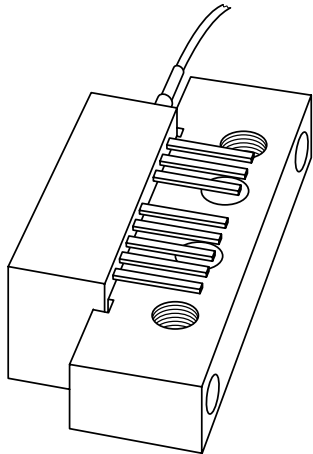


DATA SHEET



BGE847BO; BGE847BO/FC0; BGE847BO/SC0 870 MHz optical receiver

Product specification
Supersedes data of 2001 Feb 27

2001 Oct 19

870 MHz optical receiver

BGE847BO; BGE847BO/FC0; BGE847BO/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

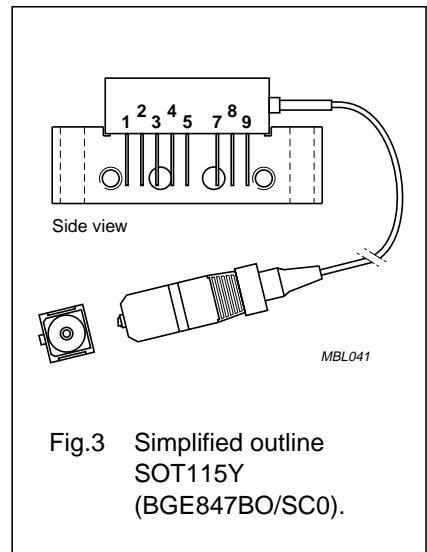
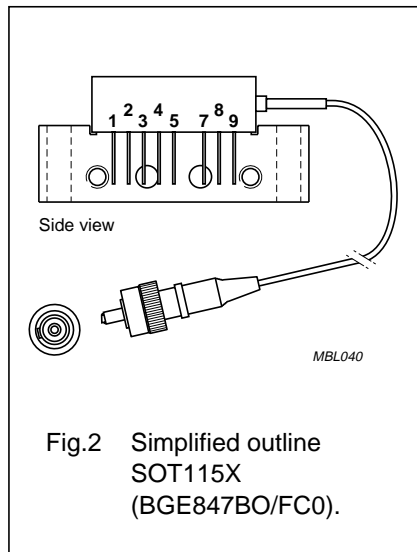
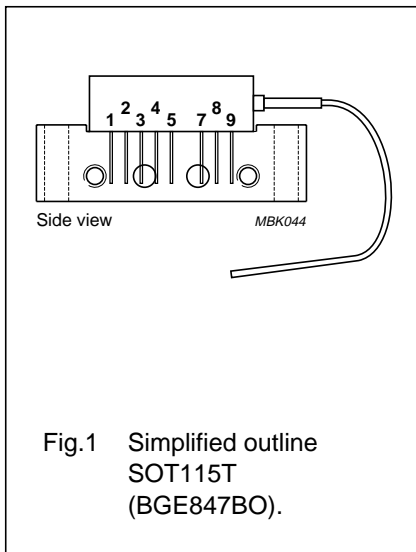
High dynamic range optical receiver amplifier modules in a standard SOT115 package where the non-jacketed fibre has either no connector or has an FC/APC or SC/APC connector.

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	dBc
F	equivalent noise input	f = 40 to 450 MHz	–	7	pA/√Hz
I _{tot}	total current consumption (DC)	V _B = 24 V	175	205	mA

HANDLING

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

870 MHz optical receiver

BGE847BO; BGE847BO/FC0;
BGE847BO/SC0**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

CHARACTERISTICSBandwidth 40 to 870 MHz; V_B = 24 V; T_{mb} = 30 °C; Z_S = Z_L = 75 Ω.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
S	responsivity BGE847BO BGE847BO/FC0, BGE847BO/SC0	λ = 1300 nm	800	-	V/W
			750	-	V/W
FL	flatness straight line (peak to valley)	f = 40 to 870 MHz	-	1	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 = 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
d ₃	third order distortion	f _m = 853.25 MHz; notes 2 and 6	-	-73	dB
F	equivalent noise input	f = 40 to 450 MHz	-	7	pA/√Hz
		f = 450 to 750 MHz	-	9	pA/√Hz
		f = 750 to 870 MHz	-	10.5	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 BGE847BO BGE847BO/FC0, BGE847BO/SC0	fibre; SM type; 9/125 μm	1	-	m
			746	861	mm
I _{tot}	total current consumption (DC)		175	205	mA
I _{pin 4}	photo diode bias current (DC)		-	25	mA

870 MHz optical receiver

BGE847BO; BGE847BO/FC0;
BGE847BO/SC0**Notes**

1. Two laser test; each laser with a modulation index of 40%; $P_{opt} = 1$ mW (total).
2. Three laser test; each laser with a modulation index of 60%; $P_{opt} = 1$ mW (total).
3. $f_m = 446.5$ MHz; $f_p = 97.25$ MHz; $f_q = 349.25$ MHz.
4. $f_m = 746.5$ MHz; $f_p = 133.25$ MHz; $f_q = 613.25$ MHz.
5. $f_m = 854.5$ MHz; $f_p = 133.25$ MHz; $f_q = 721.25$ MHz.
6. $f_m = 853.25$ MHz; $f_p = 133.25$ MHz; $f_q = 265.25$ MHz; $f_r = 721.25$ MHz.

