

# DATA SHEET

## **BLV862**

UHF linear push-pull power  
transistor

Preliminary specification  
File under Discrete Semiconductors, SC08a

1996 Jun 11

# UHF linear push-pull power transistor

BLV862

## 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.

## APPLICATION

- Common emitter class-AB operation in output stages in band 4 and 5 (470 to 860 MHz) TV transmitter amplifiers (vision or sound).

## DESCRIPTION

NPN silicon planar epitaxial transistor with two sections in push-pull configuration. The device is encapsulated in a SOT262B 4-lead rectangular flange package, with two ceramic caps.

## PINNING SOT262B

PIN	SYMBOL	DESCRIPTION
1	c1	collector 1
2	c2	collector 2
3	b1	base 1
4	b2	base 2
5	e	emitter

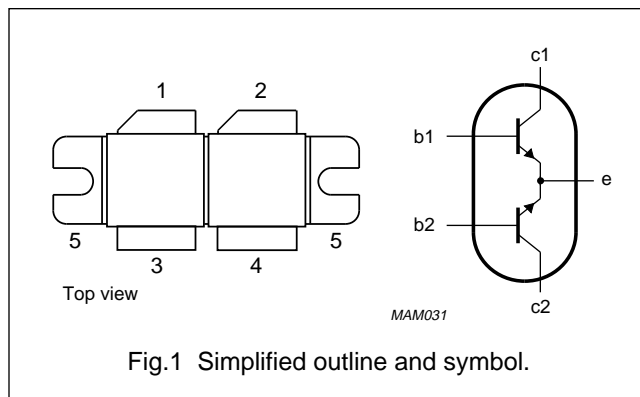


Fig.1 Simplified outline and symbol.

## QUICK REFERENCE DATA

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

MODE OF OPERATION	f (MHz)	$V_{CE}$ (V)	$P_L$ (W)	$G_p$ (dB)	$\eta_c$ (%)	$\Delta G_p$ (dB)
CW class-AB	860	28	150	$\geq 8$ typ. 9	$\geq 45$ typ. 52	$\leq 1$

## 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.

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## LIMITING VALUES

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

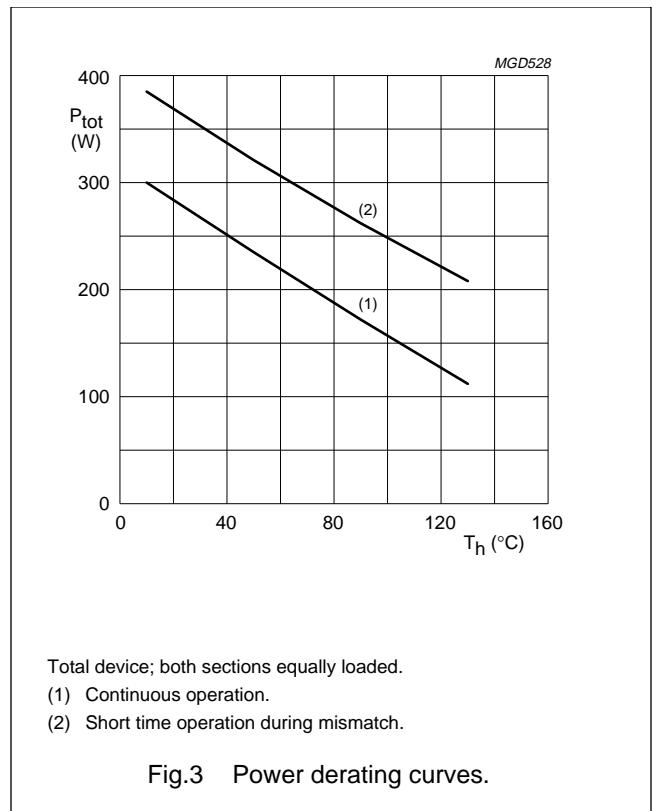
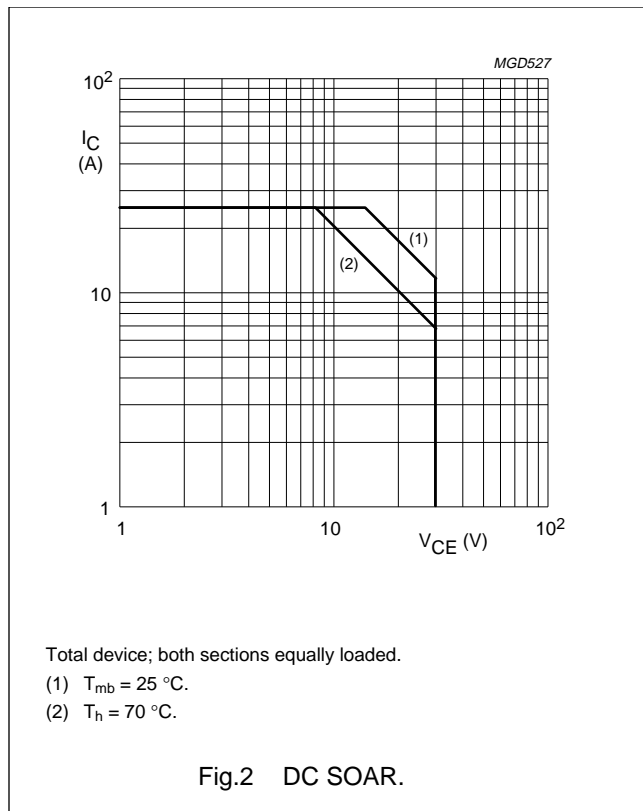
SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{CBO}$	collector-base voltage	open emitter	–	65	V
$V_{CEO}$	collector-emitter voltage	open base	–	30	V
$V_{EBO}$	emitter-base voltage	open collector	–	3	V
$I_C$	collector current (DC)		–	25	A
$I_{C(AV)}$	average collector current		–	25	A
$P_{tot}$	total power dissipation	note 1	–	350	W
$T_{stg}$	storage temperature		–65	+150	°C
$T_j$	operating junction temperature		–	200	°C

## THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-mb}$	thermal resistance from junction to mounting base	$P_{tot} = 350\ W$ ; note 1	0.5	K/W
$R_{th\ mb-h}$	thermal resistance from mounting base to heatsink	note 1	0.15	K/W

### Note to Limiting values and Thermal characteristics

1. Total device;  $T_{mb} = 25\ ^\circ C$ ; both sections equally loaded.



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

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	$I_C = 60\text{ mA}; I_E = 0$	65	–	–	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_C = 150\text{ mA}; I_B = 0$	30	–	–	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	$I_E = 3\text{ mA}; I_C = 0$	3	–	–	V
$I_{CBO}$	collector-base leakage current	$V_{CB} = 28\text{ V}$	–	–	5	mA
$h_{FE}$	DC current gain	$V_{CE} = 10\text{ V}; I_C = 4.5\text{ A}$	30	–	140	–
$\Delta h_{FE}$	DC current gain ratio of both sections	$V_{CE} = 10\text{ V}; I_C = 4.5\text{ A}$	0.67	–	1.5	–
$C_C$	collector capacitance	$V_{CE} = 28\text{ V}; I_E = i_e = 0;$ $f = 1\text{ MHz}; \text{note 1}$	–	75	–	pF

**Note**

1. The value of  $C_C$  is that of the die only, it is not measurable because of the internal matching network.

# UHF linear push-pull power transistor

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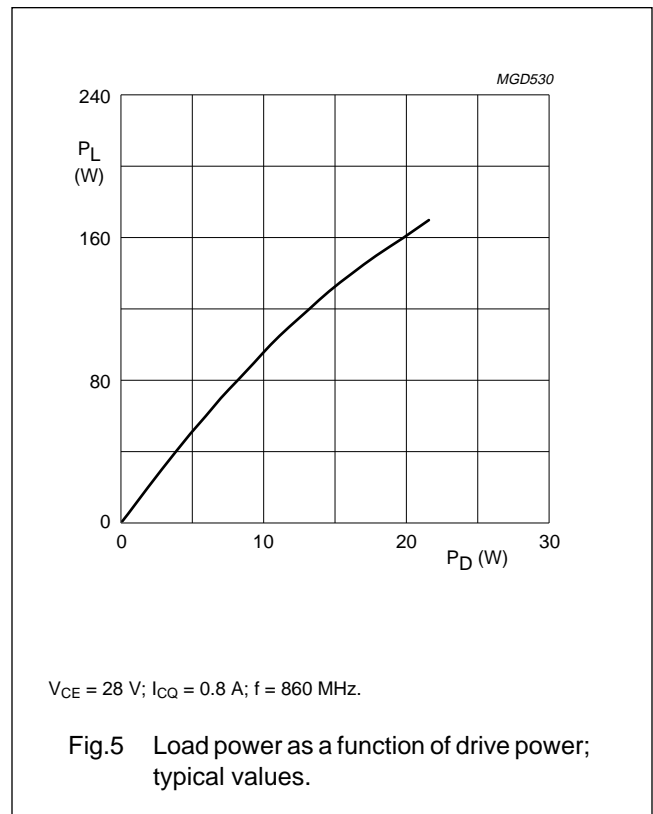
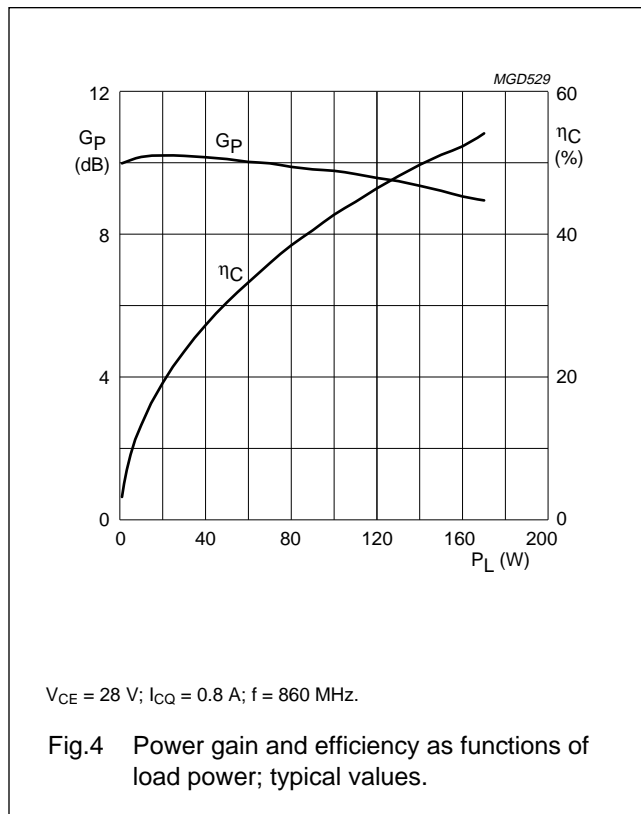
## APPLICATION INFORMATION

