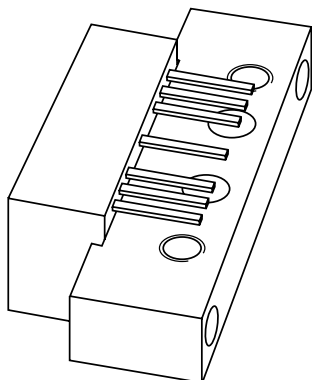


DATA SHEET



BGY787

750 MHz, 21.5 dB gain push-pull
amplifier

Product specification
Supersedes data of 2001 Oct 31

2003 May 16

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

FEATURES

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

APPLICATIONS

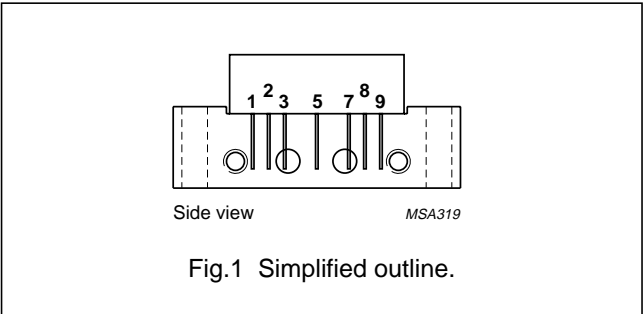
CATV systems operating over a 40 to 750 MHz frequency range.

DESCRIPTION

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

PINNING - SOT115J

PIN	DESCRIPTION
1	input
2	common
3	common
5	+V _B
7	common
8	common
9	output



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
G _p	power gain	f = 50 MHz	21	22	dB
		f = 750 MHz	21.5	–	dB
I _{tot}	total current consumption (DC)	V _B = 24 V	–	240	mA

LIMITING VALUES

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V _i	RF input voltage	–	60	dBmV
T _{stg}	storage temperature	–40	+100	°C
T _{mb}	mounting base operating temperature	–20	+100	°C

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

CHARACTERISTICS

Table 1 Bandwidth 40 to 750 MHz; $V_B = 24$ V; $T_{case} = 30$ °C; $Z_S = Z_L = 75$ Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	power gain	$f = 50$ MHz	21	21.5	22	dB
		$f = 750$ MHz	21.5	22.5	–	dB
SL	slope cable equivalent	$f = 40$ to 750 MHz	0	1	1.5	dB
FL	flatness of frequency response	$f = 40$ to 750 MHz	–	± 0.2	± 0.5	dB
s_{11}	input return losses	$f = 40$ to 80 MHz	20	33	–	dB
		$f = 80$ to 160 MHz	18.5	30	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 640 MHz	15.5	22.5	–	dB
		$f = 640$ to 750 MHz	14	20.5	–	dB
s_{22}	output return losses	$f = 40$ to 80 MHz	20	28.5	–	dB
		$f = 80$ to 160 MHz	18.5	27.5	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 640 MHz	15.5	22	–	dB
		$f = 640$ to 750 MHz	14	20	–	dB
s_{21}	phase response	$f = 50$ MHz	–45	–	+45	deg
CTB	composite triple beat	110 channels flat; $V_o = 44$ dBmV; measured at 745.25 MHz	–	–54.5	–53	dB
X_{mod}	cross modulation	110 channels flat; $V_o = 44$ dBmV; measured at 55.25 MHz	–	–54	–52	dB
CSO	composite second order distortion	110 channels flat; $V_o = 44$ dBmV; measured at 746.5 MHz	–	–57.5	–53	dB
d_2	second order distortion	note 1	–	–75	–63	dB
V_o	output voltage	$d_{im} = -60$ dB; note 2	61	63	–	dBmV
F	noise figure	$f = 50$ MHz	–	4	5	dB
		$f = 450$ MHz	–	–	5.5	dB
		$f = 550$ MHz	–	–	5.5	dB
		$f = 600$ MHz	–	–	6	dB
		$f = 750$ MHz	–	5	6.5	dB
I_{tot}	total current consumption (DC)	note 3	–	220	240	mA

Notes

- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 691.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 746.5$ MHz.
- Measure according to DIN45004B;
 $f_p = 740.25$ MHz; $V_p = V_o$;
 $f_q = 747.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 749.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 738.25$ MHz.
- The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

