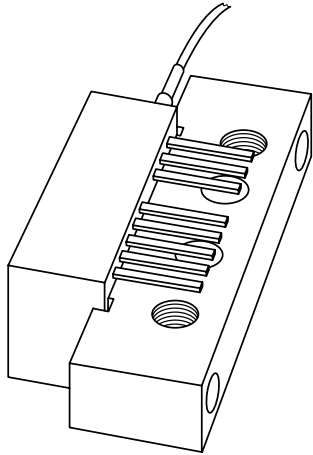


# DATA SHEET



**BGO747; BGO747/FC0;  
BGO747/SC0**  
750 MHz optical receivers

Product specification  
Supersedes data of 2002 Apr 18

2002 Dec 03

750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/SC0

FEATURES

- Excellent linearity
- Extremely low noise up to 750 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 750 MHz frequency range.

DESCRIPTION

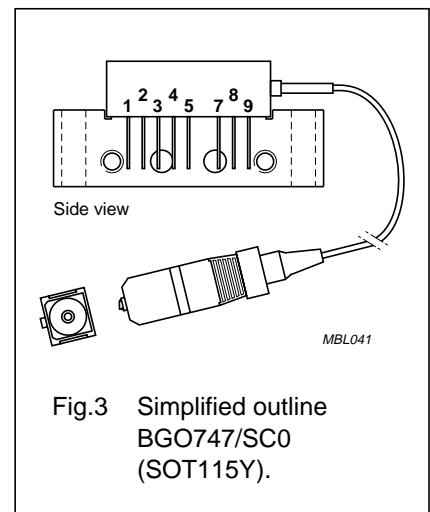
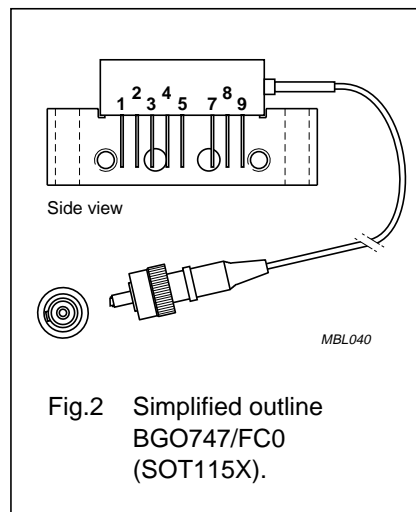
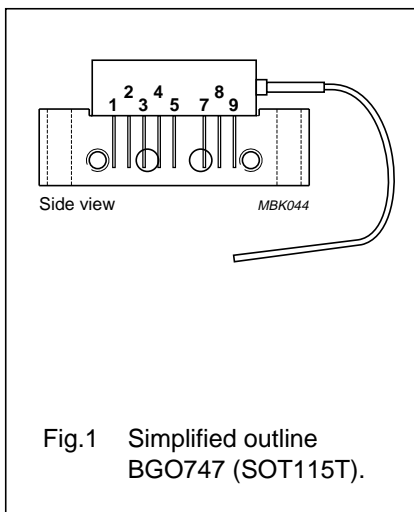
High dynamic range optical receiver amplifier modules in a standard SOT115 package where the non-jacketed fibre has either no connector or an FC/APC connector or an SC/APC connector.

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 <sub>B</sub> of the photo diode
5	+V <sub>B</sub> of the amplifier
7	common
8	common
9	output



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f	frequency range		40	750	MHz
S <sub>22</sub>	output return losses	f = 40 to 785 MHz	11	–	dB
	optical input return losses		45	–	dB
d <sub>2</sub>	second order distortion	f = 746.5 MHz	–	–63	dB
F	equivalent noise input	f = 40 to 750 MHz	–	7	pA/√Hz
I <sub>tot</sub>	total current consumption (DC)	V <sub>B</sub> = 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.

