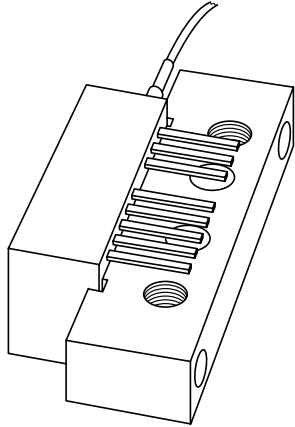


DATA SHEET



BGO847 870 MHz optical receiver

Product specification
Supersedes data of 2002 Dec 10

2003 Nov 06

870 MHz optical receiver

BGO847

FEATURES

- Excellent linearity
- Extremely low noise up to 870 MHz
- Excellent flatness (straight line)
- Standard CATV outline
- Rugged construction
- Gold metallization ensures excellent reliability
- High optical input power range.

APPLICATIONS

- CATV optical node systems operating in the 40 to 870 MHz frequency range.

DESCRIPTION

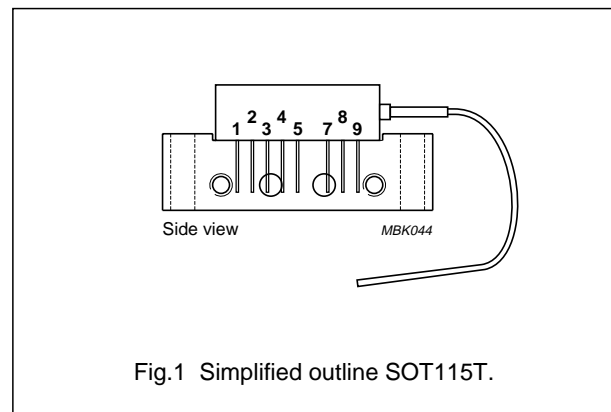
High dynamic range optical receiver amplifier module in a standard SOT115T package where the non-jacketed fibre has no connector.

The amplifier supply voltage pin and the photo diode bias voltage pin both connect to 24 V (DC).

The module has a monomode optical input suitable for 1290 to 1600 nm wavelengths, a terminal to monitor the photo diode current and an electrical output having a characteristic impedance of 75 Ω .

PINNING

PIN	DESCRIPTION
1	monitor current
2	common
3	common
4	+V _B of the photo diode
5	+V _B of the amplifier
7	common
8	common
9	output



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		40	870	MHz
S ₂₂	output return losses	f = 40 to 870 MHz	11	–	dB
	optical input return losses		45	–	dB
d ₂	second order distortion	f = 854.5 MHz	–	–63	dB
F	equivalent noise input	f = 40 to 750 MHz	–	7	pA/ $\sqrt{\text{Hz}}$
I _{tot}	total current consumption (DC)	V _B = 24 V	175	205	mA

CAUTION

This product is supplied in anti-static packing to prevent damage caused by electrostatic discharge during transport and handling. For further information, refer to Philips specs.: SNW-EQ-608, SNW-FQ-302A and SNW-FQ-302B.

870 MHz optical receiver

BGO847

HANDLING

Fibreglass optical coupling: maximum tensile strength = 5 N; minimum bending radius = 35 mm.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BGO847	–	rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; optical input; 9 gold-plated in-line leads	SOT115T

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		40	870	MHz
T _{stg}	storage temperature		–40	+85	°C
T _{mb}	operating mounting base temperature		–20	+85	°C
P _{in}	optical input power	continuous	–	5	mW
ESD	ESD sensitivity	human body model; R = 1.5 kΩ; C = 100 pF	500	–	V

CHARACTERISTICS

Bandwidth 40 to 870 MHz; V_B = 24 V; T_{mb} = 30 °C; Z_L = 75 Ω.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
S	responsivity	λ = 1300 nm	800	–	–	V/W
ΔS	responsivity difference	resp at T _{mb} = 85 °C – resp at T _{mb} = 30 °C; f = 870 MHz	–	–50	–	V/W
FL	flatness straight line	peak to valley; f = 40 to 870 MHz	–	–	1	dB
SL	slope straight line	f = 40 to 870 MHz	0	–	2	dB
ΔSL	slope difference	slope at T _{mb} = 85 °C – slope at T _{mb} = 30 °C	–	–0.35	–	dB
S ₂₂	output return losses	f = 40 to 870 MHz	11	–	–	dB
	optical input return losses		40	–	–	dB
d ₂	second order distortion	f _m = 54 MHz; notes 1 and 3	–	–	–73	dB
		f _m = 446.5 MHz; notes 1 and 4	–	–	–68	dB
		f _m = 548.5 MHz; notes 1 and 5	–	–	–67	dB
		f _m = 746.5 MHz; notes 1 and 6	–	–	–63	dB
		f _m = 854.5 MHz; notes 1 and 7	–	–	–63	dB
Δd ₂	second order distortion difference	d ₂ at T _{mb} = 85 °C – d ₂ at T _{mb} = 30 °C	–	2.5	–	dB
		d ₂ at T _{mb} = –20 °C – d ₂ at T _{mb} = 30 °C	–	–1.5	–	dB

