

UHF power transistor

BLU10/12

FEATURES

- Emitter ballasting resistors for optimum temperature profile
- Gold metallization ensures excellent reliability
- Withstands full load mismatch.

DESCRIPTION

NPN silicon planar epitaxial transistor encapsulated in a 4-pin SOT122 envelope. It is designed for common emitter, class-B operation in mobile radio transmitters in the 470 MHz communications band.

The transistor has a 4-lead stud envelope with a ceramic cap. All leads are isolated from the stud.

PINNING - SOT122A

PIN	DESCRIPTION
1	collector
2	emitter
3	base
4	emitter

QUICK REFERENCE DATA

RF performance at $T_{mb} = 25^\circ\text{C}$ in a common emitter test circuit.

MODE OF OPERATION	f (MHz)	V_{CE} (V)	P_L (W)	G_p (dB)	η_c (%)
c.w. class-B	470	12.5	10	> 8	> 65

PIN CONFIGURATION

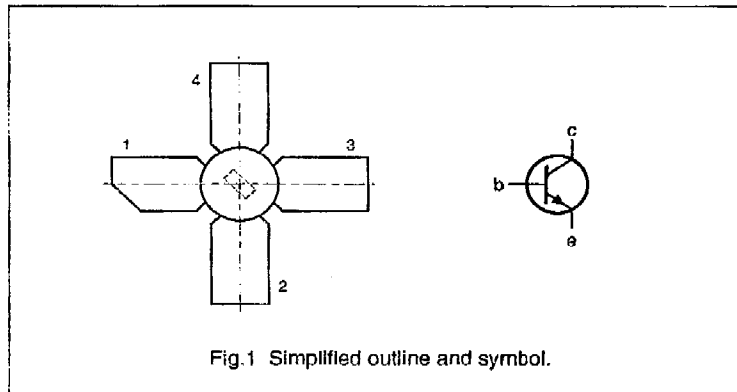
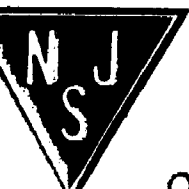


Fig. 1 Simplified outline and symbol.

WARNING

Product and environmental safety - toxic materials
 This product contains beryllium oxide. The product is entirely safe provided that the BeO disc is not damaged. All persons who handle, use or dispose of this product should be aware of its nature and of the necessary safety precautions. After use, dispose of as chemical or special waste according to the regulations applying at the location of the user. It must never be thrown out with the general or domestic waste.



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LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	-	36	V
V_{CEO}	collector-emitter voltage	open base	-	16	V
V_{EBO}	emitter-base voltage	open collector	-	3	V
$I_C, I_{C(AV)}$	collector current	DC or average value	-	1.6	A
I_{CM}	collector current	peak value $f > 1$ MHz	-	4.8	A
P_{tot}	total power dissipation	$T_{mb} = 25^\circ\text{C}$	-	41	W
T_{stg}	storage temperature range		-65	150	$^\circ\text{C}$
T_j	operating junction temperature		-	200	$^\circ\text{C}$

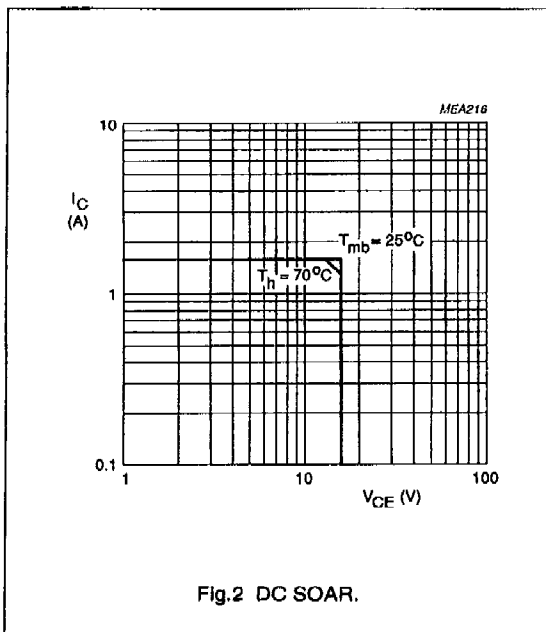
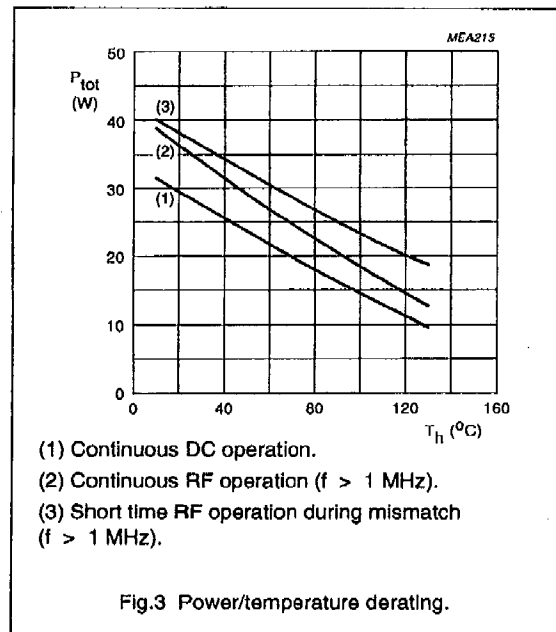


Fig.2 DC SOAR.



- (1) Continuous DC operation.
- (2) Continuous RF operation ($f > 1$ MHz).
- (3) Short time RF operation during mismatch ($f > 1$ MHz).

Fig.3 Power/temperature derating.

THERMAL RESISTANCE

SYMBOL	PARAMETER	CONDITIONS	MAX.	UNIT
$R_{th\ j-mb}$	from junction to mounting base	$P_{tot} = 41$ W; $T_{mb} = 25^\circ\text{C}$	4.3	K/W
$R_{th\ mb-h}$	from mounting base to heatsink		0.6	K/W

CHARACTERISTICS

$T_j = 25\text{ }^\circ\text{C}$.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; $I_C = 20\text{ mA}$	36	—	—	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; $I_C = 40\text{ mA}$	16	—	—	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; $I_E = 2\text{ mA}$	3	—	—	V
I_{CES}	collector-emitter leakage current	$V_{BE} = 0$; $V_{CE} = 16\text{ V}$	—	—	10	mA
h_{FE}	DC current gain	$V_{CE} = 10\text{ V}$; $I_C = 1.2\text{ A}$	25	—	—	
C_c	collector capacitance	$V_{CB} = 12.5\text{ V}$; $I_E = I_B = 0$; $f = 1\text{ MHz}$	—	15	—	pF
C_{re}	feedback capacitance	$V_{CE} = 12.5\text{ V}$; $I_C = 0$; $f = 1\text{ MHz}$	—	9	—	pF
C_{cs}	collector-stud capacitance	$f = 1\text{ MHz}$	—	1.2	—	pF