## 750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/SC0**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	750	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 40 to 750 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 BGO747 BGO747/FC0, BGO747/SC0	λ = 1300 nm	800	-	V/W
		λ = 1300 nm	750	-	V/W
FL	flatness straight line	peak to valley; f = 40 to 750 MHz	-	1	dB
SL	slope straight line	f = 40 to 750 MHz	0	2	dB
s <sub>22</sub>	output return losses	f = 40 to 785 MHz	11	-	dB
	optical input return losses		45	-	dB
d <sub>2</sub>	second order distortion	f <sub>m</sub> = 54 MHz; notes 1 and 3	-	-73	dB
		f <sub>m</sub> = 446.5 MHz; notes 1 and 4	-	-68	dB
		f <sub>m</sub> = 548.5 MHz; notes 1 and 5	-	-67	dB
		f <sub>m</sub> = 746.5 MHz; notes 1 and 6	-	-63	dB
d <sub>3</sub>	third order distortion	f <sub>m</sub> = 55.25 MHz; notes 2 and 7	-	-80	dB
		f <sub>m</sub> = 445.25 MHz; notes 2 and 8	-	-75	dB
		f <sub>m</sub> = 547.25 MHz; notes 2 and 9	-	-75	dB
		f <sub>m</sub> = 745.25 MHz; notes 2 and 10	-	-75	dB
F	equivalent noise input	f = 40 to 750 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 BGO747 BGO747/FC0, BGO747SC0	fibre; SM type; 9/125 μm	1	-	m
		fibre; SM type; 9/125 μm	746	861	mm
I <sub>tot</sub>	total current consumption (DC)		175	205	mA
I <sub>bias</sub>	diode bias current at pin 4 (DC)		-	25	mA

## 750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/SC0**Notes**

1. Two laser test; each laser with 25% modulation index;  $P_{\text{opt}} = 1 \text{ mW}$  (total).
2. Three laser test; each laser with 60% modulation index;  $P_{\text{opt}} = 1 \text{ mW}$  (total).
3.  $f_m = 54 \text{ MHz}$ ;  $f_p = 187.25 \text{ MHz}$ ;  $f_q = 133.25 \text{ MHz}$ .
4.  $f_m = 446.5 \text{ MHz}$ ;  $f_p = 97.25 \text{ MHz}$ ;  $f_q = 349.25 \text{ MHz}$ .
5.  $f_m = 548.5 \text{ MHz}$ ;  $f_p = 109.25 \text{ MHz}$ ;  $f_q = 439.25 \text{ MHz}$ .
6.  $f_m = 746.5 \text{ MHz}$ ;  $f_p = 133.25 \text{ MHz}$ ;  $f_q = 613.25 \text{ MHz}$ .
7.  $f_m = 55.25 \text{ MHz}$ ;  $f_p = 109.25 \text{ MHz}$ ;  $f_q = 133.25 \text{ MHz}$   $f_r = 187.25 \text{ MHz}$ .
8.  $f_m = 445.25 \text{ MHz}$ ;  $f_p = 193.25 \text{ MHz}$ ;  $f_q = 349.25 \text{ MHz}$   $f_r = 97.25 \text{ MHz}$ .
9.  $f_m = 547.25 \text{ MHz}$ ;  $f_p = 217.25 \text{ MHz}$ ;  $f_q = 439.25 \text{ MHz}$   $f_r = 109.25 \text{ MHz}$ .
10.  $f_m = 745.25 \text{ MHz}$ ;  $f_p = 133.25 \text{ MHz}$ ;  $f_q = 265.25 \text{ MHz}$   $f_r = 613.25 \text{ MHz}$ .

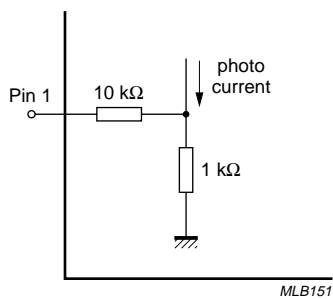


Fig.4 Monitor current pin.