870 MHz optical receiver

BGO847

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
d ₃	third order distortion	f _m = 55.25 MHz; notes 2 and 8	–	–	–80	dB
		f _m = 445.25 MHz; notes 2 and 9	–	–	–75	dB
		f _m = 547.25 MHz; notes 2 and 10	–	–	–75	dB
		f _m = 745.25 MHz; notes 2 and 11	–	–	–75	dB
		f _m = 853.25 MHz; notes 2 and 12	–	–	–73	dB
Δd ₃	third order distortion difference	d ₃ at T _{mb} = 85 °C – d ₃ at T _{mb} = 30 °C	–	1	–	dB
		d ₃ at T _{mb} = –20 °C – d ₃ at T _{mb} = 30 °C	–	–1	–	dB
F	equivalent input noise	f = 40 to 750 MHz	–	–	7	pA/√Hz
		f = 750 to 870 MHz	–	–	8	pA/√Hz
S _λ	spectral sensitivity	λ = 1310 ±20 nm	0.85	–	–	A/W
		λ = 1550 ±20 nm	0.9	–	–	A/W
λ	optical wavelength		1290	–	1600	nm
L	length of optical fibre	fibre; SM type; 9/125 μm	1	–	–	m
I _{tot}	total current consumption (DC)	T _{mb} = –20 °C to +85 °C	175	–	205	mA
I _{bias}	diode bias current at pin 4 (DC)		–	–	25	mA

Notes

- Two laser test; each laser with 40% modulation index; P_{opt} = 1 mW (total).
- Three laser test; each laser with 60% modulation index; P_{opt} = 1 mW (total).
- f_m = 54 MHz; f_p = 187.25 MHz; f_q = 133.25 MHz.
- f_m = 446.5 MHz; f_p = 97.25 MHz; f_q = 349.25 MHz.
- f_m = 548.5 MHz; f_p = 109.25 MHz; f_q = 439.25 MHz.
- f_m = 746.5 MHz; f_p = 133.25 MHz; f_q = 613.25 MHz.
- f_m = 854.5 MHz; f_p = 133.25 MHz; f_q = 721.25 MHz.
- f_m = 55.25 MHz; f_p = 109.25 MHz; f_q = 133.25 MHz f_r = 187.25 MHz.
- f_m = 445.25 MHz; f_p = 193.25 MHz; f_q = 349.25 MHz f_r = 97.25 MHz.
- f_m = 547.25 MHz; f_p = 217.25 MHz; f_q = 439.25 MHz f_r = 109.25 MHz.
- f_m = 745.25 MHz; f_p = 133.25 MHz; f_q = 265.25 MHz f_r = 613.25 MHz.
- f_m = 853.25 MHz; f_p = 133.25 MHz; f_q = 265.25 MHz f_r = 721.25 MHz.

870 MHz optical receiver

BGO847

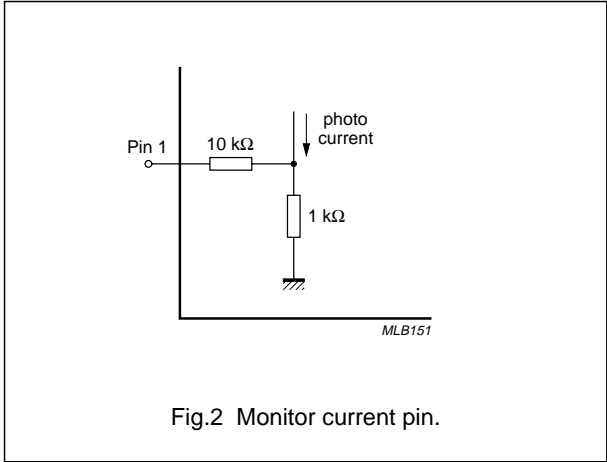


Fig.2 Monitor current pin.

