

# EVVOSEMI<sup>®</sup>

THINK CHANGE DO



ESD



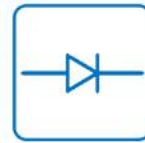
TVS



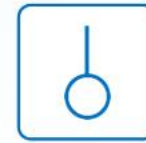
MOS



LDO



Diode



Sensor



DC-DC

## Product Specification

|              |             |       |
|--------------|-------------|-------|
| ▶ Domestic   | Part Number | 78LXX |
| ▶ Overseas   | Part Number | 78LXX |
| ▶ Equivalent | Part Number | 78LXX |

EV is the abbreviation of name EVVO

## LINEAR INTEGRATED CIRCUIT

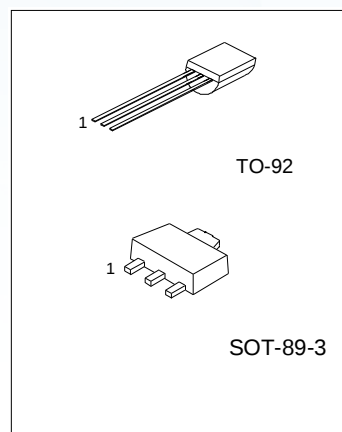
### 3-TERMINAL 0.15A POSITIVE VOLTAGE REGULATORS

#### DESCRIPTION

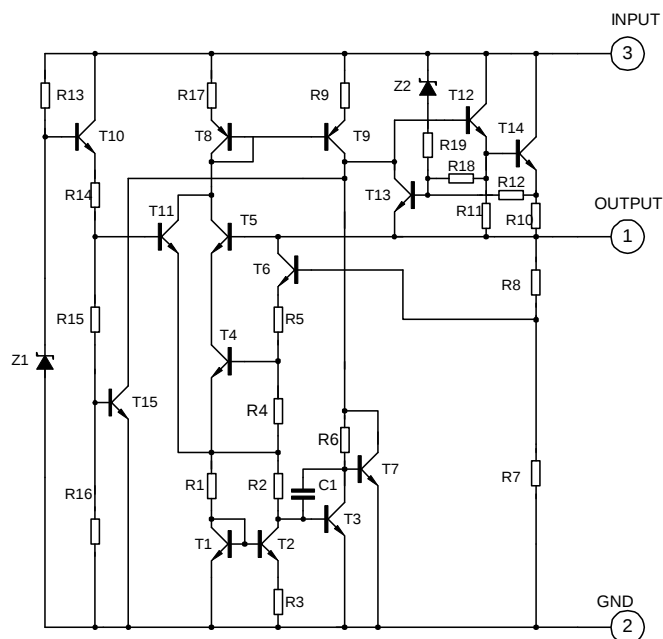
The 78LXX series of fixed voltage monolithic integrated circuit voltage regulators are suitable for applications that required supply up to 150mA.

#### FEATURE

- \*Maximum output current of 150mA
- \*Output voltage of 5V,6V,8V,9V,10V,12V,15V and 24V
- \*Thermal overload protection
- \*Short circuit current limiting



#### BLOCK DIAGRAM



## LINEAR INTEGRATED CIRCUIT

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

| CHARACTERISTICS                      | SYMBOL    | VALUE    | UNITS |
|--------------------------------------|-----------|----------|-------|
| Input voltage(for $V_o=5,8V$ )       | $V_i$     | 30       | V     |
| (for $V_o=12,15V$ )                  | $V_i$     | 35       | V     |
| High power dissipation               | $P_d$     | 700      | mW    |
| Operating Junction Temperature Range | $T_{OPR}$ | -20~+120 | °C    |
| Storage Temperature Range            | $T_{STG}$ | -55~+150 | °C    |

