

TOSHIBA

TA79L005,006,008,009,010,012,015,018,020,024P

TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

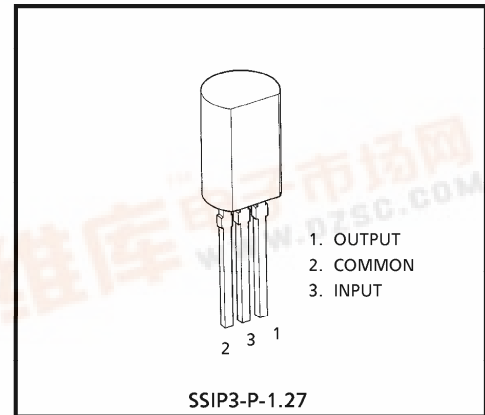
**TA79L005P, TA79L006P, TA79L008P, TA79L009P, TA79L010P
TA79L012P, TA79L015P, TA79L018P, TA79L020P, TA79L024P**

- 5V, - 6V, - 8V, - 9V, - 10V, - 12V, - 15V, - 18V, - 20V, - 24V

3-TERMINAL NEGATIVE VOLTAGE REGULATORS

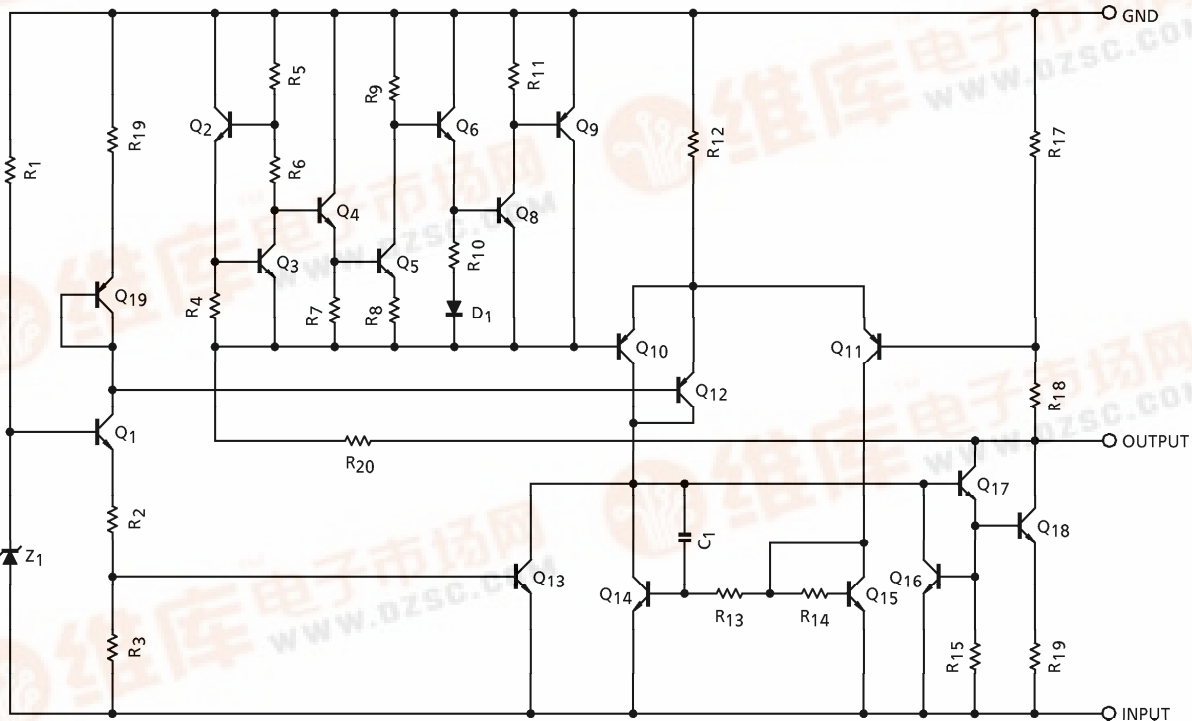
FEATURES

- Best suited to a power supply for TTL and C²MOS
- Built-in overcurrent protective circuit
- Built-in thermal protective circuit
- Max. output current 150mA (T_j = 25°C)
- Packaged in TO-92MOD



Weight : 0.36g (Typ.)

