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VHF power transistor

BLV20

DESCRIPTION

N-P-N silicon planar epitaxial transistor intended for use in class-A, B and C operated h.f. and v.h.f. transmitters with a nominal supply voltage of 28 V. The transistor is resistance stabilized and is guaranteed to withstand severe load mismatch conditions.

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

PINNING - SOT123

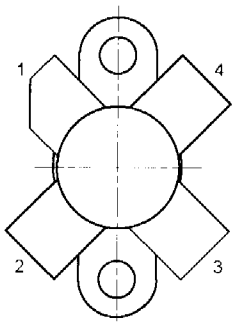
PIN	DESCRIPTION
1	collector
2	emitter
3	base
4	emitter

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.	28	175	8	> 12	> 65	1,8 + j0,7	18 – j20

PIN CONFIGURATION



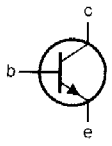


Fig.1 Simplified outline and symbol.

RATINGS

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

Collector-emitter voltage (V_{BE} = 0) peak value	V_{CESM}	max.	65 V
Collector-emitter voltage (open base)	V_{CEO}	max.	36 V
Emitter-base voltage (open collector)	V_{EBO}	max.	4 V
Collector current (average)	$I_{C(AV)}$	max.	0,9 A
Collector current (peak value); f > 1 MHz	I_{CM}	max.	2,5 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

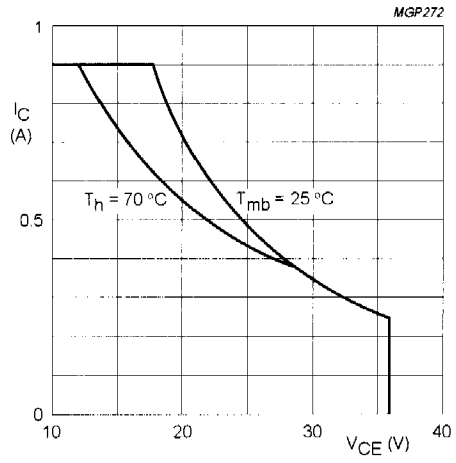
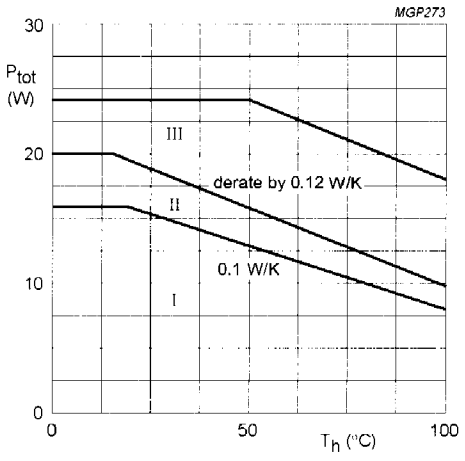


Fig.2 D.C. SOAR.



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

Fig.3 R.F. power dissipation; $V_{CE} \leq 28$ V; $f > 1$ MHz.

THERMAL RESISTANCE

(dissipation = 8 W; T_{mb} = 72,4 °C, i.e. T_h = 70 °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 °C

