



78LXXM

LINEAR INTEGRATED CIRCUIT

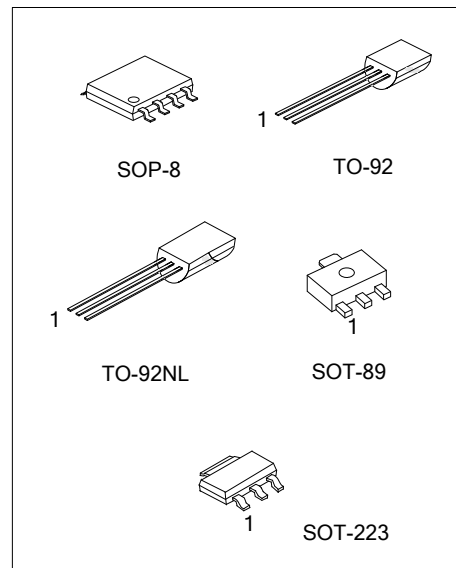
3-TERMINAL 0.2A POSITIVE VOLTAGE REGULATOR

■ DESCRIPTION

The UTC **78LXXM** family is monolithic fixed voltage regulator integrated circuit. They are suitable for applications that required supply current up to 200mA.

■ FEATURES

- *Output Current up to 200mA
- *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 | |
| - | 78LXXMG-AA3-R | SOT-223 | O | G | I | - | - | - | - | - | Tape Reel |
| - | 78LXXMG-AB3-R | SOT-89 | O | G | I | - | - | - | - | - | Tape Reel |
| 78LXXML-T92-B | 78LXXMG-T92-B | TO-92 | O | G | I | - | - | - | - | - | Tape Box |
| 78LXXML-T92-K | 78LXXMG-T92-K | TO-92 | O | G | I | - | - | - | - | - | Bulk |
| 78LXXML-T9N-B | 78LXXMG-T9N-B | TO-92NL | O | G | I | - | - | - | - | - | Tape Box |
| 78LXXML-T9N-K | 78LXXMG-T9N-K | TO-92NL | O | G | I | - | - | - | - | - | Bulk |
| - | 78LXXMG-S08-R | SOP-8 | O | G | G | NC | NC | G | G | I | Tape Reel |

Note: 1. XX: Output Voltage, refer to Marking Information
 2. Pin Assignment: O: Output G: GND I: Input

| | |
|----------------------|---|
| <p>78LXXMG-AA3-R</p> | <p>(1) B: Tape Box, K: Bulk, R: Tape Reel (2) AA3: SOT-223, AB3: SOT-89, S08: SOP-8, T92: TO-92, T9N: TO-92NL (3) G: Halogen Free and Lead Free, L: Lead Free (4) xx: refer to Marking Information</p> |
|----------------------|---|

MARKING INFORMATION

| PACKAGE | VOLTAGE CODE | MARKING |
|---------|--|---------|
| SOT-223 | 05:5.0V 06:6.0V 08:8.0V 09:9.0V 10:10V 12:12V 15:15V 18:18V 24:24V | |
| SOP-8 | | |
| SOT-89 | | |
| TO-92 | | |
| TO-92NL | | |
| | | |

■ ABSOLUTE MAXIMUM RATINGS

(Operating temperature range applies unless otherwise specified.)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|-------------------------------|----------------------|-----------|----------|------|
| Input Voltage | $V_{OUT}=5\sim 9V$ | V_{IN} | 30 | V |
| | $V_{OUT}=12\sim 24V$ | | 35 | V |
| Output Current | | I_{OUT} | 200 | mA |
| Power Dissipation | SOP-8 | P_D | 500 | mW |
| | TO-92 | | 625 | |
| | TO-92L | | 800 | |
| | TO-92NL | | 800 | |
| | SOT-89 | | 500 | |
| | SOT-223 | | 750 | |
| Ambient Operating Temperature | | T_{OPR} | -40~+85 | °C |
| Storage Temperature | | T_{STG} | -55~+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