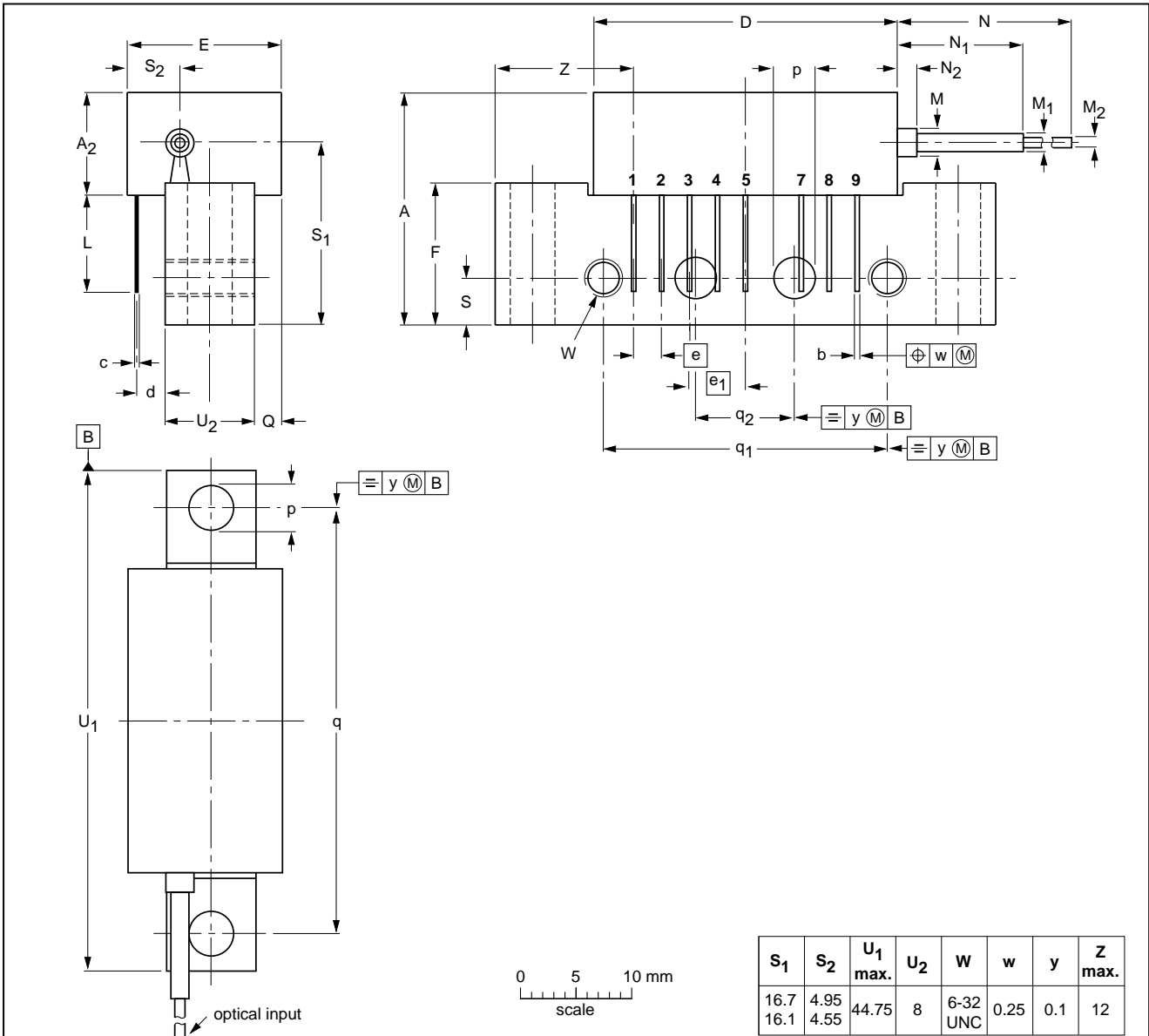
750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/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; 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> 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

