**BLV36**

# VHF LINEAR PUSH-PULL POWER TRANSISTOR

Two NPN silicon planar epitaxial transistor sections in one envelope to be used as a push-pull amplifier. This device is primarily intended for use in linear VHF television transmitters and transposers (vision or sound amplifier).

## Features

- Internally matched input for wideband operation and high power gain
- Internal midpoint (RF ground) reduces negative feedback and improves power gain
- Increased input and output impedance (compared with single-ended transistors) simplify wideband matching
- Length of external emitter leads is not critical
- Diffused emitter balancing resistors for an optimum temperature profile
- Gold metallization ensures excellent reliability

The envelope is an 8-lead flange type with a ceramic cap. All leads are isolated from the flange.

## QUICK REFERENCE DATA

RF performance in push-pull amplifier

| mode of operation | $V_{CE}$ V | $I_C(ZS)$ A | f MHz | $P_L$ W | $T_h$ °C | $G_p$ dB | $\eta_c$ % | gain compression dB |
|---|---|---|---|---|---|---|---|---|
| CW; class-AB | 28 | 2 × 0.25 | 224.25 | 115 | 25 | ⩾ 11.0 typ. 13.0 | ⩾ 48 typ. 55 | ⩽ 1.0* |

* Assuming a 3rd order amplitude transfer characteristic, 1 dB gain compression corresponds with 30% sync input/25% sync output compression in television service (negative modulation, CCIR system).
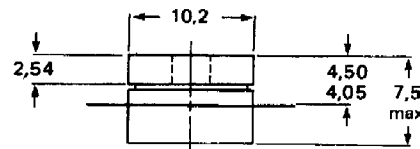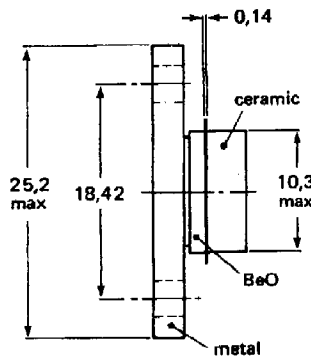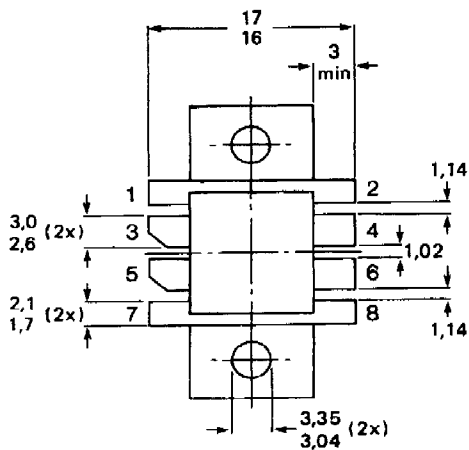
## MECHANICAL DATA

SOT161 (see Fig.1).



Torque on screw: min. 0.60 Nm
max. 0.75 Nm

Recommended screw: cheese-head 4-40 UNC/2A
Heatsink compound must be sparingly applied and evenly distributed.
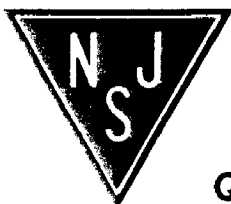
## MECHANICAL DATA

Fig.1 SOT161.

### Pinning

1 = Emitter
2 = Emitter
3 = Collector (No.2)
4 = Base (No.2)
5 = Collector (No.1)
6 = Base (No.1)
7 = Emitter
8 = Emitter

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## RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134)

