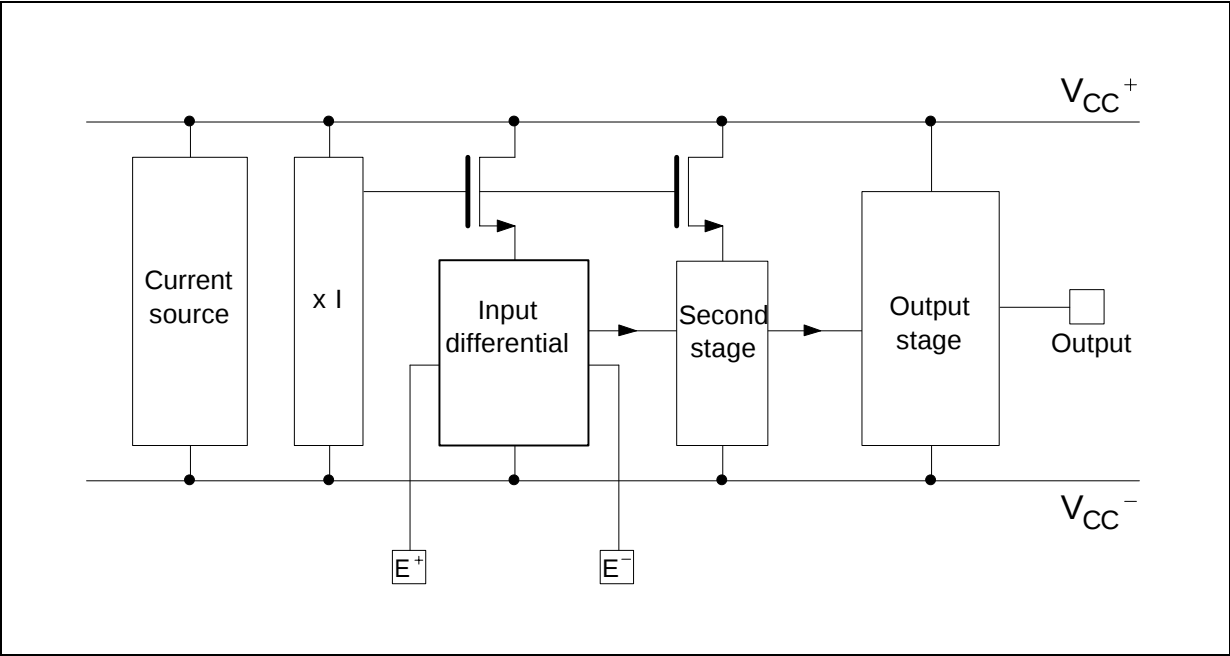


BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

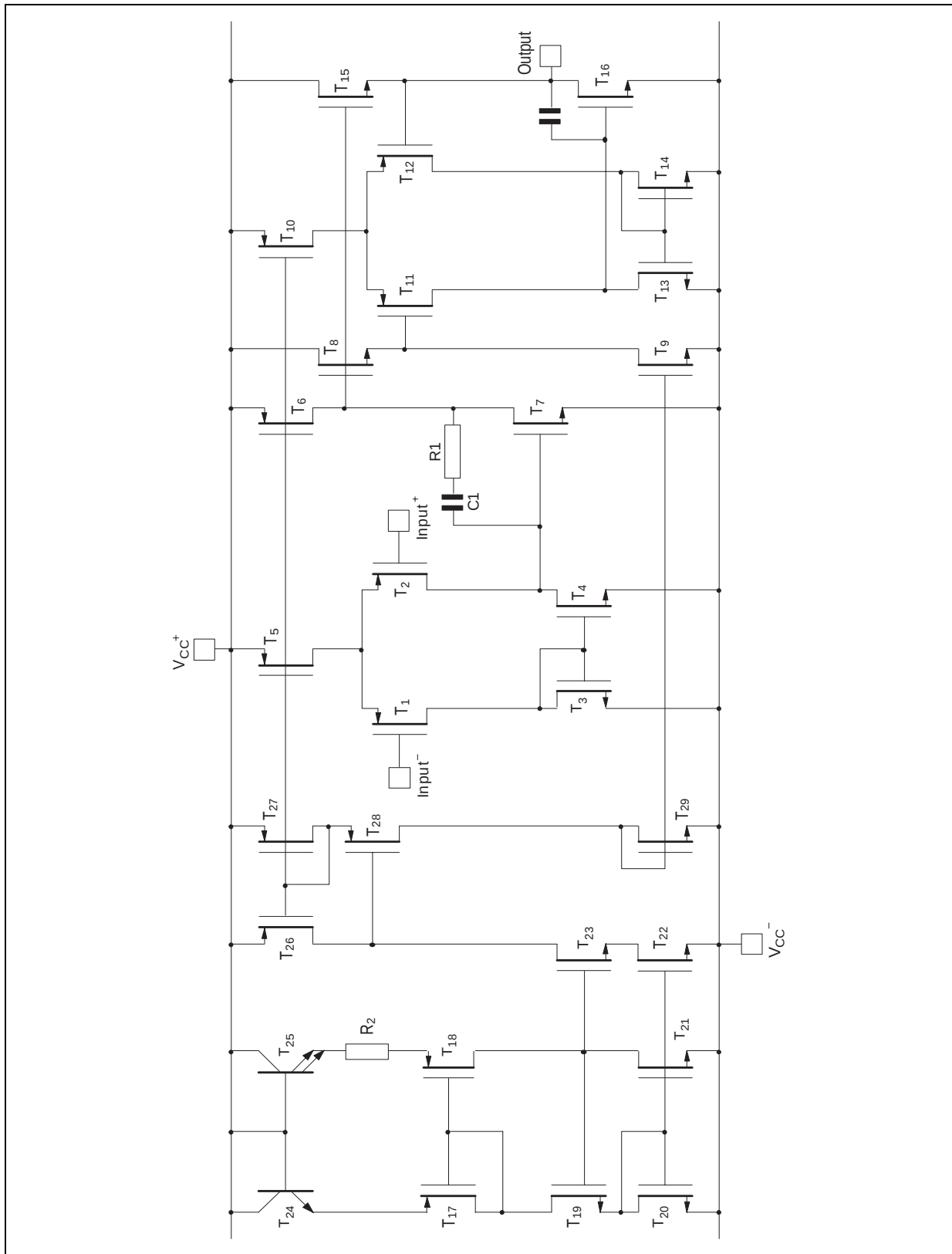
| Symbol       | Parameter                                | TS27L2C/AC/BC | TS27L2I/AI/BI | TS27L2M/AM/BM | Unit |
|--------------|------------------------------------------|---------------|---------------|---------------|------|
| $V_{CC}^{+}$ | Supply Voltage <sup>1)</sup>             | 18            |               |               | V    |
| $V_{id}$     | Differential Input Voltage <sup>2)</sup> | $\pm 18$      |               |               | V    |
| $V_i$        | Input Voltage <sup>3)</sup>              | -0.3 to 18    |               |               | V    |
| $I_o$        | Output Current for $V_{CC}^{+} \geq 15V$ | $\pm 30$      |               |               | mA   |
| $I_{in}$     | Input Current                            | $\pm 5$       |               |               | mA   |
| $T_{oper}$   | Operating Free-Air Temperature Range     | 0 to +70      | -40 to +125   | -55 to +125   | °C   |
| $T_{stg}$    | Storage Temperature Range                | -65 to +150   |               |               | °C   |

1. All values, except differential voltage are with respect to network ground terminal.
2. Differential voltages are the non-inverting input terminal with respect to the inverting input terminal.
3. The magnitude of the input and the output voltages must never exceed the magnitude of the positive supply voltage.

OPERATING CONDITIONS

| Symbol       | Parameter                       | Value                   | Unit |
|--------------|---------------------------------|-------------------------|------|
| $V_{CC}^{+}$ | Supply Voltage                  | 3 to 16                 | V    |
| $V_{icm}$    | Common Mode Input Voltage Range | 0 to $V_{CC}^{+} - 1.5$ | V    |