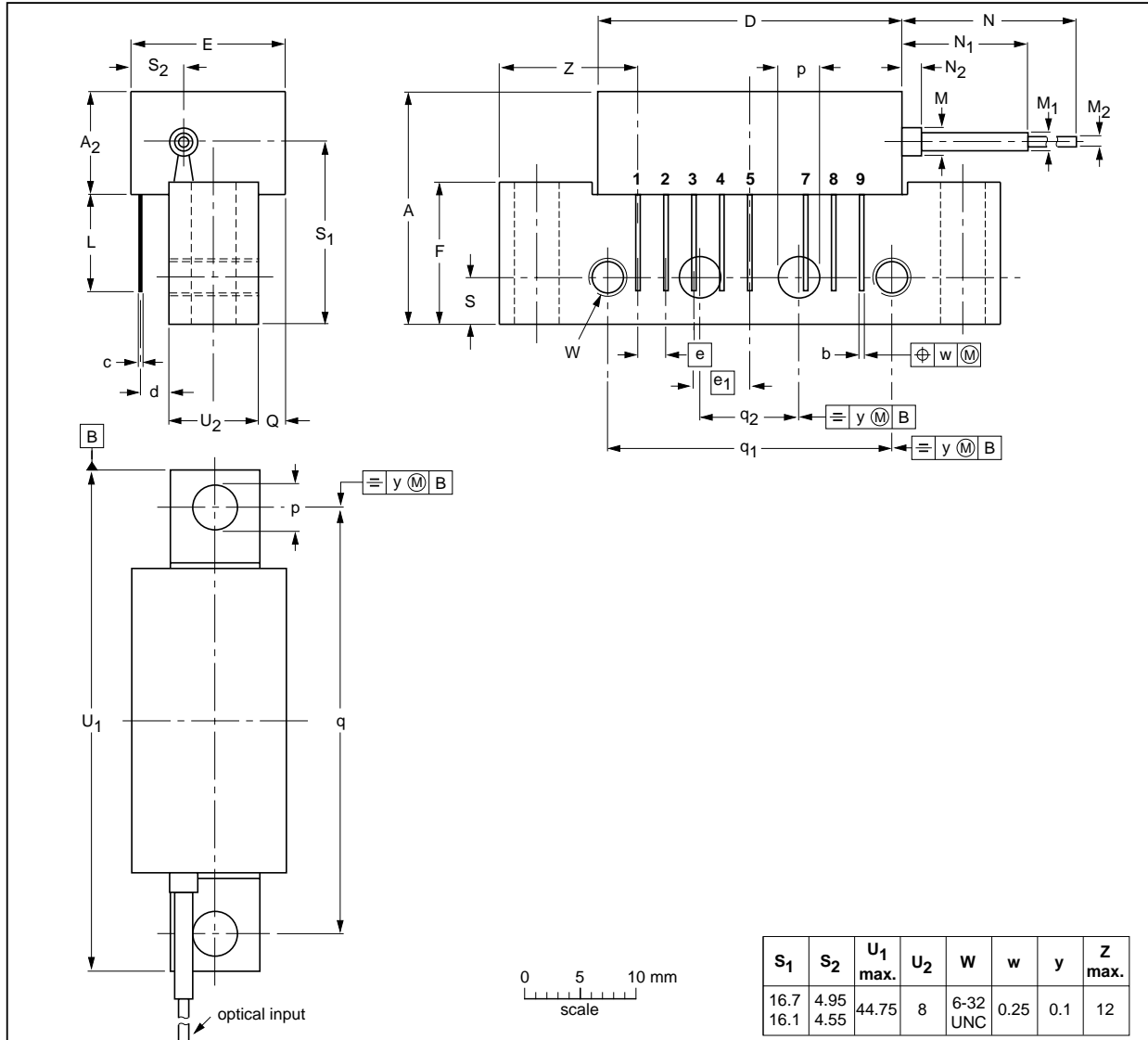
870 MHz optical receiver

BGO847

PACKAGE OUTLINE

Rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes; optical input; 8 gold-plated in-line leads

SOT115T



S ₁	S ₂	U ₁ max.	U ₂	W	w	y	Z max.
16.7	4.95	44.75	8	6-32 UNC	0.25	0.1	12
16.1	4.55						

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.	M	M ₁	M ₂	N min.	N ₁ max.	N ₂ max.	p	Q max.	q	q ₁	q ₂	S
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	2.5	1.6	0.9	1000	10.7	5	4.15 3.85	2.4	38.1	25.4	10.2	4.2

OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT115T					99-04-13 01-08-10

870 MHz optical receiver

BGO847

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS ⁽¹⁾	PRODUCT STATUS ⁽²⁾⁽³⁾	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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