| | | | |
|---|---|---|---|
| Collector-emitter voltage (peak value); (peak value); $V_{BE} = 0$ | $V_{CESM}$ | max. | 65 V |
| open base | $V_{CEO}$ | max. | 33 V |
| Emitter-base voltage (open collector) | $V_{EBO}$ | max. | 4 V |
| Collector current per transistor section DC or average | $I_C, I_{C(AV)}$ | max. | 8.5 A |
| (peak value); $f > 1$ MHz | $I_{CM}$ | max. | 17.5 A |
| Total DC power dissipation; $T_{mb} = 25\ ^{\circ}C$ | $P_{tot(DC)}$ | max. | 218 W* |
| RF power dissipation $f > 1$ MHz; $T_{mb} = 25\ ^{\circ}C$ | $P_{tot(RF)}$ | max. | 270 W* |
| Storage temperature range | $T_{stg}$ | | −65 to +150 $^{\circ}C$ |
| Operating junction temperature | $T_j$ | max. | 200 $^{\circ}C$ |
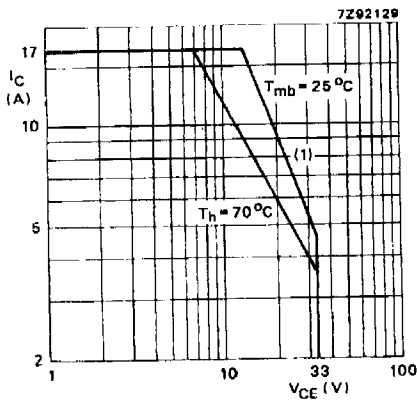
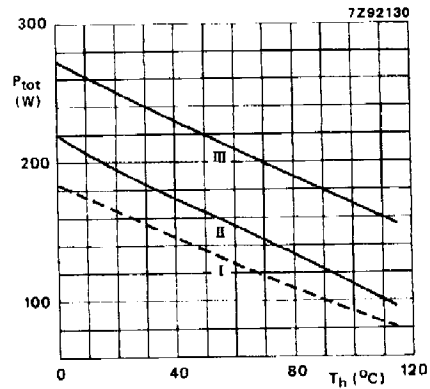

(1) Second breakdown limit.

Fig.2  DC SOAR.

Conditions for Figs 2 and 3:
$R_{th\ mb-h} = 0.25$ K/W; Total device*.



I   Continuous DC operation
II   Continuous RF operation; $(f > 1$ MHz)
III   Short-time operation during mismatch; $(f > 1$ MHz)

Fig.3  Power/temperature derating curves.

## THERMAL RESISTANCE
(dissipation = 180 W; $T_{mb} = 25\ ^{\circ}C$)**

| | | |
|---|---|---|
| From junction to mounting base (DC dissipation) | $R_{th\ j-mb(DC)} =$ | 0.85 K/W |
| From junction to mounting base (RF dissipation) | $R_{th\ j-mb(RF)} =$ | 0.64 K/W |
| From mounting base to heatsink | $R_{th\ mb-h} =$ | 0.25 K/W |

*  Dissipation of either transistor section shall not exceed half rated power.
** Both transistor sections equally loaded.

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**CHARACTERISTICS**

Apply to either transistor section unless otherwise specified. $T_j = 25\ ^{\circ}C$.

| | | | | |
|---|---|---|---|---|
| Collector-emitter breakdown voltage | | | | |
| $V_{BE} = 0$; $I_C = 25$ mA | $V_{(BR)CES}$ | > | 65 | V |
| open base; $I_C = 100$ mA | $V_{(BR)CEO}$ | > | 33 | V |
| Emitter-base breakdown voltage | | | | |
| open collector; $I_E = 10$ mA | $V_{(BR)EBO}$ | > | 4 | V |
| Collector cut-off current | | | | |
| $V_{BE} = 0$; $V_{CE} = 33$ V | $I_{CES}$ | < | 10 | mA |
| Second-breakdown energy; L = 25 mH; f = 50 Hz | | | | |
| $R_{BE} = 10\ \Omega$ | $E_{SBR}$ | > | 10 | mJ |
| DC current gain* | | typ. | 45 | |
| $I_C = 3.5$ A; $V_{CE} = 25$ V | $h_{FE}$ | 15 to | 100 | |
| Transition frequency at f = 100 MHz* | | | | |
| $-I_E = 3.3$ A; $V_{CB} = 25$ V | $f_T$ | typ. | 575 | MHz |
| $-I_E = 10$ A; $V_{CB} = 25$ V | $f_T$ | typ. | 600 | MHz |
| Collector capacitance at f = 1 MHz | | | | |
| $I_E = i_e = 0$; $V_{CB} = 25$ V | $C_c$ | typ. | 155 | pF |
| Feedback capacitance at f = 1 MHz | | | | |
| $I_C = 50$ mA; $V_{CE} = 25$ V | $C_{re}$ | typ. | 88 | pF |
| Collector-flange capacitance | $C_{cf}$ | typ. | 2 | pF |