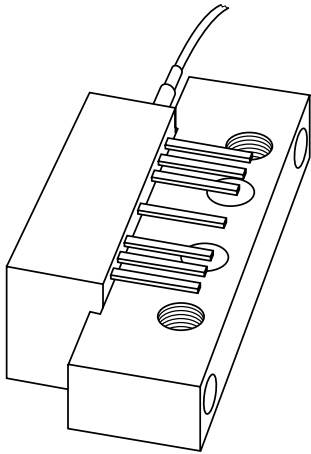


# DATA SHEET



## **BGE67BO; BGE67BO/SC0** 300 MHz, optical receiver

Product specification  
Supersedes data of 2000 Oct 31

2001 Oct 4

# 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 <sub>B</sub>
7	common
8	common
9	output

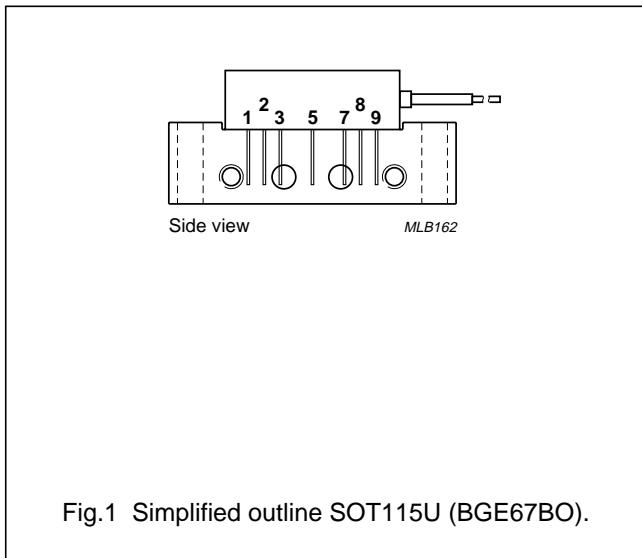


Fig.1 Simplified outline SOT115U (BGE67BO).

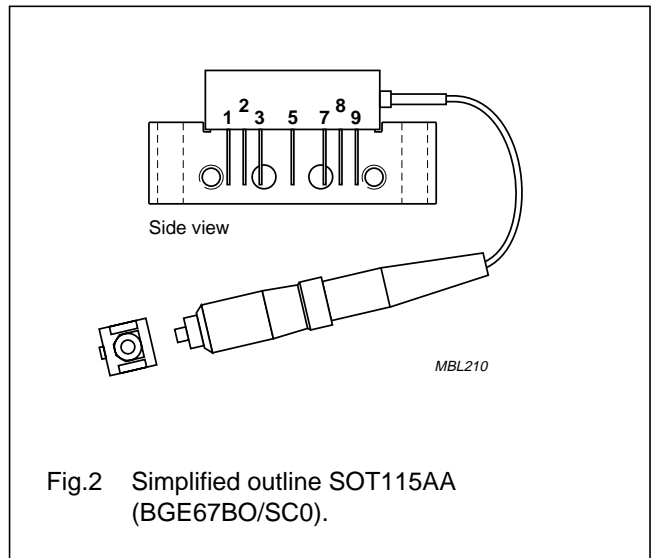


Fig.2 Simplified outline SOT115AA (BGE67BO/SC0).

**QUICK REFERENCE DATA**

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		5	300	MHz
S <sub>22</sub>	output return losses	f = 5 to 300 MHz	15	–	dB
	optical input return losses		45	–	dB
d <sub>2</sub>	second order distortion		–	–70	dBc
F	equivalent noise input	f = 10 to 300 MHz	–	7	pA/√Hz
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 24 V	160	190	mA