## SCHEMATIC DIAGRAM (for 1/2 TS27L2)

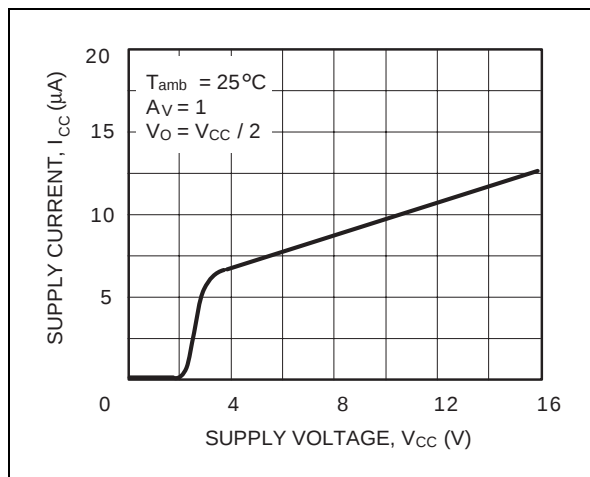
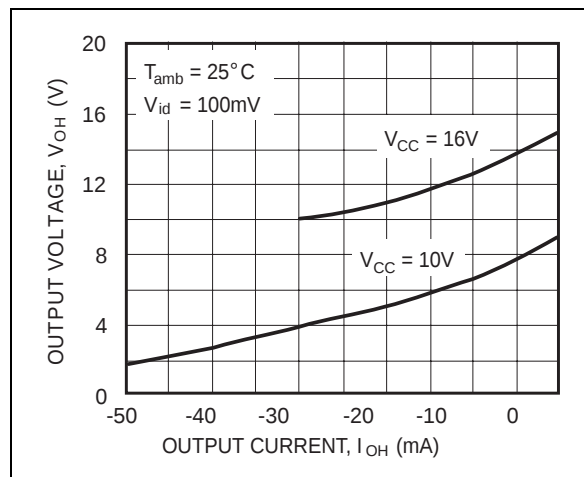
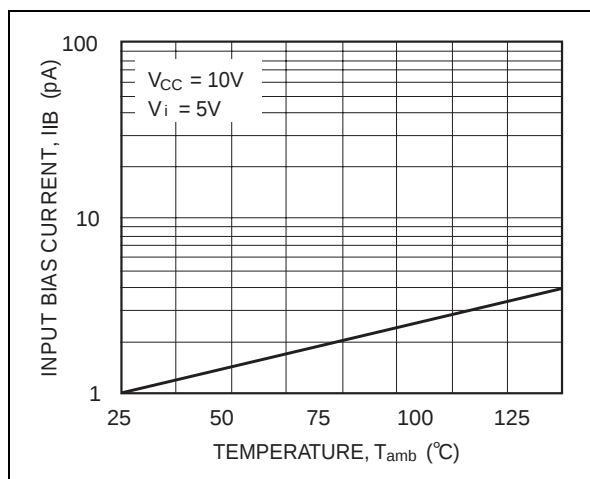
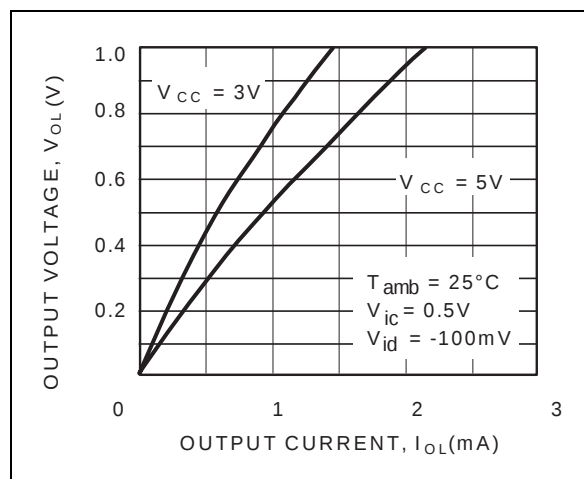
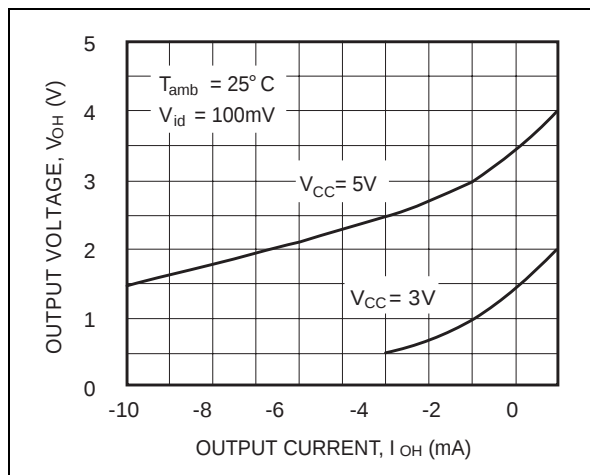
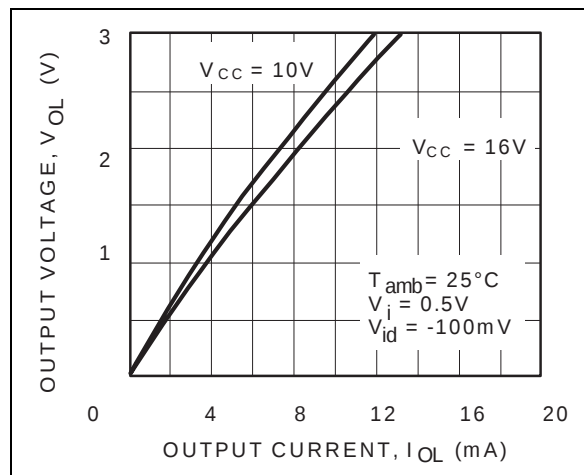