EQUIVALENT CIRCUIT



961001EBA2

TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|--------------------------------|-------------|----------------------|----------|--------|
| Input Voltage | TA79L005P | V _{IN} | - 35 | V |
| | TA79L006P | | | |
| | TA79L008P | | | |
| | TA79L009P | | | |
| | TA79L010P | | | |
| | TA79L012P | | | |
| | TA79L015P | | | |
| | TA79L018P | | | |
| | TA79L020P | | - 40 | |
| | TA79L024P | | | |
| Power Dissipation | (Ta = 25°C) | P _D | 800 | mW |
| Operating Temperature | | T _{opr} | - 30~75 | °C |
| Storage Temperature | | T _{stg} | - 55~150 | °C |
| Operating Junction Temperature | | T _j | - 30~150 | °C |
| Thermal Resistance | | R _{th(j-a)} | 156 | °C / W |

TA79L005P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -10V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|---------------|--|---------------------------------|-------|------|-----------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -5.2 | -5.0 | -4.8 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | $-20V \leq V_{IN} \leq -7.0V$ | — | 55 | 150 | mV |
| | | | | $-20V \leq V_{IN} \leq -8.0V$ | — | 45 | 100 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 11 | 60 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 5.0 | 30 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | $-20V \leq V_{IN} \leq -7.0V$ | -5.25 | — | -4.75 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | — | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -5.25 | — | -4.75 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | — | 3.1 | 6.0 | mA | |
| | | | $T_j = 125^\circ C$ | — | — | 5.5 | | |
| Quiescent Current Change | ΔI_B | 1 | $-20V \leq V_{IN} \leq -8.0V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | — | 40 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 12 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $-18V \leq V_{IN} \leq -8.0V$ $T_j = 25^\circ C, f = 120Hz$ | 41 | 49 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 0.6 | — | mV / $^\circ C$ | |

TA79L006P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -11V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|---------------|--|---------------------------------|------|-------|---------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -6.24 | -6.0 | -5.76 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | $-21V \leq V_{IN} \leq -8.1V$ | — | 50 | 150 | mV |
| | | | | $-21V \leq V_{IN} \leq -9.0V$ | — | 45 | 110 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 12 | 70 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 5.5 | 35 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | $-21V \leq V_{IN} \leq -8.1V$ | -6.3 | — | -5.7 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | — | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -6.3 | — | -5.7 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | — | 3.1 | 6.0 | mA | |
| | | | $T_j = 125^\circ C$ | — | — | 5.5 | | |
| Quiescent Current Change | ΔI_B | 1 | $-21V \leq V_{IN} \leq -9.0V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | — | 40 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 14 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $-19V \leq V_{IN} \leq -9.0V$ $T_j = 25^\circ C, f = 120Hz$ | 39 | 47 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 0.7 | — | mV / °C | |

TA79L008P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -14V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|-----------------------------|---------------|---|------|------|------|-----------------|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -8.3 | -8.0 | -7.7 | V |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | - | 20 | 175 | mV |
| | | | | - | 12 | 125 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | - | 15 | 80 | mV |
| | | | | - | 7.0 | 40 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -8.4 | - | -7.6 | V |
| | | | | -8.4 | - | -7.6 | |
| | | | | -8.4 | - | -7.6 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | - | 3.1 | 6.5 | mA |
| | | | $T_j = 125^\circ C$ | - | - | 6.0 | |
| Quiescent Current Change | ΔI_B | 1 | $-23V \leq V_{IN} \leq -11V$ | - | - | 1.5 | mA |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | - | - | 0.1 | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | - | 60 | - | μV_{rms} |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | - | - | 20 | - | mV / 1.0kh |
| Ripple Rejection Ratio | R.R. | 3 | $-23V \leq V_{IN} \leq -12V$ $T_j = 25^\circ C, f = 120Hz$ | 37 | 45 | - | dB |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | - | 1.7 | - | V |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | - | 0.8 | - | mV / $^\circ C$ |

