

HF/VHF power transistor

BLW96

DESCRIPTION

N-P-N silicon planar epitaxial transistor intended for use in class-A, AB and B operated high power industrial and military transmitting equipment in the h.f. and v.h.f. band. The transistor presents excellent performance as a linear amplifier in s.s.b. applications. It is resistance stabilized and is guaranteed to withstand severe load mismatch

conditions. Transistors are supplied in matched h_{FE} groups.

The transistor has a $\frac{1}{2}$ " 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 %	d_3 dB	d_5 dB	$I_{C(zs)}$ (I_c) A
s.s.b. (class-AB)	50	1,6 – 28	25 – 200 (P.E.P.)	> 13,5	> 40 ⁽¹⁾	< -30	< -30	0,1
c.w. (class-B)	50	108	200	typ. 6,5	typ. 67	-	-	(6)
s.s.b. (class-A)	40	28	50 (P.E.P.)	typ. 19	-	typ. -40	< -40	(4)

Note

1. η_{dt} at 200 W P.E.P.

PIN CONFIGURATION

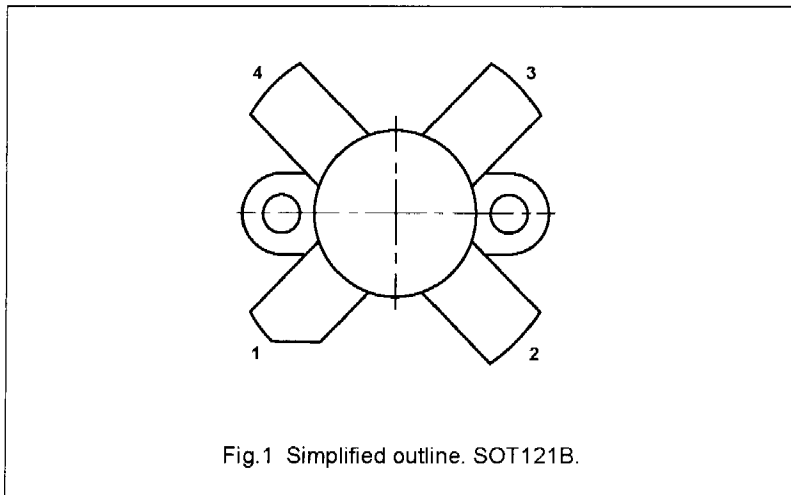
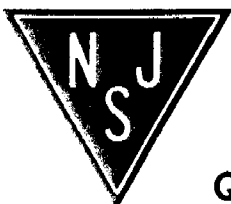


Fig.1 Simplified outline. SOT121B.

PINNING - SOT121B.

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. 110 V

Collector-emitter voltage (open base)

V_{CEO} max. 55 V

Emitter-base voltage (open collector)

V_{EBO} max. 4 V

Collector current (average)

