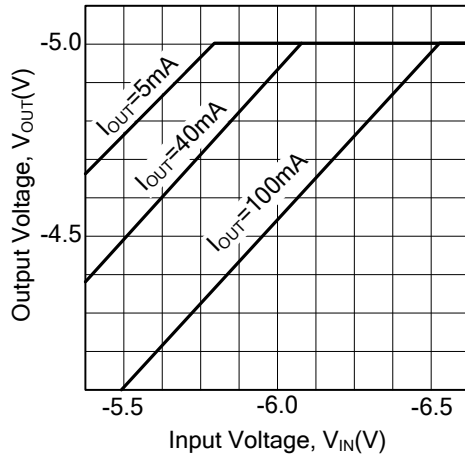


## TYPICAL CHARACTERISTICS

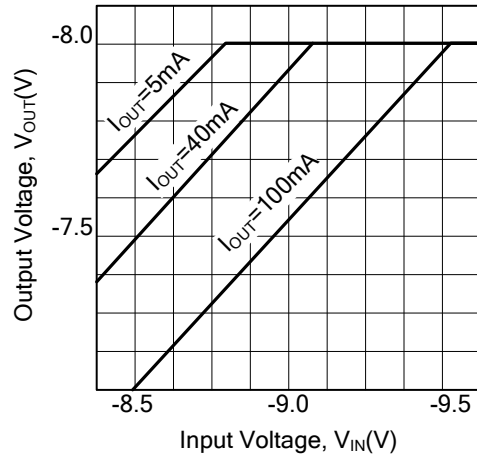


■ TYPICAL CHARACTERISTICS(Cont.)

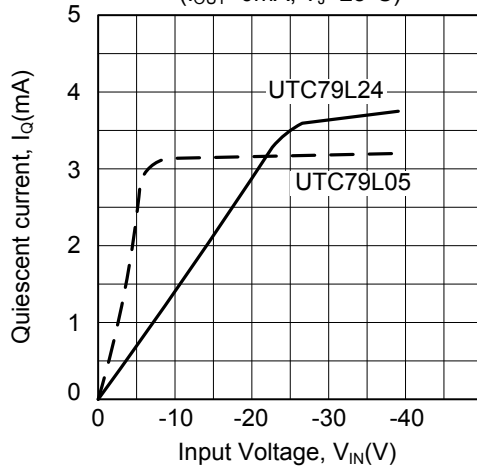
UTC79L05 Dropout Characteristics  
( $T_J=25^\circ\text{C}$ )



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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