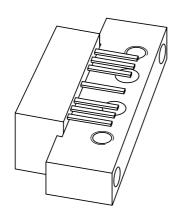
### **DISCRETE SEMICONDUCTORS**

# DATA SHEET



# **BGD816L** 860 MHz, 21.5 dB gain power doubler amplifier

Product specification Supersedes data of 2001 May 18 2001 Nov 15





## 860 MHz, 21.5 dB gain power doubler amplifier

### BGD816L

#### **FEATURES**

- · Excellent linearity
- · Extremely low noise
- Excellent return loss properties
- · Silicon nitride passivation
- Rugged construction
- · Gold metallization ensures excellent reliability.

#### **APPLICATIONS**

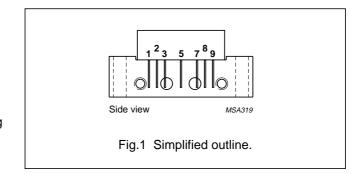
• CATV systems operating in the 40 to 870 MHz frequency range.

#### **DESCRIPTION**

Hybrid amplifier module in a SOT115J package operating with a voltage supply of 24 V (DC).

#### **PINNING - SOT115J**

PIN	DESCRIPTION	
1	input	
2, 3	common	
5	+V <sub>B</sub>	
7, 8	common	
9	output	



#### **QUICK REFERENCE DATA**

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G <sub>p</sub>	power gain	f = 45 MHz	21.2	21.8	dB
		f = 870 MHz	22	23	dB
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 24 V	345	375	mA

#### **LIMITING VALUES**

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER		MAX.	UNIT
V <sub>B</sub>	supply voltage	_	30	٧
Vi	RF input voltage		70	dBmV
T <sub>stg</sub>	storage temperature		+100	°C
T <sub>mb</sub>	operating mounting base temperature	-20	+100	°C

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#### **CHARACTERISTICS**

Bandwidth 40 to 870 MHz;  $V_B$  = 24 V;  $T_{mb}$  = 35 °C;  $Z_S$  =  $Z_L$  = 75  $\Omega$ 

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Gp	power gain	f = 45 MHz	21.2	_	21.8	dB
		f = 870 MHz	22	_	23	dB
SL	slope straight line	f = 45 to 870 MHz; note 1	0.5	1	1.5	dB
FL	flatness straight line	f = 45 to 100 MHz	_	_	±0.25	dB
		f = 100 to 800 MHz	_	_	±0.5	dB
		f = 800 to 870 MHz	-0.4	_	0.1	dB
S <sub>11</sub>	input return losses	f = 45 to 80 MHz	22	_	_	dB
		f = 80 to 160 MHz	21	_	_	dB
		f = 160 to 320 MHz	19	_	_	dB
		f = 320 to 550 MHz	18	_	_	dB
		f = 550 to 650 MHz	17	_	_	dB
		f = 650 to 750 MHz	16	_	_	dB
		f = 750 to 870 MHz	15	_	_	dB
		f = 870 to 914 MHz	12	_	_	dB
S <sub>22</sub>	output return losses	f = 45 to 80 MHz	25	_	_	dB
		f = 80 to 160 MHz	23	_	_	dB
		f = 160 to 320 MHz	18	_	_	dB
		f = 320 to 550 MHz	17	_	_	dB
		f = 550 to 650 MHz	16	_	_	dB
		f = 650 to 750 MHz	15	_	_	dB
		f = 750 to 870 MHz	15	_	_	dB
		f = 870 to 914 MHz	12	_	_	dB
s <sub>21</sub>	phase response	f = 50 MHz	-45	_	+45	deg
СТВ	composite triple beat	79 chs flat; $V_0 = 44 \text{ dBmV}$ ; $f_m = 547.25 \text{ MHz}$	_	_	-66	dB
		112 chs flat; $V_0 = 44 \text{ dBmV}$ ; $f_m = 745.25 \text{ MHz}$	_	_	-59.5	dB
		132 chs flat; $V_0 = 44 \text{ dBmV}$ ; $f_m = 859.25 \text{ MHz}$	_	_	-55	dB
		112 chs; $f_m = 547.25$ MHz; $V_o = 48.2$ dBmV at 745 MHz; note 2	_	_	-59	dB
		79 chs; $f_m = 331.25$ MHz; $V_o = 45.3$ dBmV at 547 MHz; note 3	_	_	-68.5	dB
X <sub>mod</sub>	cross modulation	79 chs flat; $V_0 = 44 \text{ dBmV}$ ; $f_m = 55.25 \text{ MHz}$	_	_	-64	dB
		112 chs flat; $V_0 = 44 \text{ dBmV}$ ; $f_m = 55.25 \text{ MHz}$	_	-	-61	dB
		132 chs flat; $V_0 = 44 \text{ dBmV}$ ; $f_m = 55.25 \text{ MHz}$	_	_	-58	dB
		112 chs; $f_m = 745.25$ MHz; $V_o = 48.2$ dBmV at 745 MHz; note 2	_	_	-60	dB
		79 chs; $f_m = 445.25$ MHz; $V_o = 45.3$ dBmV at 547 MHz; note 3	_	_	-66	dB

