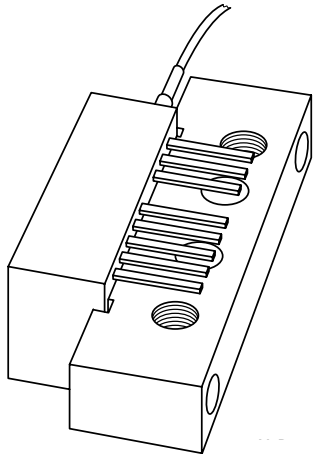


DATA SHEET



BGO827; BGO827/FC0; BGO827/SC0

870 MHz optical receivers

Product specification
Supersedes data of 2002 Dec 10

2004 Apr 07

870 MHz optical receivers

BGO827; BGO827/FC0; BGO827/SC0

FEATURES

- Excellent linearity
- Low noise
- Excellent flatness
- 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

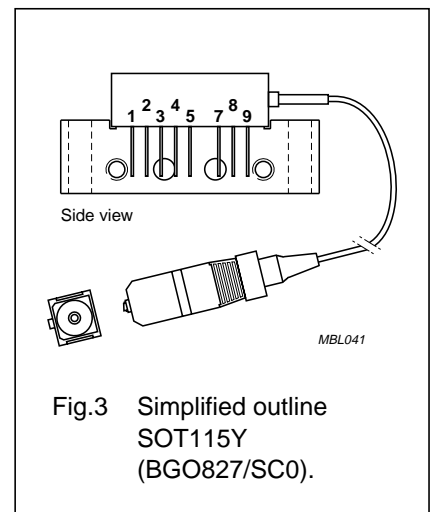
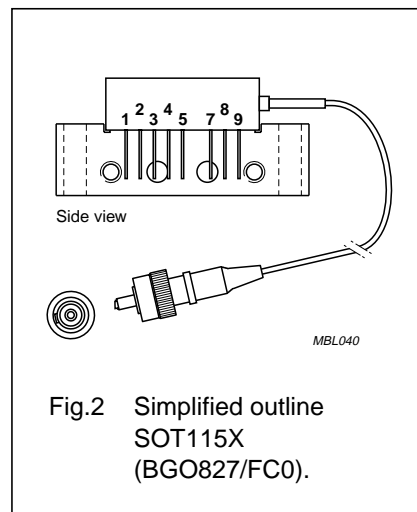
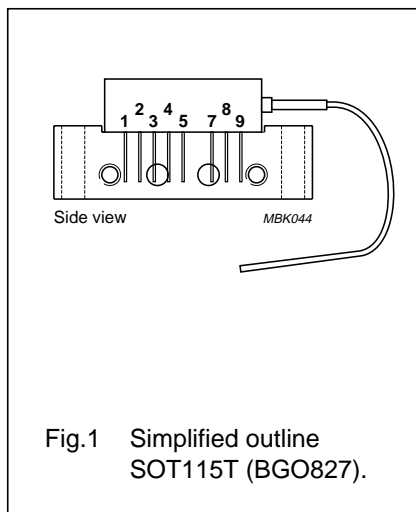
High dynamic range optical receiver amplifier modules in a standard SOT115 package where the non-jacketed fibre has either no connector or has an FC/APC or SC/APC connector.

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	–	–57	dB
F	equivalent noise input	f = 40 to 870 MHz	–	8.5	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.

870 MHz optical receivers

BGO827; BGO827/FC0;
BGO827/SC0

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BGO827	–	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
BGO827/FC0	–	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
BGO827/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

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	$\lambda = 1300 \text{ nm}$	800	–	–	V/W
	BGO827 BGO827/FC0, BGO827/SC0		750	–	–	V/W
ΔS	responsivity difference	resp at T _{mb} = 85 °C – resp at T _{mb} = 30 °C; f = 870 MHz	–	–50	–	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
ΔSL	slope difference	slope at T _{mb} = 85 °C – slope at T _{mb} = 30 °C	–	–0.35	–	dB
S ₂₂	output return losses	f = 40 to 870 MHz	11	–	–	dB
	optical input return losses		45	–	–	dB

870 MHz optical receivers

BGO827; BGO827/FC0;
BGO827/SC0

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
d ₂	second order distortion	f _m = 446.5 MHz; notes 1 and 3	–	–	–68	dB
		f _m = 746.5 MHz; notes 1 and 4	–	–	–63	dB
		f _m = 854.5 MHz; notes 1 and 5	–	–	–57	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 = 853.25 MHz; notes 2 and 6	–	–	–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
F	equivalent noise input	f = 40 to 450 MHz	–	–	7	pA/√Hz
		f = 450 to 750 MHz	–	–	8	pA/√Hz
		f = 750 to 870 MHz	–	–	8.5	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 BGO827 BGO827/FC0, BGO827/SC0	fibre; SM type; 9/125 μm	1	–	–	m
			746	–	861	mm
I _{tot}	total current consumption (DC)		175	–	205	mA
I _{bias}	diode bias current at pin 4 (DC)		–	–	25	mA

Notes

- Two laser test; each laser with a modulation index of 40%; P_{opt} = 1 mW (total).
- Three laser test; each laser with a modulation index of 60%; P_{opt} = 1 mW (total).
- f_m = 446.5 MHz; f_p = 97.25 MHz; f_q = 349.25 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 = 853.25 MHz; f_p = 133.25 MHz; f_q = 265.25 MHz; f_r = 721.25 MHz.