**HANDLING**

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

## 300 MHz, optical receiver

## BGE67BO; BGE67BO/SC0

**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 <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**Bandwidth 5 to 300 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	$\lambda = 1300 \text{ nm}$	800	-	V/W
	BGE67BO				
	BGE67BO/SC0		750	-	V/W
V <sub>pin 1</sub>	pin 1 monitor voltage	$\lambda = 1300 \text{ nm}$	0.75	1	V/mW
FL	flatness of frequency response		-	±0.3	dB
s <sub>22</sub>	output return losses	f = 5 to 300 MHz	15	-	dB
	optical input return losses		45	-	dB
OBR <sub>C</sub>	connector optical return losses	BGE67BO/SC0	60	-	dB
IL <sub>C</sub>	connector optical insertion losses	BGE67BO/SC0	-	0.5	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 = 10 to 300 MHz	-	7	pA/√Hz
s <sub>λ</sub>	spectral sensitivity	$\lambda = 1310 \pm 20 \text{ nm}$	0.85	-	A/W
		$\lambda = 1550 \pm 20 \text{ nm}$	0.9	-	A/W
λ	optical wavelength		1290	1600	nm
L	length of optical fibre	fibre; SM type; 9/125 μm	1	-	m
	BGE67BO				
	BGE67BO/SC0		746	861	mm
I <sub>tot</sub>	total current consumption (DC)	note 3	160	190	mA

**Notes**

- Two laser test; each laser with 40% modulation index;  
f<sub>p</sub> = 20.25 MHz; P<sub>p</sub> = 0.5 mW; f<sub>q</sub> = 34 MHz; P<sub>q</sub> = 0.5 mW; measured at f<sub>p</sub> + f<sub>q</sub> = 54.25 MHz.
- Three laser test; each laser with 40% modulation index; f<sub>p</sub> = 125.25 MHz; P<sub>p</sub> = 0.33 mW; f<sub>q</sub> = 109.25 MHz;  
P<sub>q</sub> = 0.33 mW; f<sub>r</sub> = 134.25 MHz; P<sub>r</sub> = 0.33 mW; measured at f<sub>p</sub> + f<sub>q</sub> - f<sub>r</sub> = 100.25 MHz.
- The module normally operates at V<sub>B</sub> = 24 V, but is able to withstand supply transients up to 30 V.

300 MHz, optical receiver

BGE67BO; BGE67BO/SC0

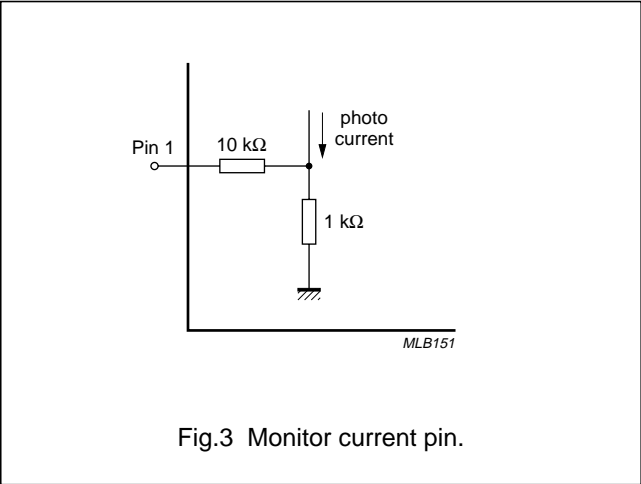


Fig.3 Monitor current pin.