**ELECTRICAL CHARACTERISTICS**
 $V_{CC}^+ = +10V$ ,  $V_{CC}^- = 0V$ ,  $T_{amb} = +25^\circ C$  (unless otherwise specified)

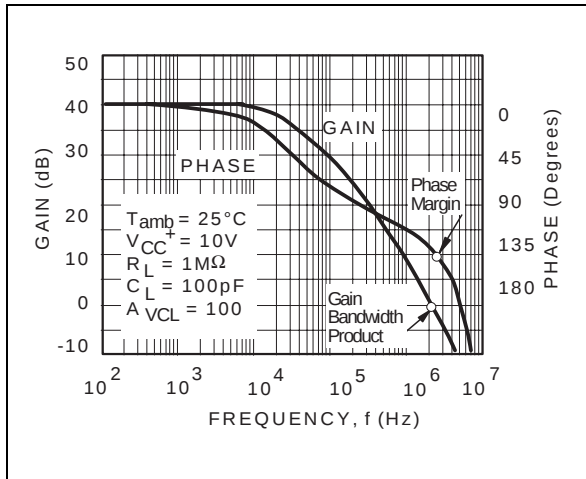
| Symbol          | Parameter                                                                                                                                                                                       | TS27L2C/AC/BC |                    |                                | TS27L2I/AI/BI<br>TS27L2M/AM/BM |                    |                                  | Unit                   |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------|--------------------------------|--------------------------------|--------------------|----------------------------------|------------------------|
|                 |                                                                                                                                                                                                 | Min.          | Typ.               | Max.                           | Min.                           | Typ.               | Max.                             |                        |
| $V_{io}$        | Input Offset Voltage<br>$V_O = 1.4V$ , $V_{ic} = 0V$<br>TS27L2C/I/M<br>TS27L2AC/AI/AM<br>TS27L2B/C/I/M<br>$T_{min} \leq T_{amb} \leq T_{max}$<br>TS27L2C/I/M<br>TS27L2AC/AI/AM<br>TS27L2B/C/I/M |               | 1.1<br>0.9<br>0.25 | 10<br>5<br>2<br>12<br>6.5<br>3 |                                | 1.1<br>0.9<br>0.25 | 10<br>5<br>2<br>12<br>6.5<br>3.5 | mV                     |
| $DV_{io}$       | Input Offset Voltage Drift                                                                                                                                                                      |               | 2                  |                                |                                | 2                  |                                  | $\mu V/^\circ C$       |
| $I_{io}$        | Input Offset Current note 1)<br>$V_{ic} = 5V$ , $V_O = 5V$<br>$T_{min} \leq T_{amb} \leq T_{max}$                                                                                               |               | 1                  | 100                            |                                | 1                  | 200                              | pA                     |
| $I_{ib}$        | Input Bias Current - see note 1<br>$V_{ic} = 5V$ , $V_O = 5V$<br>$T_{min} \leq T_{amb} \leq T_{max}$                                                                                            |               | 1                  | 150                            |                                | 1                  | 300                              | pA                     |
| $V_{OH}$        | High Level Output Voltage<br>$V_{id} = 100mV$ , $R_L = 1M\Omega$<br>$T_{min} \leq T_{amb} \leq T_{max}$                                                                                         | 8.8<br>8.7    | 9                  |                                | 8.8<br>8.6                     | 9                  |                                  | V                      |
| $V_{OL}$        | Low Level Output Voltage<br>$V_{id} = -100mV$                                                                                                                                                   |               |                    | 50                             |                                |                    | 50                               | mV                     |
| $A_{vd}$        | Large Signal Voltage Gain<br>$V_{ic} = 5V$ , $R_L = 1M\Omega$ , $V_O = 1V$ to $6V$<br>$T_{min} \leq T_{amb} \leq T_{max}$                                                                       | 60<br>45      | 100                |                                | 60<br>40                       | 100                |                                  | V/mV                   |
| GBP             | Gain Bandwidth Product<br>$A_v = 40dB$ , $R_L = 1M\Omega$ , $C_L = 100pF$ , $f_{in} = 100kHz$                                                                                                   |               | 0.1                |                                |                                | 0.1                |                                  | MHz                    |
| CMR             | Common Mode Rejection Ratio<br>$V_{ic} = 1V$ to $7.4V$ , $V_O = 1.4V$                                                                                                                           | 65            | 80                 |                                | 65                             | 80                 |                                  | dB                     |
| SVR             | Supply Voltage Rejection Ratio<br>$V_{CC}^+ = 5V$ to $10V$ , $V_O = 1.4V$                                                                                                                       | 60            | 80                 |                                | 60                             | 80                 |                                  | dB                     |
| $I_{CC}$        | Supply Current (per amplifier)<br>$A_v = 1$ , no load, $V_O = 5V$<br>$T_{min} \leq T_{amb} \leq T_{max}$                                                                                        |               | 10                 | 15<br>17                       |                                | 10                 | 15<br>18                         | $\mu A$                |
| $I_o$           | Output Short Circuit Current<br>$V_O = 0V$ , $V_{id} = 100mV$                                                                                                                                   |               | 60                 |                                |                                | 60                 |                                  | mA                     |
| $I_{sink}$      | Output Sink Current<br>$V_O = V_{CC}$ , $V_{id} = -100mV$                                                                                                                                       |               | 45                 |                                |                                | 45                 |                                  | mA                     |
| SR              | Slew Rate at Unity Gain<br>$R_L = 1M\Omega$ , $C_L = 100pF$ , $V_i = 3$ to $7V$                                                                                                                 |               | 0.04               |                                |                                | 0.04               |                                  | V/ $\mu s$             |
| $\phi_m$        | Phase Margin at Unity Gain<br>$A_v = 40dB$ , $R_L = 1M\Omega$ , $C_L = 100pF$                                                                                                                   |               | 45                 |                                |                                | 45                 |                                  | Degrees                |
| $K_{OV}$        | Overshoot Factor                                                                                                                                                                                |               | 30                 |                                |                                | 30                 |                                  | %                      |
| $e_n$           | Equivalent Input Noise Voltage<br>$f = 1kHz$ , $R_s = 100\Omega$                                                                                                                                |               | 68                 |                                |                                | 68                 |                                  | $\frac{nV}{\sqrt{Hz}}$ |
| $V_{o1}/V_{o2}$ | Channel Separation                                                                                                                                                                              |               | 120                |                                |                                | 120                |                                  | dB                     |