(0°C < T_J < 125°C, $C_1=0.33\mu F$, $C_0=0.1\mu F$, unless otherwise specified) (Note 1)

For UTC78L05M ($V_{IN}=10V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|---|------|-------|------|---------------|
| Output Voltage | V_{OUT} | $T_J=25^\circ C$ | 4.80 | 5.0 | 5.20 | V |
| | | $7V \leq V_{IN} \leq 20V, I_{OUT}=1mA \sim 40mA$ | 4.75 | | 5.25 | V |
| | | $7V \leq V_{IN} \leq V_{MAX}$ $I_{OUT}=1mA \sim 200mA$ | 4.75 | | 5.25 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^\circ C, I_{OUT}=1mA \sim 100mA$ | | 11 | 60 | mV |
| | | $T_J=25^\circ C, I_{OUT}=1mA \sim 40mA$ | | 5.0 | 30 | mV |
| Line Regulation | ΔV_{OUT} | $7V \leq V_{IN} \leq 20V, T_J=25^\circ C$ | | 8 | 150 | mV |
| | | $8V \leq V_{IN} \leq 20V, T_J=25^\circ C$ | | 6 | 100 | mV |
| Quiescent Current | I_Q | | | 2.0 | 5.5 | mA |
| Quiescent Current Change | ΔI_Q | $8V \leq V_{IN} \leq 20V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 40 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | -0.65 | | mV/°C |
| Ripple Rejection | RR | $8V \leq V_{IN} \leq 20V, f=120Hz, T_J=25^\circ C$ | 41 | 80 | | dB |
| Dropout Voltage | V_D | $T_J=25^\circ C$ | | 1.7 | | V |

For UTC78L06M ($V_{IN}=12V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|---|------|------|------|---------------|
| Output Voltage | V_{OUT} | $T_J=25^\circ C$ | 5.76 | 6.0 | 6.24 | V |
| | | $8.5V \leq V_{IN} \leq 20V, I_{OUT}=1mA \sim 40mA$ | 5.7 | | 6.3 | V |
| | | $8.5V \leq V_{IN} \leq V_{MAX}$, $I_{OUT}=1mA \sim 200mA$ | 5.7 | | 6.3 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^\circ C, I_{OUT}=1mA \sim 100mA$ | | 12.8 | 80 | mV |
| | | $T_J=25^\circ C, I_{OUT}=1mA \sim 70mA$ | | 5.8 | 40 | mV |
| Line Regulation | ΔV_{OUT} | $8.5V \leq V_{IN} \leq 20V, T_J=25^\circ C$ | | 64 | 175 | mV |
| | | $9V \leq V_{IN} \leq 20V, T_J=25^\circ C$ | | 54 | 125 | mV |
| Quiescent Current | I_Q | | | 3.9 | 6.0 | mA |
| Quiescent Current Change | ΔI_Q | $9V \leq V_{IN} \leq 20V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 49 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | 0.75 | | mV/°C |
| Ripple Rejection | RR | $10V \leq V_{IN} \leq 20V, f=120Hz, T_J=25^\circ C$ | 40 | 46 | | dB |
| Dropout Voltage | V_D | $T_J=25^\circ C$ | | 1.7 | | V |

■ ELECTRICAL CHARACTERISTICS(Cont.)

For UTC78L08M ($V_{IN}=14V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|--|------|------|------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 7.68 | 8.0 | 8.32 | V |
| | | $10.5V \leq V_{IN} \leq 23V, I_{OUT}=1mA \sim 40mA$ | 7.60 | | 8.40 | V |
| | | $10.5V \leq V_{IN} \leq V_{MAX},$ $I_{OUT}=1mA - 200mA$ | 7.60 | | 8.40 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 15 | 80 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 70mA$ | | 8.0 | 40 | mV |
| Line Regulation | ΔV_{OUT} | $10.5V \leq V_{IN} \leq 23V, T_J=25^{\circ}C$ | | 10 | 175 | mV |
| | | $11V \leq V_{IN} \leq 23V, T_J=25^{\circ}C$ | | 8 | 125 | mV |
| Quiescent Current | I_Q | | | 2.0 | 5.5 | mA |
| Quiescent Current Change | ΔI_Q | $11V \leq V_{IN} \leq 23V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 49 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | 0.75 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $11V \leq V_{IN} \leq 23V, f=120Hz, T_J=25^{\circ}C$ | 39 | 70 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

