

BLW89

U.H.F. POWER TRANSISTOR

N-P-N silicon planar epitaxial transistor suitable for transmitting applications in class-A, B or C in the u.h.f. and v.h.f. range for a nominal supply voltage of 28 V. The transistor is resistance stabilized and is guaranteed to withstand infinite VSWR at rated output power. High reliability is ensured by a gold sandwich metallization.

The transistor is housed in a 1/4" capstan envelope with a ceramic cap. All leads are isolated from the stud.

QUICK REFERENCE DATA

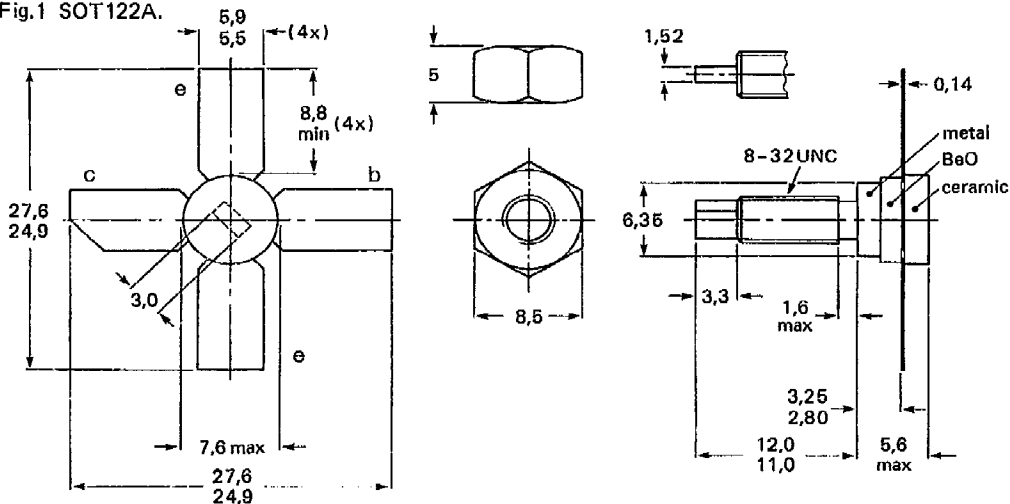
R.F. performance up to  $T_h = 25^\circ\text{C}$  in an unneutralized common-emitter class-B circuit

mode of operation	$V_{CE}$ V	f MHz	$P_L$ W	$G_p$ dB	$\eta$ %
c.w.	28	470	2	> 12	> 50

MECHANICAL DATA

Dimensions in mm

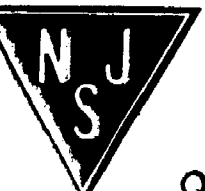
Fig.1 SOT122A.



Torque on nut: min. 0,75 Nm  
 (7,5 kg cm)  
 max. 0,85 Nm  
 (8,5 kg cm)

Diameter of clearance hole in heatsink: max. 4,2 mm.  
 Mounting hole to have no burrs at either end.  
 De-burring must leave surface flat; do not chamfer or  
 countersink either end of hole.

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	$V_{CESM}$	max.	60 V
	$V_{CEO}$	max.	30 V
Emitter-base voltage (open collector)	$V_{EBO}$	max.	4 V
Collector current d.c. or average	$I_C; I_{C(AV)}$	max.	0,32 A
(peak value); $f > 1$ MHz	$I_{CM}$	max.	1,0 A
Total power dissipation (d.c. and r.f.) up to $T_{mb} = 50$ °C	$P_{tot}$	max.	9,6 W
Storage temperature	$T_{stg}$		-65 to +150 °C
Operating junction temperature	$T_j$	max.	200 °C