1. Maximum values including unavoidable inaccuracies of the industrial test.

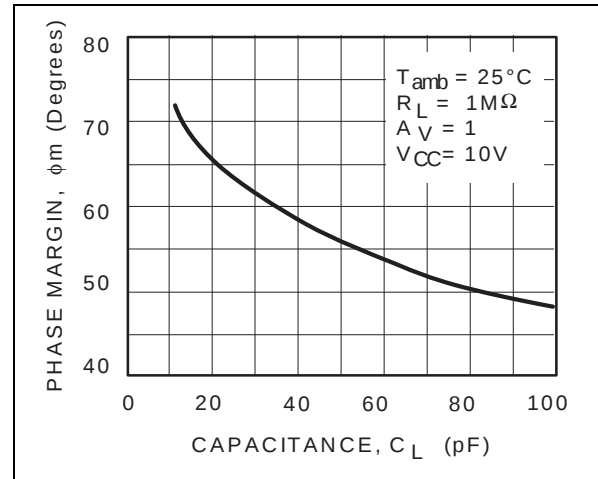
## TYPICAL CHARACTERISTICS

**Figure 1 :** Supply Current (each amplifier) versus Supply Voltage**Figure 3b :** High Level Output Voltage versus High Level Output Current**Figure 2 :** Input Bias Current versus Free Air Temperature**Figure 4a :** Low Level Output Voltage versus Low Level Output Current**Figure 3a :** High Level Output Voltage versus High Level Output Current**Figure 4b :** Low Level Output Voltage versus Low Level Output Current

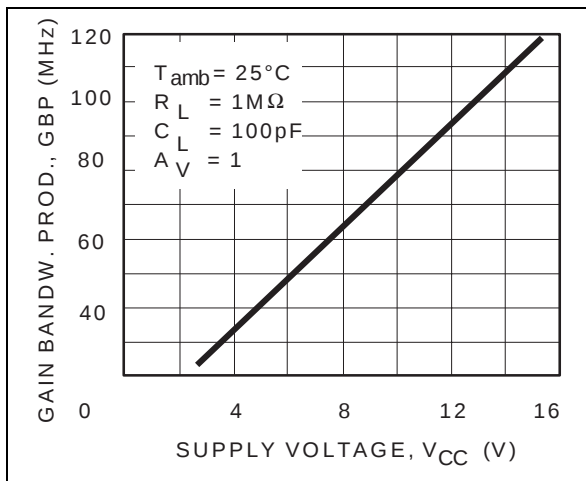
**Figure 5 : Open Loop Frequency Response and Phase Shift**