For UTC78L09M ($V_{IN}=15V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|--|------|------|------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 8.64 | 9.0 | 9.36 | V |
| | | $11.5V \leq V_{IN} \leq 24V, I_{OUT}=1mA \sim 40mA$ | 8.55 | | 9.45 | V |
| | | $11.5V \leq V_{IN} \leq V_{MAX},$ $I_{OUT}=1mA - 200mA$ | 8.55 | | 9.45 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 20 | 90 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 40mA$ | | 10 | 45 | mV |
| Line Regulation | ΔV_{OUT} | $11.5V \leq V_{IN} \leq 24V, T_J=25^{\circ}C$ | | 90 | 200 | mV |
| | | $13V \leq V_{IN} \leq 24V, T_J=25^{\circ}C$ | | 100 | 150 | mV |
| Quiescent Current | I_Q | | | 2.0 | 6.0 | mA |
| Quiescent Current Change | ΔI_Q | $13V \leq V_{IN} \leq 24V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 49 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | 0.75 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $12V \leq V_{IN} \leq 23V, f=120Hz, T_J=25^{\circ}C$ | 38 | 44 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

For UTC78L10M ($V_{IN}=16V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|--|-----|------|------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 9.6 | 10.0 | 10.4 | V |
| | | $12.5V \leq V_{IN} \leq 23V, I_{OUT}=1mA \sim 40mA$ | 9.5 | | 10.5 | V |
| | | $12.5V \leq V_{IN} \leq V_{MAX},$ $I_{OUT}=1mA - 200mA$ | 9.5 | | 10.5 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 20 | 94 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 70mA$ | | 10 | 47 | mV |
| Line Regulation | ΔV_{OUT} | $12.5V \leq V_{IN} \leq 23V, T_J=25^{\circ}C$ | | 100 | 220 | mV |
| | | $14V \leq V_{IN} \leq 23V, T_J=25^{\circ}C$ | | 200 | 170 | mV |
| Quiescent Current | I_Q | | | 4.2 | 6.5 | mA |
| Quiescent Current Change | ΔI_Q | $12.5V \leq V_{IN} \leq 23V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 74 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | 0.95 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $15V \leq V_{IN} \leq 23V, f=120Hz, T_J=25^{\circ}C$ | 38 | 43 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

■ ELECTRICAL CHARACTERISTICS(Cont.)

For UTC78L10M ($V_{IN}=16V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|---|-----|------|------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 9.6 | 10.0 | 10.4 | V |
| | | $12.5V \leq V_{IN} \leq 23V, I_{OUT}=1mA \sim 40mA$ | 9.5 | | 10.5 | V |
| | | $12.5V \leq V_{IN} \leq V_{MAX}, I_{OUT}=1mA - 200mA$ | 9.5 | | 10.5 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 20 | 94 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 70mA$ | | 10 | 47 | mV |
| Line Regulation | ΔV_{OUT} | $12.5V \leq V_{IN} \leq 23V, T_J=25^{\circ}C$ | | 100 | 220 | mV |
| | | $14V \leq V_{IN} \leq 23V, T_J=25^{\circ}C$ | | 200 | 170 | mV |
| Quiescent Current | I_Q | | 4.2 | 6.5 | mA | |
| Quiescent Current Change | ΔI_Q | $12.5V \leq V_{IN} \leq 23V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 74 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | 0.95 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $15V \leq V_{IN} \leq 23V, f=120Hz, T_J=25^{\circ}C$ | 38 | 43 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

