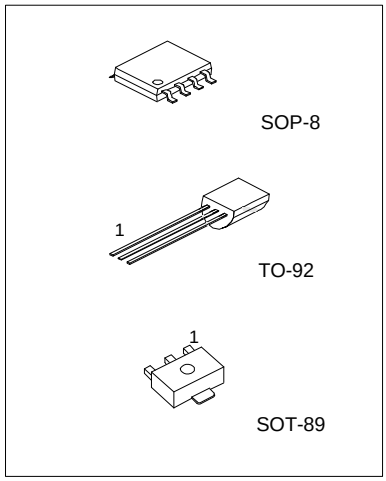
# UTC 79LXX LINEAR INTEGRATED CIRCUIT

## 3-TERMINAL 0.1A NEGATIVE VOLTAGE REGULATOR




TO-92, SOT-89: 1:GND 2:Input 3:Output
SOP-8 : 1. Vout ; 2,3,6,7 Vin ; 5. GND;
4,8 NC

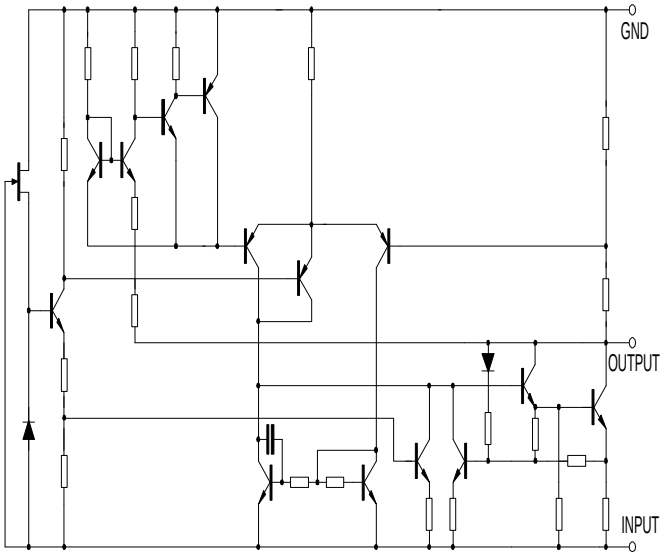
### DESCRIPTION

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

### TEST CIRCUIT



## ABSOLUTE MAXIMUM RATINGS ( Operating temperature range applies unless otherwise specified )

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---|---|---|
| Input voltage(for Vo=-5~-9V)<br>(for Vo=-12~-15V)<br>(for Vo=-18~-24V) | $V_I$<br>$V_I$<br>$V_I$ | -30<br>-35 | V<br>V |
| Power Dissipation | $P_D$ | 500 | mW |
| Operating Junction Temperature Range | $T_{OPR}$ | -30 ~ +125 | °C |
| Storage Temperature Range | $T_{STG}$ | -40 ~ +125 | °C |

## UTC79L05 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-10V,Io=40mA | -4.8 | -5.0 | -5.2 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-7~-20V,Io=40mA | | 15 | 150 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-10V,Io=1~100mA | | 7 | 60 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-10V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-8~-18V, Io=40mA,<br>$e_{in}$=1Vp-p ,f=120Hz | 41 | 71 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-10V,<br>BW=10Hz~100kH,Io=40mA | | 120 | | μV |

## UTC79L06 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-12V,Io=40mA | -5.76 | -6.0 | -5.2 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-8.5~-20V,Io=40mA | | 15 | 150 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-12V,Io=1~100mA | | 7 | 60 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-12V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-9~ -19V,<br>Io=40mA,$e_{in}$=1Vp-p ,f=120Hz | 41 | 71 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-12V,<br>BW=10Hz~100kH,Io=40mA | | 120 | | μV |

## UTC79L08 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF, unless otherwise specified)

| PARAMETER | SYMBOL | Test conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-14V,Io=40mA | -7.68 | -8.0 | -8.32 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-10.5~-23V,Io=40mA | | 24 | 175 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-14V,Io=1~100mA | | 10 | 80 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-14V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-11~ -21V,<br>Io=40mA,$e_{in}$=1Vp-p ,f=140Hz | 39 | 68 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-14V,<br>BW=10Hz~100kH,Io=40mA | | 190 | | μV |

## UTC79L09 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF,unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-15V,Io=40mA | -8.64 | -9.0 | -9.36 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-12.5~-24V,Io=40mA | | 27 | 200 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-15V,Io=1~100mA | | 12 | 90 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-15V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-12~ -22V, Io=40mA,$e_{in}$=1Vp-p ,f=150Hz | 37 | 64 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-15V, BW=10Hz~100kH,Io=40mA | | 210 | | μV |

## UTC79L12 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-19V,Io=40mA | -11.5 | -12.0 | -12.5 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-14.5~-27V,Io=40mA | | 36 | 250 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-19V,Io=1~100mA | | 16 | 100 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-19V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-15~ -25V, Io=40mA,$e_{in}$=1Vp-p ,f=190Hz | 37 | 64 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-19V, BW=10Hz~100kH,Io=40mA | | 210 | | μV |