### 78L05 ELECTRICAL CHARACTERISTICS

( $V_i=10V, I_o=40mA, 0<T_j<125^{\circ}C, C_1=0.33\mu F, C_o=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                  | Test conditions                                  | MIN  | TYP  | MAX  | UNIT          |
|----------------------------------|-------------------------|--------------------------------------------------|------|------|------|---------------|
| Output Voltage                   | $V_o$                   | $T_j=25^{\circ}C$                                | 4.8  | 5.0  | 5.2  | V             |
|                                  |                         | $7V \leq V_i \leq 20V, I_o=1mA \sim 40mA$        | 4.75 |      | 5.25 | V             |
|                                  |                         | $7V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$    | 4.75 |      | 5.25 | V<br>(note 2) |
| Output Voltage(note 3)           | $V_o$                   | $T_j=25^{\circ}C$                                | 4.9  | 5.0  | 5.1  | V             |
|                                  |                         | $7V \leq V_i \leq 20V, I_o=1mA \sim 40mA$        | 4.85 |      | 5.15 | V             |
|                                  |                         | $7V \leq V_i \leq V_{MAX}, I_o=1mA \sim 70mA$    | 4.85 |      | 5.15 | V<br>(note 2) |
| Load Regulation                  | $\Delta V_o$            | $T_j=25^{\circ}C, I_o=1mA \sim 130mA$            |      | 11   | 60   | mV            |
|                                  |                         | $T_j=25^{\circ}C, I_o=1mA \sim 40mA$             |      | 5.0  | 30   | mV            |
| Line regulation                  | $\Delta V_o$            | $7V \leq V_i \leq 20V, T_j=25^{\circ}C$          |      | 8    | 150  | mV            |
|                                  |                         | $8V \leq V_i \leq 20V, T_j=25^{\circ}C$          |      | 6    | 100  | mV            |
| Quiescent Current                | $I_q$                   |                                                  |      | 2.0  | 5.5  | mA            |
| Quiescent Current Change         | $\Delta I_q$            | $8V \leq V_i \leq 20V$                           |      |      | 1.5  | mA            |
|                                  | $\Delta I_q$            | $1mA \leq V_i \leq 40mA$                         |      |      | 0.1  | mA            |
| Output Noise Voltage             | $V_N$                   | $10Hz \leq f \leq 100kHz$                        |      | 40   |      | $\mu V$       |
| Temperature coefficient of $V_o$ | $\Delta V_o / \Delta T$ | $I_o=5mA$                                        |      | 0.65 |      | mV/°C         |
| Ripple Rejection                 | RR                      | $8V \leq V_i \leq 20V, f=120Hz, T_j=25^{\circ}C$ | 40   | 49   |      | dB            |
| Dropout Voltage                  | $V_d$                   | $T_j=25^{\circ}C$                                |      | 1.7  |      | V             |

## LINEAR INTEGRATED CIRCUIT

### 78L06 ELECTRICAL CHARACTERISTICS

( $V_I=12V$ ,  $I_O=40mA$ ,  $0<T_J<125^{\circ}C$ ,  $C_1=0.33\mu F$ ,  $C_O=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                  | Test conditions                                            | MIN  | TYP  | MAX  | UNIT            |
|----------------------------------|-------------------------|------------------------------------------------------------|------|------|------|-----------------|
| Output Voltage                   | $V_O$                   | $T_J=25^{\circ}C$                                          | 5.75 | 6.0  | 6.25 | V               |
|                                  |                         | $8.5V \leq V_I \leq 20V$ , $I_O=1mA \sim 40mA$             | 5.7  |      | 6.3  | V               |
|                                  |                         | $8.5V \leq V_I \leq V_{MAX}$ ,<br>$I_O=1mA \sim 70mA$      | 5.7  |      | 6.3  | V<br>(note 2)   |
| Output Voltage(note 3)           | $V_O$                   | $T_J=25^{\circ}C$                                          | 5.88 | 6.0  | 6.12 | V               |
|                                  |                         | $8.5V \leq V_I \leq 20V$ , $I_O=1mA \sim 40mA$             | 5.82 |      | 6.18 | V               |
|                                  |                         | $8.5V \leq V_I \leq V_{MAX}$ ,<br>$I_O=1mA \sim 70mA$      | 5.82 |      | 6.18 | V<br>(note 2)   |
| Load Regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C$ , $I_O=1mA \sim 130mA$                   |      | 12.8 | 80   | mV              |
|                                  |                         | $T_J=25^{\circ}C$ , $I_O=1mA \sim 70mA$                    |      | 5.8  | 40   | mV              |
| Line regulation                  | $\Delta V_O$            | $8.5V \leq V_I \leq 20V$ , $T_J=25^{\circ}C$               |      | 64   | 175  | mV              |
|                                  |                         | $9V \leq V_I \leq 20V$ , $T_J=25^{\circ}C$                 |      | 54   | 125  | mV              |
| Quiescent Current                | $I_Q$                   |                                                            |      | 2.0  | 5.5  | mA              |
| Quiescent Current Change         | $\Delta I_Q$            | $9V \leq V_I \leq 20V$                                     |      |      | 1.5  | mA              |
|                                  | $\Delta I_Q$            | $1mA \leq V_I \leq 40mA$                                   |      |      | 0.1  | mA              |
| Output Noise Voltage             | $V_N$                   | $10Hz \leq f \leq 100kHz$                                  |      | 49   |      | $\mu V$         |
| Temperature coefficient of $V_O$ | $\Delta V_O / \Delta T$ | $I_O=5mA$                                                  |      | 0.75 |      | mV/ $^{\circ}C$ |
| Ripple Rejection                 | RR                      | $10V \leq V_I \leq 20V$ , $f=120Hz$ ,<br>$T_J=25^{\circ}C$ | 38   | 46   |      | dB              |
| Dropout Voltage                  | $V_d$                   | $T_J=25^{\circ}C$                                          |      | 1.7  |      | V               |

