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VHF power transistor

BLY87C

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 13,5 V. The transistor is resistance stabilized and is guaranteed to withstand severe load mismatch conditions with a supply over-voltage 16,5 V.

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

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.	**13,5**	**175**	**8**	**> 12,0**	**> 60**	**2,2 + j0,4**	**96 – j28**
c.w.	12,5	175	8	typ. 11,5	typ. 65	–	–

PIN CONFIGURATION

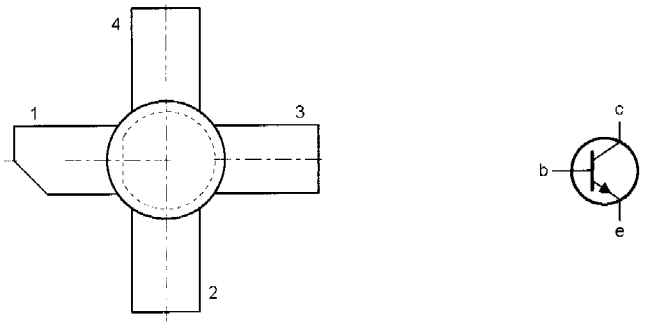


Fig.1 Simplified outline and symbol.

PINNING - SOT120

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.	18 V
Emitter-base voltage (open collector)	V_{EBO}	max.	4 V
Collector current (average)	$I_{C(AV)}$	max.	1,5 A
Collector current (peak value); f > 1 MHz	I_{CM}	max.	4,0 A
R.F. power dissipation (f > 1 MHz); T_{mb} = 25 °C	P_{rf}	max.	20 W
Storage temperature	T_{stg}		−65 to + 150 °C
Operating junction temperature	T_j	max.	200 °C

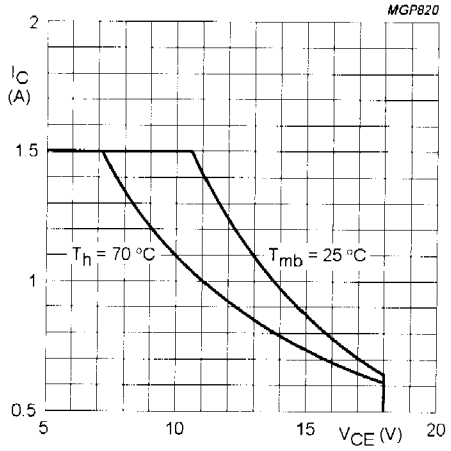
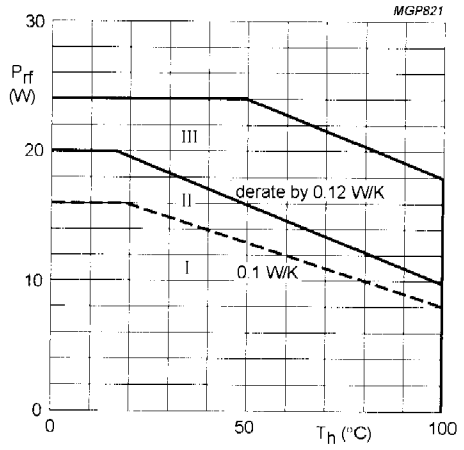


Fig.2 D.C. SOAR.



I Continuous d.c operation
II Continuous r.f. operation
III Short-time operation during mismatch

Fig.3 R.F. power dissipation; $V_{CE} \leq 16{,}5$ V; f > 1 MHz.

THERMAL RESISTANCE

(dissipation = 8 W; T_{mb} = 73,5 °C, i.e. T_h = 70 °C)

From junction to mounting base (d.c. dissipation)	$R_{th\ j\text{-}mb(dc)}$	=	10,7 K/W
From junction to mounting base (r.f. dissipation)	$R_{th\ j\text{-}mb(rf)}$	=	8,6 K/W
From mounting base to heatsink	$R_{th\ mb\text{-}h}$	=	0,45 K/W