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
CSO composite second	composite second	79 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 548.5 MHz	_	_	-66	dB
	order distortion	112 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 746.5 MHz	_	_	-58	dB
		132 chs flat; V <sub>o</sub> = 44 dBmV; f <sub>m</sub> = 860.5 MHz	_	_	-56	dB
		112 chs; $f_m = 210.0 \text{ MHz}$ ; $V_o = 48.2 \text{ dBmV}$ at 745 MHz; note 2	_	_	-57	dB
		79 chs; $f_m$ = 210.0 MHz; $V_o$ = 45.3 dBmV at 547 MHz; note 3	_	_	-64	dB
d <sub>2</sub>	second order distortion	note 4	_	_	-70	dB
Vo	output voltage	$d_{im} = -60 \text{ dB}$ ; note 5	62	_	_	dBmV
		CTB compression = 1 dB; 132 chs flat; f = 859.25 MHz	48	_	_	dBmV
		CSO compression = 1 dB; 132 chs flat; f = 860.5 MHz	49	_	_	dBmV
NF	noise figure	f = 50 MHz	_	_	5.5	dB
		f = 550 MHz	_	_	5.5	dB
		f = 750 MHz	_	-	6.5	dB
		f = 870 MHz	_		7.5	dB
I <sub>tot</sub>	total current consumption (DC)	note 6	345	360	375	mA

#### **Notes**

- 1. Slope straight line is defined as gain at 870 MHz against gain at 45 MHz.
- 2. Tilt = 10.2 dB (55 to 745 MHz).
- 3. Tilt = 7.3 dB (55 to 547 MHz).
- $\begin{array}{ll} \text{4.} & \text{f}_p = 55.25 \text{ MHz; V}_p = 44 \text{ dBmV;} \\ & \text{f}_q = 805.25 \text{ MHz; V}_q = 44 \text{ dBmV;} \\ & \text{measured at f}_p + \text{f}_q = 860.5 \text{ MHz.} \end{array}$
- 5. Measured according to DIN45004B:

```
\begin{split} f_p &= 851.25 \text{ MHz; } V_p = V_o; \\ f_q &= 858.25 \text{ MHz; } V_q = V_o - 6 \text{ dB;} \\ f_r &= 860.25 \text{ MHz; } V_r = V_o - 6 \text{ dB;} \\ \text{measured at } f_p + f_q - f_r = 849.25 \text{ MHz.} \end{split}
```

6. The module normally operates at  $V_B = 24 \text{ V}$ , but is able to withstand supply transients up to 35 V.

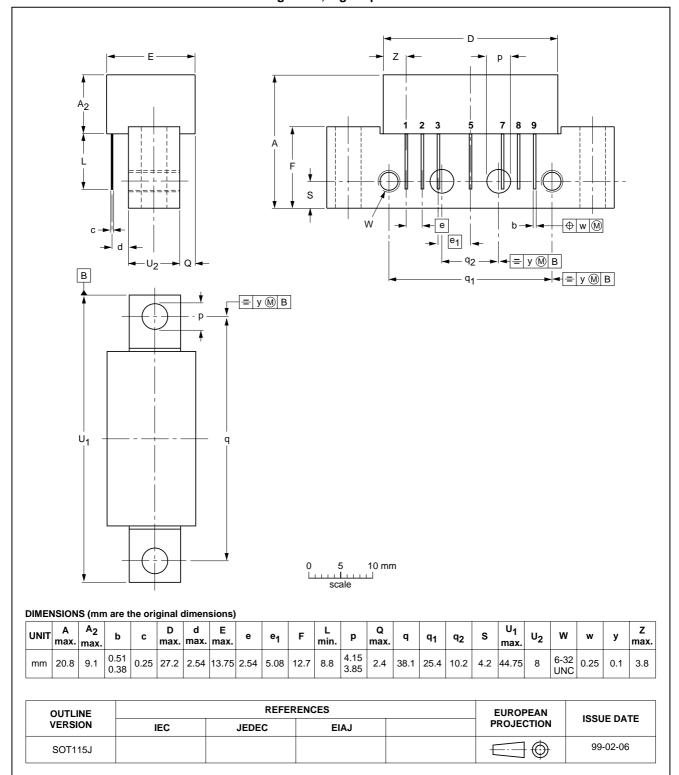
## 860 MHz, 21.5 dB gain power doubler amplifier

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#### **PACKAGE OUTLINE**

Rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; 7 gold-plated in-line leads

SOT115J



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DATA SHEET STATUS(1)	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
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**NOTES** 

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