870 MHz optical receivers

BGO827; BGO827/FC0;
BGO827/SC0

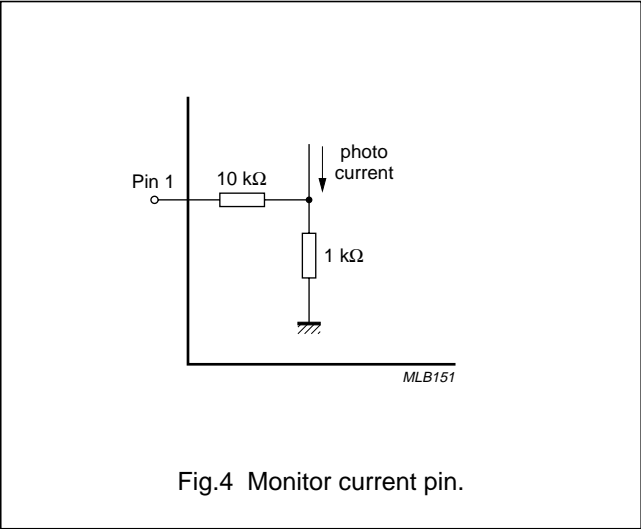


Fig.4 Monitor current pin.

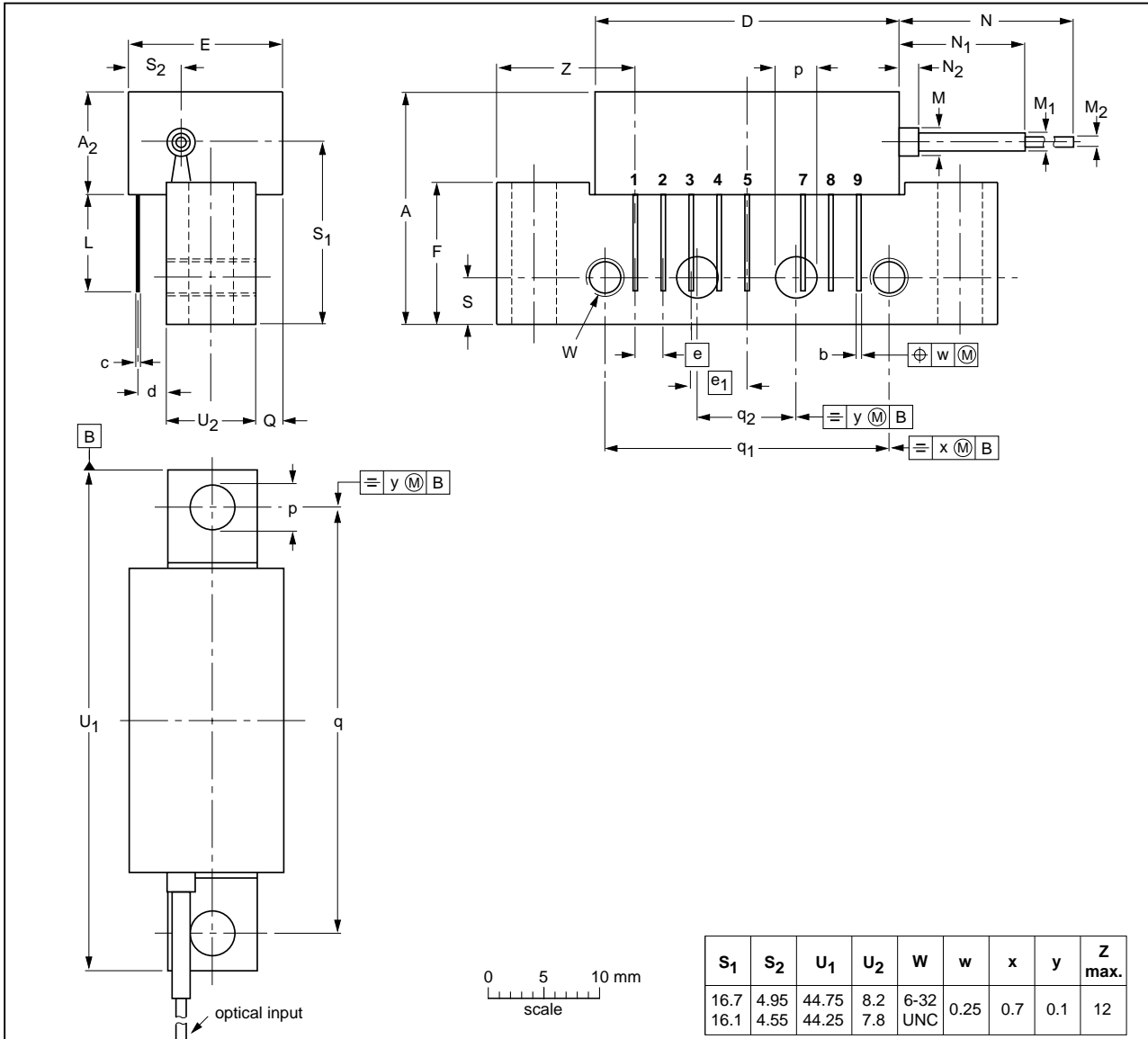
870 MHz optical receivers

BGO827; BGO827/FC0;
BGO827/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 ₁	S ₂	U ₁	U ₂	W	w	x	y	Z max.
16.7	4.95	44.75	8.2	6-32	0.25	0.7	0.1	12