$I_{C(AV)}$ max. 12 A

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

I_{CM} max. 40 A

R.F. power dissipation ($f > 1$ MHz); $T_{mb} = 45$ °C

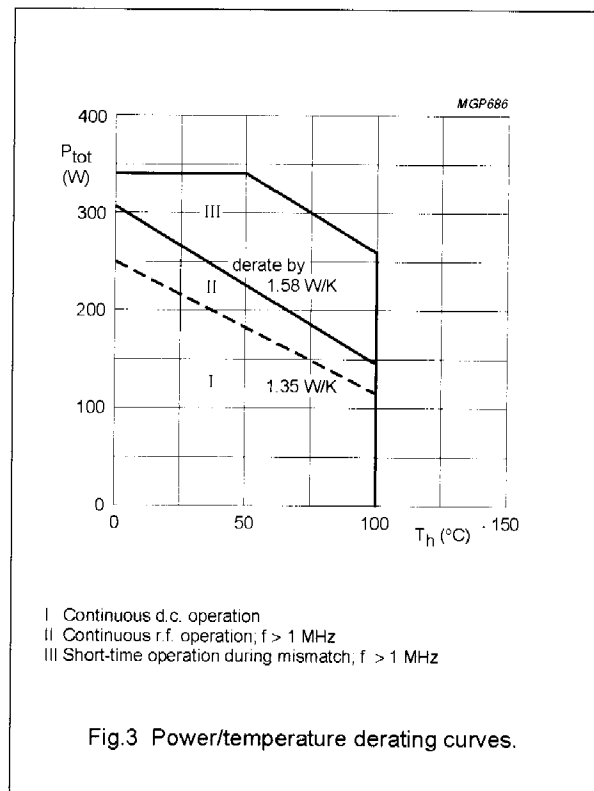
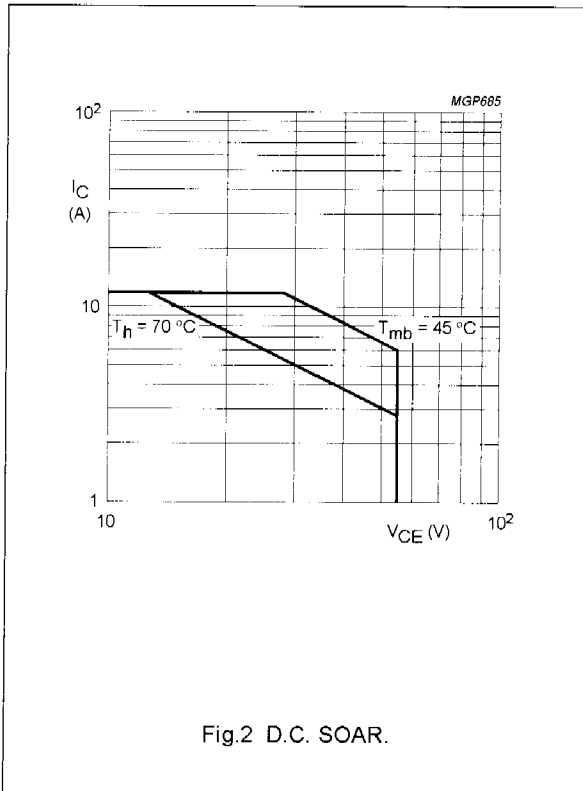
P_{rf} max. 340 W

Storage temperature

T_{stg} -65 to +150 °C

Operating junction temperature

T_j max. 200 °C



THERMAL RESISTANCE

(dissipation = 150 W; $T_{mb} = 100$ °C, i.e. $T_h = 70$ °C)

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

$R_{th\ j-mb(dc)}$ = 0,63 K/W

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

$R_{th\ j-mb(rf)}$ = 0,45 K/W

From mounting base to heatsink

$R_{th\ mb-h}$ = 0,2 K/W

CHARACTERISTICS

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

Collector-emitter breakdown voltage $V_{BE} = 0; I_C = 50\text{ mA}$	$V_{(BR)CES}$	>	110 V
Collector-emitter breakdown voltage open base; $I_C = 200\text{ mA}$	$V_{(BR)CEO}$	>	55 V
Emitter-base breakdown voltage open collector; $I_E = 20\text{ mA}$	$V_{(BR)EBO}$	>	4 V
Collector cut-off current $V_{BE} = 0; V_{CE} = 55\text{ V}$	I_{CES}	<	10 mA
Second breakdown energy; $L = 25\text{ mH}; f = 50\text{ Hz}$ open base $R_{BE} = 10\text{ }\Omega$	E_{SBO}	>	20 mJ
	E_{SBR}	>	20 mJ
D.C. current gain ⁽¹⁾ $I_C = 7\text{ A}; V_{CE} = 5\text{ V}$	h_{FE}	typ. 15 to	30 50
D.C. current gain ratio of matched devices ⁽¹⁾ $I_C = 7\text{ A}; V_{CE} = 5\text{ V}$	h_{FE1}/h_{FE2}	\leq	1,2
Collector-emitter saturation voltage ⁽¹⁾ $I_C = 20\text{ A}; I_B = 4\text{ A}$	V_{CEsat}	typ.	1,9 V
Transition frequency at $f = 100\text{ MHz}$ ⁽²⁾ $-I_E = 7\text{ A}; V_{CB} = 45\text{ V}$	f_T	typ.	235 MHz
$-I_E = 20\text{ A}; V_{CB} = 45\text{ V}$	f_T	typ.	245 MHz
Collector capacitance at $f = 1\text{ MHz}$ $I_E = I_e = 0; V_{CB} = 50\text{ V}$	C_C	typ.	280 pF
Feedback capacitance at $f = 1\text{ MHz}$ $I_C = 150\text{ mA}; V_{CE} = 50\text{ V}$	C_{re}	typ.	170 pF
Collecting-flange capacitance	C_{cf}	typ.	4,4 pF