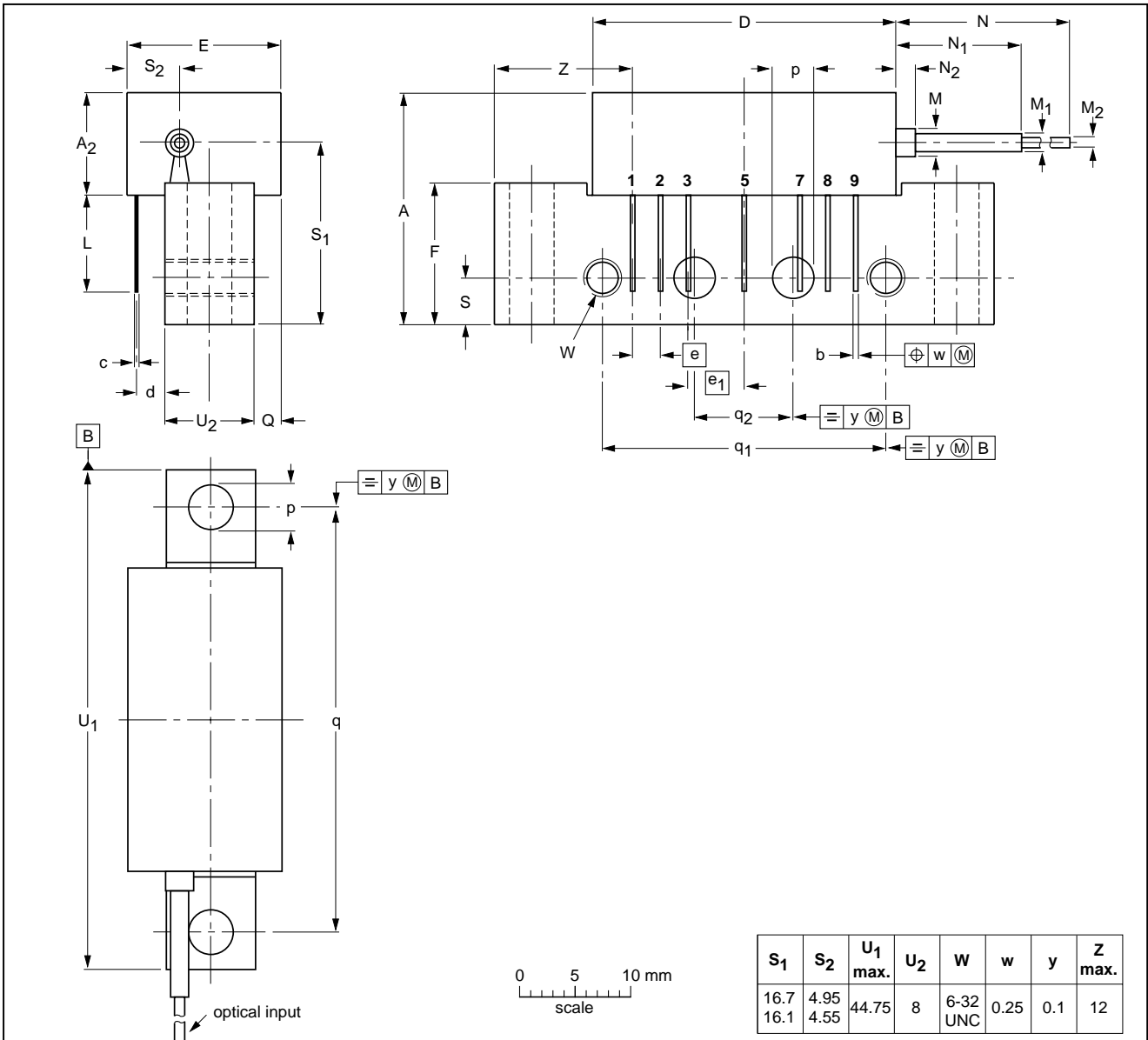
300 MHz, optical receiver

BGE67BO; BGE67BO/SC0

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 <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> max.	N <sub>2</sub> max.	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	5	4.15 3.85	2.4	38.1	25.4	10.2	4.2