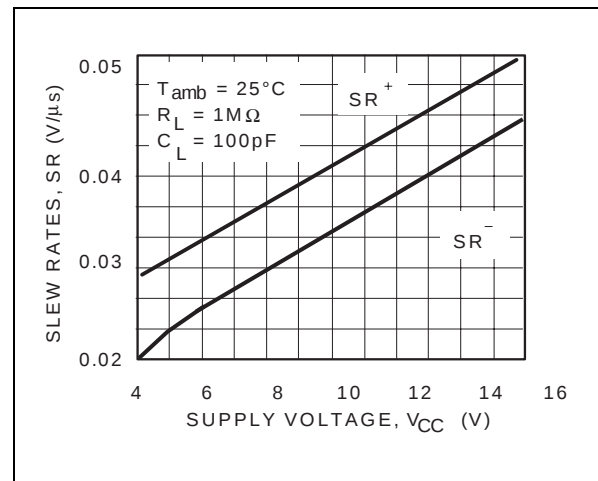
**Figure 8 : Phase Margin versus Capacitive Load**



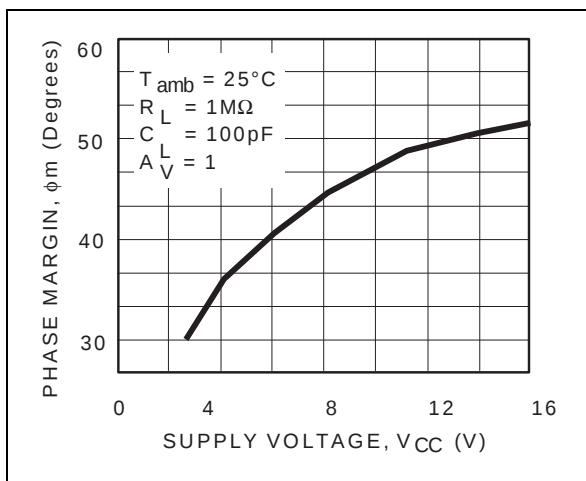
**Figure 6 : Gain Bandwidth Product versus Supply Voltage**



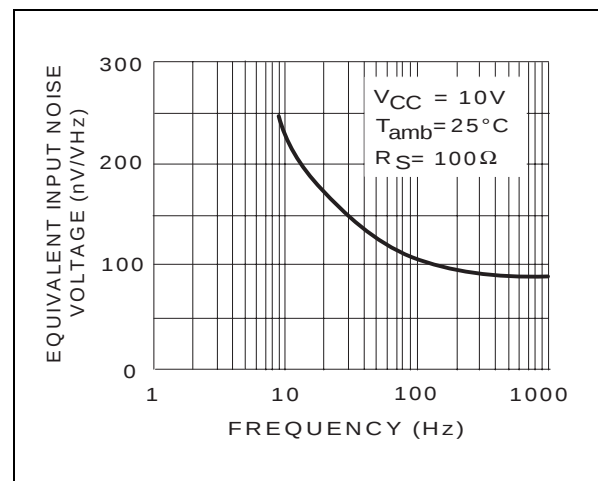
**Figure 9 : Slew Rate versus Supply Voltage**



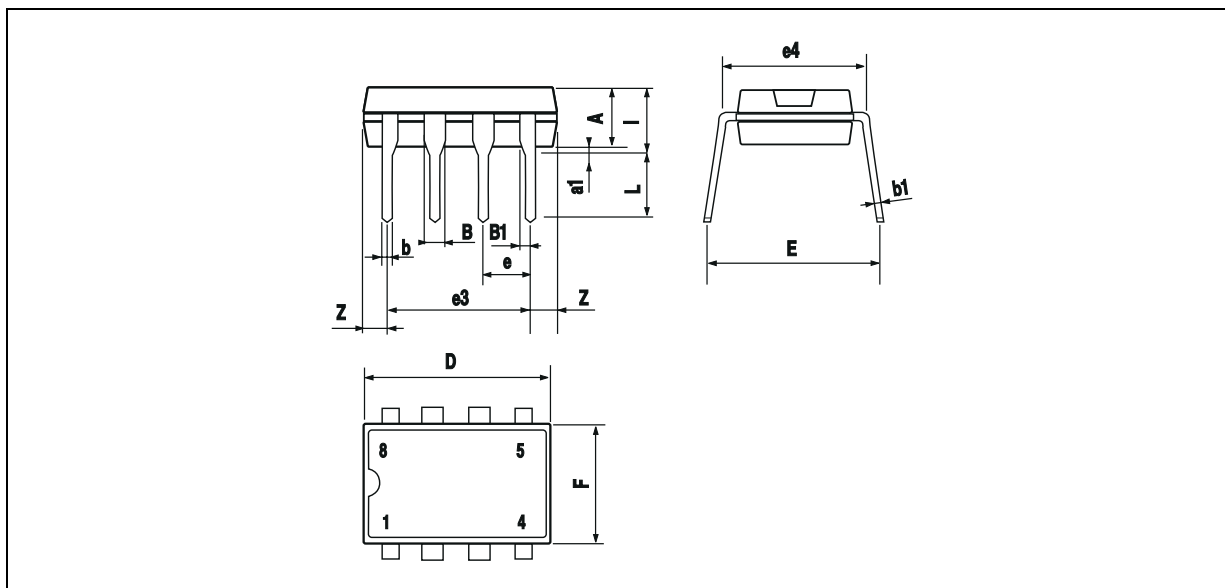
**Figure 7 : Phase Margin versus Supply Voltage**