TA79L009P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -15V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^{\circ}C \leq T_j \leq 125^{\circ}C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|---------------|---|---------------------------------|-------|-------|------------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^{\circ}C$ | -9.36 | -9.0 | -8.64 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^{\circ}C$ | $-24V \leq V_{IN} \leq -11.4V$ | — | 80 | 200 | mV |
| | | | | $-24V \leq V_{IN} \leq -12V$ | — | 20 | 160 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^{\circ}C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 17 | 90 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 8.0 | 45 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^{\circ}C$ | $-24V \leq V_{IN} \leq -11.4V$ | -9.45 | — | -8.55 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | -9.45 | — | -8.55 | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -9.45 | — | -8.55 | |
| Quiescent Current | I_B | 1 | $T_j = 25^{\circ}C$ | — | 3.2 | 6.5 | mA | |
| | | | $T_j = 125^{\circ}C$ | — | — | 6.0 | | |
| Quiescent Current Change | ΔI_B | 1 | $-24V \leq V_{IN} \leq -12V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^{\circ}C$ $10Hz \leq f \leq 100kHz$ | — | 65 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 21 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $-24V \leq V_{IN} \leq -12V$ $T_j = 25^{\circ}C$, $f = 120Hz$ | 36 | 44 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^{\circ}C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 0.85 | — | mV / $^{\circ}C$ | |

TA79L010P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -16V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|-----------------------------|---------------|---|-------|-------|------|---------------|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -10.4 | -10.0 | -9.6 | V |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | — | 80 | 230 | mV |
| | | | $-25V \leq V_{IN} \leq -13V$ | — | 30 | 170 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | — | 18 | 90 | mV |
| | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 8.5 | 45 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -10.5 | — | -9.5 | V |
| | | | $-25V \leq V_{IN} \leq -12.5V$ | -10.5 | — | -9.5 | |
| | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -10.5 | — | -9.5 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | — | 3.2 | 6.5 | mA |
| | | | $T_j = 125^\circ C$ | — | — | 6.0 | |
| Quiescent Current Change | ΔI_B | 1 | $-25V \leq V_{IN} \leq -13V$ | — | — | 1.5 | mA |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | — | 70 | — | μV_{rms} |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 22 | — | mV / 1.0kh |
| Ripple Rejection Ratio | R.R. | 3 | $-24V \leq V_{IN} \leq -13V$ $T_j = 25^\circ C, f = 120Hz$ | 36 | 43 | — | dB |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | — | 1.7 | — | V |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 0.9 | — | mV / °C |

TA79L012P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -19V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|---------------|---|---------------------------------|-------|-------|-----------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -12.5 | -12.0 | -11.5 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | $-27V \leq V_{IN} \leq -14.5V$ | — | 120 | 250 | mV |
| | | | | $-27V \leq V_{IN} \leq -16V$ | — | 100 | 200 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 20 | 100 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 10 | 50 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | $-27V \leq V_{IN} \leq -14.5V$ | -12.6 | — | -11.4 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | — | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -12.6 | — | -11.4 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | — | 3.2 | 6.5 | mA | |
| | | | $T_j = 125^\circ C$ | — | — | 6.0 | | |
| Quiescent Current Change | ΔI_B | 1 | $-27V \leq V_{IN} \leq -16V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | — | 80 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 24 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $-25V \leq V_{IN} \leq -15V$ $T_j = 25^\circ C, f = 120Hz$ | 37 | 42 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 1.0 | — | mV / $^\circ C$ | |

TA79L015P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -23V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|---------------|--|---------------------------------|--------|-------|-----------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -15.6 | -15.0 | -14.4 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | $-30V \leq V_{IN} \leq -17.5V$ | — | 130 | 300 | mV |
| | | | | $-30V \leq V_{IN} \leq -20V$ | — | 110 | 250 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 25 | 150 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 12 | 75 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | $-30V \leq V_{IN} \leq -17.5V$ | -15.75 | — | -14.25 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | — | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -15.75 | — | -14.25 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | — | 3.3 | 6.5 | mA | |
| | | | $T_j = 125^\circ C$ | — | — | 6.0 | | |
| Quiescent Current Change | ΔI_B | 1 | $-30V \leq V_{IN} \leq -20V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | — | 90 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 30 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $-28.5V \leq V_{IN} \leq -18.5V$ $T_j = 25^\circ C$, $f = 120Hz$ | 34 | 39 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 1.3 | — | mV / $^\circ C$ | |

TA79L018P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -27V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|---------------|---|----------------------------------|--------|--------|-----------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | - 18.7 | - 18.0 | - 17.3 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | $- 33V \leq V_{IN} \leq 20.7V$ | — | 32 | 325 | mV |
| | | | | $- 33V \leq V_{IN} \leq - 21V$ | — | 27 | 275 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 30 | 170 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 15 | 75 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | $- 33V \leq V_{IN} \leq - 20.9V$ | - 18.9 | — | - 17.1 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | - 18.9 | — | - 17.1 | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | - 18.9 | — | - 17.1 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | — | 3.3 | 6.5 | mA | |
| | | | $T_j = 125^\circ C$ | — | — | 6.0 | | |
| Quiescent Current Change | ΔI_B | 1 | $- 33V \leq V_{IN} \leq - 21V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | — | 150 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 45 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $- 33V \leq V_{IN} \leq - 23V$ $T_j = 25^\circ C, f = 120Hz$ | 33 | 48 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 1.5 | — | mV / $^\circ C$ | |

