

**UHF push-pull power transistor**

**BLV948**

**FEATURES**

- Double input and output matching for easy matching and high gain
- Poly-silicon emitter-ballasting resistors for an optimum temperature profile
- Gold metallization ensures excellent reliability.

**DESCRIPTION**

Two NPN silicon planar epitaxial transistors in push-pull configuration, intended for linear common emitter class-AB operation in base station transmitters in the 800 to 960 MHz range.

The transistor is encapsulated in a 4-lead SOT262A2 flange envelope, with two ceramic caps. The flange provides the common emitter connection for both transistors.

**PINNING - SOT262A2**

PIN	DESCRIPTION
1	collector 1
2	collector 2
3	base 1
4	base 2
5	emitter (connected to flange)

**QUICK REFERENCE DATA**

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

MODE OF OPERATION	f (MHz)	V <sub>CE</sub> (V)	P <sub>L</sub> (W)	G <sub>p</sub> (dB)	$\eta_c$ (%)	d <sub>s</sub> (dBc)
CW, class-AB	900	26	150	≥ 7	≥ 48	-
	960	26	150	≥ 6.5	≥ 45	-
2-tone, class-AB	900	26	150 (PEP)	≥ 7.5	≥ 34	≤ -24
	960	26	150 (PEP)	≥ 7.5	≥ 34	≤ -22

**WARNING**

**Product and environmental safety - toxic materials**

This product contains beryllium oxide. The product is entirely safe provided that the BeO discs are 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.

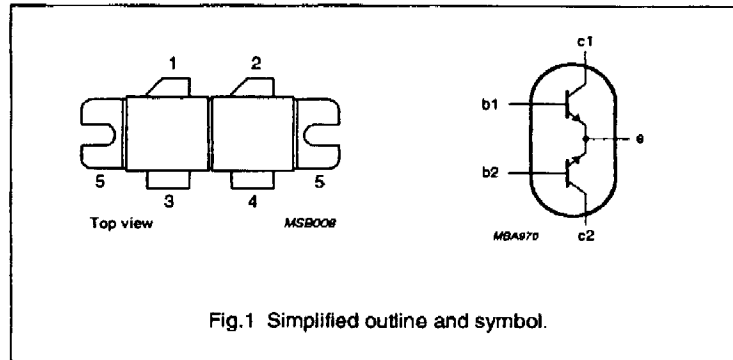
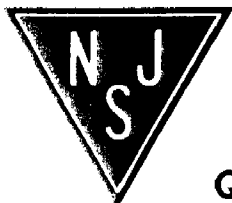


Fig. 1 Simplified outline and symbol.



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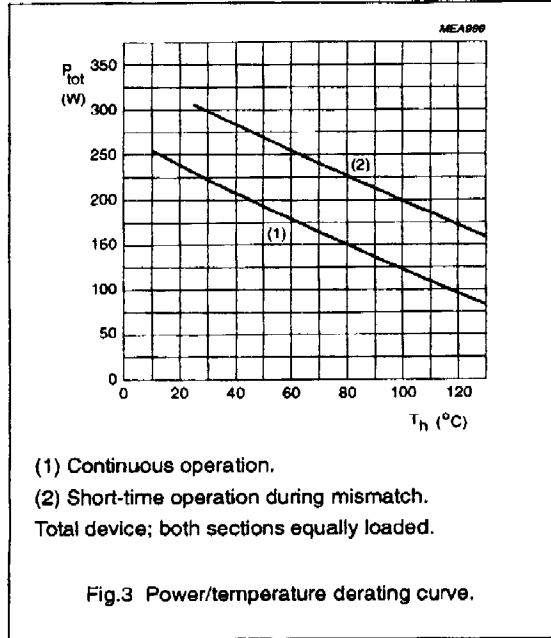
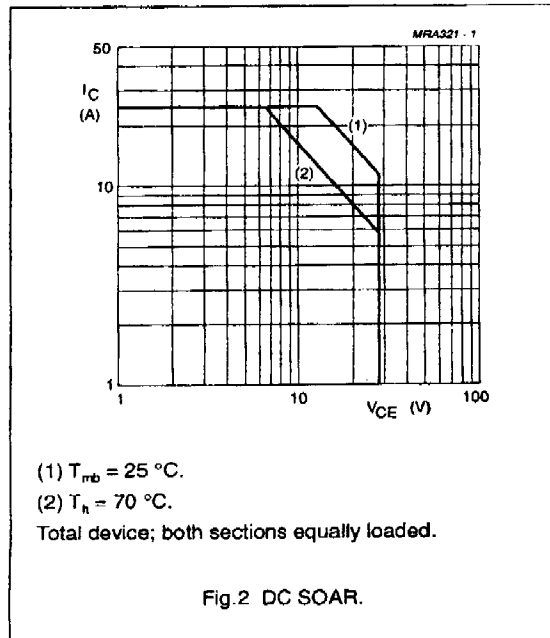
**LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 134).  
Per transistor section unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	-	60	V
$V_{CEO}$	collector-emitter voltage	open base	-	28	V
$V_{EBO}$	emitter-base voltage	open collector	-	3	V
$I_C$	DC collector current		-	12.5	A
$I_{C(AV)}$	average collector current		-	12.5	A
$P_{tot}$	total power dissipation	$T_{mb} = 25\text{ °C}$ ; total device; both sections equally loaded	-	320	W
$T_{stg}$	storage temperature		-65	150	°C
$T_j$	junction temperature		-	200	°C

