

BLX98

U.H.F. LINEAR POWER TRANSISTOR

N-P-N silicon planar epitaxial transistor primarily intended for use in linear u.h.f. amplifiers of television transposers and transmitters in band IV-V.

Features:

- diffused emitter ballasting resistors for an optimum temperature profile;
- gold metallization ensures excellent reliability.

The transistor has a 1/4" capstan envelope with a moulded cap. All leads are isolated from the stud.

QUICK REFERENCE DATA

R.F. performance in linear amplifier

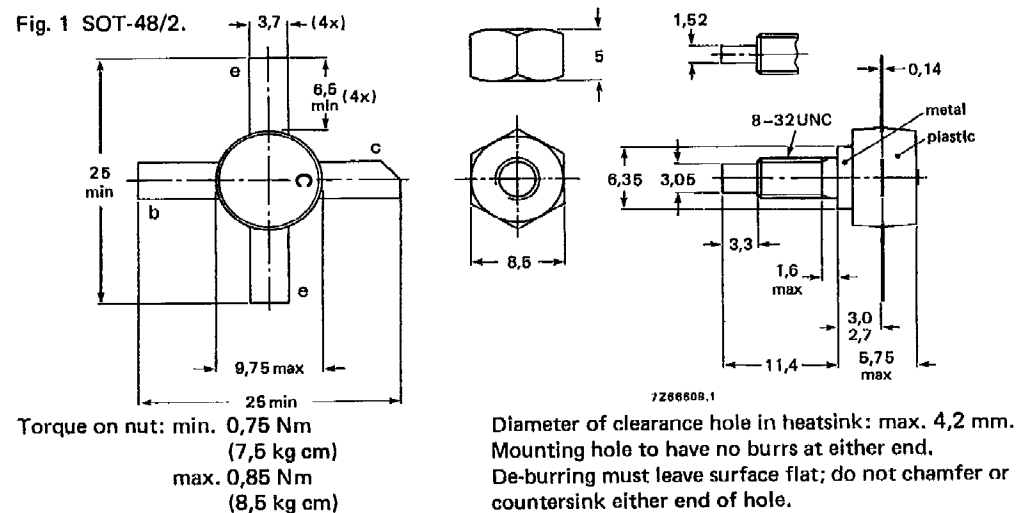
mode of operation	f_{vision} MHz	V_{CE} V	I_{C} mA	T_{h} °C	d_{im}^* dB	$P_{\text{O sync}}^*$ W	G_{p} dB
class-A	860	25	850	70	-60	> 3,5	> 5,0
class-A	860	25	850	70	-60	typ. 4,0	typ. 5,5

* Three-tone test method (vision carrier -8 dB, sound carrier -7 dB, sideband signal -16 dB), zero dB corresponds to peak sync level.

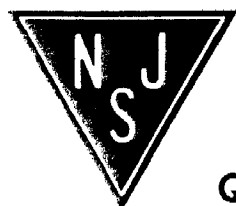
MECHANICAL DATA

Dimensions in mm

Fig. 1 SOT-48/2.



When locking is required an adhesive is preferred instead of a lock washer.



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RATINGS

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

Collector-emitter voltage
(peak value); $V_{BE} = 0$

open base

Emitter-base voltage (open collector)

Collector current

d.c.

