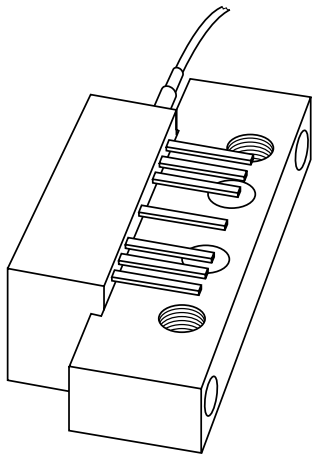
DATA SHEET



BGE67BO; BGE67BO/SC0
300 MHz, optical receiver

Product specification
Supersedes data of 2000 Oct 31

2001 Oct 4

Philips
Semiconductors

PHILIPS

300 MHz, optical receiver BGE67BO; BGE67BO/SC0

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 in the 5 to 300 MHz frequency range.

DESCRIPTION

High dynamic range optical receiver amplifier modules in a standard SOT115 package where the non-jacketed fibre has either no connector (BGE67BO) or has an SC/APC connector (BGE67BO/SC0). The operating supply voltage is 24 V (DC).

The modules contain 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

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

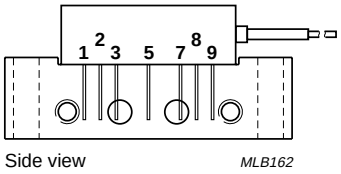


Fig.1 Simplified outline SOT115U (BGE67BO).

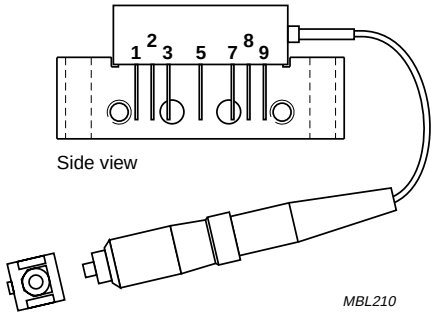


Fig.2 Simplified outline SOT115AA (BGE67BO/SC0).

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	15	–	dB
	optical input return losses		45	–	dB
d_2	second order distortion		–	–70	dBc
F	equivalent noise input	f = 10 to 300 MHz	–	7	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.

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			
	BGE67BO		800	–	V/W
	BGE67BO/SC0		750	–	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
s_{22}	output return losses	f = 5 to 300 MHz	15	–	dB
	optical input return losses		45	–	dB
OBR_C	connector optical return losses	BGE67BO/SC0	60	–	dB
IL_C	connector optical insertion losses	BGE67BO/SC0	–	0.5	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	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			
	BGE67BO		1	–	m
	BGE67BO/SC0		746	861	mm
I_{tot}	total current consumption (DC)	note 3	160	190	mA