16.1	4.55	44.25	7.8	UNC				

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	N ₂	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 0.0	5 0	4.15 3.85	2.4	38.1	25.4	10.2	4.2

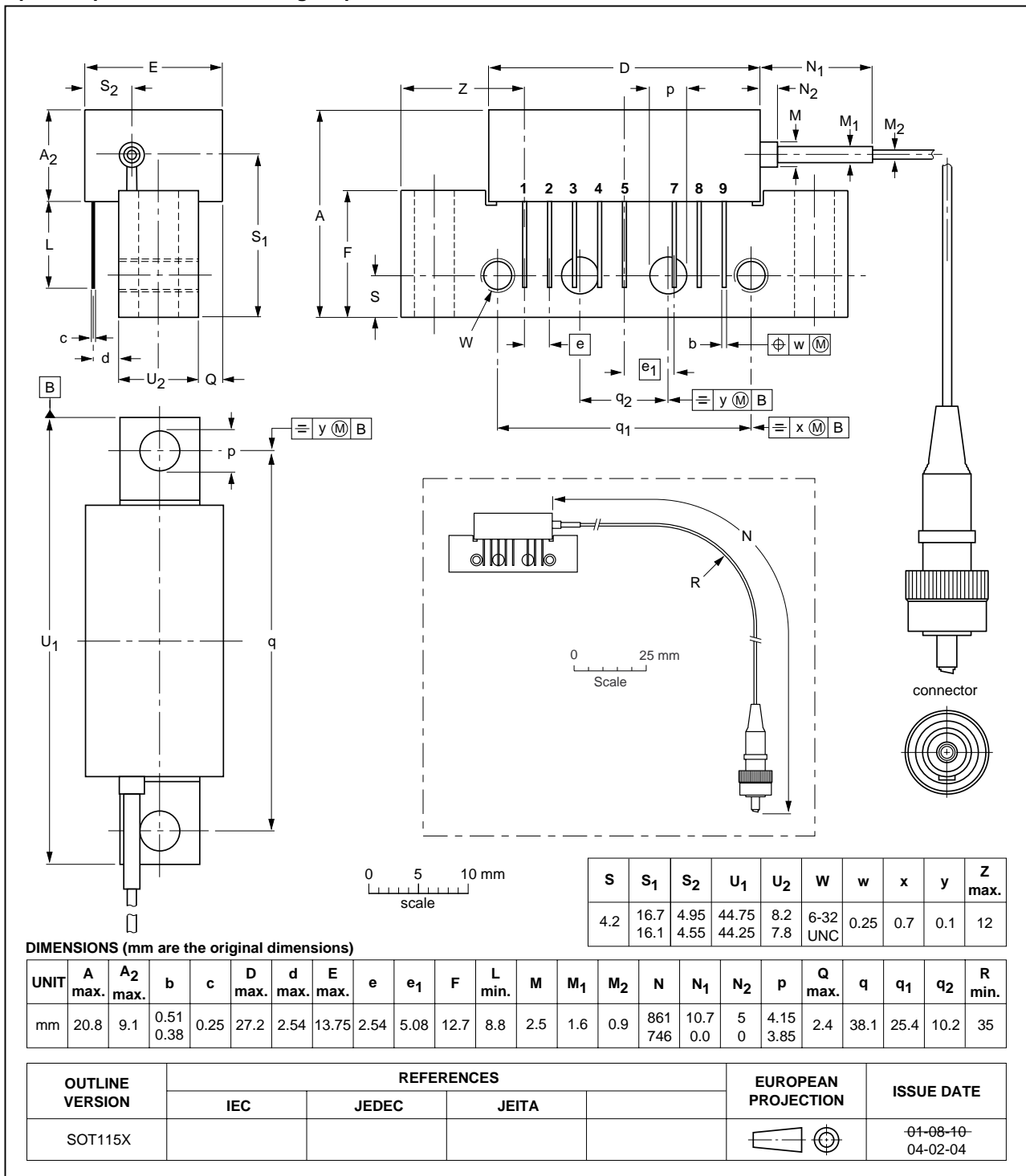
OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOT115T						01-08-10 04-02-04

