

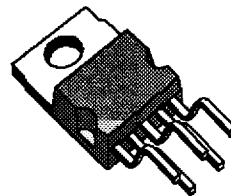
## 4A LINEAR DRIVER

- HIGH OUTPUT CURRENT (4A peak)
- HIGH CURRENT GAIN (10.000 typ.)
- OPERATION UP TO  $\pm 20$  V
- THERMAL PROTECTION
- SHORT CIRCUIT PROTECTION
- OPERATION WITHIN SOA
- HIGH SLEW-RATE (30 V/ $\mu$ s)

### DESCRIPTION

The L149 is a general purpose power booster in Pentawatt<sup>®</sup> package consisting of a quasi-complementary darlington output stage with the associated biasing system and inhibit facility.

The device is particularly suited for use with an operational amplifier inside a closed loop configuration to increase output current.



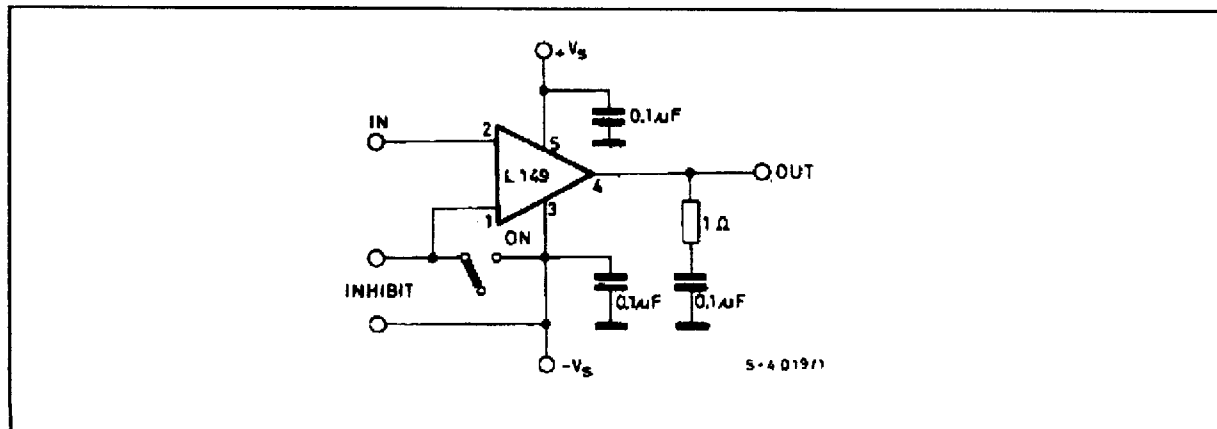
Pentawatt<sup>®</sup>

ORDER CODE : L149V

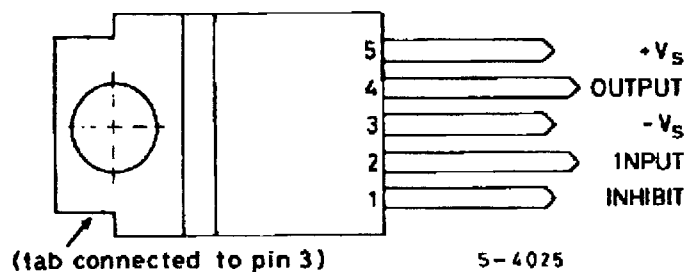
### ABSOLUTE MAXIMUM RATINGS

| Symbol      | Parameter                                                | Value                        | Unit   |
|-------------|----------------------------------------------------------|------------------------------|--------|
| $V_s$       | Supply Voltage                                           | $\pm 20$                     | V      |
| $V_i$       | Input Voltage                                            |                              | $V_s$  |
| $V_5 - V_4$ | Upper Power Transistor VCE                               | 40                           | V      |
| $V_4 - V_3$ | Lower Power Transistor VCE                               | 40                           | V      |
| $I_o$       | DC Output Current                                        | 3                            | A      |
| $I_o$       | Peak Output Current (internally limited)                 | 4                            | A      |
| $V_{INH}$   | Input Inhibit Voltage                                    | - $V_s + 5$<br>- $V_s - 1.5$ | V<br>V |
| $P_{tot}$   | Total Power Dissipation at $T_{case} = 75^\circ\text{C}$ | 25                           | W      |

