

UHF linear push-pull power transistor

BLV861

FEATURES

- Double stage internal input and output matching networks for an optimum wideband capability and high gain
- Polysilicon emitter ballasting resistors for an optimum temperature profile
- Gold metallization ensures excellent reliability.

APPLICATIONS

- Common emitter class-AB output stages of television transmitter amplifiers (sound and vision) operating in bands 4 and 5 (470 to 860 MHz).

DESCRIPTION

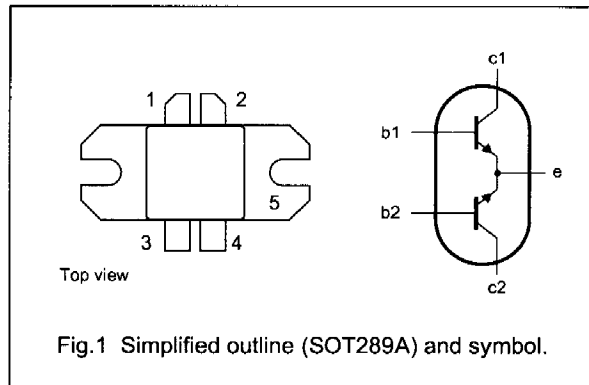
NPN silicon planar epitaxial transistor with two sections in push-pull configuration. The device is encapsulated in a SOT289A 4-lead rectangular flange package, with a ceramic cap.

PINNING

PIN	SYMBOL	DESCRIPTION
1	c1	collector 1; note 1
2	c2	collector 2; note 1
3	b1	base 1
4	b2	base 2
5	e	common emitters; note 2

Notes

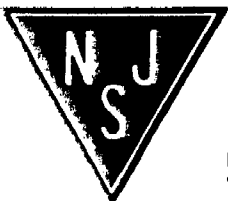
1. Collectors c1 and c2 are internally connected.
2. Common emitters are connected to the flange.



QUICK REFERENCE DATA

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

MODE OF OPERATION	f (MHz)	V_{CE} (V)	P_L (W)	G_p (dB)	η_c (%)	ΔG_p (dB)
CW class-AB	860	28	100	≥ 8.5	≥ 55	≤ 1



LIMITING VALUES

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

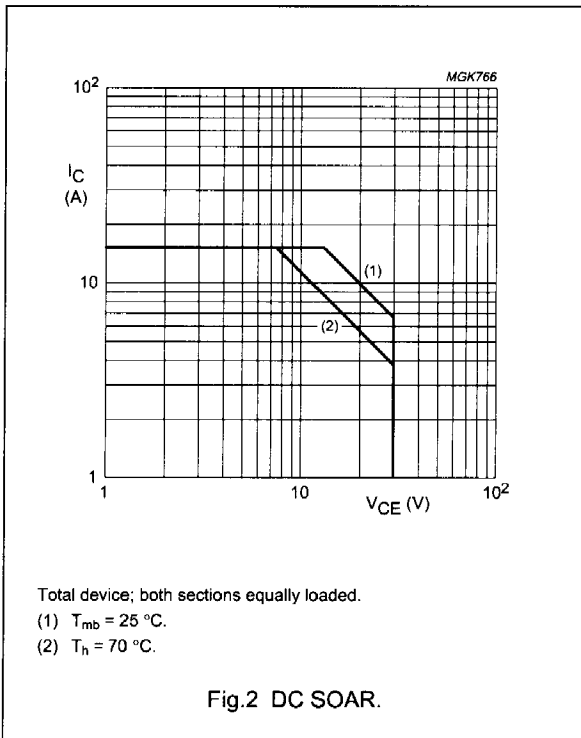
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	-	65	V
V_{CEO}	collector-emitter voltage	open base	-	30	V
V_{EBO}	emitter-base voltage	open collector	-	3	V
I_C	collector current (DC)		-	15	A
P_{tot}	total power dissipation	$T_{mb} = 25\text{ }^\circ\text{C}$	-	220	W
T_{stg}	storage temperature		-65	+150	$^\circ\text{C}$
T_j	operating junction temperature		-	200	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-mb}$	thermal resistance from junction to mounting base	$P_{tot} = 220\text{ W}$; note 1	0.8	K/W
$R_{th\ mb-h}$	thermal resistance from mounting base to heatsink		0.2	K/W