# LINEAR INTEGRATED CIRCUIT

## 78L08 ELECTRICAL CHARACTERISTICS

( $V_I=14V$ ,  $I_O=40mA$ ,  $0<T_J<125^{\circ}C$ ,  $C_1=0.33\mu F$ ,  $C_O=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                  | Test conditions                                   | MIN  | TYP  | MAX  | UNIT            |
|----------------------------------|-------------------------|---------------------------------------------------|------|------|------|-----------------|
| Output Voltage                   | $V_O$                   | $T_J=25^{\circ}C$                                 | 7.7  | 8.0  | 8.3  | V               |
|                                  |                         | $10.5V \leq V_I \leq 23V, I_O=1mA \sim 40mA$      | 7.6  |      | 8.4  | V               |
|                                  |                         | $10.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$  | 7.6  |      | 8.4  | V (note 2)      |
| Output Voltage(note 3)           | $V_O$                   | $T_J=25^{\circ}C$                                 | 7.84 | 8.0  | 8.16 | V               |
|                                  |                         | $10.5V \leq V_I \leq 23V, I_O=1mA \sim 40mA$      | 7.76 |      | 8.24 | V               |
|                                  |                         | $10.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$  | 7.76 |      | 8.24 | V (note 2)      |
| Load Regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C, I_O=1mA \sim 130mA$             |      | 15   | 80   | mV              |
| Line regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C, I_O=1mA \sim 70mA$              |      | 8.0  | 40   | mV              |
|                                  |                         | $10.5V \leq V_I \leq 23V, T_J=25^{\circ}C$        |      | 10   | 175  | mV              |
|                                  |                         | $11V \leq V_I \leq 23V, T_J=25^{\circ}C$          |      | 8    | 125  | mV              |
| Quiescent Current                | $I_Q$                   |                                                   |      | 2.0  | 5.5  | mA              |
| Quiescent Current Change         | $\Delta I_Q$            | $11V \leq V_I \leq 23V$                           |      |      | 1.5  | mA              |
|                                  | $\Delta I_Q$            | $1mA \leq V_I \leq 40mA$                          |      |      | 0.1  | mA              |
| Output Noise Voltage             | $V_N$                   | $10Hz \leq f \leq 100kHz$                         |      | 49   |      | $\mu V$         |
| Temperature coefficient of $V_O$ | $\Delta V_O / \Delta T$ | $I_O=5mA$                                         |      | 0.75 |      | mV/ $^{\circ}C$ |
| Ripple Rejection                 | RR                      | $11V \leq V_I \leq 23V, f=120Hz, T_J=25^{\circ}C$ | 36   | 45   |      | dB              |
| Dropout Voltage                  | $V_d$                   | $T_J=25^{\circ}C$                                 |      | 1.7  |      | V               |

