



LINEAR INTEGRATED CIRCUIT

MONOLITHIC HIGH GAIN POWER OUTPUT STAGE

The L149 is a general purpose power booster in Pentawatt[®] package consisting of a quasi-complementary darlington's output stage with the associated biasing system and inhibit facility.
The circuit features are:

- High output current (4A peak)
- High current gain (10 000 typ.)
- Operation up to $\pm 20V$
- Thermal protection
- Short circuit protection
- Operation within SOA
- High slew-rate

The device is particularly suited for use with an operational amplifier inside a closed loop configuration to increase output current ($P_o = 20W$, $d = 0.5\%$, $R_L = 4\Omega$, $V_s = \pm 16V$).

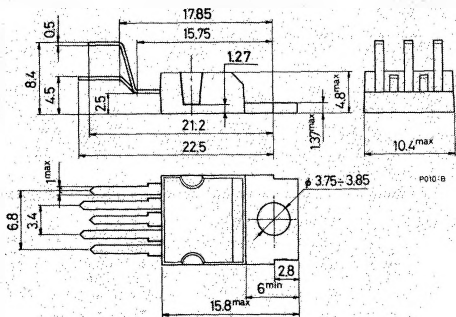
ABSOLUTE MAXIMUM RATINGS

V_s	Supply voltage	± 20	V
V_i	Input voltage	V_s	
I_o	DC output current	3	A
I_o	Peak output current (internally limited)	4	A
V_{INH}	Input inhibit voltage	$-V_s + 5$	V
		$-V_s - 1.5$	V
P_{tot}	Power dissipation at $T_{case} = 75^\circ C$	25	W
T_{stg}, T_j	Storage and junction temperature	-40 to 150	$^\circ C$

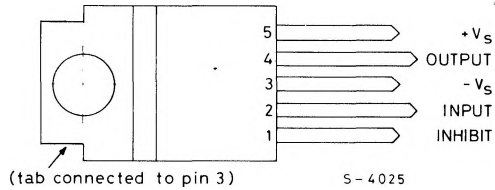
ORDERING NUMBER: L149V

MECHANICAL DATA

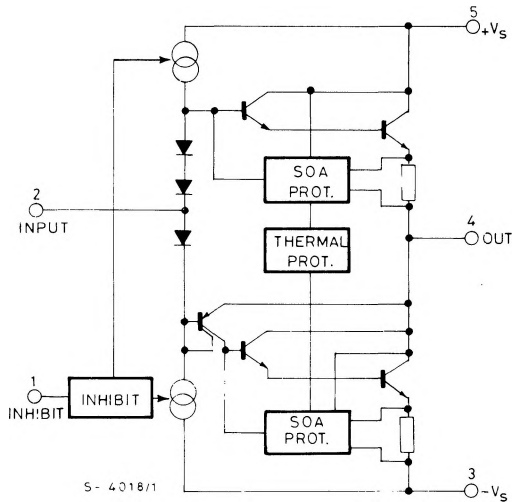
Dimensions in mm



CONNECTION DIAGRAM (top view)



SCHEMATIC DIAGRAM





THERMAL DATA

$R_{th \text{ j-case}}$	Thermal resistance junction-case	max	3	$^{\circ}\text{C/W}$
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ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_s Supply voltage				± 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	μA
h_{FE} DC current gain	$V_s = \pm 16\text{V}$ $I_o = 3\text{A}$	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			± 0.3	V
	OFF condition	± 1.2			
R_{INH} Inhibit input resistance	$f = 1 \text{ KHz}$		2.0		$\text{K}\Omega$
SR Slew rate			30		$\text{V}/\mu\text{s}$
B Power bandwidth	$V_s = \pm 18\text{V}$, $d = 1\%$, $R_L = 8\Omega$		200		KHz

TEST CIRCUIT

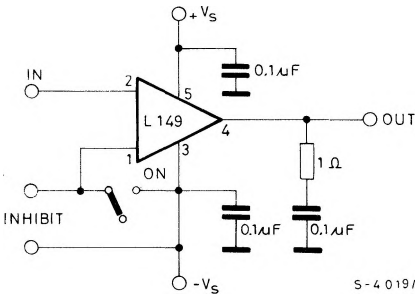


Fig. 1 - Maximum saturation voltage vs. output current

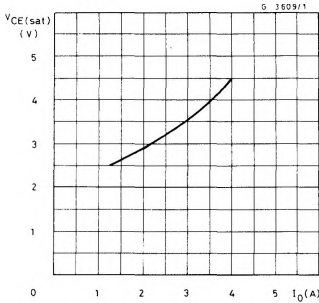


Fig. 2 - Current limiting characteristics

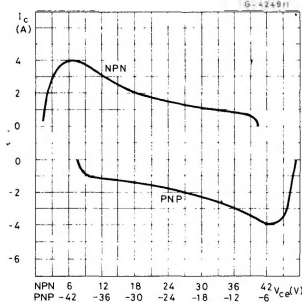
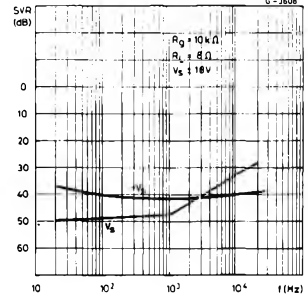