**Figure 10 : Input Voltage Noise versus Frequency**

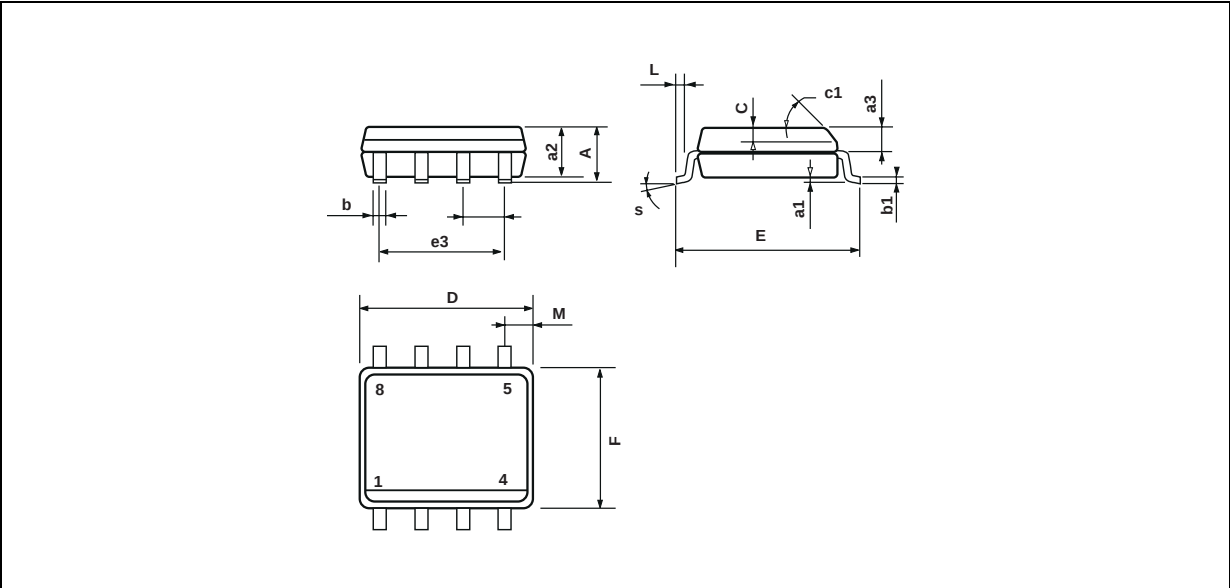


**PACKAGE MECHANICAL DATA**  
8 PINS - PLASTIC DIP

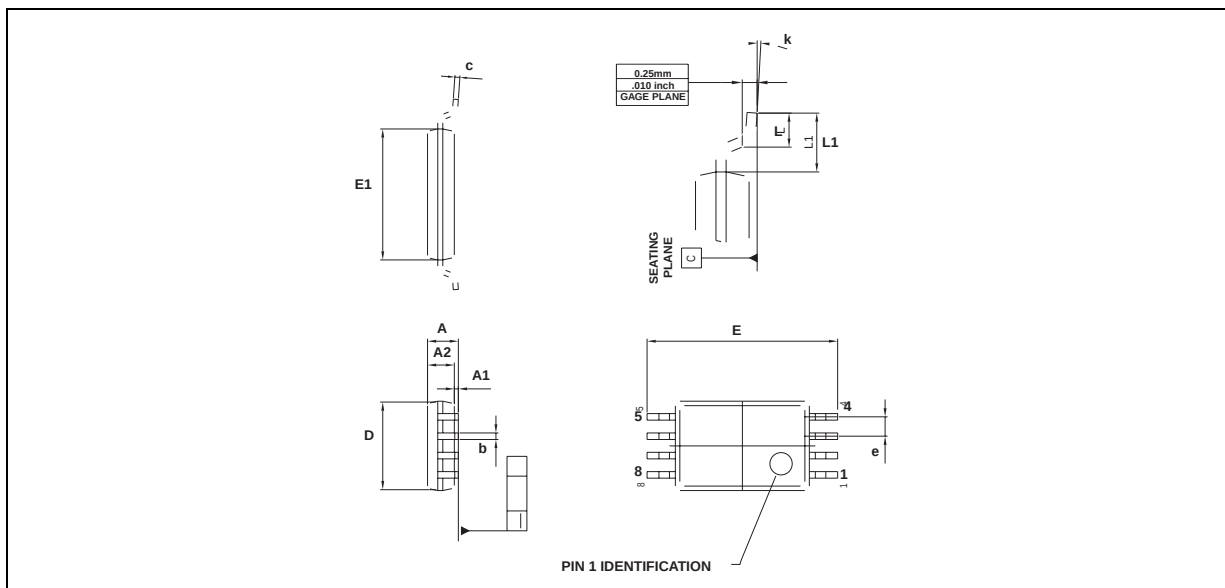


| Dim. | Millimeters |      |       | Inches |       |       |
|------|-------------|------|-------|--------|-------|-------|
|      | Min.        | Typ. | Max.  | Min.   | Typ.  | Max.  |
| A    |             | 3.32 |       |        | 0.131 |       |
| a1   | 0.51        |      |       | 0.020  |       |       |
| B    | 1.15        |      | 1.65  | 0.045  |       | 0.065 |
| b    | 0.356       |      | 0.55  | 0.014  |       | 0.022 |
| b1   | 0.204       |      | 0.304 | 0.008  |       | 0.012 |
| D    |             |      | 10.92 |        |       | 0.430 |
| E    | 7.95        |      | 9.75  | 0.313  |       | 0.384 |
| e    |             | 2.54 |       |        | 0.100 |       |
| e3   |             | 7.62 |       |        | 0.300 |       |
| e4   |             | 7.62 |       |        | 0.300 |       |
| F    |             |      | 6.6   |        |       | 0.260 |
| i    |             |      | 5.08  |        |       | 0.200 |
| L    | 3.18        |      | 3.81  | 0.125  |       | 0.150 |
| Z    |             |      | 1.52  |        |       | 0.060 |

PACKAGE MECHANICAL DATA  
8 PINS - PLASTIC MICROPACKAGE (SO)



| Dim. | Millimeters |      |      | Inches |       |       |
|------|-------------|------|------|--------|-------|-------|
|      | Min.        | Typ. | Max. | Min.   | Typ.  | Max.  |
| A    |             |      | 1.75 |        |       | 0.069 |
| a1   | 0.1         |      | 0.25 | 0.004  |       | 0.010 |
| a2   |             |      | 1.65 |        |       | 0.065 |
| a3   | 0.65        |      | 0.85 | 0.026  |       | 0.033 |
| b    | 0.35        |      | 0.48 | 0.014  |       | 0.019 |