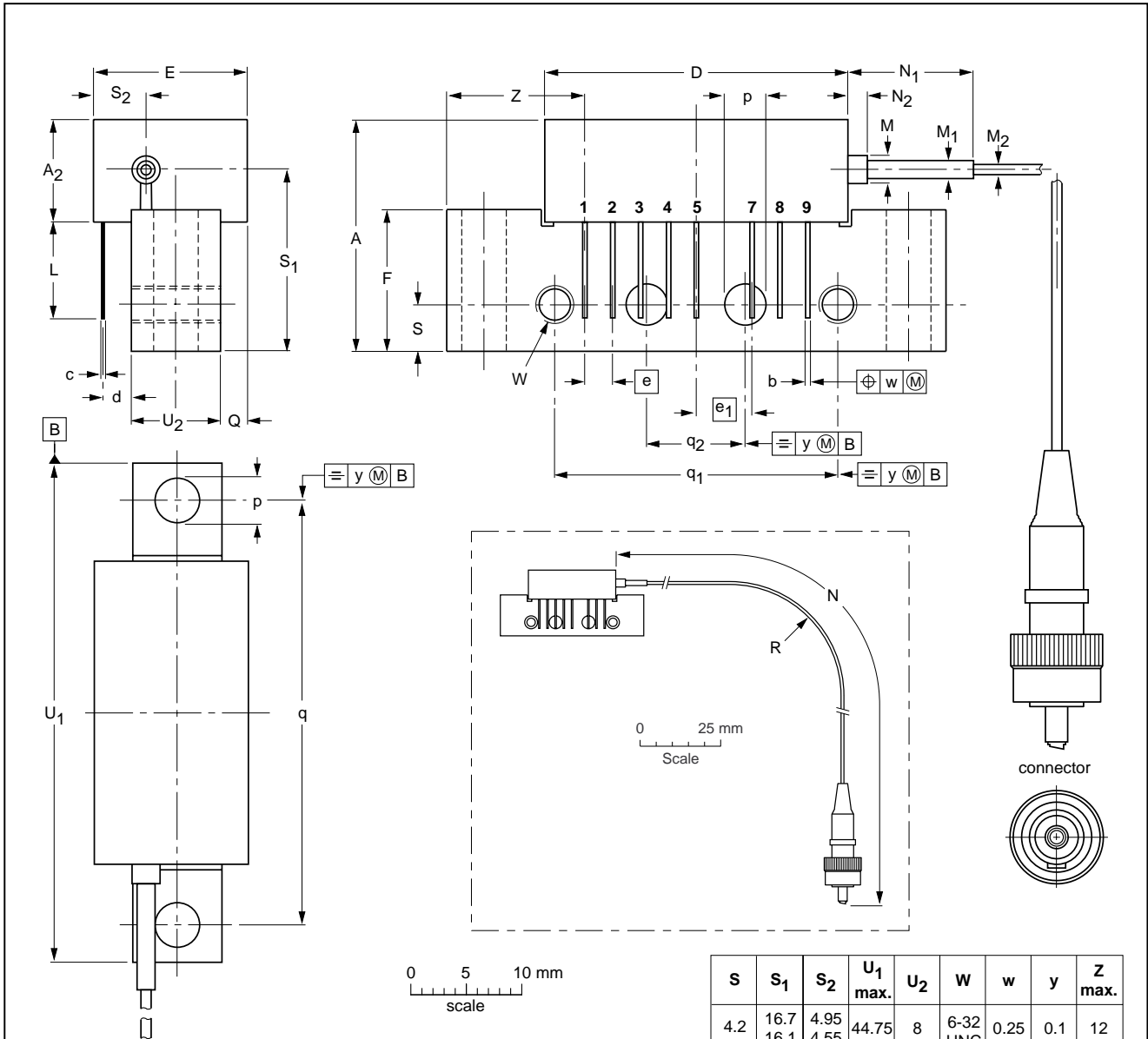
OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT115T					99-04-13 01-08-10

750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/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; 8 gold-plated in-line leads

SOT115X



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> max.	N <sub>2</sub> max.	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	5	4.15 3.85	2.4	38.1	25.4	10.2	35