Fig. 3 - Supply voltage rejection vs. frequency



APPLICATION INFORMATION

Fig. 4 - High power amplifier with single power supply ($G_V = 30$ dB)

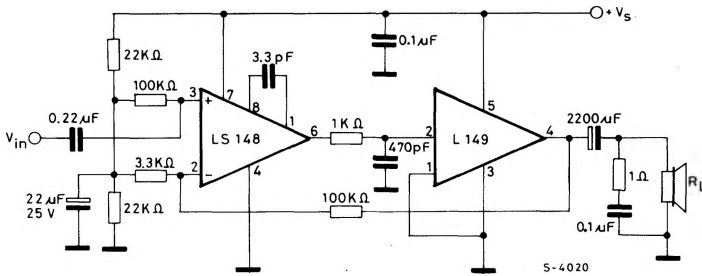


Fig. 5 - Distortion vs. output power ($f = 1$ KHz)

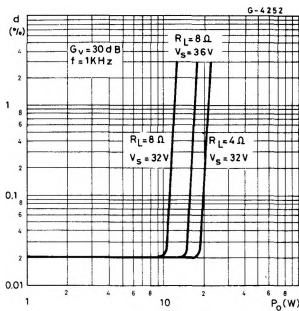


Fig. 6 - Distortion vs. output power ($f = 10$ KHz)

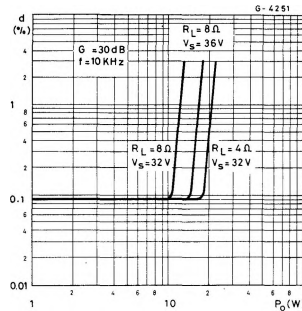
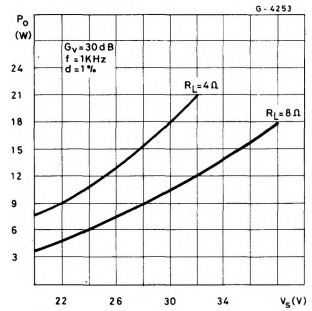


Fig. 7 - Output power vs. supply voltage



APPLICATION INFORMATION (continued)

Fig. 8 – High slew-rate power operational amplifier

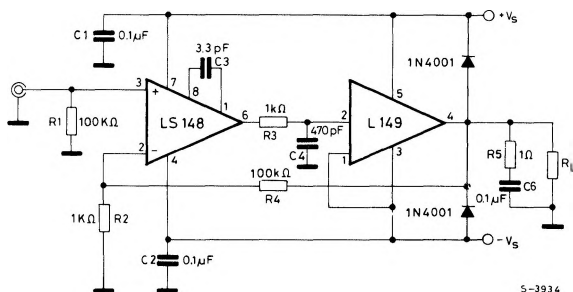


Fig. 9 – Electronic potentiometer (short-circuit protected)

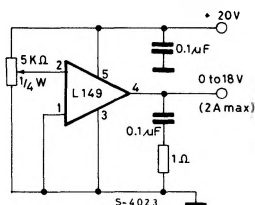
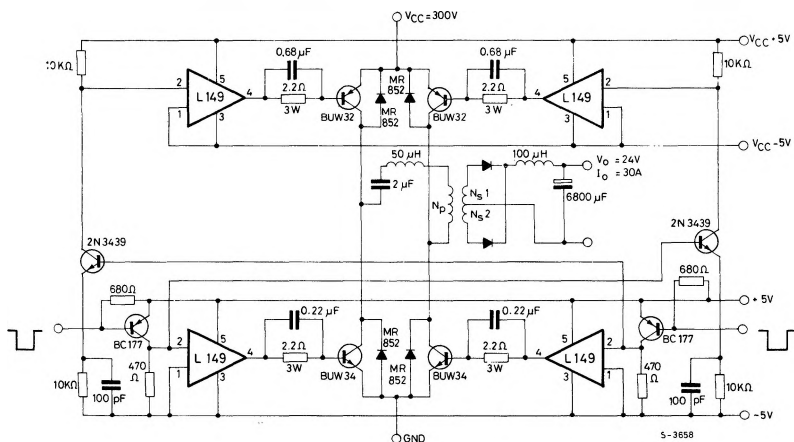


Fig. 10 – 720W Switch-Mode Power Supply using the L149 as driver stage for the power transistors



NOTE – For a more detailed description of the L 149 and its applications, refer to SGS-TECHNICAL NOTE TN.150.