

HF/VHF power transistor

BLW85

DESCRIPTION

N-P-N silicon planar epitaxial transistor intended for use in class-A, B and C operated mobile h.f. and v.h.f. transmitters with a nominal supply voltage of 12,5 V. The transistor is resistance stabilized and is guaranteed to withstand severe load mismatch conditions with a supply over-voltage to 16,5 V.

Matched h_{FE} groups are available on request.

It has a 3/8" flange envelope with a ceramic cap. All leads are isolated from the flange.

QUICK REFERENCE DATA

R.F. performance up to $T_h = 25^\circ C$

MODE OF OPERATION	V_{CE} V	f MHz	P_L W	G_p dB	η %	\bar{Z}_i Ω	\bar{Z}_L Ω	d_3 dB
c.w. (class-B)	12,5	175	45	> 4,5	> 75	$1,4 + j1,5$	$2,7 - j1,3$	-
s.s.b. (class-AB)	12,5	1,6-28	3-30 (P.E.P.)	typ. 19,5	typ. 35	-	-	typ. -33

PIN CONFIGURATION

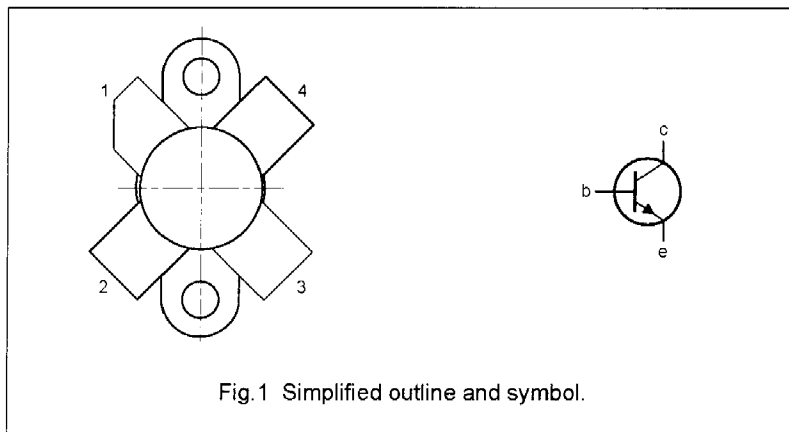
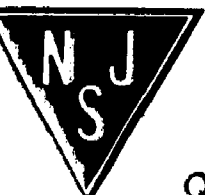


Fig. 1 Simplified outline and symbol.

PINNING - SOT123

PIN	DESCRIPTION
1	collector
2	emitter
3	base
4	emitter



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RATINGS

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

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

peak value

V_{CESM} max. 36 V

Collector-emitter voltage (open base)

V_{CEO} max. 16 V

Emitter-base voltage (open-collector)

V_{EBO} max. 4 V

Collector current (average)

