

VHF power transistor

BLV10

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 to 16,5 V.

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 $T_h = 25^\circ\text{C}$ 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	> 9,0	> 70	$2,8 + j1,2$	$76 - j16$
c.w.	12,5	175	8	typ. 10,5	typ. 75	-	-

PIN CONFIGURATION

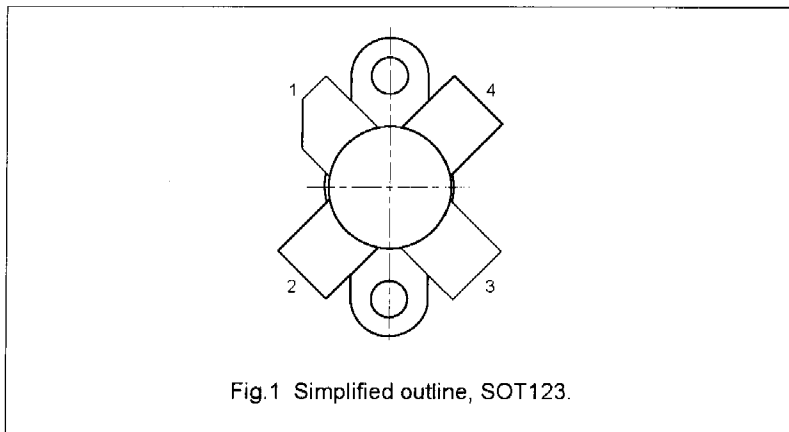
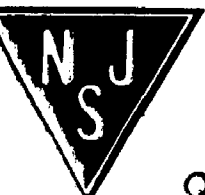


Fig.1 Simplified outline, SOT123.

PINNING

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

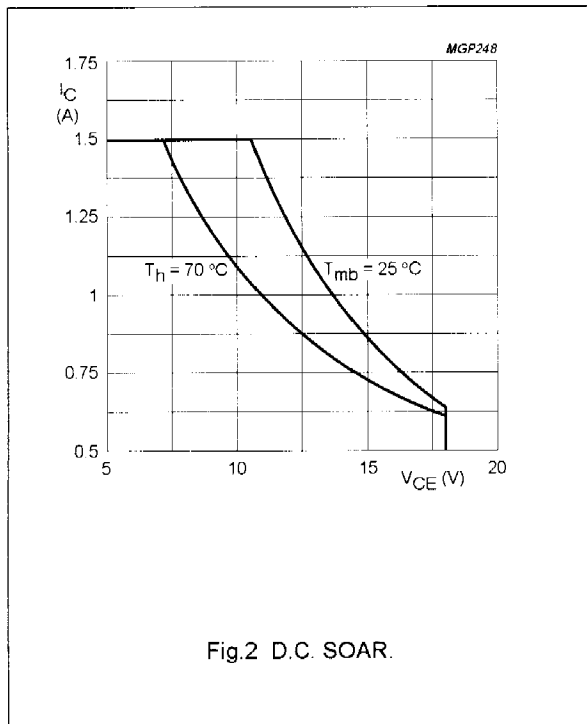
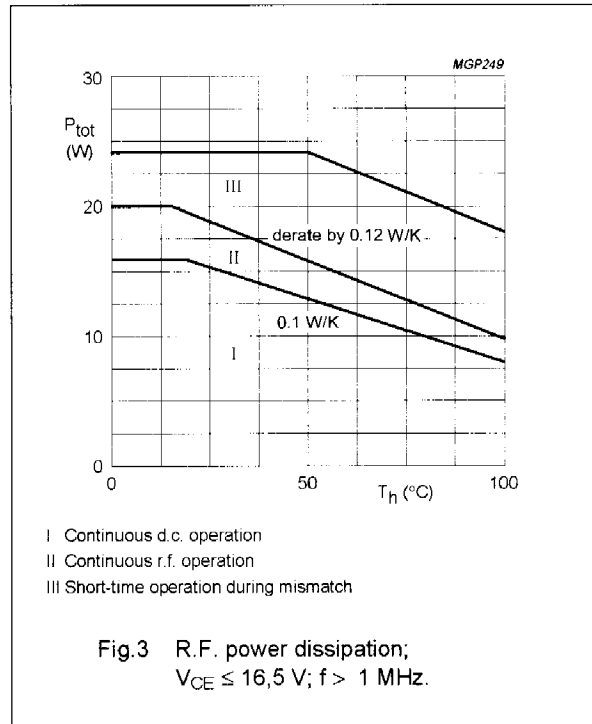


Fig.2 D.C. SOAR.