TA79L020P

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -29V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^\circ C \leq T_j \leq 125^\circ C$)

| CHARACTERISTIC | SYMBOL | TEST CIRCUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|--------------|---|---------------------------------|-------|-------|-----------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | -20.8 | -20.0 | -19.2 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^\circ C$ | $-35V \leq V_{IN} \leq -23.5V$ | — | 33 | 330 | mV |
| | | | | $-35V \leq V_{IN} \leq -24V$ | — | 28 | 285 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^\circ C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 33 | 180 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 17 | 90 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^\circ C$ | $-35V \leq V_{IN} \leq -23.5V$ | -21.0 | — | -19.0 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | — | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -21.0 | — | -19.0 | |
| Quiescent Current | I_B | 1 | $T_j = 25^\circ C$ | — | 3.3 | 6.5 | mA | |
| | | | $T_j = 125^\circ C$ | — | — | 6.0 | | |
| Quiescent Current Change | ΔI_B | 1 | $-35V \leq V_{IN} \leq -24V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $10mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^\circ C$ $10Hz \leq f \leq 100kHz$ | — | 170 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 49 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $-35V \leq V_{IN} \leq -27V$ $T_j = 25^\circ C, f = 120Hz$ | 31 | 37 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^\circ C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 1.7 | — | mV / $^\circ C$ | |

TA79L024P

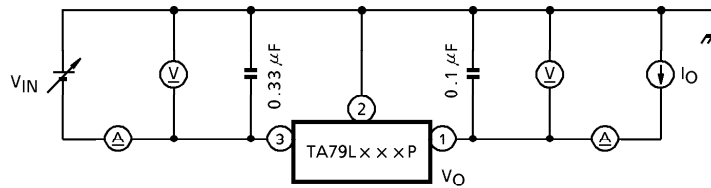
ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, $V_{IN} = -33V$, $I_{OUT} = 40mA$, $C_{IN} = 0.33\mu F$, $C_{OUT} = 0.1\mu F$, $0^{\circ}C \leq T_j \leq 125^{\circ}C$)

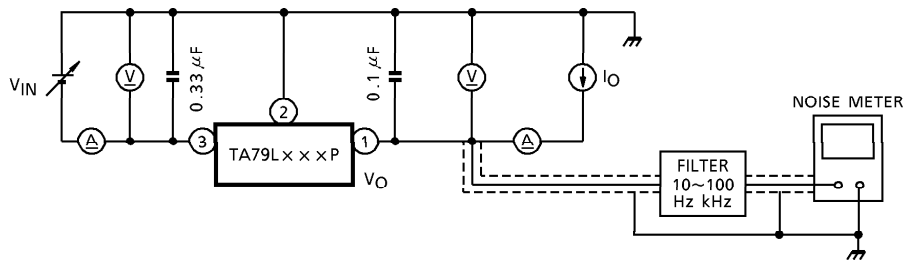
| CHARACTERISTIC | SYMBOL | TEST CIR-CUIT | TEST CONDITION | MIN. | TYP. | MAX. | UNIT | |
|---|-----------------------------|---------------|---|---------------------------------|-------|-------|------------------|----|
| Output Voltage | V_{OUT} | 1 | $T_j = 25^{\circ}C$ | -25.0 | -24.0 | -23.0 | V | |
| Line Regulation | Reg. Line | 1 | $T_j = 25^{\circ}C$ | $-38V \leq V_{IN} \leq -27V$ | — | 35 | 350 | mV |
| | | | | $-38V \leq V_{IN} \leq -28V$ | — | 30 | 300 | |
| Load Regulation | Reg. Load | 1 | $T_j = 25^{\circ}C$ | $1.0mA \leq I_{OUT} \leq 100mA$ | — | 40 | 200 | mV |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | — | 20 | 100 | |
| Output Voltage | V_{OUT} | 1 | $T_j = 25^{\circ}C$ | $-38V \leq V_{IN} \leq -27V$ | -25.2 | — | -22.8 | V |
| | | | | $1.0mA \leq I_{OUT} \leq 40mA$ | -25.2 | — | -22.8 | |
| | | | | $1.0mA \leq I_{OUT} \leq 70mA$ | -25.2 | — | -22.8 | |
| Quiescent Current | I_B | 1 | $T_j = 25^{\circ}C$ | — | 3.5 | 6.5 | mA | |
| | | | $T_j = 125^{\circ}C$ | — | — | 6.0 | | |
| Quiescent Current Change | ΔI_B | 1 | $-38V \leq V_{IN} \leq -28V$ | — | — | 1.5 | mA | |
| | ΔI_{BO} | 1 | $1.0mA \leq I_{OUT} \leq 40mA$ | — | — | 0.1 | | |
| Output Noise Voltage | V_{NO} | 2 | $T_a = 25^{\circ}C$ $10Hz \leq f \leq 100kHz$ | — | 200 | — | μV_{rms} | |
| Long Term Stability | $\Delta V_{OUT} / \Delta t$ | 1 | — | — | 56 | — | mV / 1.0kh | |
| Ripple Rejection Ratio | R.R. | 3 | $-35V \leq V_{IN} \leq -29V$ $T_j = 25^{\circ}C$, $f = 120Hz$ | 31 | 47 | — | dB | |
| Dropout Voltage | $ V_{IN} - V_{OUT} $ | 1 | $T_j = 25^{\circ}C$ | — | 1.7 | — | V | |
| Average Temperature Coefficient of Output Voltage | T_{CVO} | 1 | $I_{OUT} = 5mA$ | — | 2.0 | — | mV / $^{\circ}C$ | |