## LINEAR INTEGRATED CIRCUIT

### 78L09 ELECTRICAL CHARACTERISTICS

( $V_I=15V$ ,  $I_O=40mA$ ,  $0<T_J<125^{\circ}C$ ,  $C_1=0.33\mu F$ ,  $C_O=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                  | Test conditions                                            | MIN  | TYP  | MAX  | UNIT            |
|----------------------------------|-------------------------|------------------------------------------------------------|------|------|------|-----------------|
| Output Voltage                   | $V_O$                   | $T_J=25^{\circ}C$                                          | 8.64 | 9.0  | 9.36 | V               |
|                                  |                         | $11.5V \leq V_I \leq 24V$ , $I_O=1mA \sim 40mA$            | 8.55 |      | 9.45 | V               |
|                                  |                         | $11.5V \leq V_I \leq V_{MAX}$ , $I_O=1mA \sim 70mA$        | 8.55 |      | 9.45 | V<br>(note 2)   |
| Output Voltage(note 3)           | $V_O$                   | $T_J=25^{\circ}C$                                          | 8.82 | 9.0  | 9.18 | V               |
|                                  |                         | $11.5V \leq V_I \leq 24V$ , $I_O=1mA \sim 40mA$            | 8.73 |      | 9.27 | V               |
|                                  |                         | $11.5V \leq V_I \leq V_{MAX}$ , $I_O=1mA \sim 70mA$        | 8.73 |      | 9.27 | V<br>(note 2)   |
| Load Regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C$ , $I_O=1mA \sim 130mA$                   |      | 20   | 90   | mV              |
|                                  |                         | $T_J=25^{\circ}C$ , $I_O=1mA \sim 40mA$                    |      | 10   | 45   | mV              |
| Line regulation                  | $\Delta V_O$            | $11.5V \leq V_I \leq 24V$ , $T_J=25^{\circ}C$              |      | 90   | 200  | mV              |
|                                  |                         | $13V \leq V_I \leq 24V$ , $T_J=25^{\circ}C$                |      | 100  | 150  | mV              |
| Quiescent Current                | $I_q$                   |                                                            |      | 2.0  | 5.5  | mA              |
| Quiescent Current Change         | $\Delta I_q$            | $13V \leq V_I \leq 24V$                                    |      |      | 1.5  | mA              |
|                                  | $\Delta I_q$            | $1mA \leq V_I \leq 40mA$                                   |      |      | 0.1  | mA              |
| Output Noise Voltage             | $V_N$                   | $10Hz \leq f \leq 100kHz$                                  |      | 49   |      | $\mu V$         |
| Temperature coefficient of $V_O$ | $\Delta V_O / \Delta T$ | $I_O=5mA$                                                  |      | 0.75 |      | mV/ $^{\circ}C$ |
| Ripple Rejection                 | RR                      | $12V \leq V_I \leq 23V$ , $f=120Hz$ ,<br>$T_J=25^{\circ}C$ | 36   | 44   |      | dB              |
| Dropout Voltage                  | $V_d$                   | $T_J=25^{\circ}C$                                          |      | 1.7  |      | V               |

## LINEAR INTEGRATED CIRCUIT

### 78L12 ELECTRICAL CHARACTERISTICS

( $V_I=19V$ ,  $I_O=40mA$ ,  $0<T_J<125^{\circ}C$ ,  $C_1=0.33\mu F$ ,  $C_O=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                | Test conditions                                   | MIN   | TYP  | MAX   | UNIT            |
|----------------------------------|-----------------------|---------------------------------------------------|-------|------|-------|-----------------|
| Output Voltage                   | $V_O$                 | $T_J=25^{\circ}C$                                 | 11.5  | 12   | 12.6  | V               |
|                                  |                       | $14.5V \leq V_I \leq 27V, I_O=1mA \sim 40mA$      | 11.4  |      | 12.6  | V               |
|                                  |                       | $14.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$  | 11.4  |      | 12.6  | V<br>(note 2)   |
| Output Voltage(note 3)           | $V_O$                 | $T_J=25^{\circ}C$                                 | 11.76 | 12.0 | 12.24 | V               |
|                                  |                       | $14.5V \leq V_I \leq 27V, I_O=1mA \sim 40mA$      | 11.64 |      | 12.36 | V               |
|                                  |                       | $14.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$  | 11.64 |      | 12.36 | V<br>(note 2)   |
| Load Regulation                  | $\Delta V_O$          | $T_J=25^{\circ}C, I_O=1mA \sim 130mA$             |       | 25   | 150   | mV              |
|                                  |                       | $T_J=25^{\circ}C, I_O=1mA \sim 40mA$              |       | 12   | 75    | mV              |
| Line regulation                  | $\Delta V_O$          | $14.5V \leq V_I \leq 27V, T_J=25^{\circ}C$        |       | 25   | 300   | mV              |
|                                  |                       | $16V \leq V_I \leq 27V, T_J=25^{\circ}C$          |       | 20   | 250   | mV              |
| Quiescent Current                | $I_q$                 |                                                   |       | 2.0  | 5.5   | mA              |
| Quiescent Current Change         | $\Delta I_q$          | $16V \leq V_I \leq 27V$                           |       |      | 1.5   | mA              |
|                                  | $\Delta I_q$          | $1mA \leq V_I \leq 40mA$                          |       |      | 0.1   | mA              |
| Output Noise Voltage             | $V_N$                 | $10Hz \leq f \leq 100kHz$                         |       | 80   |       | $\mu V$         |
| Temperature coefficient of $V_O$ | $\Delta V_O/\Delta T$ | $I_O=5mA$                                         |       | 1.0  |       | mV/ $^{\circ}C$ |
| Ripple Rejection                 | RR                    | $15V \leq V_I \leq 25V, f=120Hz, T_J=25^{\circ}C$ | 36    | 42   |       | dB              |
| Dropout Voltage                  | $V_d$                 | $T_J=25^{\circ}C$                                 |       | 1.7  |       | V               |