For UTC78L12M ($V_{IN}=19V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|---|-------|------|-------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 11.52 | 12 | 12.48 | V |
| | | $14.5V \leq V_{IN} \leq 27V, I_{OUT}=1mA \sim 40mA$ | 11.40 | | 12.60 | V |
| | | $14.5V \leq V_{IN} \leq V_{MAX}, I_{OUT}=1mA - 200mA$ | 11.40 | | 12.60 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 25 | 150 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 40mA$ | | 12 | 75 | mV |
| Line Regulation | ΔV_{OUT} | $14.5V \leq V_{IN} \leq 27V, T_J=25^{\circ}C$ | | 25 | 300 | mV |
| | | $16V \leq V_{IN} \leq 27V, T_J=25^{\circ}C$ | | 20 | 250 | mV |
| Quiescent Current | I_Q | | 2.0 | 6.0 | mA | |
| Quiescent Current Change | ΔI_Q | $16V \leq V_{IN} \leq 27V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 80 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | -1.0 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $15V \leq V_{IN} \leq 25V, f=120Hz, T_J=25^{\circ}C$ | 37 | 65 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

For UTC78L15M ($V_{IN}=23V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|--|-------|------|-------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 14.40 | 15 | 15.60 | V |
| | | $17.5V \leq V_{IN} \leq 30V, I_{OUT}=1mA \sim 40mA$ | 14.25 | | 15.75 | V |
| | | $17.5V \leq V_{IN} \leq V_{MAX}, I_{OUT}=1mA - 200mA$ | 14.25 | | 15.75 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 20 | 150 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 70mA$ | | 25 | 150 | mV |
| Line Regulation | ΔV_{OUT} | $17.5V \leq V_{IN} \leq 30V, T_J=25^{\circ}C$ | | 25 | 150 | mV |
| | | $20V \leq V_{IN} \leq 30V, T_J=25^{\circ}C$ | | 15 | 75 | mV |
| Quiescent Current | I_Q | | 2.2 | 6.5 | mA | |
| Quiescent Current Change | ΔI_Q | $20V \leq V_{IN} \leq 30V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 90 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | -1.3 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $18.5V \leq V_{IN} \leq 28.5V, f=120Hz, T_J=25^{\circ}C$ | 34 | 63 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

■ ELECTRICAL CHARACTERISTICS(Cont.)

For UTC78L18M ($V_{IN}=27V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|--|-------|------|-------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 17.28 | 18 | 18.72 | V |
| | | $21V \leq V_{IN} \leq 33V, I_{OUT}=1mA \sim 40mA$ | 17.10 | | 18.90 | V |
| | | $21V \leq V_{IN} \leq V_{MAX}, I_{OUT}=1mA - 200mA$ | 17.10 | | 18.90 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 30 | 170 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 40mA$ | | 15 | 85 | mV |
| Line Regulation | ΔV_{OUT} | $21V \leq V_{IN} \leq 33V, T_J=25^{\circ}C$ | | 145 | 300 | mV |
| | | $22V \leq V_{IN} \leq 33V, T_J=25^{\circ}C$ | | 135 | 250 | mV |
| Quiescent Current | I_Q | | | 2.0 | 6.0 | mA |
| Quiescent Current Change | ΔI_Q | $21V \leq V_{IN} \leq 33V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 150 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | -1.8 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $23V \leq V_{IN} \leq 33V, f=120Hz, T_J=25^{\circ}C$ | 34 | 48 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