(peak value); $f > 1$ MHz

Total power dissipation at $T_h = 70^\circ\text{C}$

Storage temperature

Junction temperature

V_{CESM} max. 50 V

V_{CEO} max. 27 V

V_{EBO} max. 3,5 V

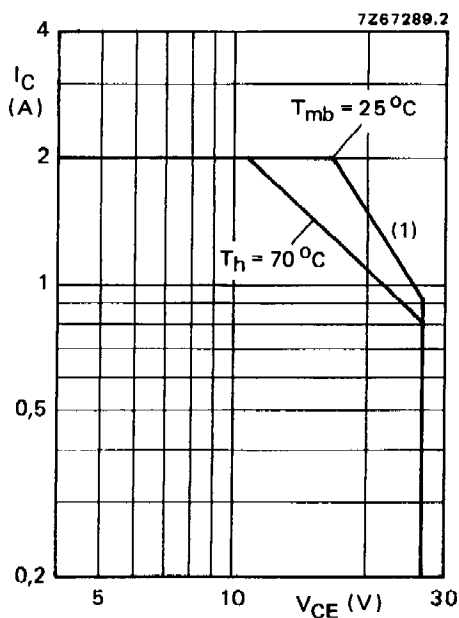
I_C max. 2 A

I_{CM} max. 4 A

P_{tot} max. 21,5 W

T_{stg} -65 to $+200^\circ\text{C}$

T_j max. 200°C



(1) Second breakdown limit (independent of temperature).

Fig. 2 D.C. SOAR.

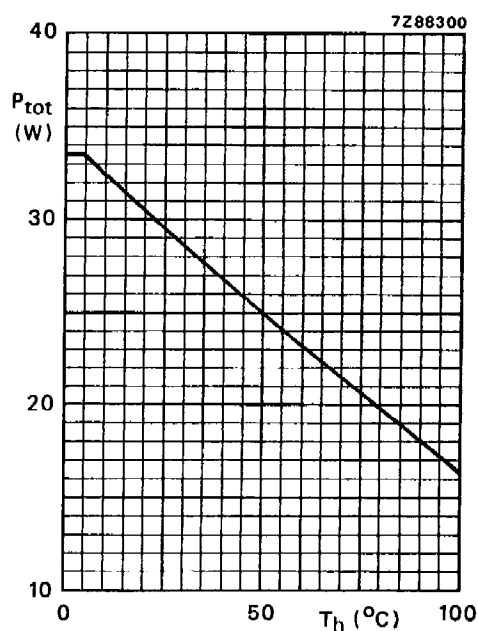


Fig. 3 Power derating curve vs. temperature.

THERMAL RESISTANCE (dissipation = 21,25 W; $T_{mb} = 82,75^\circ\text{C}$, i.e. $T_h = 70^\circ\text{C}$).