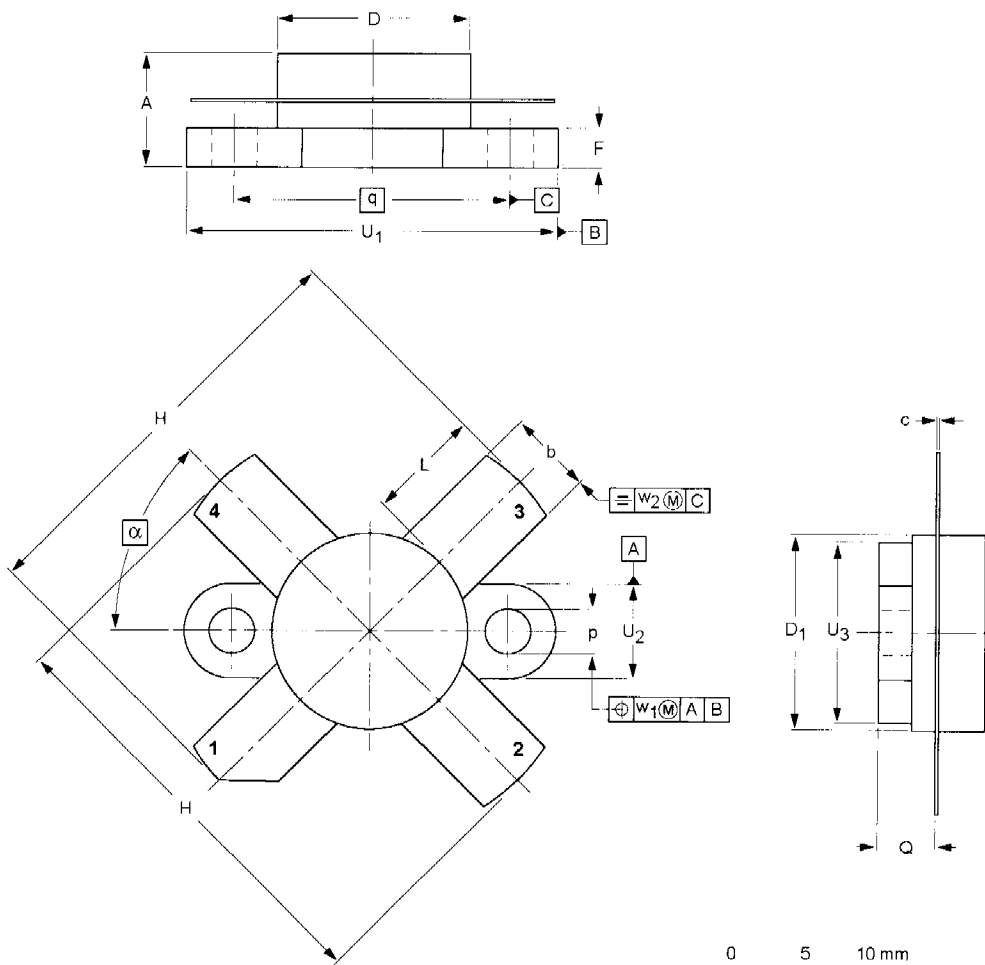
Notes

1. Measured under pulse conditions: $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0,02$.
2. Measured under pulse conditions: $t_p \leq 50\text{ }\mu\text{s}; \delta \leq 0,01$.

PACKAGE OUTLINE

Flanged ceramic package; 2 mounting holes; 4 leads

SOT121B



DIMENSIONS (millimetre dimensions are derived from the original inch dimensions)

UNIT	A	b	c	D	D ₁	F	H	L	p	Q	q	U ₁	U ₂	U ₃	w ₁	w ₂	α
mm	7.27 6.17	5.82 5.56	0.16 0.10	12.86 12.59	12.83 12.57	2.67 2.41	28.45 25.52	7.93 6.32	3.30 3.05	4.45 3.91	18.42	24.90 24.63	6.48 6.22	12.32 12.06	0.51	1.02	45°
inches	0.286 0.243	0.229 0.219	0.006 0.004	0.506 0.496	0.505 0.495	0.105 0.095	1.120 1.005	0.312 0.249	0.130 0.120	0.175 0.154	0.725	0.98 0.97	0.255 0.245	0.485 0.475	0.02	0.04	

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT121B					97-06-28