Table 2 Bandwidth 40 to 770 MHz; $V_B = 24$ V; $T_{case} = 30$ °C; $Z_S = Z_L = 75$ Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	power gain	$f = 50$ MHz	21	21.5	22	dB
		$f = 770$ MHz	21.5	22.5	–	dB
SL	slope cable equivalent	$f = 40$ to 770 MHz	0	1	1.5	dB
FL	flatness of frequency response	$f = 40$ to 770 MHz	–	± 0.2	± 0.5	dB
S_{11}	input return losses	$f = 40$ to 80 MHz	20	33	–	dB
		$f = 80$ to 160 MHz	18.5	30	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 640 MHz	15.5	22.5	–	dB
		$f = 640$ to 770 MHz	14	20.5	–	dB
S_{22}	output return losses	$f = 40$ to 80 MHz	20	28.5	–	dB
		$f = 80$ to 160 MHz	18.5	27.5	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 640 MHz	15.5	22	–	dB
		$f = 640$ to 770 MHz	14	20	–	dB
S_{21}	phase response	$f = 50$ MHz	–45	–	+45	deg
CTB	composite triple beat	110 channels flat; $V_o = 44$ dBmV; measured at 745.25 MHz	–	–54.5	–53	dB
X_{mod}	cross modulation	110 channels flat; $V_o = 44$ dBmV; measured at 55.25 MHz	–	–54	–52	dB
CSO	composite second order distortion	110 channels flat; $V_o = 44$ dBmV; measured at 746.5 MHz	–	–57.5	–53	dB
d_2	second order distortion	note 1	–	–75	–63	dB
V_o	output voltage	$d_{im} = -60$ dB; note 2	61	63	–	dBmV
F	noise figure	$f = 50$ MHz	–	4	5	dB
		$f = 450$ MHz	–	–	5.5	dB
		$f = 550$ MHz	–	–	5.5	dB
		$f = 600$ MHz	–	–	6	dB
		$f = 770$ MHz	–	5	6.5	dB
I_{tot}	total current consumption (DC)	note 3	–	220	240	mA

Notes

- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 691.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 746.5$ MHz.
- Measure according to DIN45004B;
 $f_p = 740.25$ MHz; $V_p = V_o$;
 $f_q = 747.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 749.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 738.25$ MHz.
- The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

Table 3 Bandwidth 40 to 600 MHz; $V_B = 24$ V; $T_{case} = 30$ °C; $Z_S = Z_L = 75$ Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	power gain	$f = 50$ MHz	21	21.5	22	dB
		$f = 600$ MHz	21.5	–	–	dB
SL	slope cable equivalent	$f = 40$ to 600 MHz	0	–	1.5	dB
FL	flatness of frequency response	$f = 40$ to 600 MHz	–	–	± 0.3	dB
S_{11}	input return losses	$f = 40$ to 80 MHz	20	33	–	dB
		$f = 80$ to 160 MHz	18.5	30	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 600 MHz	16	22.5	–	dB
S_{22}	output return losses	$f = 40$ to 80 MHz;	20	28.5	–	dB
		$f = 80$ to 160 MHz	18.5	27.5	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 600 MHz	16	22	–	dB
S_{21}	phase response	$f = 50$ MHz	–45	–	+45	deg
CTB	composite triple beat	85 channels flat; $V_o = 44$ dBmV; measured at 595.25 MHz	–	–59.5	–58	dB
X_{mod}	cross modulation	85 channels flat; $V_o = 44$ dBmV; measured at 55.25 MHz	–	–55.5	–53	dB
CSO	composite second order distortion	85 channels flat; $V_o = 44$ dBmV; measured at 596.5 MHz	–	–64	–56	dB
d_2	second order distortion	note 1	–	–	–68	dB
V_o	output voltage	$d_{im} = -60$ dB; note 2	62.5	–	–	dBmV
F	noise figure	see Table 1	–	–	–	dB
I_{tot}	total current consumption (DC)	note 3	–	220	240	mA

Notes

- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 541.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 596.5$ MHz.
- Measure according to DIN45004B;
 $f_p = 590.25$ MHz; $V_p = V_o$;
 $f_q = 597.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 599.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 588.25$ MHz.
- The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