$I_{C(AV)}$ max. 9 A

Collector current (peak value); $f > 1$ MHz

I_{CM} max. 22 A

R.F. power dissipation up to ($f > 1$ MHz); $T_{mb} = 25$ °C

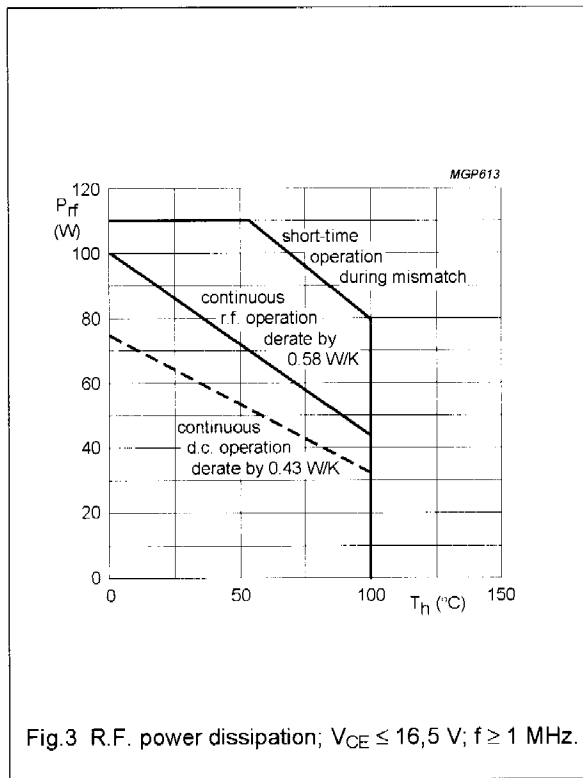
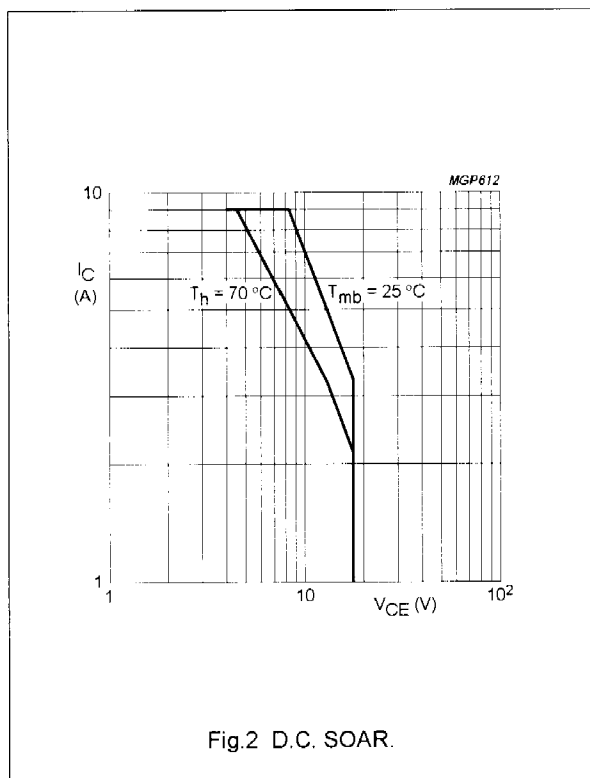
P_{rf} max. 105 W

Storage temperature

T_{stg} -65 to + 150 °C

Operating junction temperature

T_j max. 200 °C



THERMAL RESISTANCE

(dissipation = 30 W; $T_{mb} = 79$ °C, i.e. $T_h = 70$ °C)

From junction to mounting base (d.c. dissipation)

$R_{th\ j-mb(dc)}$ = 2,5 K/W

From junction to mounting base (r.f. dissipation)

$R_{th\ j-mb(rf)}$ = 1,8 K/W

From mounting base to heatsink

$R_{th\ mb-h}$ = 0,3 K/W

CHARACTERISTICS

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

Collector-emitter breakdown voltage $V_{BE} = 0; I_C = 50\text{ mA}$	$V_{(BR)CES}$	>	36 V
Collector-emitter breakdown voltage open base; $I_C = 100\text{ mA}$	$V_{(BR)CEO}$	>	16 V
Emitter-base breakdown voltage open collector; $I_E = 25\text{ mA}$	$V_{(BR)EBO}$	>	4 V
Collector cut-off current $V_{BE} = 0; V_{CE} = 18\text{ V}$	I_{CES}	<	25 mA
Second breakdown energy; $L = 25\text{ mH}; f = 50\text{ Hz}$ open base	E_{SBO}	>	8 mJ
$R_{BE} = 10\ \Omega$	E_{SBR}	>	8 mJ
D.C. current gain ⁽¹⁾ $I_C = 4\text{ A}; V_{CE} = 5\text{ V}$		typ.	50
D.C. current gain ratio of matched devices ⁽¹⁾ $I_C = 4\text{ A}; V_{CE} = 5\text{ V}$	h_{FE}		10 to 80
Collector-emitter saturation voltage ⁽¹⁾ $I_C = 12,5\text{ A}; I_B = 2,5\text{ A}$	h_{FE1}/h_{FE2}	<	1,2
Transition frequency at $f = 100\text{ MHz}$ ⁽¹⁾ $-I_E = 4\text{ A}; V_{CB} = 12,5\text{ V}$	V_{CEsat}	typ.	1,5 V
$-I_E = 12,5\text{ A}; V_{CB} = 12,5\text{ V}$	f_T	typ.	650 MHz
Collector capacitance at $f = 1\text{ MHz}$ $I_E = I_e = 0; V_{CB} = 15\text{ V}$	f_T	typ.	600 MHz
Feedback capacitance at $f = 1\text{ MHz}$ $I_C = 200\text{ mA}; V_{CE} = 15\text{ V}$	C_c	typ.	120 pF
Collector-flange capacitance	C_{re}	typ.	82 pF
	C_{cf}	typ.	2 pF

Note

1. Measured under pulse conditions: $t_p \leq 200\ \mu\text{s}; \delta \leq 0,02$.

PACKAGE OUTLINE

Flanged ceramic package; 2 mounting holes; 4 leads

SOT123A