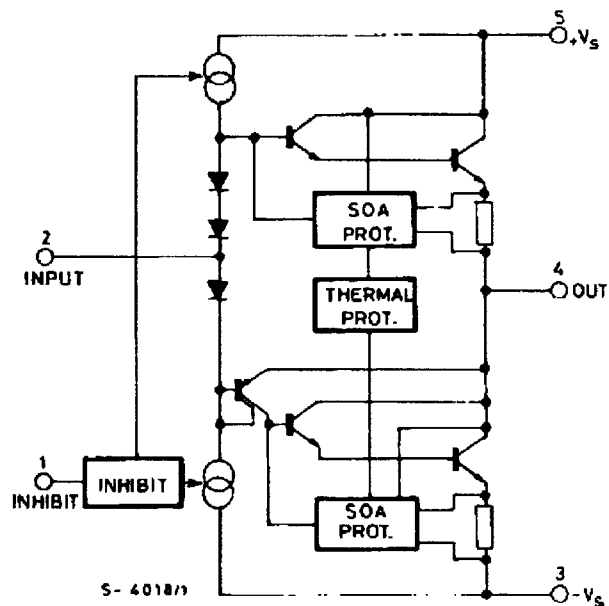
### TEST CIRCUIT



## CONNECTION DIAGRAM (top view)



## SCHEMATIC DIAGRAM



## THERMAL DATA

| Symbol     | Parameter                        | Value | Unit |
|------------|----------------------------------|-------|------|
| Rth-j-case | Thermal resistance junction-case | max 3 | °C/W |

ELECTRICAL CHARACTERISTICS ( $T_j = 25^\circ\text{C}$ ,  $V_s = \pm 16\text{V}$ )

| Symbol      | Parameter                                | Test conditions                                      | Min.      | Typ.  | Max.      | Unit             |
|-------------|------------------------------------------|------------------------------------------------------|-----------|-------|-----------|------------------|
| $V_s$       | Supply Voltage                           |                                                      |           |       | $\pm 20$  | V                |
| $I_d$       | Quiescent Drain Current                  | $V_s = \pm 16\text{V}$                               |           | 30    |           | mA               |
| $I_{in}$    | Input current                            | $V_s = \pm 16\text{V}$ $V_i = 0\text{V}$             |           | 200   | 400       | $\mu\text{A}$    |
| $h_{FE}$    | DC current drain                         | $V_s = \pm 16\text{V}$ $I_o = 3\text{A}$             | 6000      | 10000 |           | -                |
| $G_v$       | Voltage gain                             | $V_s = \pm 16\text{V}$ $I_o = 1.5\text{A}$           |           | 1     |           | -                |
| $V_{CEsat}$ | Saturation voltage (for each transistor) | $I_o = 3\text{A}$                                    |           |       | 3.5       | V                |
| $V_{os}$    | Input offset voltage                     | $V_s = \pm 16\text{V}$                               |           |       | 0.3       | V                |
| $V_{INH}$   | Inhibit input voltage (pins 1-3)         | ON condition                                         |           |       | $\pm 0.3$ | V                |
|             |                                          | OFF condition                                        | $\pm 1.8$ |       |           |                  |
| $R_{INH}$   | Inhibit input resistance                 |                                                      |           | 2.0   |           | K $\Omega$       |
| SR          | Slew rate                                |                                                      |           | 30    |           | V/ $\mu\text{s}$ |
| B           | Power bandwidth                          | $V_o = \pm 10\text{V}$ , $d = 1\%$ , $R_L = 8\Omega$ |           | 200   |           | KHz              |