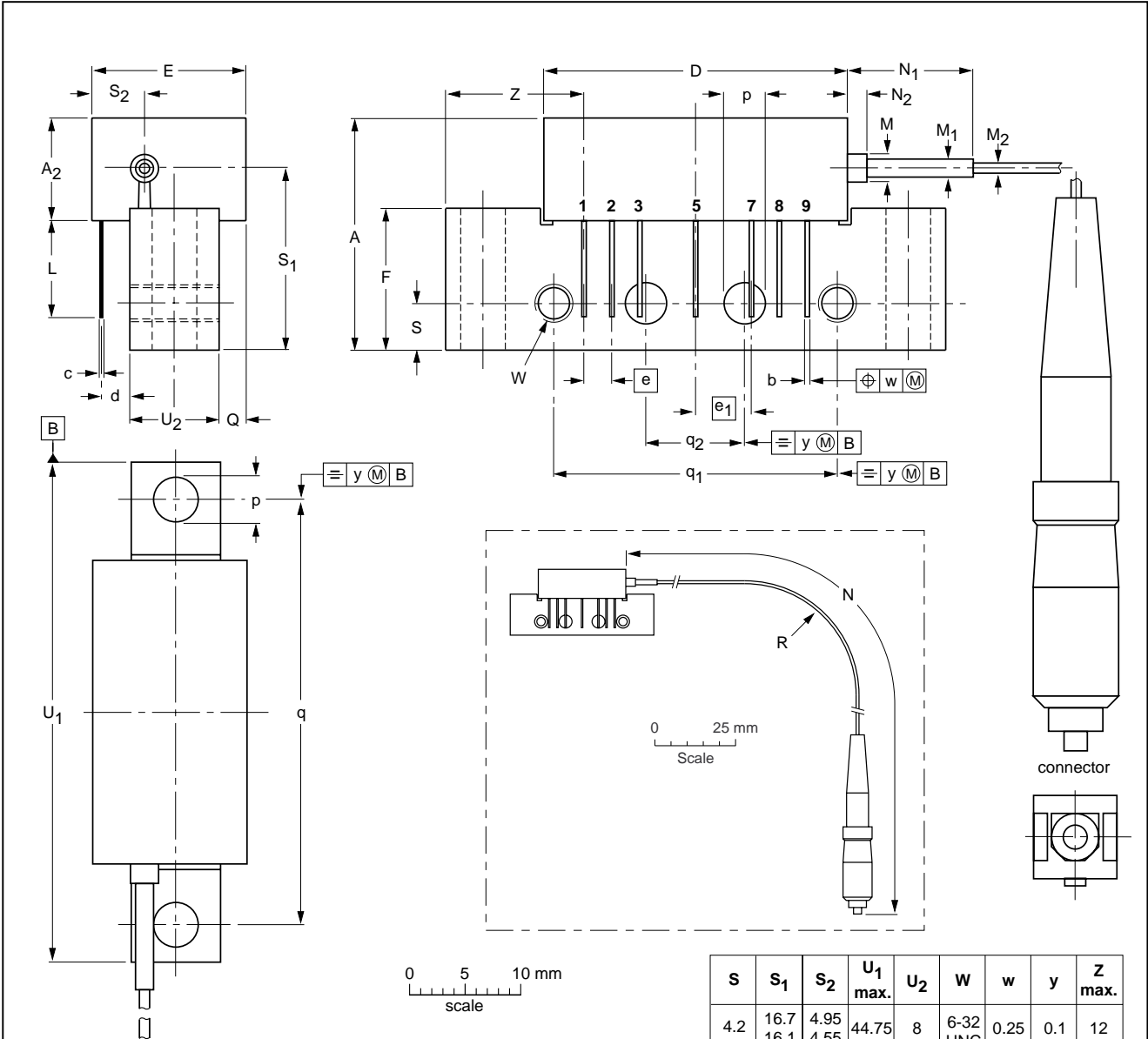
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115U						99-04-13 01-08-10

300 MHz, optical receiver

BGE67BO; BGE67BO/SC0

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



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	N <sub>1</sub>	N <sub>2</sub>	p	Q max.	q	q <sub>1</sub>	q <sub>2</sub>	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

S	S <sub>1</sub>	S <sub>2</sub>	U <sub>1</sub> max.	U <sub>2</sub>	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

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

## 300 MHz, optical receiver

## BGE67BO; BGE67BO/SC0

## DATA SHEET STATUS

DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITIONS
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## **Contact information**

For additional information please visit <http://www.semiconductors.philips.com>. Fax: +31 40 27 24825

For sales offices addresses send e-mail to: [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com).

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