## UTC79L15 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-23V,Io=40mA | -14.4 | -15.0 | -15.6 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-17.5~-30V,Io=40mA | | 45 | 300 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-23V,Io=1~100mA | | 20 | 150 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-23V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-18.5~ -28.5V, Io=40mA,$e_{in}$=1Vp-p ,f=230Hz | 34 | 63 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-23V, BW=10Hz~100kH,Io=40mA | | 340 | | μV |

## UTC79L18 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF, unless otherwise specified)

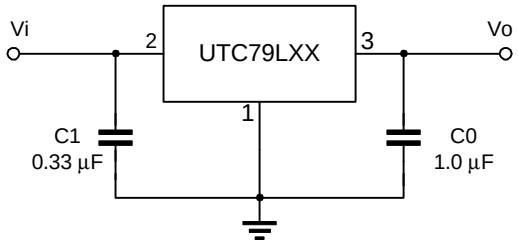
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-27V,Io=40mA | -17.3 | -18.0 | -18.7 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-20.5~-33V,Io=40mA | | 54 | 300 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-27V,Io=1~100mA | | 23 | 170 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-27V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-23~ -33V, Io=40mA,$e_{in}$=1Vp-p ,f=270Hz | 33 | 60 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-27V, BW=10Hz~100kH,Io=40mA | | 410 | | μV |

## UTC79L24 ELECTRICAL CHARACTERISTICS

(Tj=25°C,C1=0.33μF,Co=1.0μF, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Output Voltage | Vo | $V_{IN}$=-33V,Io=40mA | -23.0 | -24.0 | -25.0 | V |
| Line Regulation | Vo-$V_{IN}$ | $V_{IN}$=-27~-38V,Io=40mA | | 72 | 350 | mV |
| Load Regulation | Vo-Io | $V_{IN}$=-33V,Io=1~100mA | | 30 | 200 | mV |
| Quiescent current | $I_Q$ | $V_{IN}$=-33V,Io=40mA | | 3.5 | 6.0 | mA |
| Ripple Rejection | RR | $V_{IN}$=-29~ -35V, Io=40mA,$e_{in}$=1Vp-p ,f=330Hz | 31 | 55 | | dB |
| Output Noise Voltage | $V_{NO}$ | $V_{IN}$=-33V, BW=10Hz~100kH,Io=40mA | | 550 | | μV |

## APPLICATION CIRCUIT



## TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1 Power dissipation vs. ambient temperature

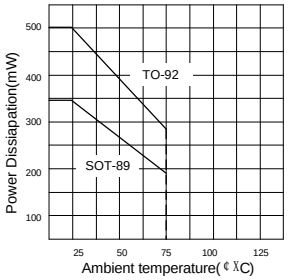



Fig.2 Input Voltage vs. Output Voltage

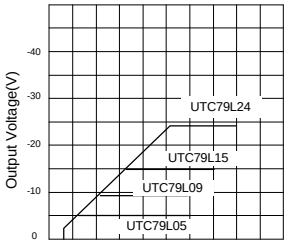



Fig.3 Load Characteristics (Tj=25℃C)

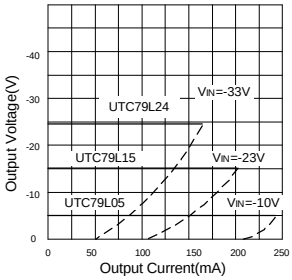



Fig.4 Short Circuit Current (Tj=25℃C)

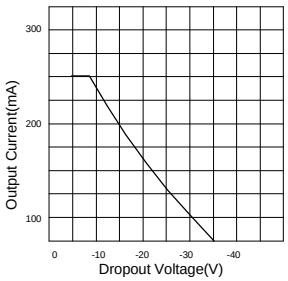



Fig.5 Output Voltage vs. Junction temperature

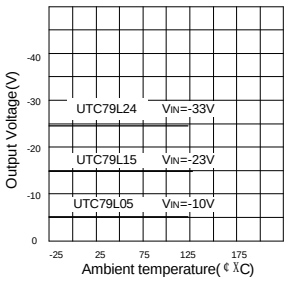



Fig.6 Output Voltage vs. ambient temperature

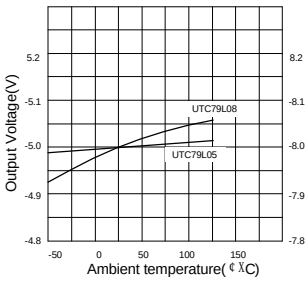



Fig.7 UTC79L05 Dropout Characteristics (Tj=25℃C)

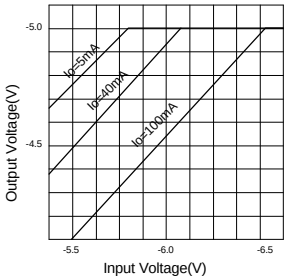



Fig.8 UTC79L08 Dropout Characteristics (Tj=25℃C)

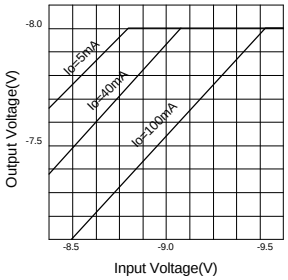



Fig.9 Current vs. Input Voltage(Io=0mA,Tj=25℃C)