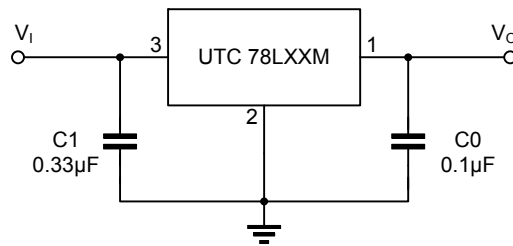
For UTC78L24M ($V_{IN}=33V$, $I_{OUT}=40mA$)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|-----------------------|--|-------|------|-------|----------------|
| Output Voltage | V_{OUT} | $T_J=25^{\circ}C$ | 23.04 | 24 | 24.96 | V |
| | | $27V \leq V_{IN} \leq 38V, I_{OUT}=1mA \sim 40mA$ | 22.80 | | 25.20 | V |
| | | $27V \leq V_{IN} \leq V_{MAX}, I_{OUT}=1mA - 200mA$ | 22.80 | | 25.20 | V (Note 2) |
| Load Regulation | ΔV_{OUT} | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 100mA$ | | 40 | 200 | mV |
| | | $T_J=25^{\circ}C, I_{OUT}=1mA \sim 40mA$ | | 20 | 100 | mV |
| Line Regulation | ΔV_{OUT} | $27V \leq V_{IN} \leq 38V, T_J=25^{\circ}C$ | | 160 | 300 | mV |
| | | $28V \leq V_{IN} \leq 38V, T_J=25^{\circ}C$ | | 150 | 250 | mV |
| Quiescent Current | I_Q | | | 2.2 | 6.0 | mA |
| Quiescent Current Change | ΔI_Q | $27V \leq V_{IN} \leq 38V$ | | | 1.5 | mA |
| | | $1mA \leq V_{IN} \leq 40mA$ | | | 0.1 | mA |
| Output Noise Voltage | e_N | $10Hz \leq f \leq 100kHz$ | | 200 | | μV |
| Temperature Coefficient of V_{OUT} | $\Delta V_O/\Delta T$ | $I_{OUT}=5mA$ | | -2.0 | | $mV/^{\circ}C$ |
| Ripple Rejection | RR | $27V \leq V_{IN} \leq 38V, f=120Hz, T_J=25^{\circ}C$ | 34 | 45 | | dB |
| Dropout Voltage | V_D | $T_J=25^{\circ}C$ | | 1.7 | | V |

Note: 1. The Maximum steady state usable output current are dependent on input voltage, heat sinking, lead length of the package and copper pattern of PCB. The data above represent pulse test conditions with junction temperatures specified at the initiation of test.