CHARACTERISTICS

T_j = 25 °C

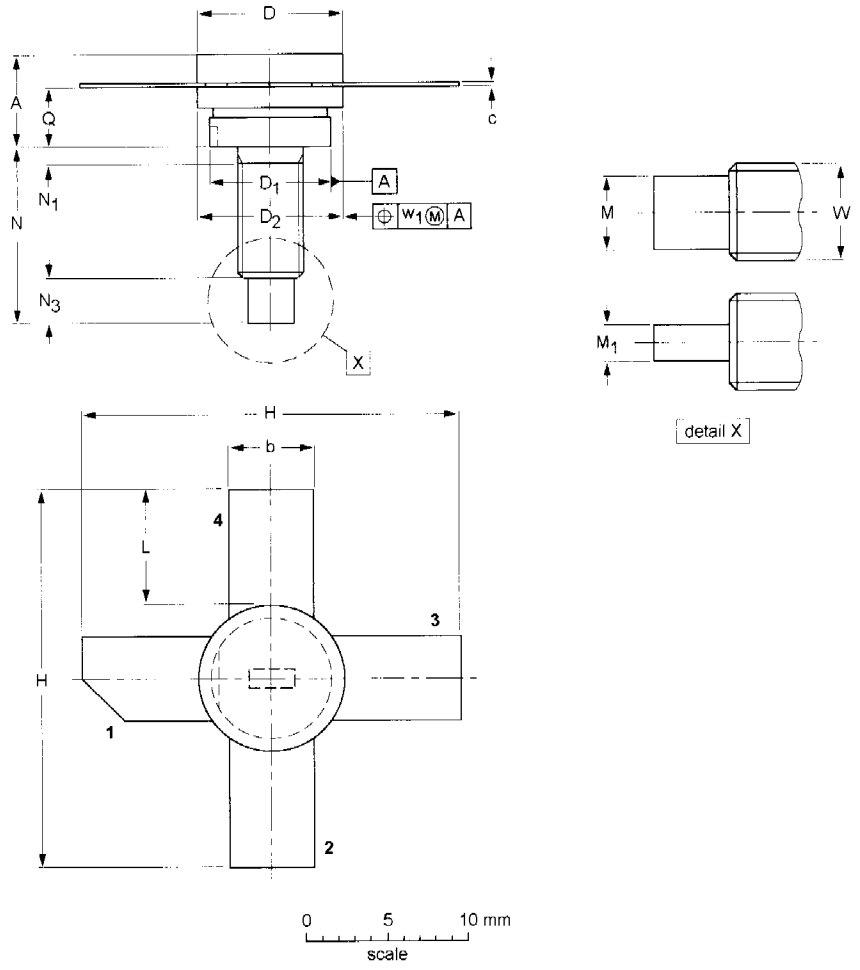
Collector-emitter breakdown voltage				
V_{BE} = 0; I_C = 5 mA	$V_{(BR)\ CES}$	>	36	V
Collector-emitter breakdown voltage				
open base; I_C = 25 mA	$V_{(BR)CEO}$	>	18	V
Emitter-base breakdown voltage				
open collector; I_E = 1 mA	$V_{(BR)EBO}$	>	4	V
Collector cut-off current				
V_{BE} = 0; V_{CE} = 18 V	I_{CES}	<	2	mA
Second breakdown energy; L = 25 mH; f = 50 Hz				
open base	E_{SBO}	>	0,5	mJ
R_{BE} = 10 Ω	E_{SBR}	>	0,5	mJ
D.C. current gain (1)				
I_C = 0,75 A; V_{CE} = 5 V	h_{FE}	typ.	40 10 to 100	
Collector-emitter saturation voltage (1)				
I_C = 2 A; I_B = 0,4 A	V_{CEsat}	typ.	0,85	V
Transition frequency at f = 100 MHz (1)				
$-I_E$ = 0,75 A; V_{CB} = 13,5 V	f_T	typ.	950	MHz
$-I_E$ = 2 A; V_{CB} = 13,5 V	f_T	typ.	850	MHz
Collector capacitance at f = 1 MHz				
$I_E = I_e$ = 0; V_{CB} = 13,5 V	C_c	typ.	16,5	pF
Feedback capacitance at f = 1 MHz				
I_C = 100 mA; V_{CE} = 13,5 V	C_{re}	typ.	12	pF
Collector-stud capacitance	C_{cs}	typ.	2	pF

Note

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

PACKAGE OUTLINE

Studded ceramic package; 4 leads **SOT120A**



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

UNIT	A	b	c	D	D_1	D_2	H	L	M	M_1	N	N_1	N_3	Q	W	w_1
mm	5.97 4.74	5.90 5.48	0.18 0.14	9.73 9.47	8.39 8.12	9.66 9.39	27.44 25.78	9.00 8.00	3.41 2.92	1.66 1.39	12.83 11.17	1.60 0.00	3.31 2.54	4.35 3.98	8-32 UNC	0.38
inches	0.283 0.248	0.232 0.216	0.007 0.004	0.383 0.373	0.330 0.320	0.380 0.370	1.080 1.015	0.354 0.315	0.134 0.115	0.065 0.055	0.505 0.440	0.063 0.000	0.130 0.100	0.171 0.157		0.015

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION
	IEC	JEDEC	EIAJ		
SOT120A					