Table 4 Bandwidth 40 to 550 MHz; $V_B = 24$ V; $T_{case} = 30$ °C; $Z_S = Z_L = 75$ Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	power gain	$f = 50$ MHz	21	21.5	22	dB
		$f = 550$ MHz	21.5	–	–	dB
SL	slope cable equivalent	$f = 40$ to 550 MHz	0	–	1.5	dB
FL	flatness of frequency response	$f = 40$ to 550 MHz	–	–	± 0.3	dB
S_{11}	input return losses	$f = 40$ to 80 MHz	20	33	–	dB
		$f = 80$ to 160 MHz	18.5	30	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 550 MHz	16	22.5	–	dB
S_{22}	output return losses	$f = 40$ to 80 MHz	20	28.5	–	dB
		$f = 80$ to 160 MHz	18.5	27.5	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 550 MHz	16	22	–	dB
S_{21}	phase response	$f = 50$ MHz	–45	–	+45	deg
CTB	composite triple beat	77 channels flat; $V_o = 44$ dBmV; measured at 547.25 MHz	–	–61	–60	dB
X_{mod}	cross modulation	77 channels flat; $V_o = 44$ dBmV; measured at 55.25 MHz	–	–56.5	–55	dB
CSO	composite second order distortion	77 channels flat; $V_o = 44$ dBmV; measured at 548.5 MHz	–	–65.5	–58	dB
d_2	second order distortion	note 1	–	–	–70	dB
V_o	output voltage	$d_{im} = -60$ dB; note 2	63	–	–	dBmV
F	noise figure	see Table 1	–	–	–	dB
I_{tot}	total current consumption (DC)	note 3	–	220	240	mA

Notes

- $f_p = 55.25$ MHz; $V_p = 44$ dBmV;
 $f_q = 493.25$ MHz; $V_q = 44$ dBmV;
measured at $f_p + f_q = 548.5$ MHz.
- Measure according to DIN45004B;
 $f_p = 540.25$ MHz; $V_p = V_o$;
 $f_q = 547.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 549.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 538.25$ MHz.
- The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

Table 5 Bandwidth 40 to 450 MHz; $V_B = 24$ V; $T_{case} = 30$ °C; $Z_S = Z_L = 75$ Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
G_p	power gain	$f = 50$ MHz	21	21.5	22	dB
		$f = 450$ MHz	21.5	–	–	dB
SL	slope cable equivalent	$f = 40$ to 450 MHz	0	–	1.5	dB
FL	flatness of frequency response	$f = 40$ to 450 MHz	–	–	± 0.3	dB
S_{11}	input return losses	$f = 40$ to 80 MHz	20	33	–	dB
		$f = 80$ to 160 MHz	18.5	30	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 450 MHz	16	22.5	–	dB
S_{22}	output return losses	$f = 40$ to 80 MHz	20	28.5	–	dB
		$f = 80$ to 160 MHz	18.5	27.5	–	dB
		$f = 160$ to 320 MHz	17	25	–	dB
		$f = 320$ to 450 MHz	16	22	–	dB
S_{21}	phase response	$f = 50$ MHz	–45	–	+45	deg
CTB	composite triple beat	60 channels flat; $V_o = 46$ dBmV; measured at 445.25 MHz	–	–	–59	dB
X_{mod}	cross modulation	60 channels flat; $V_o = 46$ dBmV; measured at 55.25 MHz	–	–	–54	dB
CSO	composite second order distortion	60 channels flat; $V_o = 46$ dBmV; measured at 446.5 MHz	–	–	–60	dB
d_2	second order distortion	note 1	–	–	–73	dB
V_o	output voltage	$d_{im} = -60$ dB; note 2	64	–	–	dBmV
F	noise figure	see Table 1	–	–	–	dB
I_{tot}	total current consumption (DC)	note 3	–	220	240	mA

Notes

- $f_p = 55.25$ MHz; $V_p = 46$ dBmV;
 $f_q = 391.25$ MHz; $V_q = 46$ dBmV;
measured at $f_p + f_q = 446.5$ MHz.
- Measure according to DIN45004B;
 $f_p = 440.25$ MHz; $V_p = V_o$;
 $f_q = 447.25$ MHz; $V_q = V_o - 6$ dB;
 $f_r = 449.25$ MHz; $V_r = V_o - 6$ dB;
measured at $f_p + f_q - f_r = 438.25$ MHz.
- The module normally operates at $V_B = 24$ V, but is able to withstand supply transients up to 30 V.