2. Power dissipation < 0.5W

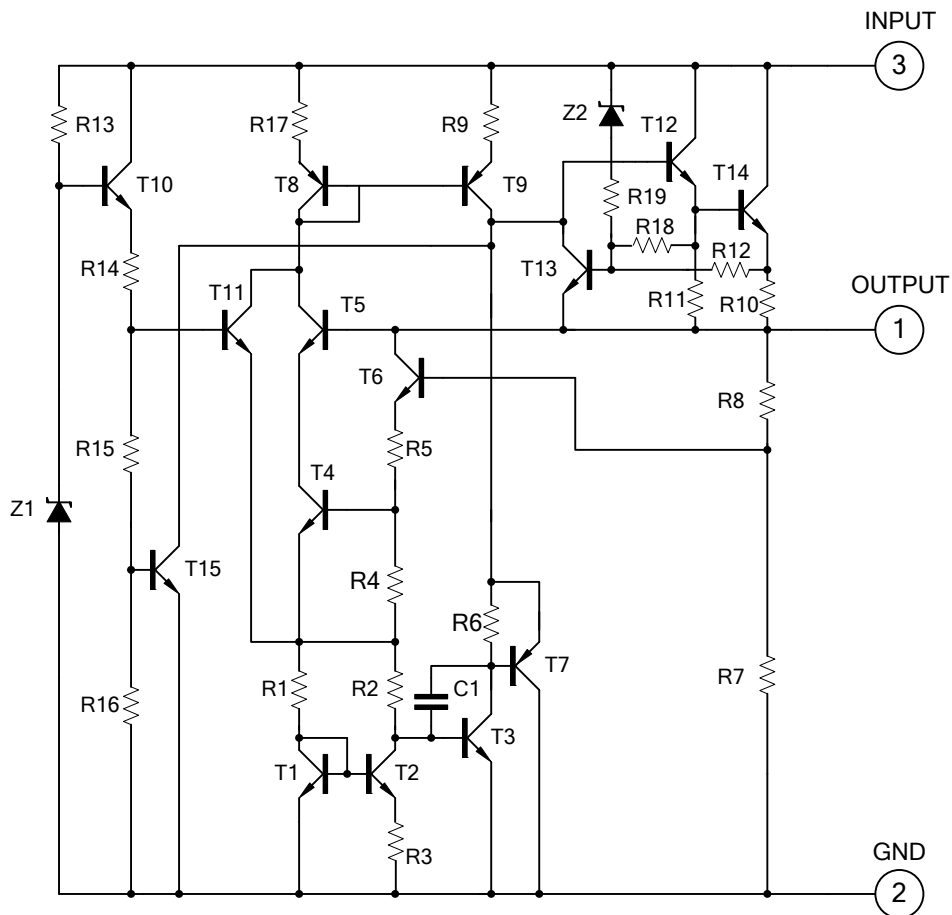
APPLICATION CIRCUIT



Notes 1: To specify an output voltage, substitute voltage value for "XXM".

2: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

TEST CIRCUIT



■ TYPICAL CHARACTERISTICS

Fig.1 Ambient Temperature vs. Power Dissipation

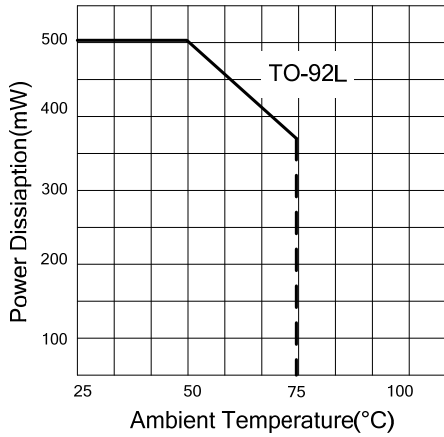


Fig.2 UTC78L05M Output Voltage vs. Ambient Temperature

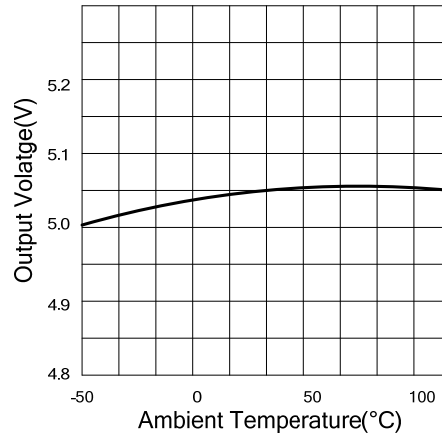


Fig.3 UTC78L12M Power Dissipation vs. Ambient Temperature

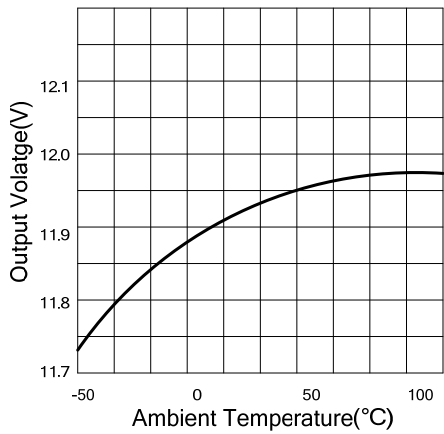


Fig.4 Output Characteristics (I_{OUT}=0mA, T_J=25°C)

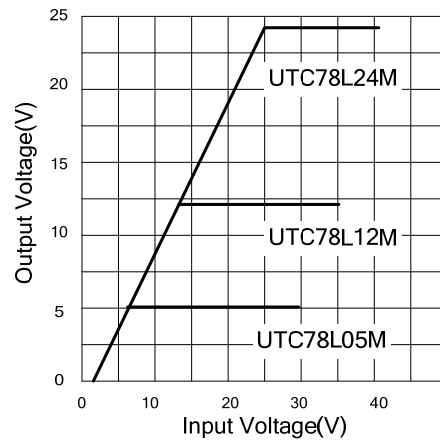


Fig.5 UTC78L05M Dropout Characteristics (T_J=25°C)