## LINEAR INTEGRATED CIRCUIT

### 78L15 ELECTRICAL CHARACTERISTICS

( $V_I=23V, I_O=40mA, 0<T_J<125^{\circ}C, C_1=0.33\mu F, C_O=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                  | Test conditions                                       | MIN   | TYP  | MAX   | UNIT            |
|----------------------------------|-------------------------|-------------------------------------------------------|-------|------|-------|-----------------|
| Output Voltage                   | $V_O$                   | $T_J=25^{\circ}C$                                     | 14.4  | 15   | 15.6  | V               |
|                                  |                         | $17.5V \leq V_I \leq 30V, I_O=1mA \sim 40mA$          | 14.25 |      | 15.75 | V               |
|                                  |                         | $17.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$      | 14.25 |      | 15.75 | V<br>(note 2)   |
| Output Voltage(note 3)           | $V_O$                   | $T_J=25^{\circ}C$                                     | 14.7  | 15.0 | 15.3  | V               |
|                                  |                         | $17.5V \leq V_I \leq 30V, I_O=1mA \sim 40mA$          | 14.55 |      | 15.45 | V               |
|                                  |                         | $17.5V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$      | 14.55 |      | 15.45 | V<br>(note 2)   |
| Load Regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C, I_O=1mA \sim 130mA$                 |       | 20   | 150   | mV              |
| Line regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C, I_O=1mA \sim 70mA$                  |       | 25   | 150   | mV              |
|                                  |                         | $17.5V \leq V_I \leq 30V, T_J=25^{\circ}C$            |       | 25   | 150   | mV              |
|                                  |                         | $20V \leq V_I \leq 30V, T_J=25^{\circ}C$              |       | 15   | 75    | mV              |
| Quiescent Current                | $I_q$                   |                                                       |       | 2.2  | 6.0   | mA              |
| Quiescent Current Change         | $\Delta I_q$            | $20V \leq V_I \leq 30V$                               |       |      | 1.5   | mA              |
|                                  | $\Delta I_q$            | $1mA \leq V_I \leq 40mA$                              |       |      | 0.1   | mA              |
| Output Noise Voltage             | $V_N$                   | $10Hz \leq f \leq 100kHz$                             |       | 90   |       | $\mu V$         |
| Temperature coefficient of $V_O$ | $\Delta V_O / \Delta T$ | $I_O=5mA$                                             |       | 1.3  |       | mV/ $^{\circ}C$ |
| Ripple Rejection                 | RR                      | $18.5V \leq V_I \leq 28.5V, f=120Hz, T_J=25^{\circ}C$ | 33    | 39   |       | dB              |
| Dropout Voltage                  | $V_d$                   | $T_J=25^{\circ}C$                                     |       | 1.7  |       | V               |