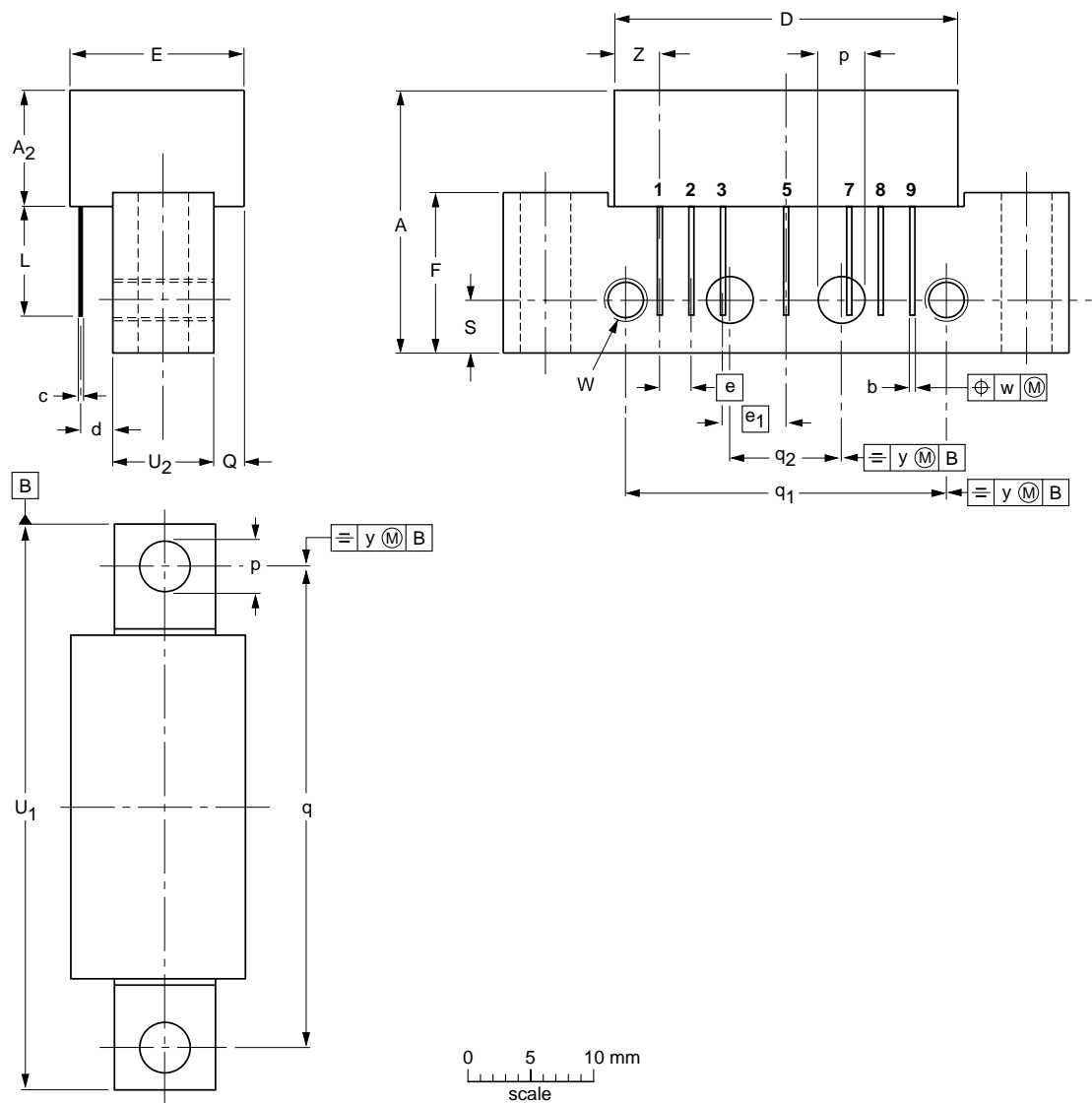
750 MHz, 21.5 dB gain push-pull amplifier

BGY787

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



DIMENSIONS (mm are the original dimensions)

UNIT	A max.	A ₂ max.	b	c	D max.	d max.	E max.	e	e ₁	F	L min.	p	Q max.	q	q ₁	q ₂	S	U ₁ max.	U ₂	W	w	y	Z max.
mm	20.8	9.1	0.51 0.38	0.25	27.2	2.54	13.75	2.54	5.08	12.7	8.8	4.15 3.85	2.4	38.1	25.4	10.2	4.2	44.75	8	6-32 UNC	0.25	0.1	3.8

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115J						99-02-06

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
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750 MHz, 21.5 dB gain push-pull amplifier

BGY787

NOTES

750 MHz, 21.5 dB gain push-pull amplifier

BGY787

NOTES

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