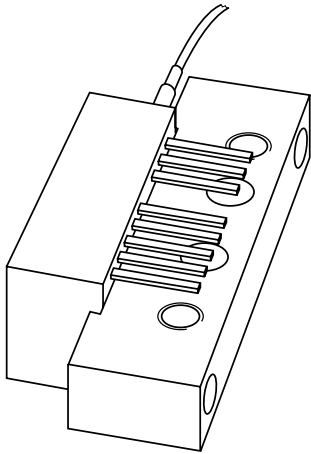


# DATA SHEET



## **BGY847BO** Optical receiver module

Product specification  
Supersedes data of 1998 Jan 30  
File under Discrete Semiconductors, SC16

1998 Mar 13

# Optical receiver module

# BGY847BO

### FEATURES

- Excellent linearity
- Extreme low noise
- Excellent flatness
- Standard CATV outline
- Rugged construction
- Gold metallization ensures excellent reliability.

### APPLICATIONS

- CATV systems operating in the 40 to 860 MHz frequency range.

### DESCRIPTION

Hybrid high dynamic range optical receiver module in a SOT115T package. Two of the module pins are for connection to 24 V (DC). One for amplifier supply voltage and the other for the pin diode bias.

The module contains a monomode optical input suitable for wavelengths from 1290 to 1600 nm, a terminal to monitor the pin diode current and an electrical output with an impedance of 75 Ω.

### PINNING - SOT115T

PIN	DESCRIPTION
1	monitor current
2	common
3	common
4	+V <sub>B</sub> of the pin diode
5	+V <sub>B</sub> of the amplifier
7	common
8	common
9	output

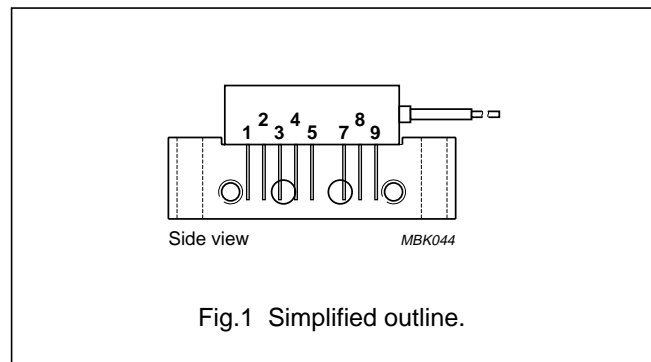


Fig.1 Simplified outline.

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		40	860	MHz
S <sub>22</sub>	output return losses	f = 40 to 860 MHz	11	–	dB
	optical input return losses		40	–	dB
d <sub>2</sub>	second order distortion	f = 324.25 MHz	–	–70	dBc
F	equivalent noise input	f = 40 MHz	–	7	pA/√Hz
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 24 V	175	205	mA

### HANDLING

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

### 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.

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**LIMITING VALUES**

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		40	860	MHz
T <sub>stg</sub>	storage temperature		-40	+85	°C
T <sub>mb</sub>	operating mounting base temperature		-20	+85	°C
P <sub>in</sub>	optical input power	continuous	-	5	mW
ESD	ESD sensitivity	human body model; R = 1.5 kΩ; C = 100 pF	500	-	V

**CHARACTERISTICS**

**Table 1** Bandwidth 40 to 860 MHz; V<sub>B</sub> = 24 V; T<sub>mb</sub> = 30 °C; Z<sub>L</sub> = 75 Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
S	responsivity	λ = 1300 nm	800	-	V/W
FL	flatness of frequency response		-	±0.5	dB
S <sub>22</sub>	output return losses	f = 40 to 860 MHz	11	-	dB
	optical input return losses		40	-	dB
d <sub>2</sub>	second order distortion	note 1	-	-70	dB
d <sub>3</sub>	third order distortion	note 2	-	-80	dB
F	equivalent noise input	f = 40 MHz	-	7	pA/√Hz
s <sub>λ</sub>	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 <sub>tot</sub>	total current consumption (DC)		175	205	mA
I <sub>pin 4</sub>	pin diode bias current (DC)		-	25	mA

**Notes**

- Two laser test; each laser with 40% modulation index;  
 f<sub>p</sub> = 135 MHz; P<sub>p</sub> = 0.5 mW;  
 f<sub>q</sub> = 189.25 MHz; P<sub>q</sub> = 0.5 mW;  
 measured at f<sub>p</sub> + f<sub>q</sub> = 324.25 MHz.
- Three laser test; each laser with 40% modulation index;  
 f<sub>p</sub> = 326.25 MHz; P<sub>p</sub> = 0.33 mW;  
 f<sub>q</sub> = 333.25 MHz; P<sub>q</sub> = 0.33 mW;  
 f<sub>r</sub> = 335.25 MHz; P<sub>r</sub> = 0.33 mW;  
 measured at f<sub>p</sub> + f<sub>q</sub> - f<sub>r</sub> = 324.25 MHz.