## LINEAR INTEGRATED CIRCUIT

### 78L18 ELECTRICAL CHARACTERISTICS

( $V_I=27V$ ,  $I_O=40mA$ ,  $0<T_J<125^{\circ}C$ ,  $C_1=0.33\mu F$ ,  $C_O=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                  | Test conditions                                            | MIN   | TYP  | MAX   | UNIT            |
|----------------------------------|-------------------------|------------------------------------------------------------|-------|------|-------|-----------------|
| Output Voltage                   | $V_O$                   | $T_J=25^{\circ}C$                                          | 17.3  | 18   | 18.7  | V               |
|                                  |                         | $21V \leq V_I \leq 33V$ , $I_O=1mA \sim 40mA$              | 17.1  |      | 18.9  | V               |
|                                  |                         | $21V \leq V_I \leq V_{MAX}$ , $I_O=1mA \sim 70mA$          | 17.1  |      | 18.9  | V<br>(note 2)   |
| Output Voltage(note 3)           | $V_O$                   | $T_J=25^{\circ}C$                                          | 17.64 | 18.0 | 18.36 | V               |
|                                  |                         | $21V \leq V_I \leq 33V$ , $I_O=1mA \sim 40mA$              | 17.46 |      | 18.54 | V               |
|                                  |                         | $21V \leq V_I \leq V_{MAX}$ , $I_O=1mA \sim 70mA$          | 17.46 |      | 18.54 | V<br>(note 2)   |
| Load Regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C$ , $I_O=1mA \sim 130mA$                   |       | 30   | 170   | mV              |
|                                  |                         | $T_J=25^{\circ}C$ , $I_O=1mA \sim 40mA$                    |       | 15   | 85    | mV              |
| Line regulation                  | $\Delta V_O$            | $21V \leq V_I \leq 33V$ , $T_J=25^{\circ}C$                |       | 145  | 300   | mV              |
|                                  |                         | $22V \leq V_I \leq 33V$ , $T_J=25^{\circ}C$                |       | 135  | 250   | mV              |
| Quiescent Current                | $I_Q$                   |                                                            |       | 2.2  | 6.0   | mA              |
| Quiescent Current Change         | $\Delta I_Q$            | $21V \leq V_I \leq 33V$                                    |       |      | 1.5   | mA              |
|                                  | $\Delta I_Q$            | $1mA \leq V_I \leq 40mA$                                   |       |      | 0.1   | mA              |
| Output Noise Voltage             | $V_N$                   | $10Hz \leq f \leq 100kHz$                                  |       | 150  |       | $\mu V$         |
| Temperature coefficient of $V_O$ | $\Delta V_O / \Delta T$ | $I_O=5mA$                                                  |       | 1.8  |       | mV/ $^{\circ}C$ |
| Ripple Rejection                 | RR                      | $23V \leq V_I \leq 33V$ , $f=120Hz$ ,<br>$T_J=25^{\circ}C$ | 32    | 38   |       | dB              |
| Dropout Voltage                  | $V_d$                   | $T_J=250^{\circ}C$                                         |       | 1.7  |       | V               |

## LINEAR INTEGRATED CIRCUIT

### 78L24 ELECTRICAL CHARACTERISTICS

( $V_I=33V$ ,  $I_O=40mA$ ,  $0<T_J<125^{\circ}C$ ,  $C_1=0.33\mu F$ ,  $C_O=0.1\mu F$ , unless otherwise specified)(Note 1)

| Characteristic                   | Symbol                  | Test conditions                                   | MIN   | TYP | MAX   | UNIT            |
|----------------------------------|-------------------------|---------------------------------------------------|-------|-----|-------|-----------------|
| Output Voltage                   | $V_O$                   | $T_J=25^{\circ}C$                                 | 23    | 24  | 25    | V               |
|                                  |                         | $27V \leq V_I \leq 38V, I_O=1mA \sim 40mA$        | 22.8  |     | 25.2  | V               |
|                                  |                         | $27V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$    | 22.8  |     | 25.2  | V<br>(note 2)   |
| Output Voltage(note 3)           | $V_O$                   | $T_J=25^{\circ}C$                                 | 23.5  | 24  | 24.5  | V               |
|                                  |                         | $27V \leq V_I \leq 38V, I_O=1mA \sim 40mA$        | 23.25 |     | 24.75 | V               |
|                                  |                         | $27V \leq V_I \leq V_{MAX}, I_O=1mA \sim 70mA$    | 23.25 |     | 24.75 | V<br>(note 2)   |
| Load Regulation                  | $\Delta V_O$            | $T_J=25^{\circ}C, I_O=1mA \sim 130mA$             |       | 40  | 200   | mV              |
|                                  |                         | $T_J=25^{\circ}C, I_O=1mA \sim 40mA$              |       | 20  | 100   | mV              |
| Line regulation                  | $\Delta V_O$            | $27V \leq V_I \leq 38V, T_J=25^{\circ}C$          |       | 160 | 300   | mV              |
|                                  |                         | $28V \leq V_I \leq 38V, T_J=25^{\circ}C$          |       | 150 | 250   | mV              |
| Quiescent Current                | $I_q$                   |                                                   |       | 2.2 | 6.0   | mA              |
| Quiescent Current Change         | $\Delta I_q$            | $27V \leq V_I \leq 38V$                           |       |     | 1.5   | mA              |
|                                  | $\Delta I_q$            | $1mA \leq V_I \leq 40mA$                          |       |     | 0.1   | mA              |
| Output Noise Voltage             | $V_N$                   | $10Hz \leq f \leq 100kHz$                         |       | 200 |       | $\mu V$         |
| Temperature coefficient of $V_O$ | $\Delta V_O / \Delta T$ | $I_O=5mA$                                         |       | 2.0 |       | mV/ $^{\circ}C$ |
| Ripple Rejection                 | RR                      | $27V \leq V_I \leq 38V, f=120Hz, T_J=25^{\circ}C$ | 30    | 37  |       | dB              |
| Dropout Voltage                  | $V_d$                   | $T_J=25^{\circ}C$                                 |       | 1.7 |       | V               |

