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HF/VHF power transistor

BLW86

DESCRIPTION

N-P-N silicon planar epitaxial transistor intended for use in class-A, AB and B 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. Matched hFE groups are available on request.

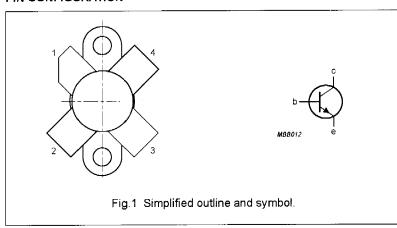
It has a 3/8" flange envelope with a ceramic cap. All leads are isolated from the flange.

QUICK REFERENCE DATA

R.F. performance up to T_h = 25 °C

MODE OF OPERATION	V _{CE}	f MHz	P _L W	G _p dB	η %	$\overline{\mathbf{z_i}}$	Ÿ∟ mS	d ₃ dB
c.w. (class-B)	28	175	45	> 7,5	> 70	0,7 + j1,3	110 – j62	_
s.s.b. (class-AB)	28	1,6 – 28	5–47,5 (P.E.P.)	typ. 19	typ. 45		-	typ30
s.s.b. (class-A)	26	1,6 – 28	17 (P.E.P.)	typ. 22	-	_	_	typ. –42

PIN CONFIGURATION



PINNING - SOT123

PIN	DESCRIPTION							
1	collector							
2	emitter							
3	base							
4	emitter							

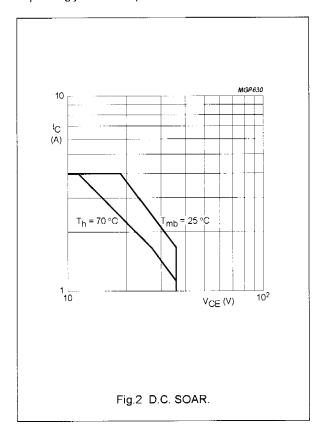
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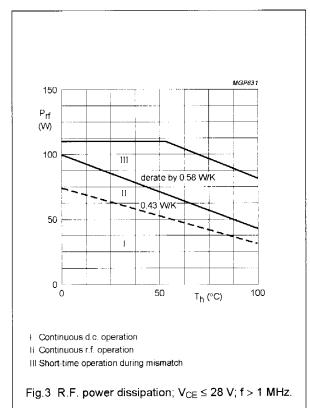
RATINGS

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

Collector-emitter voltage ($V_{BE} = 0$)

peak value	V_{CESM}	max.	65	٧
Collector-emitter voltage (open base)	V_{CEO}	max.	36	٧
Emitter-base voltage (open-collector)	V_{EBO}	max.	4	٧
Collector current (average)	I _{C(AV)}	max.	4	Α
Collector current (peak value); f > 1 MHz	I _{CM}	max.	12	Α
R.F. power dissipation (f > 1 MHz); T _{mb} = 25 °C	P _{rf}	max.	105	W
Storage temperature	T_{stg}	−65 to	+ 150	್೦
Operating junction temperature	T_{j}	max.	200	°C





THERMAL RESISTANCE

(dissipation = 45 W; T_{mb} = 83,5 °C, i.e. T_h = 70 °C)

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

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

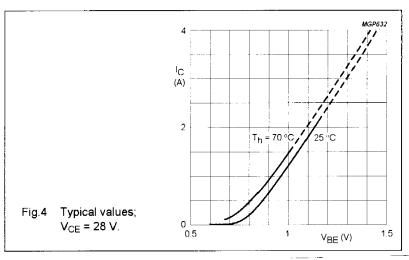
From mounting base to heatsink

 $R_{th j-mb(dc)} = 2,65 \text{ K/W}$ $R_{th j-mb(rf)} = 1,95 \text{ K/W}$ $R_{th mb-h} = 0,3 \text{ K/W}$