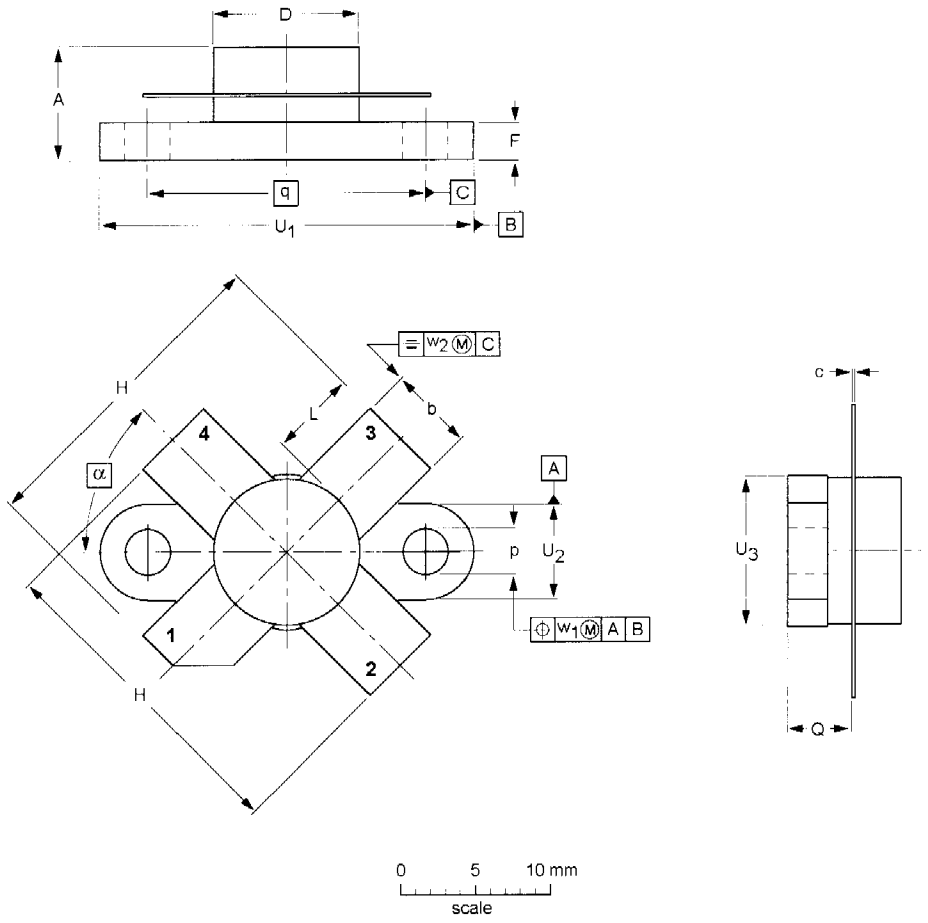
Collector-emitter breakdown voltage V_{BE} = 0; I_C = 2 mA	$V_{(BR)CES}$	>	65 V
Collector-emitter breakdown voltage open base; I_C = 10 mA	$V_{(BR)CEO}$	>	36 V
Emitter-base breakdown voltage open collector; I_E = 1 mA	$V_{(BR)EBO}$	>	4 V
Collector cut-off current V_{BE} = 0; V_{CE} = 36 V	I_{CES}	<	1 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 = 0,4 A; V_{CE} = 5 V	h_{FE}	typ. 10 to	50 100
Collector-emitter saturation voltage (1) I_C = 1,25 A; I_B = 0,25 A	V_{CEsat}	typ.	0,8 V
Transition frequency at f = 100 MHz (1) $-I_E$ = 0,4 A; V_{CB} = 28 V	f_T	typ.	600 MHz
$-I_E$ = 1,25 A; V_{CB} = 28 V	f_T	typ.	520 MHz
Collector capacitance at f = 1 MHz $I_E = I_e$ = 0; V_{CB} = 28 V	C_c	typ.	10 pF
Feedback capacitance at f = 1 MHz I_C = 50 mA; V_{CE} = 28 V	C_{re}	typ.	7,1 pF
Collector-flange capacitance	C_{cf}	typ.	2 pF

Note

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

PACKAGE OUTLINE

Flanged ceramic package; 2 mounting holes; 4 leads **SOT123A**



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 6.37	5.82 5.56	0.18 0.10	9.73 9.47	9.63 9.42	2.72 2.31	20.71 19.93	5.61 5.16	3.33 3.04	4.63 4.11	18.42	25.15 24.38	6.61 6.09	9.78 9.39	0.51	1.02	45°
inches	0.294 0.251	0.229 0.219	0.007 0.004	0.383 0.373	0.397 0.371	0.107 0.091	0.815 0.785	0.221 0.203	0.131 0.120	0.182 0.162	0.725	0.99 0.96	0.26 0.24	0.385 0.370	0.02	0.04	

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION
	IEC	JEDEC	EIAJ	
SOT123A				