870 MHz optical receivers

BGO827; BGO827/FC0;
BGO827/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

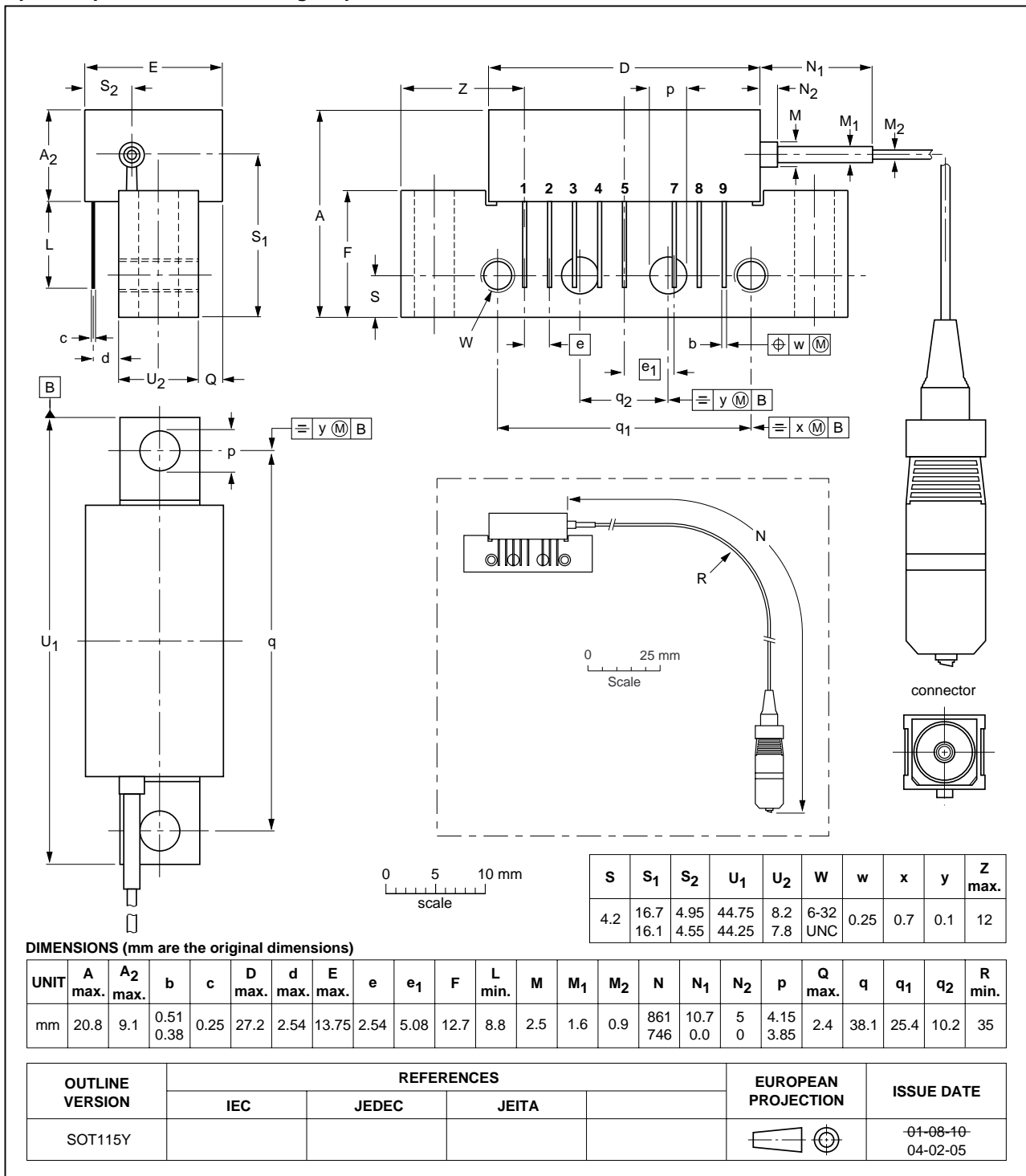


870 MHz optical receivers

BGO827; BGO827/FC0;
BGO827/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



870 MHz optical receivers

BGO827; BGO827/FC0;
BGO827/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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2. The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL <http://www.semiconductors.philips.com>.
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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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