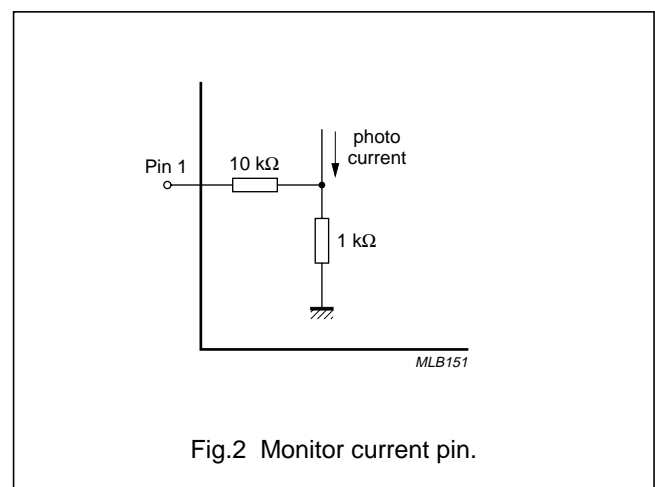


Fig.2 Monitor current pin.

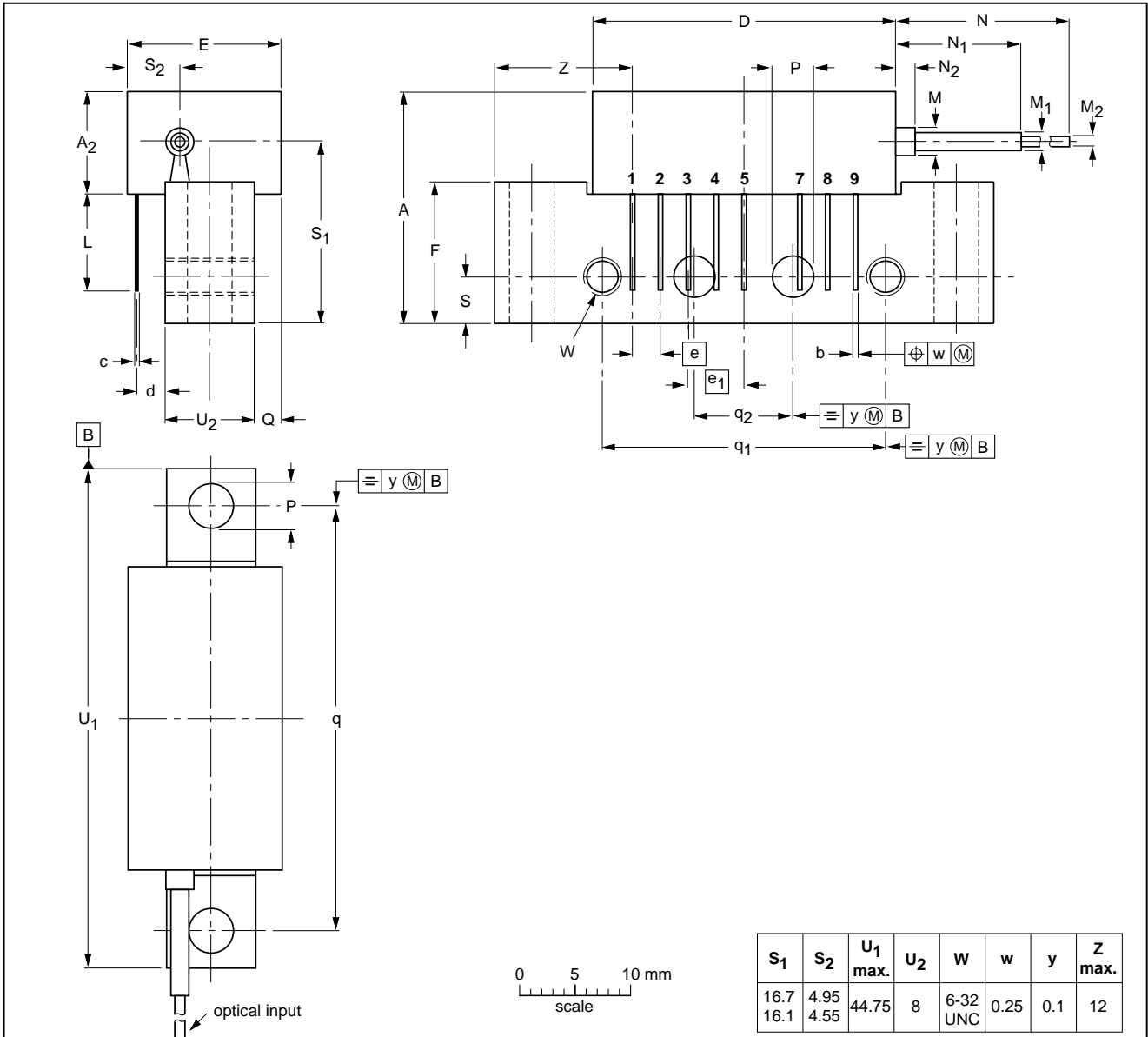
Optical receiver module

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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; optical input; 8 gold-plated in-line leads

SOT115T



S <sub>1</sub>	S <sub>2</sub>	U <sub>1</sub> max.	U <sub>2</sub>	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 <sub>2</sub> max.	b	c	D max.	d max.	E max.	e	e <sub>1</sub>	F	L min.	M	M <sub>1</sub>	M <sub>2</sub>	N min.	N <sub>1</sub>	N <sub>2</sub>	∅ P	Q max.	q	q <sub>1</sub>	q <sub>2</sub>	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 8.7	5 1	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						98-03-06

## Optical receiver module

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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.	

**LIFE SUPPORT APPLICATIONS**

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**NOTES**

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**NOTES**

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Printed in The Netherlands

125106/00/03/pp8

Date of release: 1998 Mar 13

Document order number: 9397 750 03367

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