CHARACTERISTICS				
T_j = 25 °C unless otherwise specified				
Collector-emitter breakdown voltage				
$V_{BE} = 0$; $I_{C} = 25 \text{ mA}$	$V_{(BR)CES}$	>	65	V
Collector-emitter breakdown voltage				
open base; I _C = 100 mA	$V_{(BR)CEO}$	>	36	V
Emitter-base breakdown voltage				
open collector; I _E = 10 mA	$V_{(BR)EBO}$	>	4	V
Collector cut-off current				
$V_{BE} = 0$; $V_{CE} = 36 \text{ V}$	I _{CES}	<	10	mA
Second breakdown energy; L = 25 mH; f = 50 Hz				
open base	E _{SBO}	>	8	mJ
R_{BE} = 10 Ω	E _{SBR}	>	8	mJ
D.C. current gain ⁽¹⁾				
$I_{C} = 2.5 \text{ A}; V_{CE} = 5 \text{ V}$		typ.		
1C 2,071, 4CE 3 4	h	GP.	45	
10 2,571, 40E 4 4	h _{FE}	10 to		
D.C. current gain ratio of matched devices ⁽¹⁾	h _{FE}	• •		
	h _{FE1} /h _{FE2}	• •		
D.C. current gain ratio of matched devices ⁽¹⁾		10 to	08 c	
D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2,5 \text{ A}; \text{ V}_{CE} = 5 \text{ V}$		10 to	08 c	V
D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2,5 \text{ A; } V_{CE} = 5 \text{ V}$ Collector-emitter saturation voltage ⁽¹⁾	h _{FE1} /h _{FE2}	10 to	1,2	V
D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2.5 \text{ A; } V_{CE} = 5 \text{ V}$ Collector-emitter saturation voltage ⁽¹⁾ $I_{C} = 7.5 \text{ A; } I_{B} = 1.5 \text{ A}$	h _{FE1} /h _{FE2}	10 to	1,2 1,5	V MHz
D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2,5 \text{ A}; V_{CE} = 5 \text{ V}$ Collector-emitter saturation voltage ⁽¹⁾ $I_{C} = 7,5 \text{ A}; I_{B} = 1,5 \text{ A}$ Transition frequency at f = 100 MHz ⁽¹⁾	h _{FE1} /h _{FE2}	10 to	1,2 1,5 570	
D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2.5 \text{ A}; V_{CE} = 5 \text{ V}$ Collector-emitter saturation voltage ⁽¹⁾ $I_{C} = 7.5 \text{ A}; I_{B} = 1.5 \text{ A}$ Transition frequency at f = 100 MHz ⁽¹⁾ $-I_{E} = 2.5 \text{ A}; V_{CB} = 28 \text{ V}$	$h_{\text{FE1}}/h_{\text{FE2}}$ V_{CEsat}	10 to < typ. typ.	1,2 1,5 570	MHz
D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2,5 \text{ A; } V_{CE} = 5 \text{ V}$ Collector-emitter saturation voltage ⁽¹⁾ $I_{C} = 7,5 \text{ A; } I_{B} = 1,5 \text{ A}$ Transition frequency at f = 100 MHz ⁽¹⁾ $-I_{E} = 2,5 \text{ A; } V_{CB} = 28 \text{ V}$ $-I_{E} = 7,5 \text{ A; } V_{CB} = 28 \text{ V}$	$h_{\text{FE1}}/h_{\text{FE2}}$ V_{CEsat}	10 to < typ. typ.	1,2 1,5 570	MHz MHz
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D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2.5 \text{ A; } V_{CE} = 5 \text{ V}$ Collector-emitter saturation voltage ⁽¹⁾ $I_{C} = 7.5 \text{ A; } I_{B} = 1.5 \text{ A}$ Transition frequency at $f = 100 \text{ MHz}^{(1)}$ $-I_{E} = 2.5 \text{ A; } V_{CB} = 28 \text{ V}$ $-I_{E} = 7.5 \text{ A; } V_{CB} = 28 \text{ V}$ Collector capacitance at $f = 1 \text{ MHz}$ $I_{E} = I_{e} = 0; V_{CB} = 28 \text{ V}$	$h_{\text{FE1}}/h_{\text{FE2}}$ V_{CEsat} f_{T} f_{C} C_{re}	typ. typ.	1,2 1,5 570 570	MHz MHz pF
D.C. current gain ratio of matched devices ⁽¹⁾ $I_{C} = 2,5 \text{ A}; V_{CE} = 5 \text{ V}$ Collector-emitter saturation voltage ⁽¹⁾ $I_{C} = 7,5 \text{ A}; I_{B} = 1,5 \text{ A}$ Transition frequency at f = 100 MHz ⁽¹⁾ $-I_{E} = 2,5 \text{ A}; V_{CB} = 28 \text{ V}$ $-I_{E} = 7,5 \text{ A}; V_{CB} = 28 \text{ V}$ Collector capacitance at f = 1 MHz $I_{E} = I_{e} = 0; V_{CB} = 28 \text{ V}$ Feedback capacitance at f = 1 MHz	h_{FE1}/h_{FE2} V_{CEsat} f_T f_T	typ. typ. typ. typ.	1,2 1,5 570 570 82	MHz MHz pF

Note

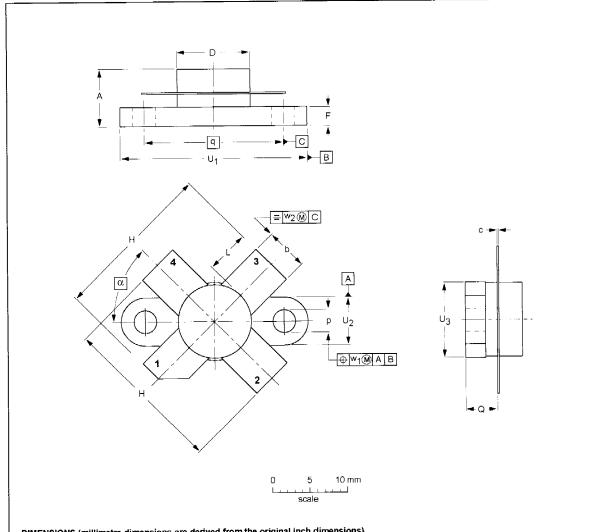
1. Measured under pulse conditions: $t_p \le 200~\mu s;~\delta \le 0.02.$



PACKAGE OUTLINE

Flanged ceramic package; 2 mounting holes; 4 leads

SOT123A



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

UNIT	A	b	С	D	D ₁	F	н	L	р	Q	q	u ₁	u ₂	U ₃	W1	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	0.29 4 0.251	0.229 0.219	0.007 0.004	0.383 0.373	0.397 0.371	0.107 0.091		0.221 0.203		0.182 0.162	0.725	0.99 0.96	0.26 0.24	0.385 0.370	0.02	0.04	

OUTLINE		REFER E NCES							
VERSION	IEC	JEDEC	EIAJ		PROJECTION				
SOT123A									