- 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; $T_{mb} = 72,4\text{ }^{\circ}\text{C}$, i.e. $T_h = 70\text{ }^{\circ}\text{C}$)

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

 $V_{BE} = 0$; $I_C = 5\text{ mA}$ $V_{(BR)\ CES}$ > 36 V

Collector-emitter breakdown voltage

open base; $I_C = 25\text{ mA}$ $V_{(BR)\ CEO}$ > 18 V

Emitter-base breakdown voltage

open collector; $I_E = 1\text{ mA}$ $V_{(BR)\ EBO}$ > 4 V

Collector cut-off current

 $V_{BE} = 0$; $V_{CE} = 18\text{ V}$ I_{CES} < 2 mASecond breakdown energy; $L = 25\text{ mH}$; $f = 50\text{ Hz}$

open base

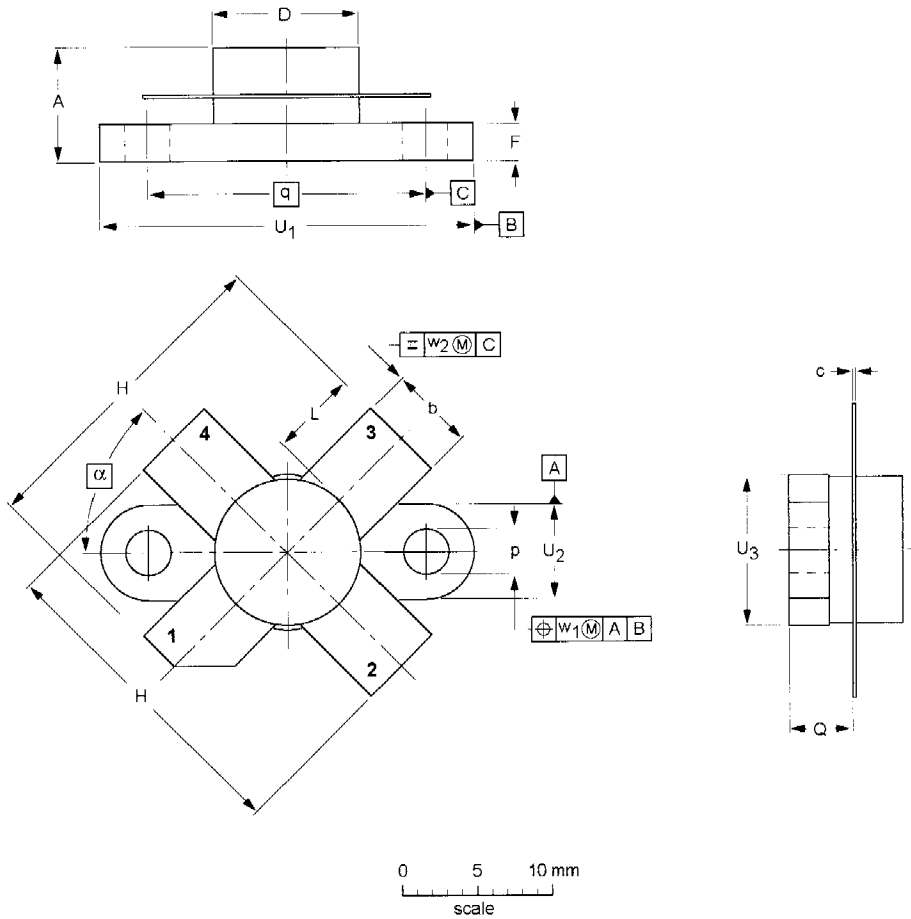
 E_{SBO} > 0,5 mJ $R_{BE} = 10\ \Omega$ E_{SBR} > 0,5 mJD.C. current gain⁽¹⁾ $I_C = 0,75\text{ A}$; $V_{CE} = 5\text{ V}$

typ. 40

 h_{FE} 10 to 100Collector-emitter saturation voltage⁽¹⁾ $I_C = 2\text{ A}$; $I_B = 0,4\text{ A}$ V_{CEsat} typ. 0,85 VTransition frequency at $f = 100\text{ MHz}$ ⁽¹⁾ $-I_E = 0,75\text{ A}$; $V_{CB} = 13,5\text{ V}$ f_T typ. 950 MHz $-I_E = 2\text{ A}$; $V_{CB} = 13,5\text{ V}$ f_T typ. 850 MHzCollector capacitance at $f = 1\text{ MHz}$ $I_E = I_e = 0$; $V_{CB} = 13,5\text{ V}$ C_c typ. 16,5 pFFeedback capacitance at $f = 1\text{ MHz}$ $I_C = 100\text{ mA}$; $V_{CE} = 13,5\text{ V}$ C_{re} typ. 12 pF

Collector-flange capacitance

 C_{cf} typ. 2 pF**Note**1. Measured under pulse conditions: $t_p \leq 200\ \mu\text{s}$; $\delta \leq 0,02$.



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	7.47	5.82	0.18	9.73	9.63	2.72	20.71	5.61	3.33	4.63	18.42	25.15	6.61	9.78	0.51	1.02	45°
	6.37	5.56	0.10	9.47	9.42	2.31	19.93	5.16	3.04	4.11							
inches	0.294	0.229	0.007	0.383	0.397	0.107	0.815	0.221	0.131	0.182	0.725	0.99	0.26	0.385	0.02	0.04	
	0.251	0.219	0.004	0.373	0.371	0.091	0.785	0.203	0.120	0.162							

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION
	IEC	JEDEC	EIAJ	
SOT123A				