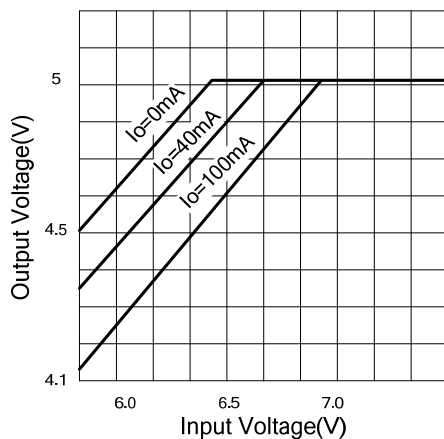
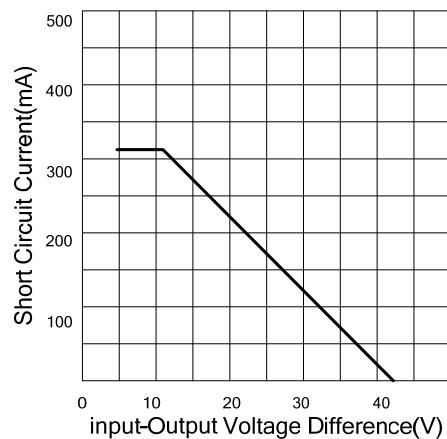


Fig.6 Short Circuit Output Current (T_J=25°C)



■ TYPICAL CHARACTERISTICS(Cont.)

Fig.7 UTC78L12/24M Quiescent Current vs Output Current ($T_J=25^{\circ}\text{C}$)

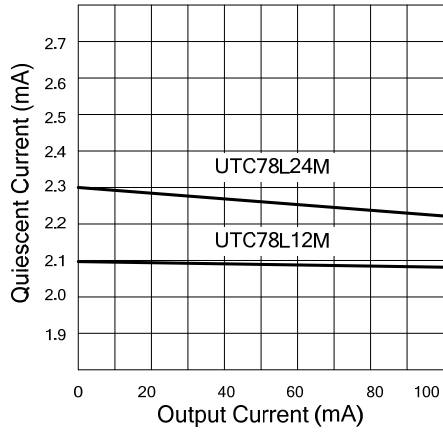


Fig.8 UTC78L05M Quiescent Current vs. Input Voltage ($I_{out}=0\text{mA}, T_J=25^{\circ}\text{C}$)

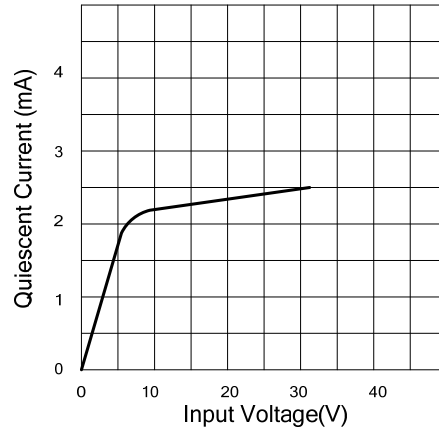
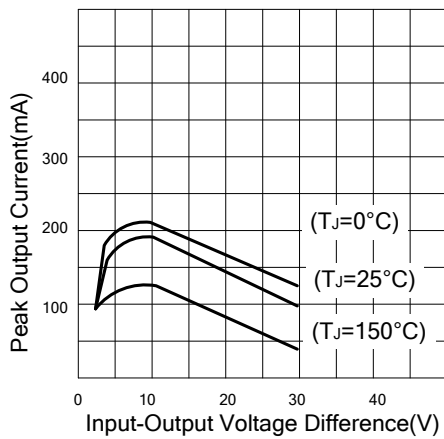


Fig.9 Peak Output Current vs Dropout Voltage Difference



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