TEST CIRCUIT

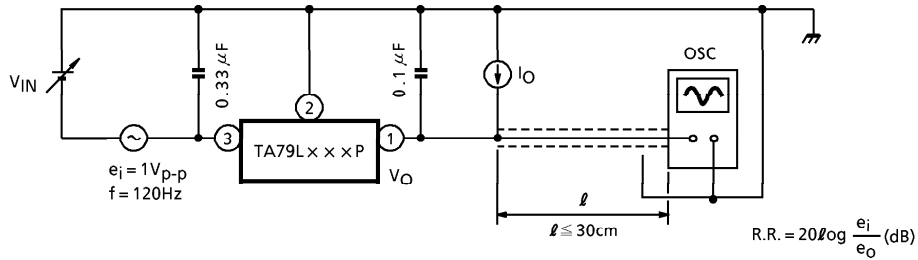
1. V_{OUT} , Reg.line, Reg.load, I_B , ΔI_B , $\Delta V_{OUT} / \Delta t$, $|V_{IN}-V_{OUT}|$, T_{CVO}

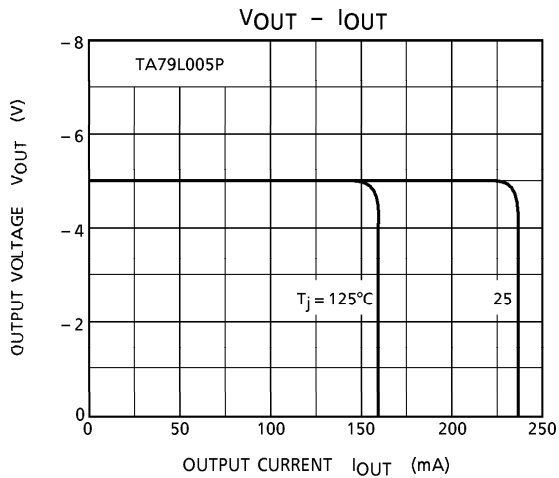
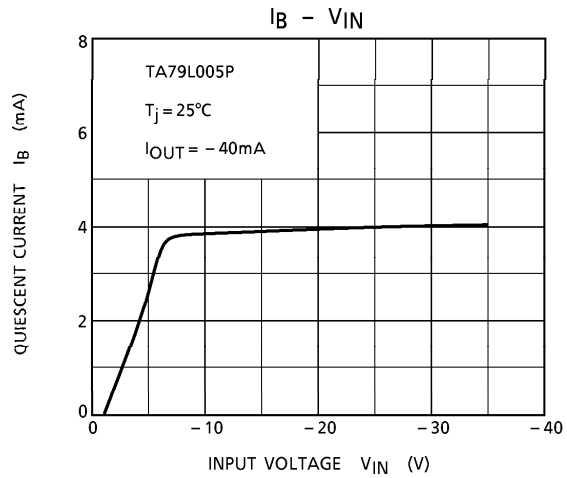