## APPLICATION INFORMATION

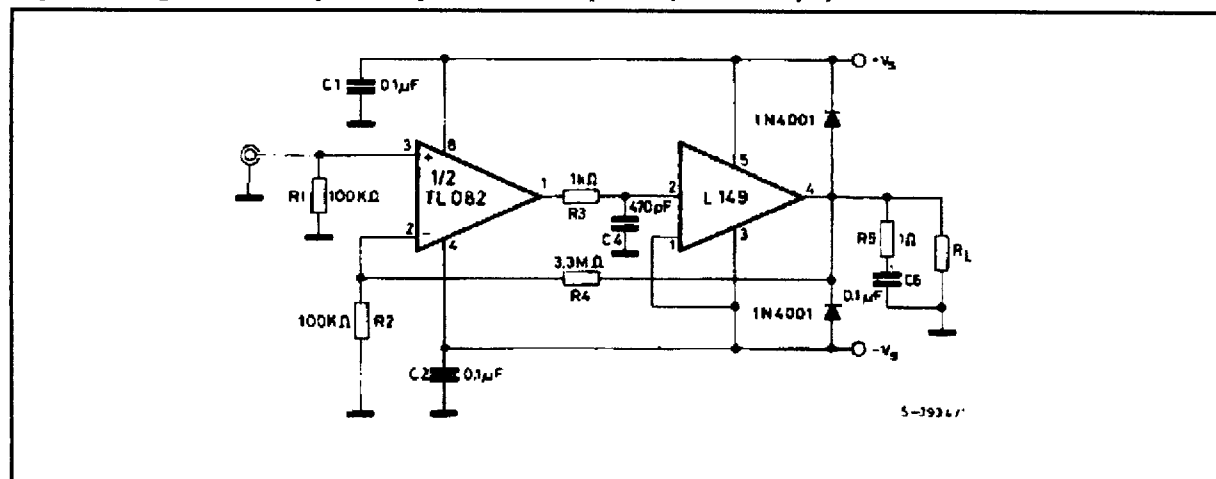
Figure 1. High slew-rate power operational amplifier ( $SR = 13\text{V}/\mu\text{s}$ )

Figure 2. Maximum saturation voltage vs. output current.

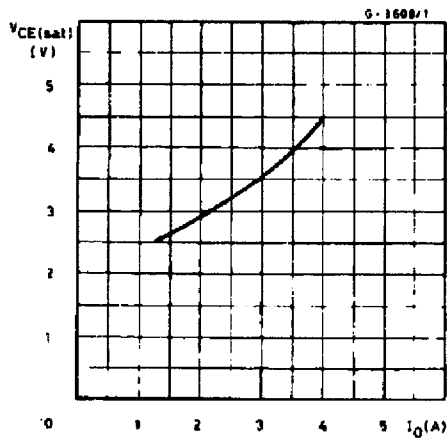


Figure 3. Current limiting characteristics.

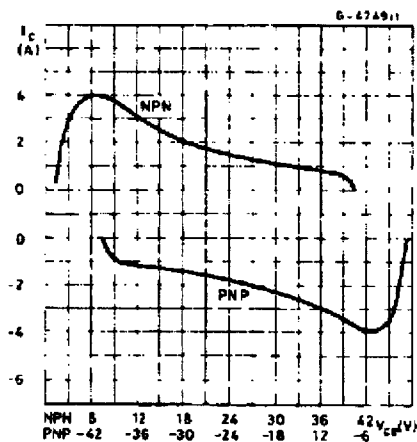


Figure 4: Supply voltage rejection vs. frequency.