| b1   | 0.19        |      | 0.25 | 0.007  |       | 0.010 |
| C    | 0.25        |      | 0.5  | 0.010  |       | 0.020 |
| c1   | 45° (typ.)  |      |      |        |       |       |
| D    | 4.8         |      | 5.0  | 0.189  |       | 0.197 |
| E    | 5.8         |      | 6.2  | 0.228  |       | 0.244 |
| e    |             | 1.27 |      |        | 0.050 |       |
| e3   |             | 3.81 |      |        | 0.150 |       |
| F    | 3.8         |      | 4.0  | 0.150  |       | 0.157 |
| L    | 0.4         |      | 1.27 | 0.016  |       | 0.050 |
| M    |             |      | 0.6  |        |       | 0.024 |
| S    | 8° (max.)   |      |      |        |       |       |

**PACKAGE MECHANICAL DATA****8 PINS - THIN SHRINK SMALL OUTLINE PACKAGE (TSSOP)**

| Dim. | Millimeters |       |      | Inches |        |       |
|------|-------------|-------|------|--------|--------|-------|
|      | Min.        | Typ.  | Max. | Min.   | Typ.   | Max.  |
| A    |             |       | 1.20 |        |        | 0.05  |
| A1   | 0.05        |       | 0.15 | 0.01   |        | 0.006 |
| A2   | 0.80        | 1.00  | 1.05 | 0.031  | 0.039  | 0.041 |
| b    | 0.19        |       | 0.30 | 0.007  |        | 0.15  |
| c    | 0.09        |       | 0.20 | 0.003  |        | 0.012 |
| D    | 2.90        | 3.00  | 3.10 | 0.114  | 0.118  | 0.122 |
| E    |             | 6.40  |      |        | 0.252  |       |
| E1   | 4.30        | 4.40  | 4.50 | 0.169  | 0.173  | 0.177 |
| e    |             | 0.65  |      |        | 0.025  |       |
| k    | 0°          |       | 8°   | 0°     |        | 8°    |
| L    | 0.50        | 0.60  | 0.75 | 0.09   | 0.0236 | 0.030 |
| L1   | 0.45        | 0.600 | 0.75 | 0.018  | 0.024  | 0.030 |
| L1   |             | 1.000 |      |        | 0.039  |       |

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