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UHF power transistor

BLU99
BLU99/SL

DESCRIPTION

N-P-N silicon planar epitaxial transistor primarily intended for use in mobile radio transmitters in the u.h.f. band. The transistor is also very suitable for application in the 900 MHz mobile radio band.

FEATURES

- multi-base structure and diffused emitter-ballasting resistors for an optimum temperature profile;
- gold metallization ensures excellent reliability.

The BLU99 has a 4-lead stud envelope with a ceramic cap (SOT122A). All leads are isolated from the stud. The BLU99/SL is a studless version (SOT122D).

QUICK REFERENCE DATA

R.F. performance at T_h = 25 °C in a common-emitter class-B circuit.

MODE OF OPERATION	V_{CE} V	f MHz	P_L W	G_p dB	η_C %
narrow band; c.w.	12,5	470	5	> 10,5	> 60
	12,5	900	4	typ. 7,0	typ. 60

PIN CONFIGURATION

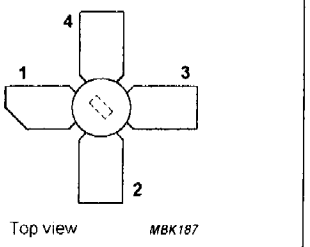


Fig.1 Simplified outline. SOT122A (BLU99).

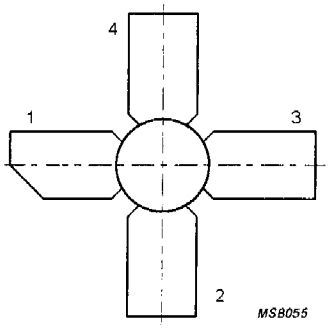


Fig.2 Simplified outline. SOT122D (BLU99/SL).

PINNING - SOT122A; SOT122D

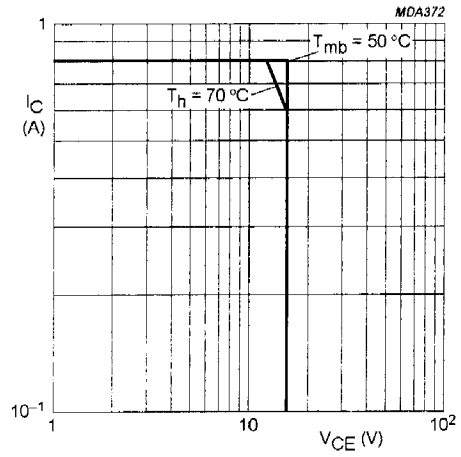
PIN	DESCRIPTION
1	collector
2	emitter
3	base
4	emitter

PRODUCT SAFETY This device incorporates beryllium oxide, the dust of which is toxic. The device is entirely safe provided that the BeO disc is not damaged.

RATINGS

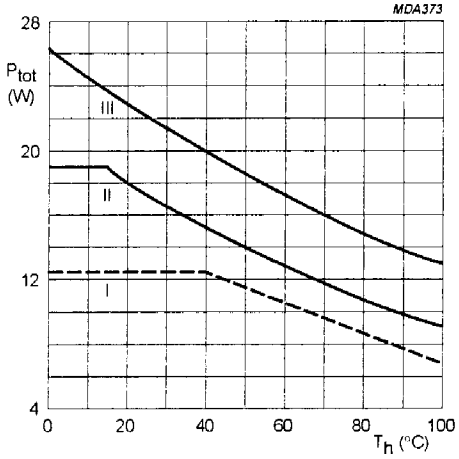
Limiting values in accordance with the Absolute Maximum System (IEC 134)

Collector-base voltage (open emitter)	V_{CBO}	max.	36 V
Collector-emitter voltage (open base)	V_{CEO}	max.	16 V
Emitter-base voltage (open collector)	V_{EBO}	max.	3 V
Collector current			
d.c. or average	I_C;$I_{C(AV)}$	max.	0,8 A
peak value; f > 1 MHz	I_{CM}	max.	2,5 A
D.C. power dissipation up to T_{mb} = 50 °C	$P_{tot\ (d.c.)}$	max.	12,5 W
R.F. power dissipation			
f > 1 MHz; T_{mb} = 25 °C	$P_{tot\ (r.f.)}$	max.	19 W
Storage temperature	T_{stg}		−65 to + 150 °C
Operating junction temperature	T_j	max.	200 °C



$R_{th\ mb\text{-}h}$ = 0,6 K/W.

Fig.3 D.C. SOAR.



I Continuous d.c. operation
II Continuous r.f. operation (f > 1 MHz).
III Short-time r.f. operation during mismatch (f > 1 MHz).

Fig.4 Power/temperature derating curves.

THERMAL RESISTANCE

(dissipation = 9 W; T_{mb} = 25 °C)

From junction to mounting base (d.c. dissipation)	$R_{th\ j\text{-}mb(dc)}$	=	10 K/W
From junction to mounting base (r.f. dissipation)	$R_{th\ j\text{-}mb(rf)}$	=	7,5 K/W
From mounting base to heatsink	$R_{th\ mb\text{-}h}$	=	0,6 K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

Collector-base breakdown voltage			
open emitter; I_C = 10 mA	$V_{(BR)CBO}$	>	36 V
Collector-emitter breakdown voltage			
open base; I_C = 20 mA	$V_{(BR)CEO}$	>	16 V
Emitter-base breakdown voltage			
open collector; I_E = 1 mA	$V_{(BR)EBO}$	>	3 V
Collector cut-off current			
V_{BE} = 0; V_{CE} = 16 V	I_{CES}	<	5 mA
Second breakdown energy; L = 25 mH; f = 50 Hz			
R_{BE} = 10 Ω	E_{SBR}	>	1 mJ
D.C. current gain(2)			
I_C = 0,6 A; V_{CE} = 10 V	h_{FE}	> 25 typ. 100	
Transition frequency at f = 500 MHz(1)			
I_C = 0,6 A; V_{CE} = 12,5 V	f_T	typ.	4,0 GHz
Collector capacitance at f = 1 MHz			
$I_E = I_e$ = 0; V_{CB} = 12,5 V	C_c	typ.	7,5 pF
Feedback capacitance at f = 1 MHz			
I_C = 0; V_{CE} = 12,5 V	C_{re}	typ.	5 pF
Collector-stud capacitance	C_{cs}	typ.	1,2 pF

Notes

1. Measured under pulse conditions: t_p = 50 μs; δ < 0,01.
2. Measured under pulse conditions: t_p = 300 μs; δ < 0,01.