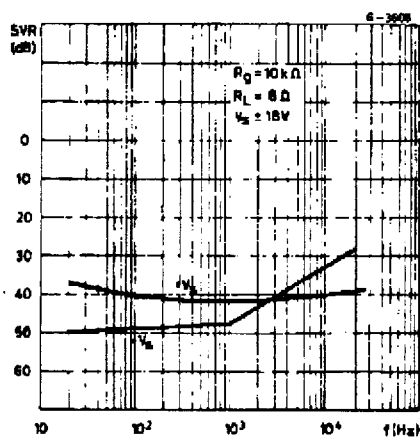
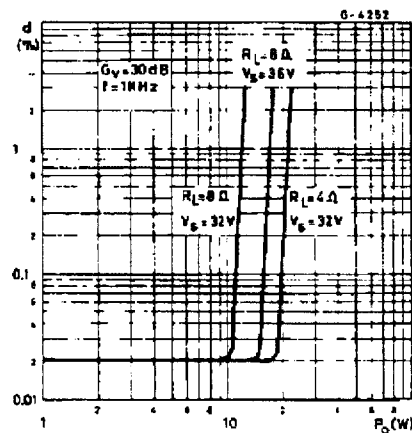
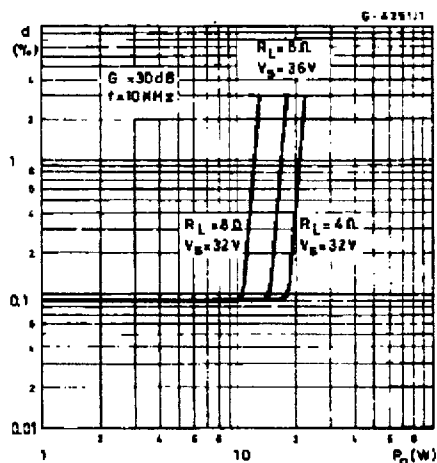
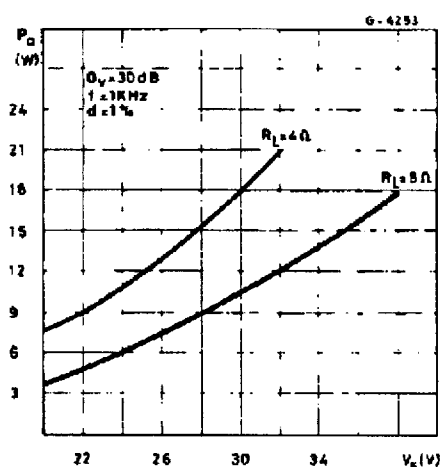
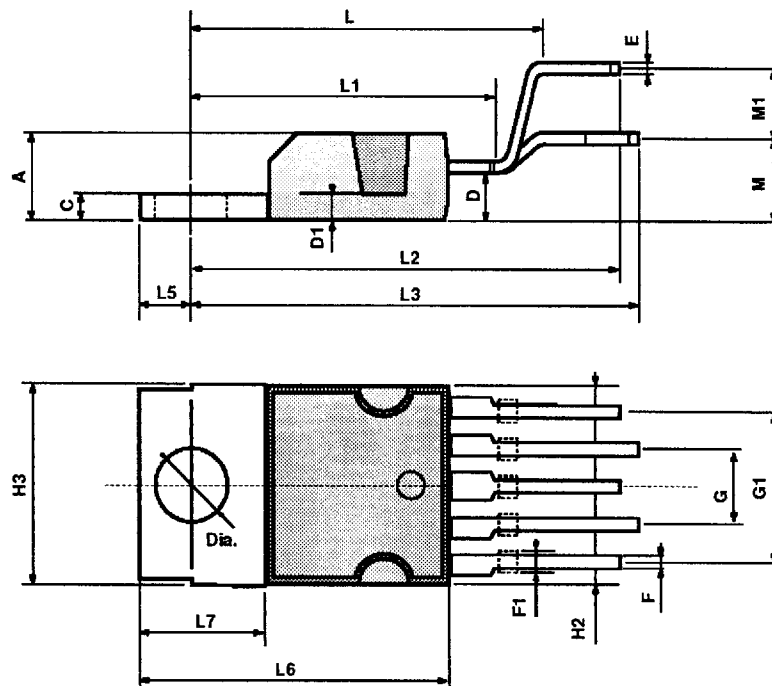
Figure 5: Distortion vs. output power ( $f = 1$  KHz).Figure 6. Distortion vs. output power ( $f = 1$  KHz).

Figure 7. Output power vs. supply voltage.



## PENTAWATT PACKAGE MECHANICAL DATA

| DIM. | mm    |       |      | inch  |       |       |
|------|-------|-------|------|-------|-------|-------|
|      | MIN.  | TYP.  | MAX. | MIN.  | TYP.  | MAX.  |
| A    |       |       | 4.8  |       |       | 0.189 |
| C    |       |       | 1.37 |       |       | 0.054 |
| D    | 2.4   |       | 2.8  | 0.094 |       | 0.110 |
| D1   | 1.2   |       | 1.35 | 0.047 |       | 0.053 |
| E    | 0.35  |       | 0.55 | 0.014 |       | 0.022 |
| F    | 0.8   |       | 1.05 | 0.031 |       | 0.041 |
| F1   | 1     |       | 1.4  | 0.039 |       | 0.055 |
| G    |       | 3.4   |      | 0.126 | 0.134 | 0.142 |
| G1   |       | 6.8   |      | 0.260 | 0.268 | 0.276 |
| H2   |       |       | 10.4 |       |       | 0.409 |
| H3   | 10.05 |       | 10.4 | 0.396 |       | 0.409 |
| L    |       | 17.85 |      |       | 0.703 |       |
| L1   |       | 15.75 |      |       | 0.620 |       |
| L2   |       | 21.4  |      |       | 0.843 |       |
| L3   |       | 22.5  |      |       | 0.886 |       |
| L5   | 2.6   |       | 3    | 0.102 |       | 0.118 |
| L6   | 15.1  |       | 15.8 | 0.594 |       | 0.622 |
| L7   | 6     |       | 6.6  | 0.236 |       | 0.260 |
| M    |       | 4.5   |      |       | 0.177 |       |
| M1   |       | 4     |      |       | 0.157 |       |
| Dia  | 3.65  |       | 3.85 | 0.144 |       | 0.152 |



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