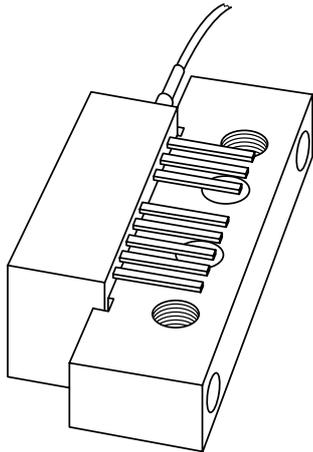


DATA SHEET



BGO847; BGO847/SC0 870 MHz optical receivers

Product specification
Supersedes data of 2002 May 17

2002 Dec 10

870 MHz optical receivers

BGO847; BGO847/SC0

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

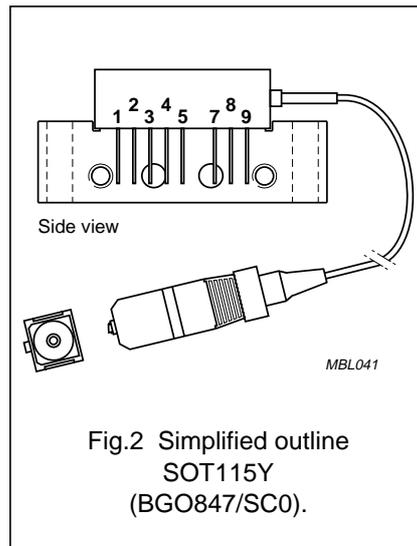
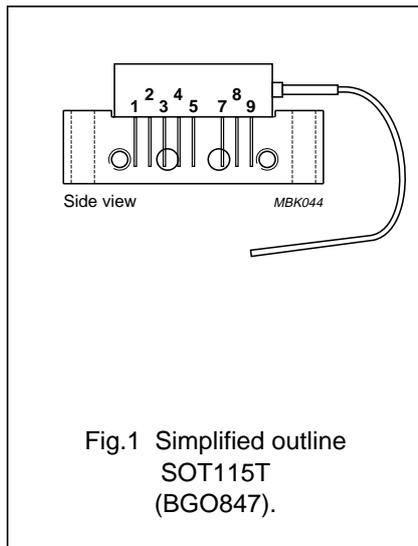
High dynamic range optical receiver amplifier modules in a standard SOT115 package where the non-jacketed fibre has either no connector or an SC/APC connector.

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

The modules have 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/√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.

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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		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 BGO847 BGO847/SC0	λ = 1300 nm	800	-	-	V/W
		λ = 1300 nm	750	-	-	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
S ₂₂	output return losses	f = 40 to 870 MHz	11	-	-	dB
	optical input return losses		45	-	-	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
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

870 MHz optical receivers

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
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					
	BGO847 BGO847/SC0	fibre; SM type; 9/125 μm fibre; SM type; 9/125 μm	1 746	– –	– 861	m mm
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.

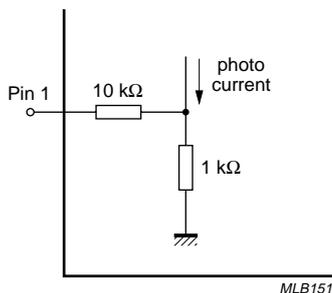


Fig.3 Monitor current pin.

