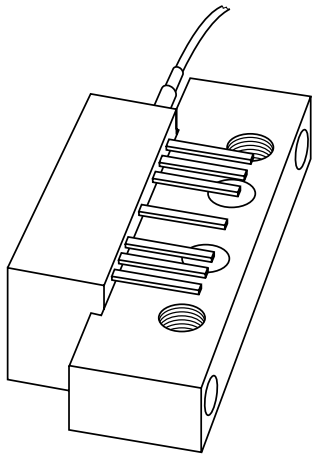
DATA SHEET



BGO387
300 MHz Optical receiver

Product specification
Supersedes data of 2002 Jun 27

2002 Dec 03

Philips
Semiconductors

PHILIPS

300 MHz Optical receiver BGO387

FEATURES

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

APPLICATIONS

- Reverse receiver amplifiers in two-way CATV systems operating in the 5 to 300 MHz frequency range.

DESCRIPTION

High dynamic range optical receiver amplifier module in a standard SOT115U package, operating at a voltage supply of 24 V (DC). 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 a characteristic impedance of 75 Ω.

PINNING - SOT115U

PIN	DESCRIPTION
1	monitor current
2, 3	common
5	$+V_B$
7, 8	common
9	output

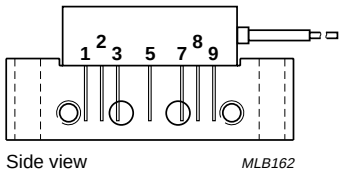


Fig.1 Simplified outline.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		5	300	MHz
s_{22}	output return losses	f = 5 to 300 MHz	16	–	dB
	optical input return losses		45	–	dB
d_2	second order distortion		–	–70	dB
F	equivalent noise input	f = 10 to 300 MHz	–	7.5	pA/√Hz
I_{tot}	total current consumption (DC)	V_B = 24 V	160	190	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.

LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		5	300	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 5 to 300 MHz; V_B = 24 V; T_{mb} = 30 °C; Z_L = 75 Ω

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
S	responsivity	λ = 1300 nm	800	–	V/W
$V_{pin\ 1}$	pin 1 monitor voltage	λ = 1300 nm	0.75	1	V/mW
FL	flatness of frequency response		–	±0.3	dB
SL	slope cable equivalent	f = 5 to 300 MHz	0	2	dB
s_{22}	output return losses	f = 5 to 300 MHz	16	–	dB
	optical input return losses		45	–	dB
d_2	second order distortion	note 1	–	–70	dB
d_3	third order distortion	note 2	–	–80	dB
F	equivalent noise input	f = 10 to 300 MHz	–	7.5	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)	note 3	160	190	mA

Notes

1. Two laser test; each laser with 25% modulation index; f_p = 20.25 MHz; P_p = 0.5 mW; f_q = 34 MHz; P_q = 0.5 mW; measured at $f_p + f_q$ = 54.25 MHz.
2. Three laser test; each laser with 40% modulation index; f_p = 125.25 MHz; P_p = 0.33 mW; f_q = 109.25 MHz; P_q = 0.33 mW; f_r = 134.25 MHz; P_r = 0.33 mW; measured at $f_p + f_q - f_r$ = 100.25 MHz.
3. The module normally operates at V_B = 24 V, but is able to withstand supply transients up to 30 V.

