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UHF power transistor

BLW81

DESCRIPTION

N-P-N silicon planar epitaxial transistor intended for transmitting applications in class-A, B or C in the u.h.f. and v.h.f. range for a nominal supply voltages up to 13,5 V.
The resistance stabilization of the transistor provides protection against device damage at severe load mismatch conditions.

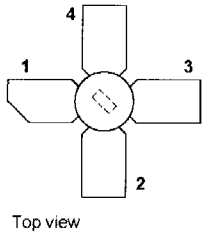
The transistor is housed in a ¼" capstan envelope with a ceramic cap.

QUICK REFERENCE DATA

R.F. performance up to T_h = 25 °C in an unneutralized common-emitter class-B circuit

MODE OF OPERATION	V_{CE} V	f MHz	P_L W	G_p dB	η %	$\bar{z}_i$ Ω	$\bar{Y}_L$ mS
c.w.	**12,5**	**470**	**10**	**> 6,0**	**> 60**	**1,3 + j2,5**	**150 – j66**
c.w.	12,5	175	10	typ. 13,5	typ. 60	1,2 – j0,6	140 – j80

PIN CONFIGURATION



Top view

Fig.1 Simplified outline. SOT122A.

PINNING - SOT122A.

PIN	DESCRIPTION
1	collector
2	emitter
3	base
4	emitter

PRODUCT SAFETY This device incorporates beryllium oxide, the dust of which is toxic. The device is entirely safe provided that the BeO disc is not damaged.

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	17	V
Emitter-base voltage (open collector)	V_{EBO}	max	4	V
Collector current (d.c. or average)	I_C	max	2,5	A
Collector current (peak value); f > 1 MHz	I_{CM}	max	7,5	A
R.F. power dissipation (f > 1 MHz); T_{mb} = 25 °C	P_{tot}	max	40	W
Storage temperature	T_{stg}		−65 to +150	°C
Operating junction temperature	T_j	max	200	°C

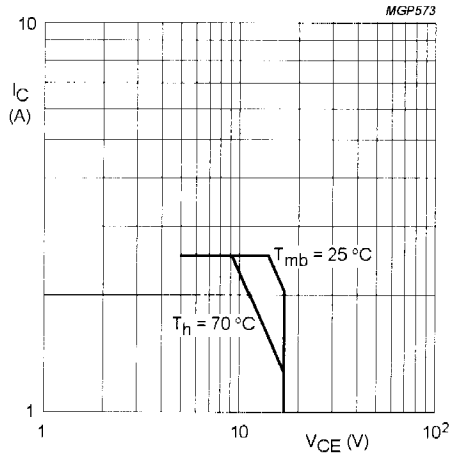


Fig.2

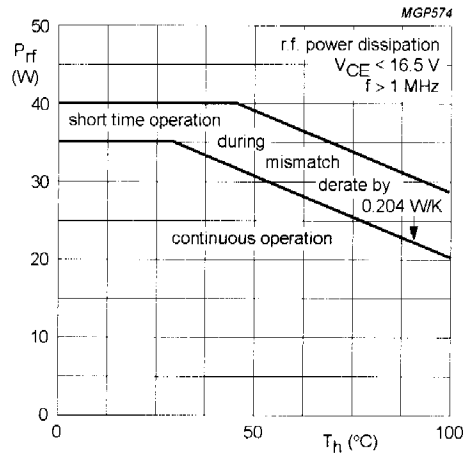


Fig.3

THERMAL RESISTANCE

From junction to mounting base	$R_{th\ j\text{-}mb}$	=	4,3 K/W
From mounting base to heatsink	$R_{th\ mb\text{-}h}$	=	0,6 K/W

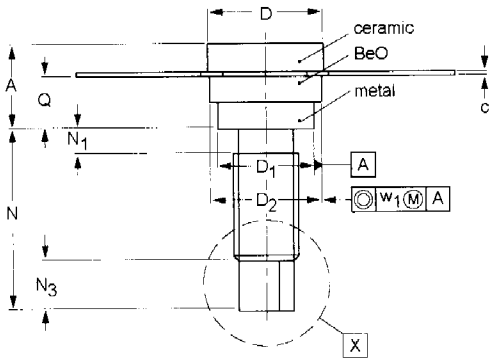
CHARACTERISTICS

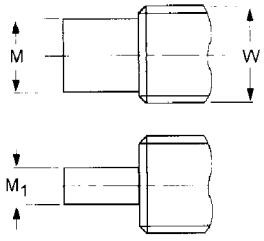
T_j = 25 °C

Breakdown voltages			
Collector-emitter voltage			
V_{BE} = 0; I_C = 25 mA	$V_{(BR)CES}$	>	36 V
Collector-emitter voltage			
open base; I_C = 100 mA	$V_{(BR)CEO}$	>	17 V
Emitter-base voltage			
open collector; I_E = 10 mA	$V_{(BR)EBO}$	>	4 V
Collector cut-off current			
V_{BE} = 0; V_{CE} = 17 V	I_{CES}	<	10 mA
D.C. current gain (1)			
I_C = 1,25 A; V_{CE} = 5 V	h_{FE}	>	10
		typ	35
Collector-emitter saturation voltage (1)			
I_C = 3,75 A; I_B = 0,75 A	V_{CEsat}	typ	0,75 V
Transition frequency at f = 500 MHz (1)			
I_C = 1,25 A; V_{CE} = 12,5 V	f_T	typ	1,3 GHz
I_C = 3,75 A; V_{CE} = 12,5 V	f_T	typ	0,9 GHz
Collector capacitance at f = 1 MHz			
$I_E = I_e$ = 0; V_{CB} = 12,5 V	C_c	typ	34 pF
Feedback capacitance at f = 1 MHz			
I_C = 100 mA; V_{CE} = 12,5 V	C_{re}	typ	18 pF
Collector-stud capacitance	C_{cs}	typ	1,2 pF

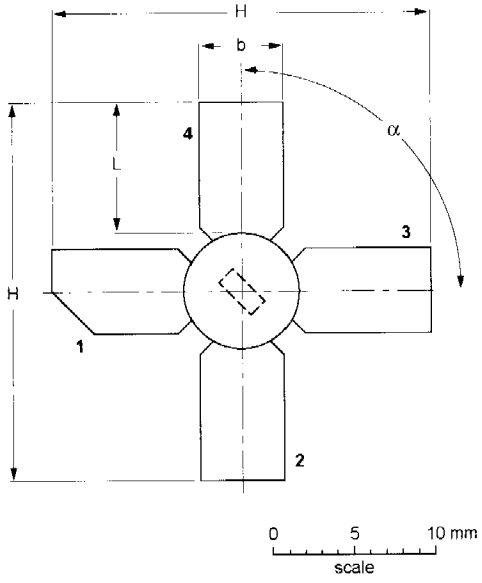
Note

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





detail X



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

UNIT	A	b	c	D	D_1	D_2	H	L	M_1	M	N	N_1 max.	N_3	Q	W	w_1	α
mm	5.97 4.74	5.85 5.58	0.18 0.14	7.50 7.23	6.48 6.22	7.24 6.93	27.56 25.78	9.91 9.14	3.18 2.66	1.66 1.39	11.82 11.04	1.02	3.86 2.92	3.38 2.74	8-32 UNC	0.381	90°