New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

HF/VHF power transistor — BLW85

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 12,5 V. The transistor is resistance stabilized and is guaranteed to withstand severe load mismatch conditions with a supply over-voltage to 16,5 V.

Matched h_{FE} 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} V	f MHz	P_L W	G_p dB	η %	$\bar{z}_i$ Ω	$\bar{Z}_L$ Ω	d_3 dB
c.w. (class-B)	**12,5**	**175**	**45**	> **4,5**	> **75**	**1,4 + j1,5**	**2,7–j1,3**	–
s.s.b. (class-AB)	12,5	1,6–28	3–30 (P.E.P.)	typ. 19,5	typ. 35	–	–	typ. –33

PIN CONFIGURATION

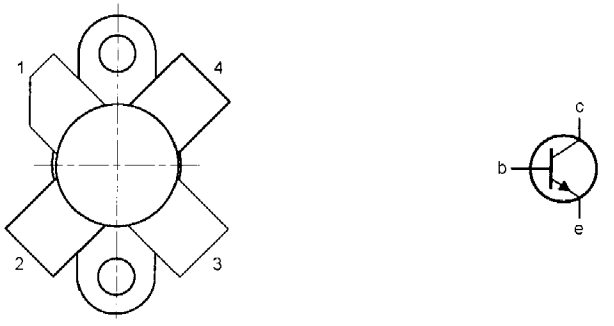


Fig.1 Simplified outline and symbol.

PINNING - SOT123

PIN	DESCRIPTION
1	collector
2	emitter
3	base
4	emitter

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.	16 V
Emitter-base voltage (open-collector)	V_{EBO}	max.	4 V
Collector current (average)	$I_{C(AV)}$	max.	9 A
Collector current (peak value); f > 1 MHz	I_{CM}	max.	22 A
R.F. power dissipation up to (f > 1 MHz); T_{mb} = 25 °C	P_{rf}	max.	105 W
Storage temperature	T_{stg}		−65 to + 150 °C
Operating junction temperature	T_j	max.	200 °C

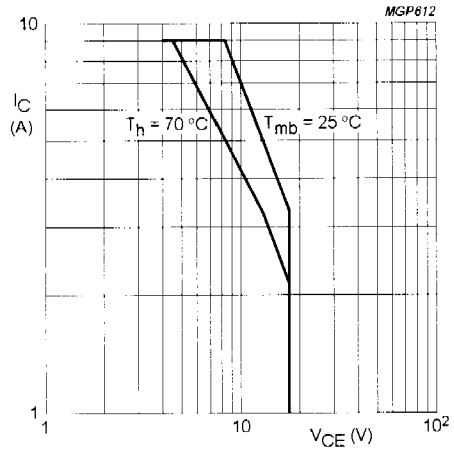


Fig.2 D.C. SOAR.

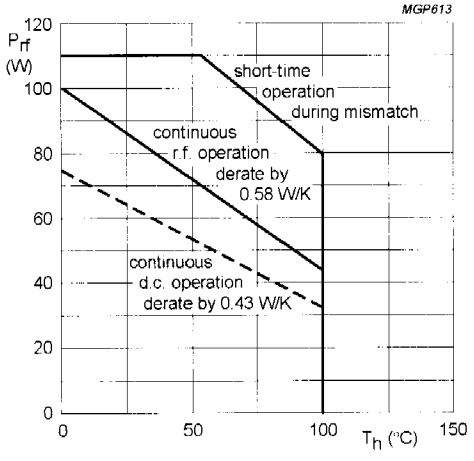


Fig.3 R.F. power dissipation; $V_{CE} \leq 16{,}5$ V; f ≥ 1 MHz.