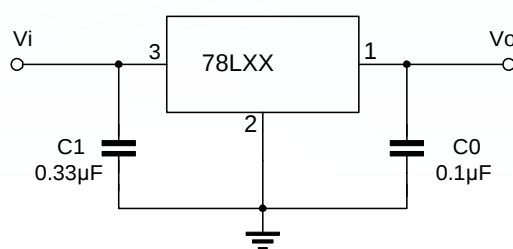
Note 1: The Maximum steady state usable output current and input voltage are very dependent on the heating sinking and/or lead temperature length of the package. The data above represent pulse test conditions with junction temperatures as indicated at the initiation of test.

Note 2: Power dissipation  $< 0.75W$ .

Note 3: Output voltage of 78LXXA.

## LINEAR INTEGRATED CIRCUIT

## TYPICAL APPLICATION



Note 1: To specify an output voltage, substitute voltage value for "XX".

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

## LINEAR INTEGRATED CIRCUIT

### TYPICAL PERFORMANCE CHARACTERISTICS

Fig .1 78L05/12 Output Voltage vs Ambient Temperature

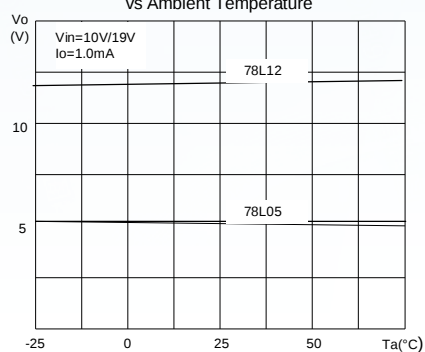


Fig 2 78L05/12 Quiescent Current vs Output Current

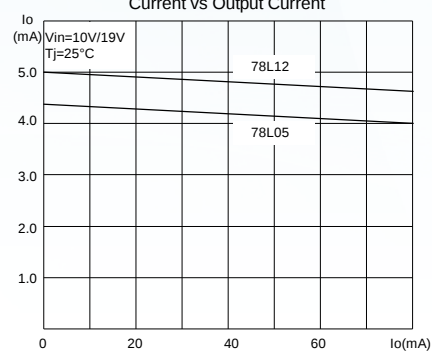


Fig.3 78L05 Quiescent Current vs Input

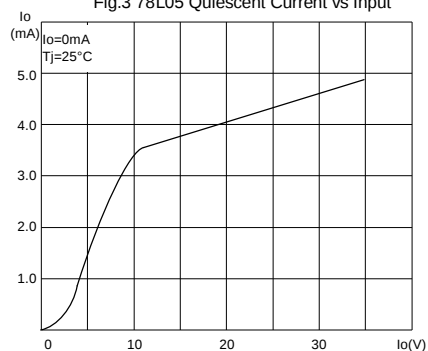


Fig.4 78L05/12/24 Thermal Shutdown

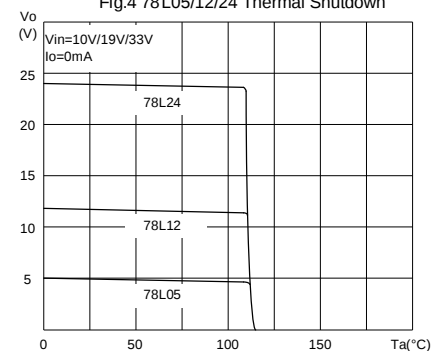


Fig.5 78 L05/12/24 Output Characteristics

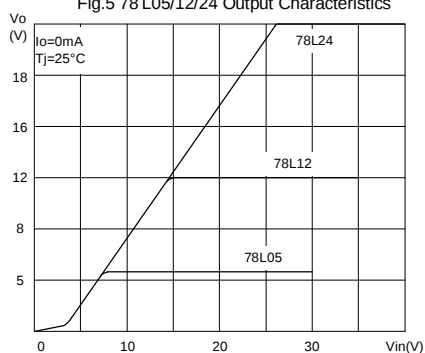
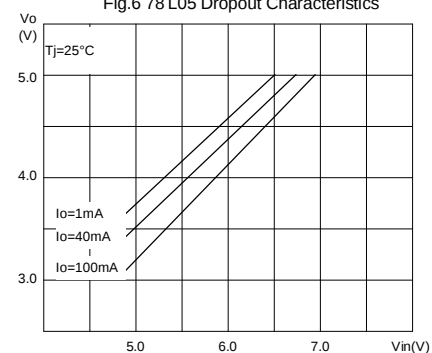
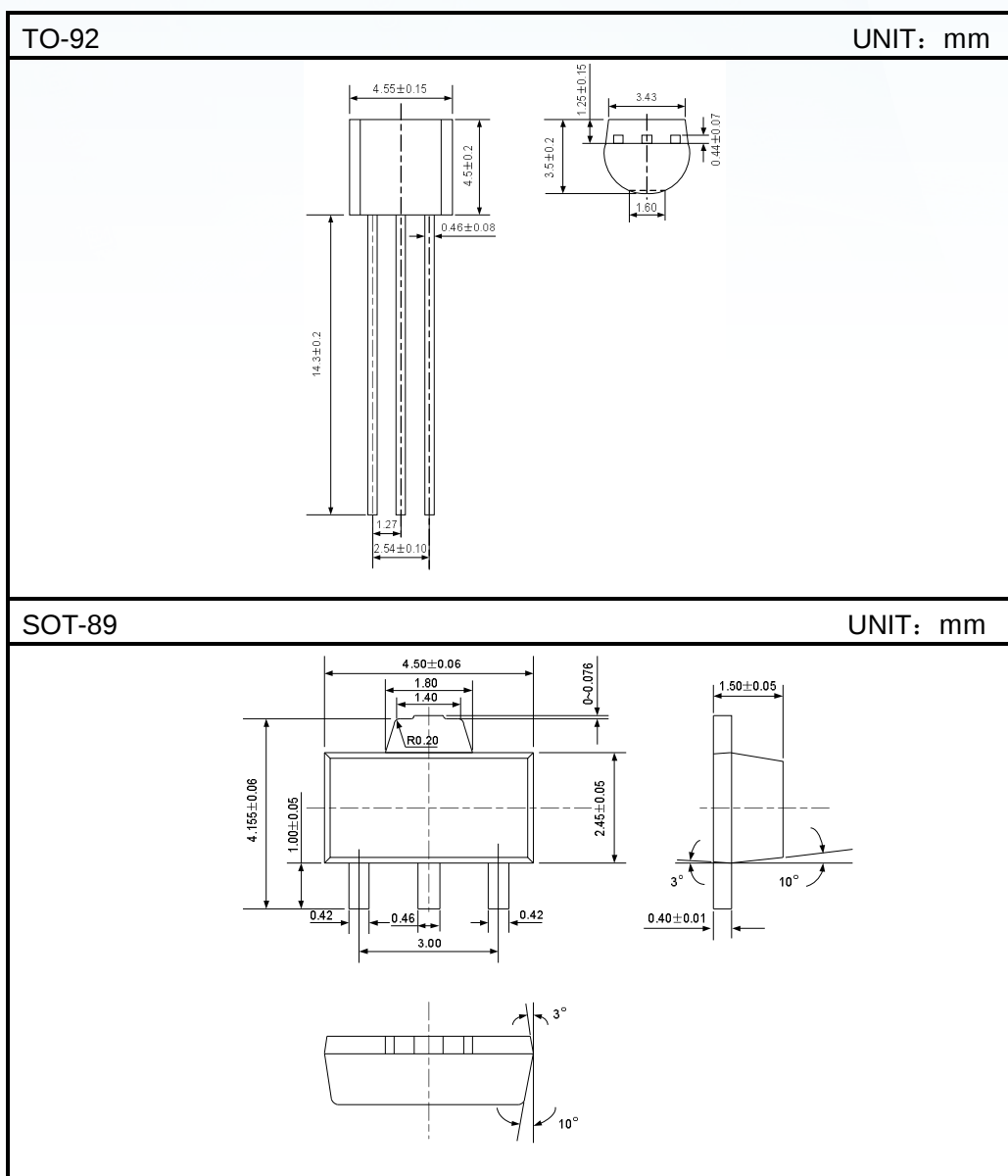


Fig.6 78 L05 Dropout Characteristics



### PACKAGE OTLINE

# LINEAR INTEGRATED CIRCUIT



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