Notes

1. Two laser test; each laser with 40% 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.

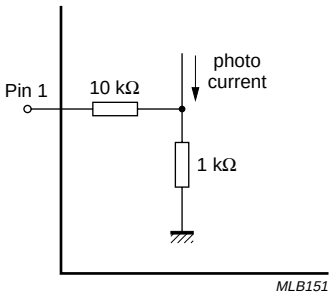
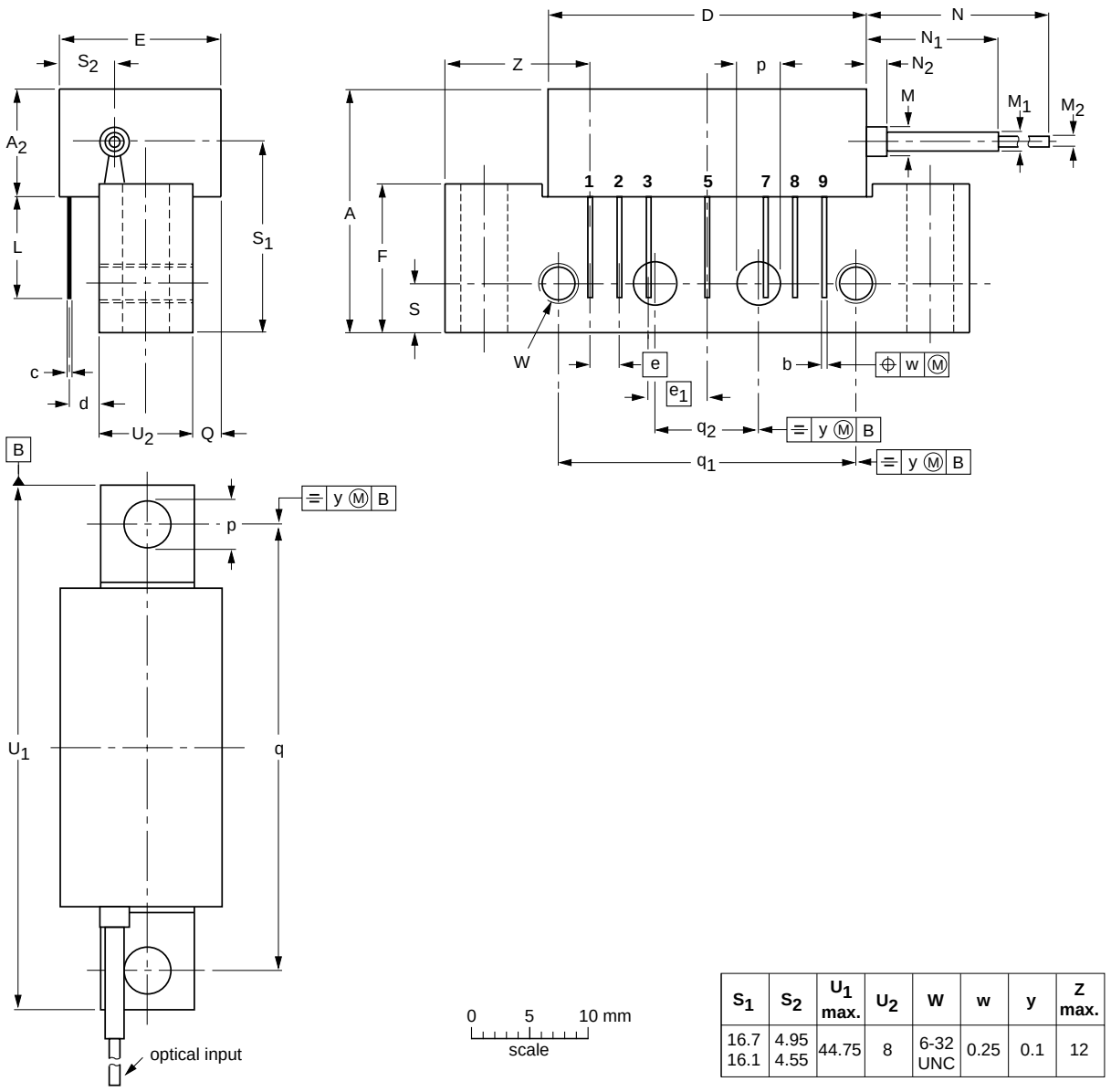


Fig.3 Monitor current pin.