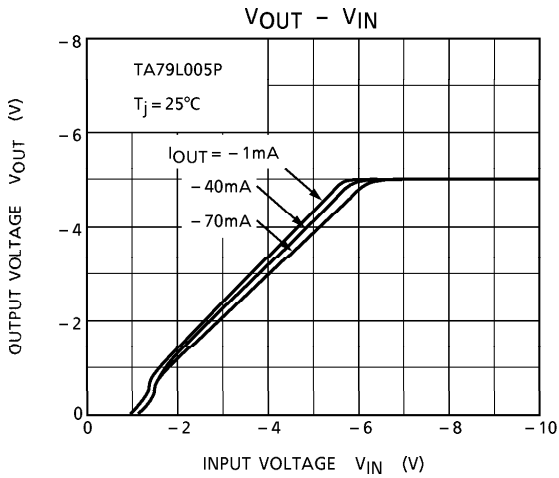
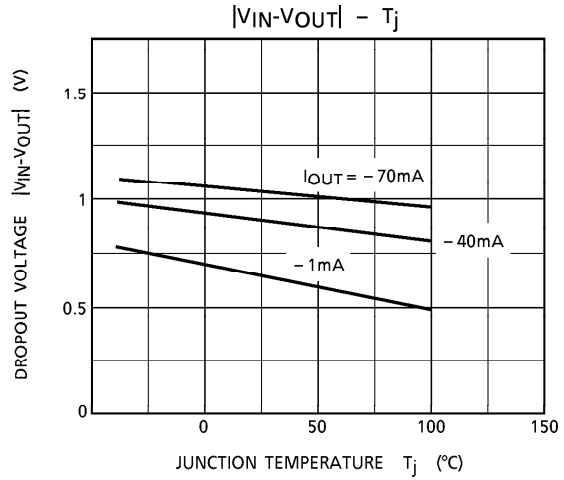
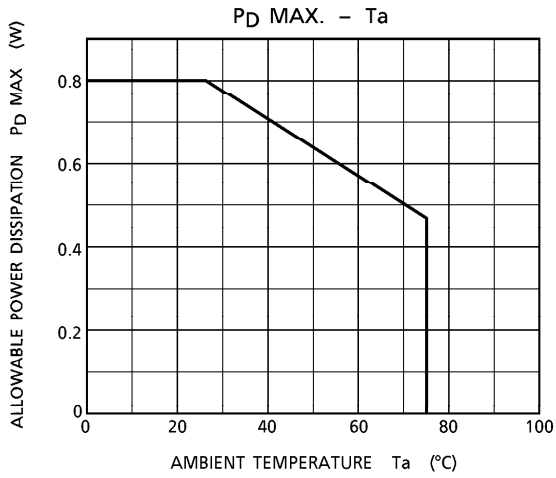


2. V_{NO}



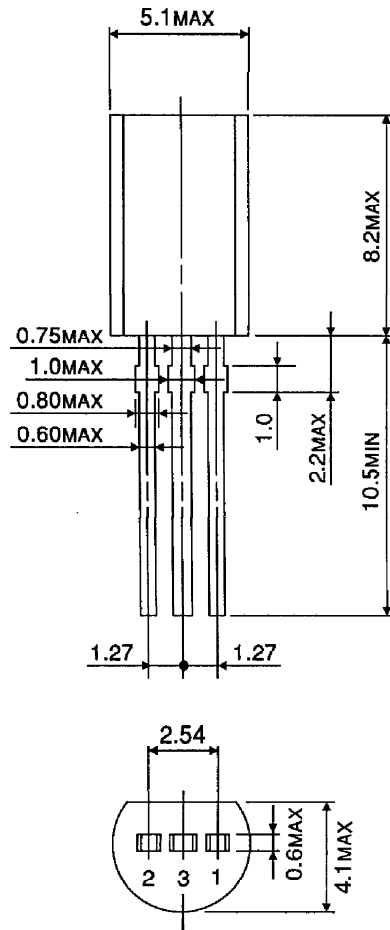
3. R.R.





OUTLINE DRAWING
SSIP3-P-1.27

Unit : mm



Weight : 0.36g (Typ.)