From junction to mounting base

$R_{th j-mb} = 5,45 \text{ K/W}$

From mounting base to heatsink

$R_{th mb-h} = 0,6 \text{ K/W}$

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CHARACTERISTICS

$T_j = 25^\circ\text{C}$ unless otherwise specified

Collector-emitter breakdown voltage

$V_{BE} = 0; I_C = 10\text{ mA}$

open base; $I_C = 25\text{ mA}$

$V_{(BR)CES} > 50\text{ V}$

$V_{(BR)CEO} > 27\text{ V}$

Emitter-base breakdown voltage

open collector; $I_E = 5\text{ mA}$

$V_{(BR)EBO} > 3,5\text{ V}$

D.C. current gain*

$I_C = 850\text{ mA}; V_{CE} = 25\text{ V}$

$h_{FE} > 15$
typ. 40

Collector-emitter saturation voltage*

$I_C = 500\text{ mA}; I_B = 100\text{ mA}$

V_{CEsat} typ. 0,25 V

Transition frequency at $f = 500\text{ MHz}$ **

$-I_E = 850\text{ mA}; V_{CB} = 25\text{ V}$

f_T typ. 2,5 GHz

Collector capacitance at $f = 1\text{ MHz}$

$I_E = I_E = 0; V_{CB} = 25\text{ V}$

C_C typ. 24 pF
< 30 pF

Feedback capacitance at $f = 1\text{ MHz}$

$I_C = 50\text{ mA}; V_{CE} = 25\text{ V}$

C_{re} typ. 15 pF

Collector-stud capacitance

C_{cs} typ. 2 pF

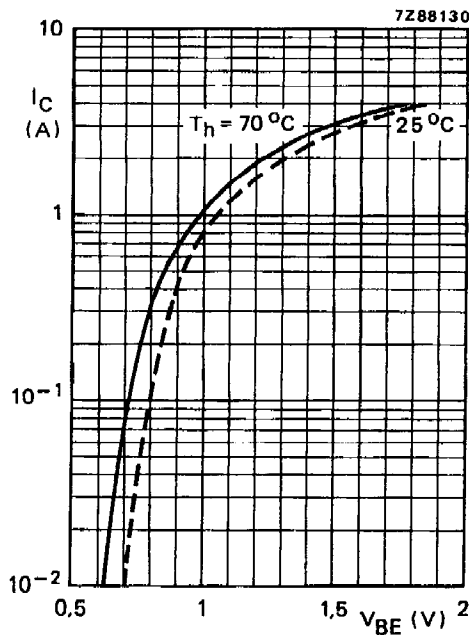


Fig. 5 Typical values; $V_{CE} = 25\text{ V}$.

* Measured under pulse conditions: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0,02$.

** Measured under pulse conditions: $t_p \leq 50\text{ }\mu\text{s}$; $\delta \leq 0,01$.

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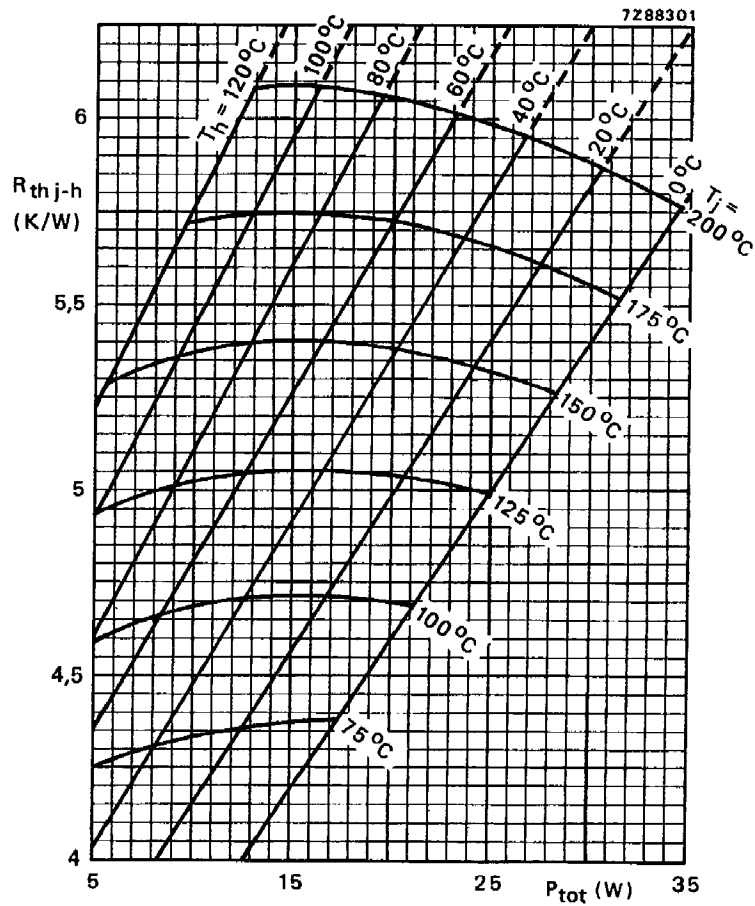


Fig. 4 Maximum thermal resistance from junction to heatsink as a function of power dissipation, with heatsink and junction temperature as parameters. ($R_{th\ mb-h} = 0,6\text{ K/W}$.)

Example

Nominal class-A operation (without r.f. signal): $V_{CE} = 25\text{ V}$; $I_C = 850\text{ mA}$; $T_h = 70\text{ °C}$.

Fig. 4 shows: $R_{th\ j-h}$ max. 6,05 K/W
 T_j max. 200 °C

Typical device: $R_{th\ j-h}$ typ. 5,35 K/W
 T_j typ. 183 °C