THERMAL RESISTANCE

(dissipation = 30 W; T_{mb} = 79 °C, i.e. T_h = 70 °C)

From junction to mounting base (d.c. dissipation)	$R_{th\ j\text{-}mb(dc)}$	=	2,5 K/W
From junction to mounting base (r.f. dissipation)	$R_{th\ j\text{-}mb(rf)}$	=	1,8 K/W
From mounting base to heatsink	$R_{th\ mb\text{-}h}$	=	0,3 K/W

CHARACTERISTICS

T_j = 25 °C

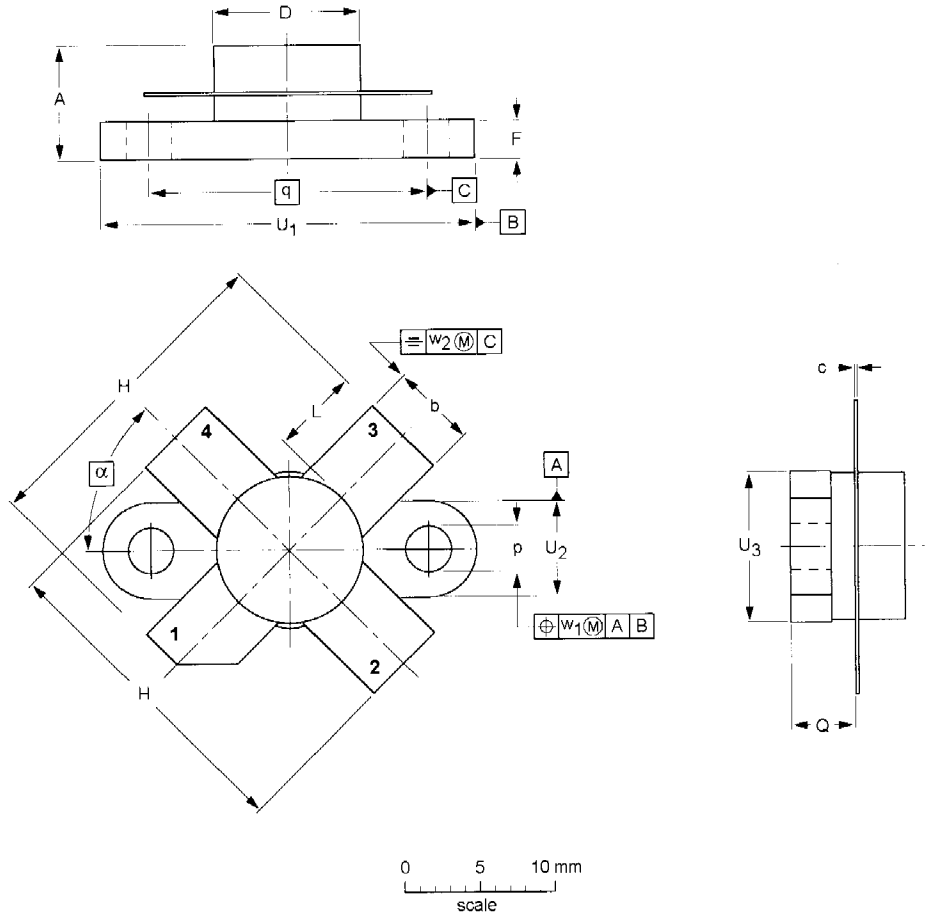
Collector-emitter breakdown voltage				
V_{BE} = 0; I_C = 50 mA	$V_{(BR)\ CES}$	>	36	V
Collector-emitter breakdown voltage				
open base; I_C = 100 mA	$V_{(BR)\ CEO}$	>	16	V
Emitter-base breakdown voltage				
open collector; I_E = 25 mA	$V_{(BR)EBO}$	>	4	V
Collector cut-off current				
V_{BE} = 0; V_{CE} = 18 V	I_{CES}	<	25	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]		typ.	50	
I_C = 4 A; V_{CE} = 5 V	h_{FE}		10 to 80	
D.C. current gain ratio of matched devices[1]				
I_C = 4 A; V_{CE} = 5 V	h_{FE1}/h_{FE2}	<	1,2	
Collector-emitter saturation voltage[1]				
I_C = 12,5 A; I_B = 2,5 A	V_{CEsat}	typ.	1,5	V
Transition frequency at f = 100 MHz[1]				
$-I_E$ = 4 A; V_{CB} = 12,5 V	f_T	typ.	650	MHz
$-I_E$ = 12,5 A; V_{CB} = 12,5 V	f_T	typ.	600	MHz
Collector capacitance at f = 1 MHz				
$I_E = I_e$ = 0; V_{CB} = 15 V	C_c	typ.	120	pF
Feedback capacitance at f = 1 MHz				
I_C = 200 mA; V_{CE} = 15 V	C_{re}	typ.	82	pF
Collector-flange capacitance	C_{cf}	typ.	2	pF

Note

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

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				