Note

1. Thermal resistance is determined under specified RF operating conditions.



CHARACTERISTICS

Values apply to either transistor section; $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_E = 0; I_C = 35\text{ mA}$	65	–	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_B = 0; I_C = 90\text{ mA}$	30	–	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	$I_E = 2\text{ mA}; I_C = 0$	3	–	–	V
I_{CBO}	collector-base leakage current	$V_{CB} = 28\text{ V}$	–	–	3	mA
h_{FE}	DC current gain	$I_C = 2.8\text{ A}; V_{CE} = 10\text{ V}$	30	–	120	–
Δh_{FE}	DC current gain ratio of both sections	$I_C = 4.5\text{ A}; V_{CE} = 10\text{ V}$	0.67	–	1.5	–
C_c	collector capacitance	$I_E = I_E = 0; V_{CE} = 28\text{ V};$ $f = 1\text{ MHz}; \text{note 1}$	–	47	–	pF

Note

- The value of C_c is that of the die only; it is not measurable because of the internal matching network.

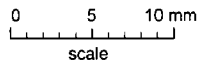
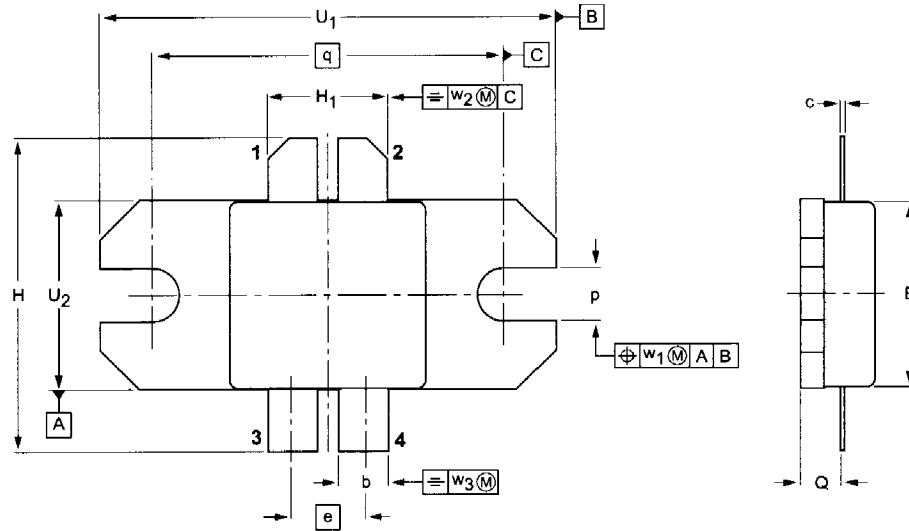
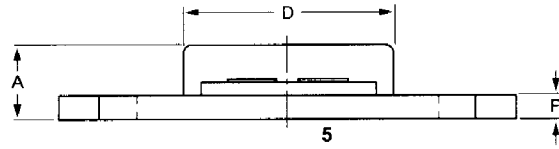
APPLICATION INFORMATION

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

MODE OF OPERATION	f (MHz)	V_{CE} (V)	I_{CQ} (A)	P_L (W)	G_p (dB)	η_c (%)	ΔG_p (dB)
CW class-AB	860	28	0.1	100	≥ 8.5	≥ 55	≤ 1

Ruggedness in class-AB operation

The BLV861 is capable of withstanding a load mismatch corresponding to $V_{SWR} = 3 : 1$ through all phases under the conditions: $T_h = 25\text{ }^\circ\text{C}$; $f = 860\text{ MHz}$; $V_{CE} = 28\text{ V}$; $I_{CQ} = 0.1\text{ A}$; $P_L = 100\text{ W}$; $R_{th\text{ mb-h}} = 0.2\text{ K/W}$.



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

UNIT	A	b	c	D	E	e	F	H	H ₁	p	Q	q	U ₁	U ₂	w ₁	w ₂	w ₃
mm	4.65 3.92	3.33 3.07	0.10 0.05	13.10 12.90	11.53 11.33	4.60	1.65 1.40	19.81 19.05	4.85 4.34	3.43 3.17	2.31 2.06	21.44	28.07 27.81	11.81 11.56	0.51	1.02	0.25
inches	0.183 0.154	0.131 0.121	0.004 0.002	0.516 0.508	0.454 0.446	0.181	0.065 0.055	0.780 0.750	0.191 0.171	0.135 0.125	0.091 0.081	0.844	1.105 1.095	0.465 0.455	0.02	0.04	0.01

OUTLINE VERSION	REFERENCES			
	IEC	JEDEC	EIAJ	
SOT289A				