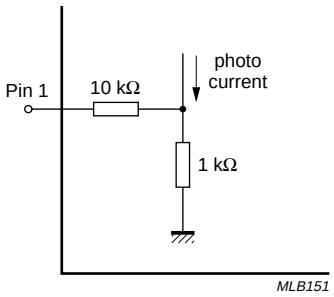
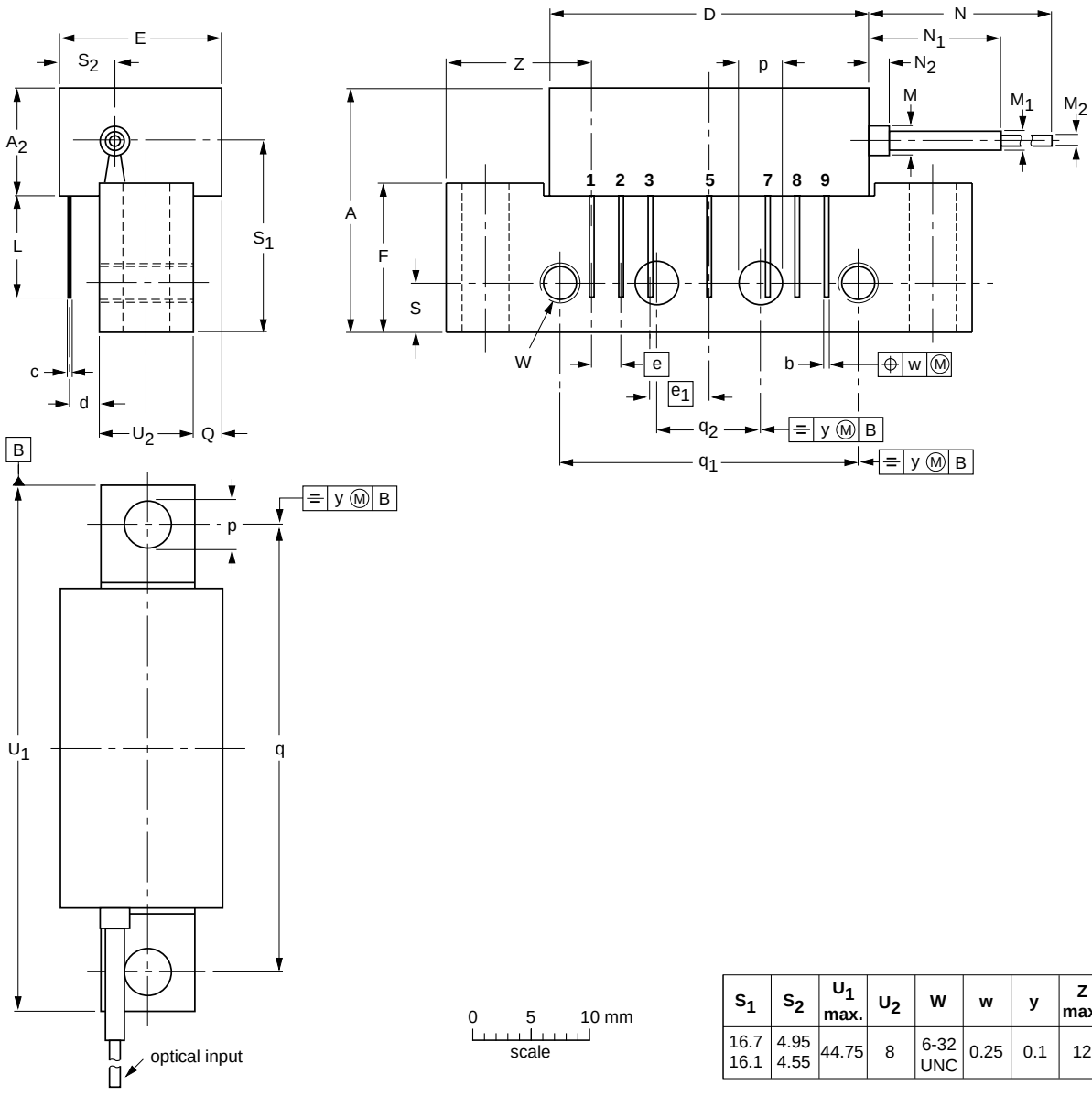


Fig.2 Monitor current pin.

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; 7 gold-plated in-line leads **SOT115U**



S_1	S_2	U_1 max.	U_2	W	w	y	Z max.
16.7 16.1	4.95 4.55	44.75	8	6-32 UNC	0.25	0.1	12

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			
SOT115U						~~99-04-13~~ 01-08-10

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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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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