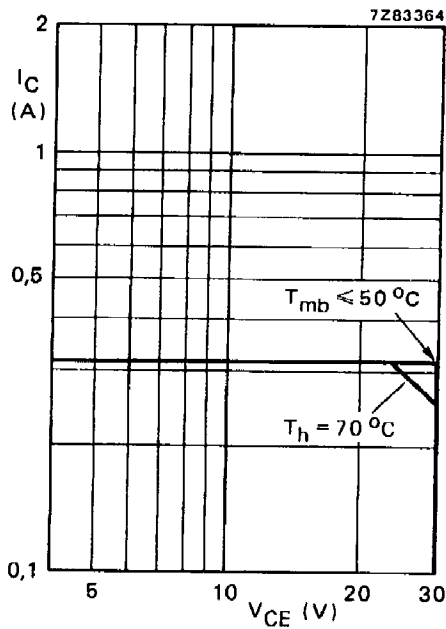


Fig. 2 D.C. SOAR.

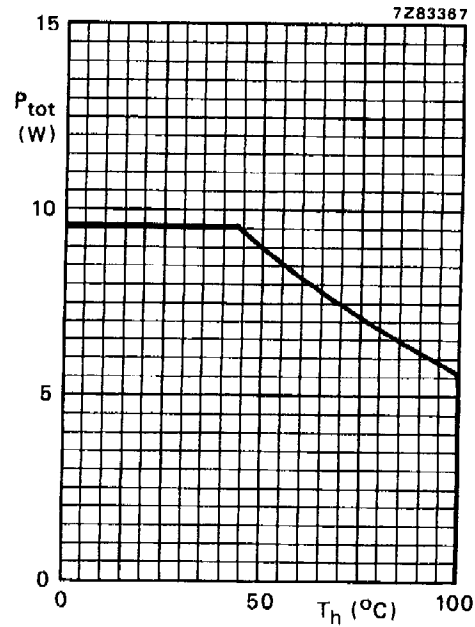


Fig. 3 Power derating curve vs. temperature.

**THERMAL RESISTANCE** (dissipation = 3,5 W;  $T_{mb} = 72$  °C, i.e.  $T_h = 70$  °C)

From junction to mounting base

(d.c. and r.f. dissipation)

$$R_{th\ j-mb} = 13,0\ K/W$$

From mounting base to heatsink

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

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### CHARACTERISTICS

$T_J = 25\text{ }^\circ\text{C}$

Collector-emitter breakdown voltage

$V_{BE} = 0; I_C = 2\text{ mA}$

$V_{(BR)CES} > 60\text{ V}$

Collector-emitter breakdown voltage

open base;  $I_C = 10\text{ mA}$

$V_{(BR)CEO} > 30\text{ V}$

Emitter-base breakdown voltage

open collector;  $I_E = 1\text{ mA}$

$V_{(BR)EBO} > 4\text{ V}$

Collector cut-off current

$V_{BE} = 0; V_{CE} = 30\text{ V}$

$I_{CES} < 1\text{ mA}$

Second breakdown energy;  $L = 25\text{ mH}; f = 50\text{ Hz}$

open base

$R_{BE} = 10\text{ }\Omega$

$E_{SBO} > 0,5\text{ mJ}$

$E_{SBR} > 0,5\text{ mJ}$

D.C. current gain \*

$I_C = 0,15\text{ A}; V_{CE} = 5\text{ V}$

$h_{FE}$  typ. 40  
10 to 100

Collector-emitter saturation voltage \*

$I_C = 0,5\text{ A}; I_B = 0,1\text{ A}$

$V_{CEsat}$  typ. 0,9 V

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

$-I_E = 0,15\text{ A}; V_{CB} = 28\text{ V}$

$-I_E = 0,50\text{ A}; V_{CB} = 28\text{ V}$

$f_T$  typ. 1,20 GHz

$f_T$  typ. 0,85 GHz

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

$I_E = I_e = 0; V_{CB} = 28\text{ V}$

$C_c$  typ. 5,5 pF

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

$I_C = 10\text{ mA}; V_{CE} = 28\text{ V}$

$C_{re}$  typ. 2 pF

Collector-stud capacitance

$C_{cs}$  typ. 1,2 pF