**THERMAL RESISTANCE**

SYMBOL	PARAMETER	CONDITIONS	THERMAL RESISTANCE
$R_{th\ j-mb}$	thermal resistance from junction to mounting base	$P_{tot} = 320\text{ W}$ ; $T_{mb} = 25\text{ °C}$ ; total device; both sections equally loaded	max. 0.55 K/W
$R_{th\ mb-h}$	thermal resistance from mounting base to heatsink	total device; both sections equally loaded	max. 0.15 K/W



**CHARACTERISTICS**

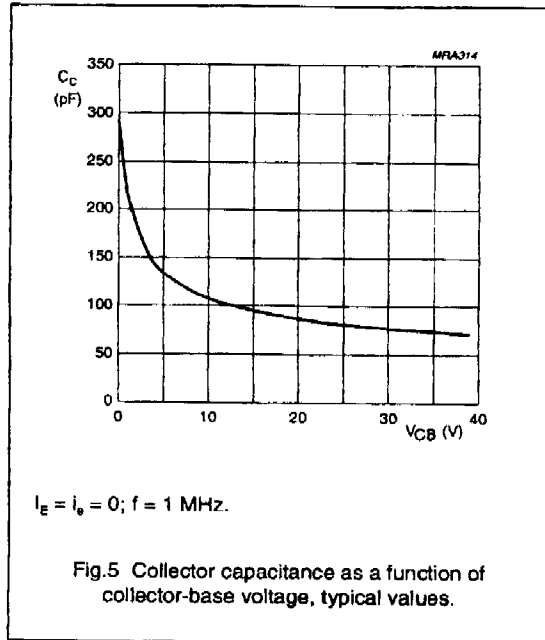
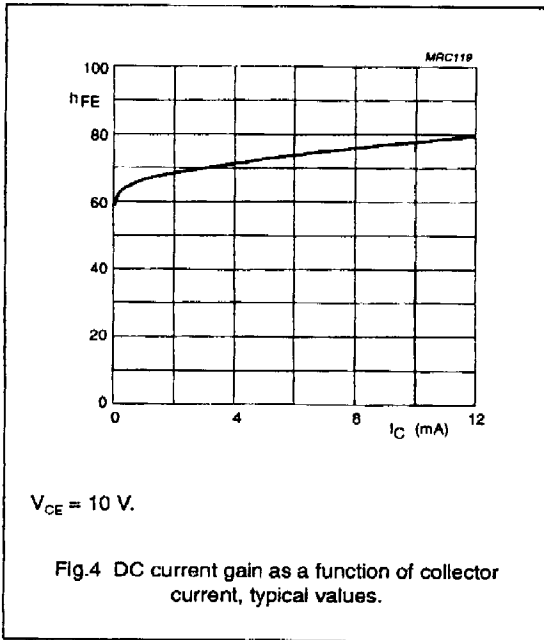
$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

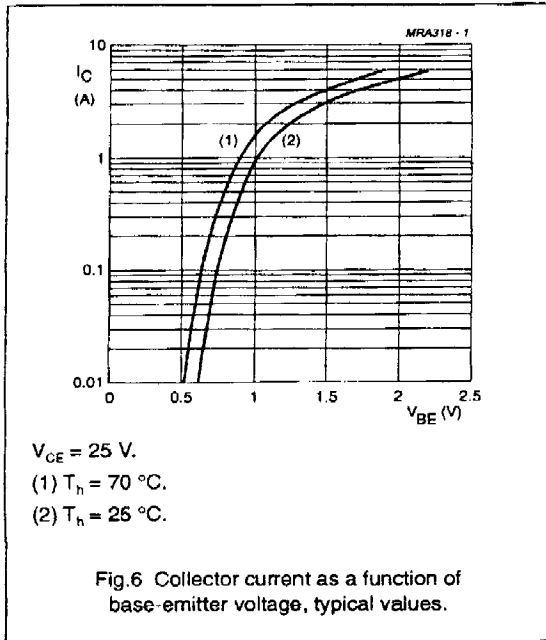
Per transistor section unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; $I_C = 60\text{ mA}$	60	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; $I_C = 150\text{ mA}$	28	-	-	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; $I_E = 3\text{ mA}$	3	-	-	V
$I_{CES}$	collector-emitter cut-off current	$V_{BE} = 0; V_{CE} = 25\text{ V}$	-	-	10	mA
$h_{FE}$	DC current gain	$I_C = 1.5\text{ A}; V_{CE} = 10\text{ V}$	30	-	120	
$\Delta h_{FE}$	DC current gain ratio of both sections	$I_C = 1.5\text{ A}; V_{CE} = 10\text{ V}$	0.67	-	1.5	
$C_c$	collector capacitance (note 1)	$I_E = I_B = 0; V_{CB} = 25\text{ V}; f = 1\text{ MHz}$	-	80	90	pF

**Note**

- Value  $C_c$  is that of the die only, it is not measurable because of the internal matching network.





**APPLICATION INFORMATION**

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

$R_{th\ mb-h} = 0.15 \text{ K/W.}$

MODE OF OPERATION	f (MHz)	$V_{CE}$ (V)	$I_{co}$ (mA)	$P_L$ (W)	$G_p$ (dB)	$\eta_c$ (%)
CW, class-AB	900	26	2 x 100	150	$\geq 7$ typ. 8.3	$\geq 48$ typ. 53
	960	26	2 x 100	150	$\geq 6.5$ typ. 7.9	$\geq 45$ typ. 50

**Ruggedness in class-AB operation**

The BLV948 is capable of withstanding a load mismatch corresponding to  $VSWR = 2:1$  through all phases under the following conditions:  $V_{CE} = 26 \text{ V; } T_h = 25 \text{ }^\circ\text{C; } R_{th\ mb-h} = 0.15 \text{ K/W; } P_L = 150 \text{ W; } f = 960 \text{ MHz.}$