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

MODE OF OPERATION	f (MHz)	$V_{CE}$ (V)	$I_{CQ}$ (A)	$P_L$ (W)	$G_p$ (dB)	$\eta_c$ (%)	$\Delta G_p$ (dB)
CW class-AB	860	28	0.8	150	$\geq 8$ typ. 9	$\geq 45$ typ. 52	$\leq 1$

### Ruggedness in class-AB operation

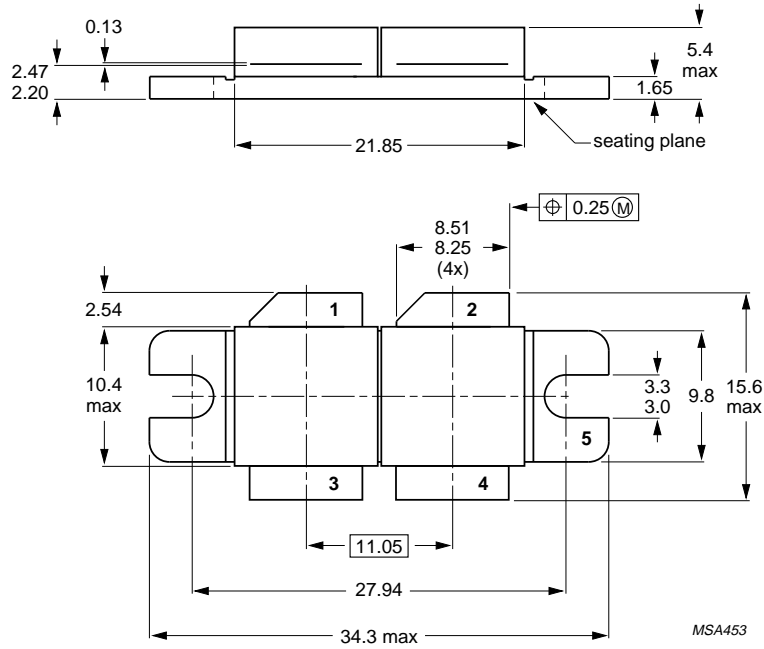
The BLV862 is capable of withstanding a load mismatch corresponding to  $VSWR = 2 : 1$  through all phases under the conditions:  $V_{CE} = 28\text{ V}$ ;  $I_{CQ} = 0.8\text{ A}$ ;  $f = 860\text{ MHz}$ ;  $T_h = 25\text{ }^\circ\text{C}$ ;  $P_L = 150\text{ W}$ ;  $R_{th\ mb-h} = 0.15\text{ K/W}$ .



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PACKAGE OUTLINE



Dimensions in mm.  
 Torque on screw: min. 0.6 Nm; max. 0.75 Nm.  
 Recommended screw: cheese-head 4-40 UNC/2A.  
 Heatsink compound must be applied sparingly and evenly distributed.

Fig.6 SOT262B.

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**DEFINITIONS**

<b>Data Sheet Status</b>	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	

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