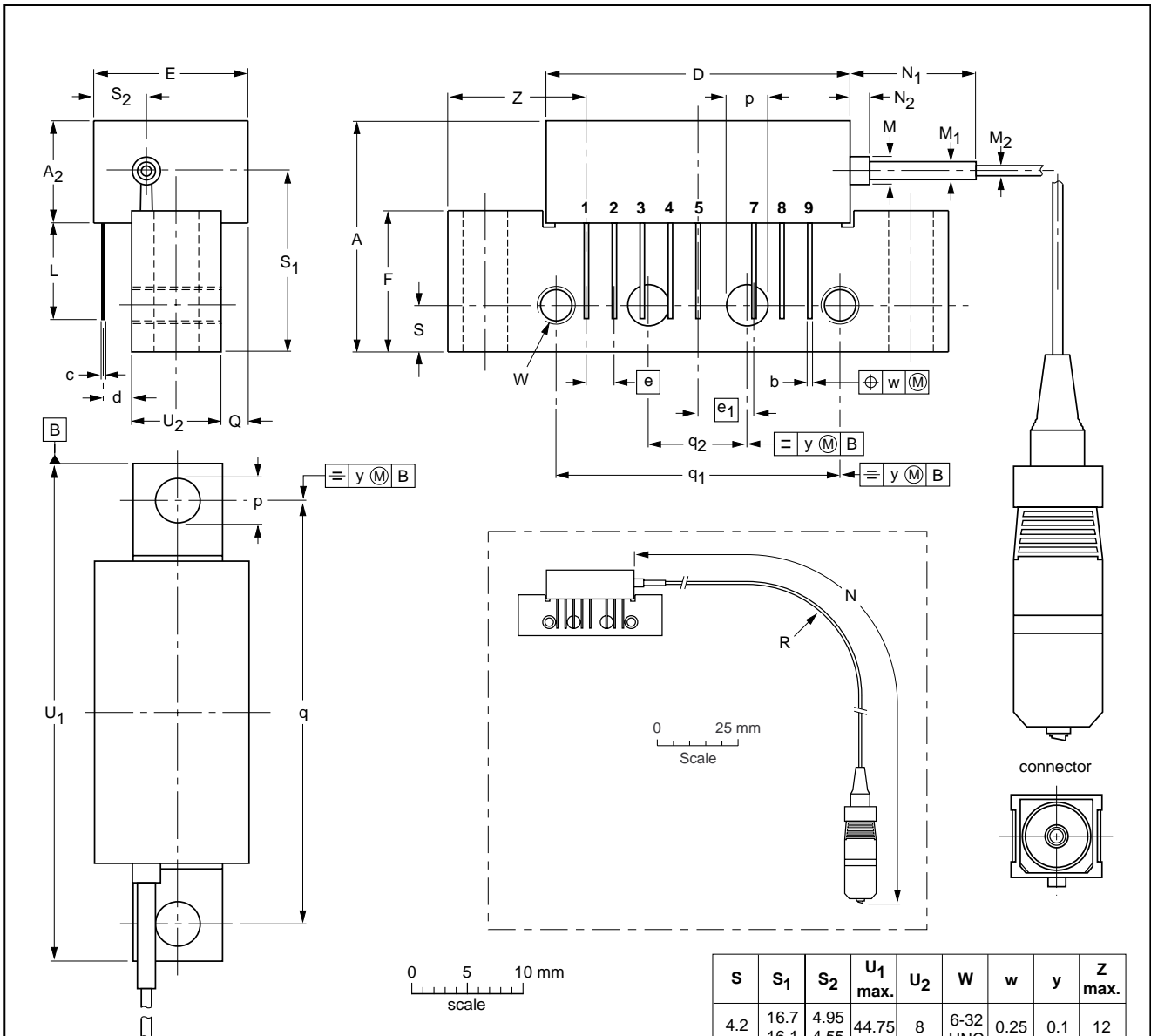
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	IEC	JEDEC	EIAJ		
SOT115X					00-01-06- 01-08-10

750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/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; 8 gold-plated in-line leads

SOT115Y



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

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> max.	N <sub>2</sub> max.	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	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

## 750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/SC0

## DATA SHEET STATUS

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750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/SC0

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**NOTES**

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750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/SC0

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**NOTES**

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750 MHz optical receivers

BGO747; BGO747/FC0;  
BGO747/SC0

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**NOTES**

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Printed in The Netherlands

613518/04/pp12

Date of release: 2002 Dec 03

Document order number: 9397 750 10521

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