PACKAGE OUTLINES

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**



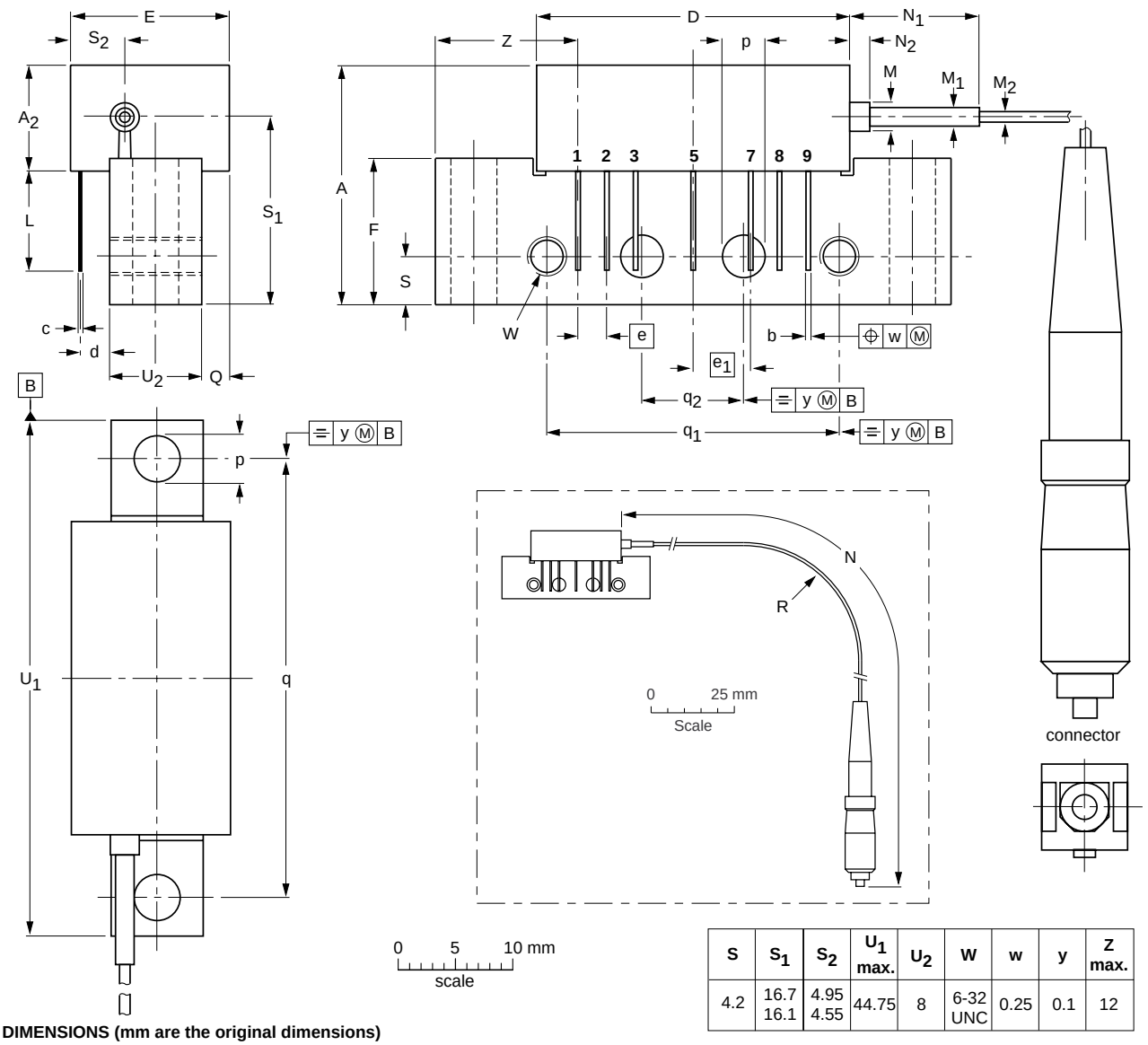
S_1	S_2	U_1 max.	U_2	W	w	y	Z max.
16.7 16.1	4.95 4.55	44.75	8	6-32 UNC	0.25	0.1	12

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

Rectangular single-ended package; aluminium flange;
2 vertical mounting holes; 2 x 6-32 UNC and 2 extra horizontal mounting holes;
optical input with connector; 7 gold-plated in-line leads **SOT115AA**



S	S_1	S_2	U_1 max.	U_2	W	w	y	Z max.
4.2	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	N_1	N_2	p	Q max.	q	q_1	q_2	R min.
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	861 746	10.7 8.7	5 1	4.15 3.85	2.4	38.1	25.4	10.2	35

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115AA						00-06-09

DATA SHEET STATUS

DATA SHEET STATUS[1]	PRODUCT STATUS[2]	DEFINITIONS
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.
Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
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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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Contact information

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