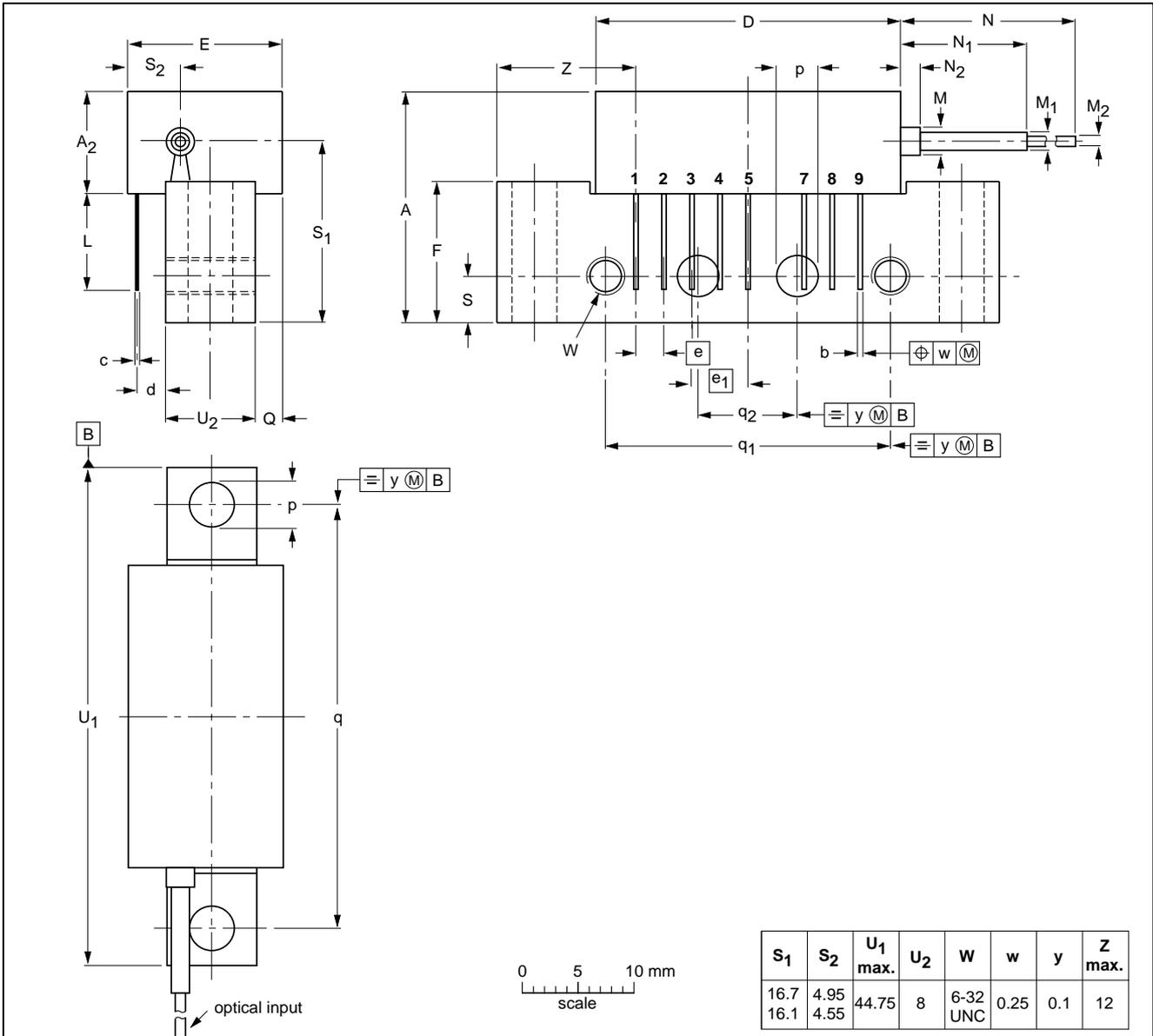
870 MHz optical receivers

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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; 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

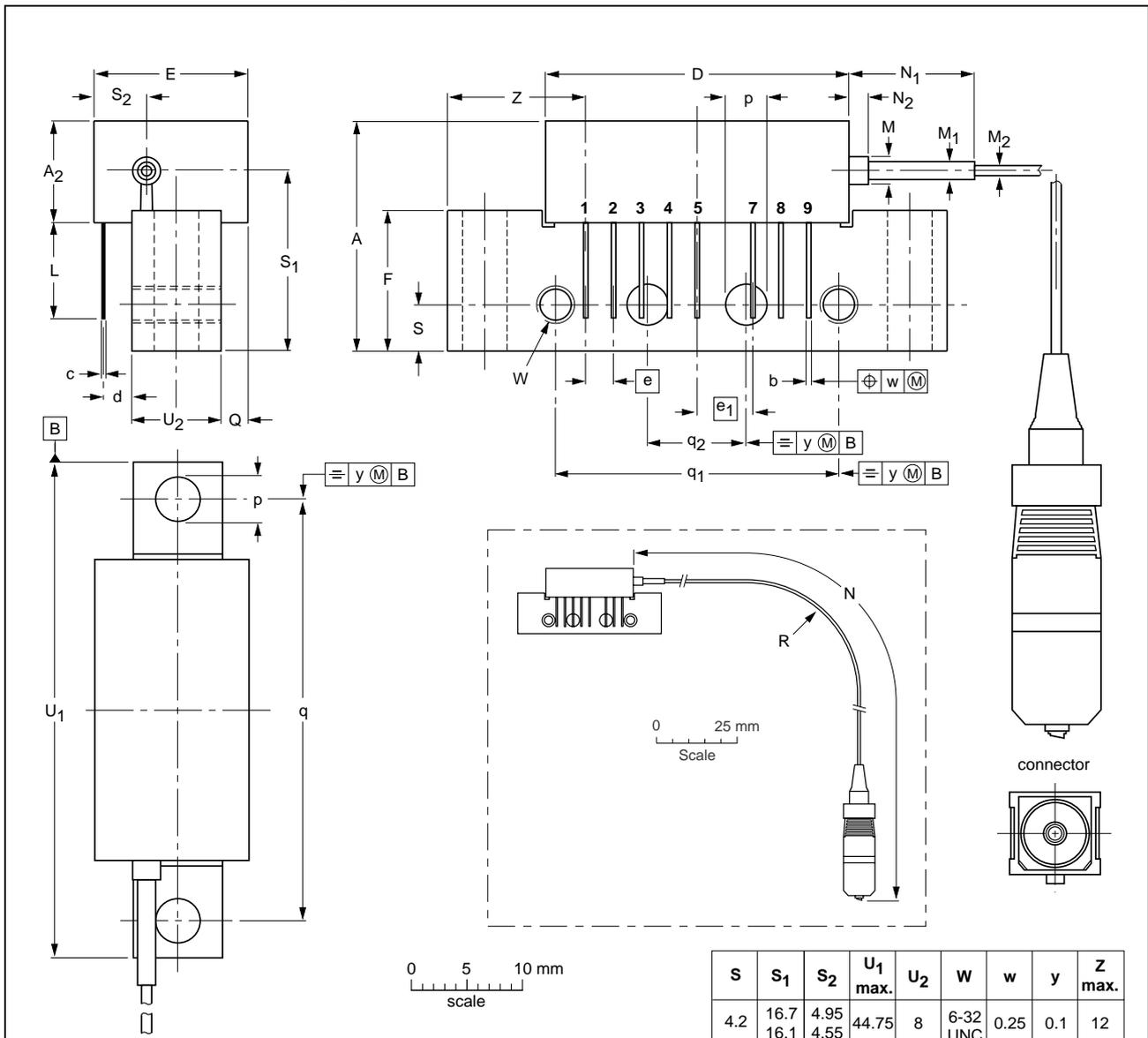
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115T						99-04-13 01-08-10

870 MHz optical receivers

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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; 8 gold-plated in-line leads

SOT115Y



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 max.	N ₂ max.	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	5	4.15 3.85	2.4	38.1	25.4	10.2	35

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT115Y						00-01-06 01-08-10

870 MHz optical receivers

BGO847; BGO847/SC0

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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