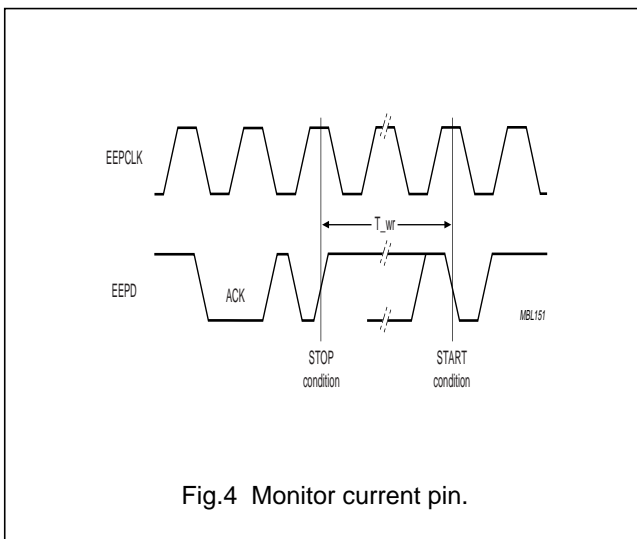


Fig.4 Monitor current pin.

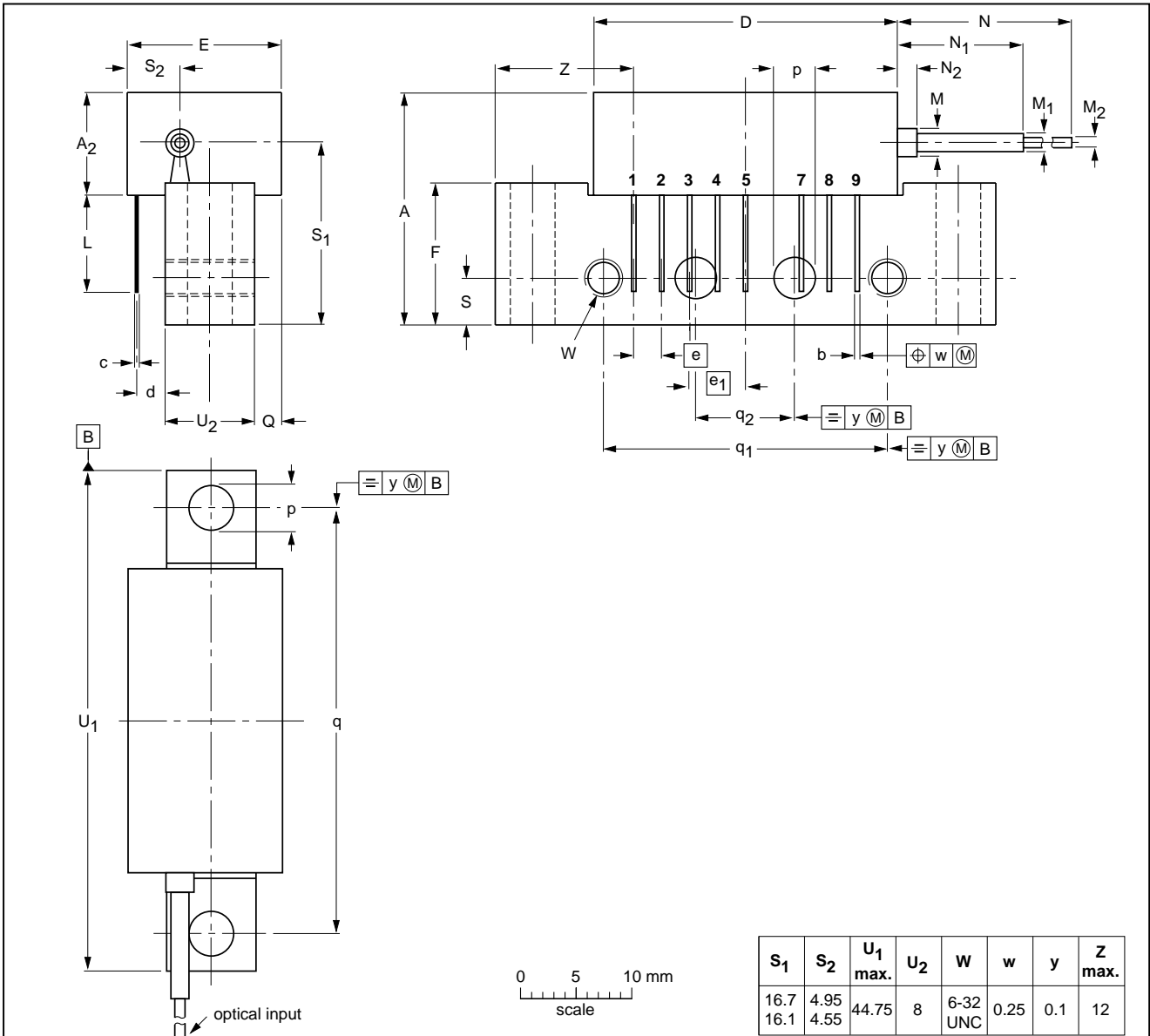
870 MHz optical receiver

BGE847BO; BGE847BO/FC0;
BGE847BO/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



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

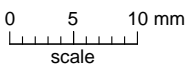
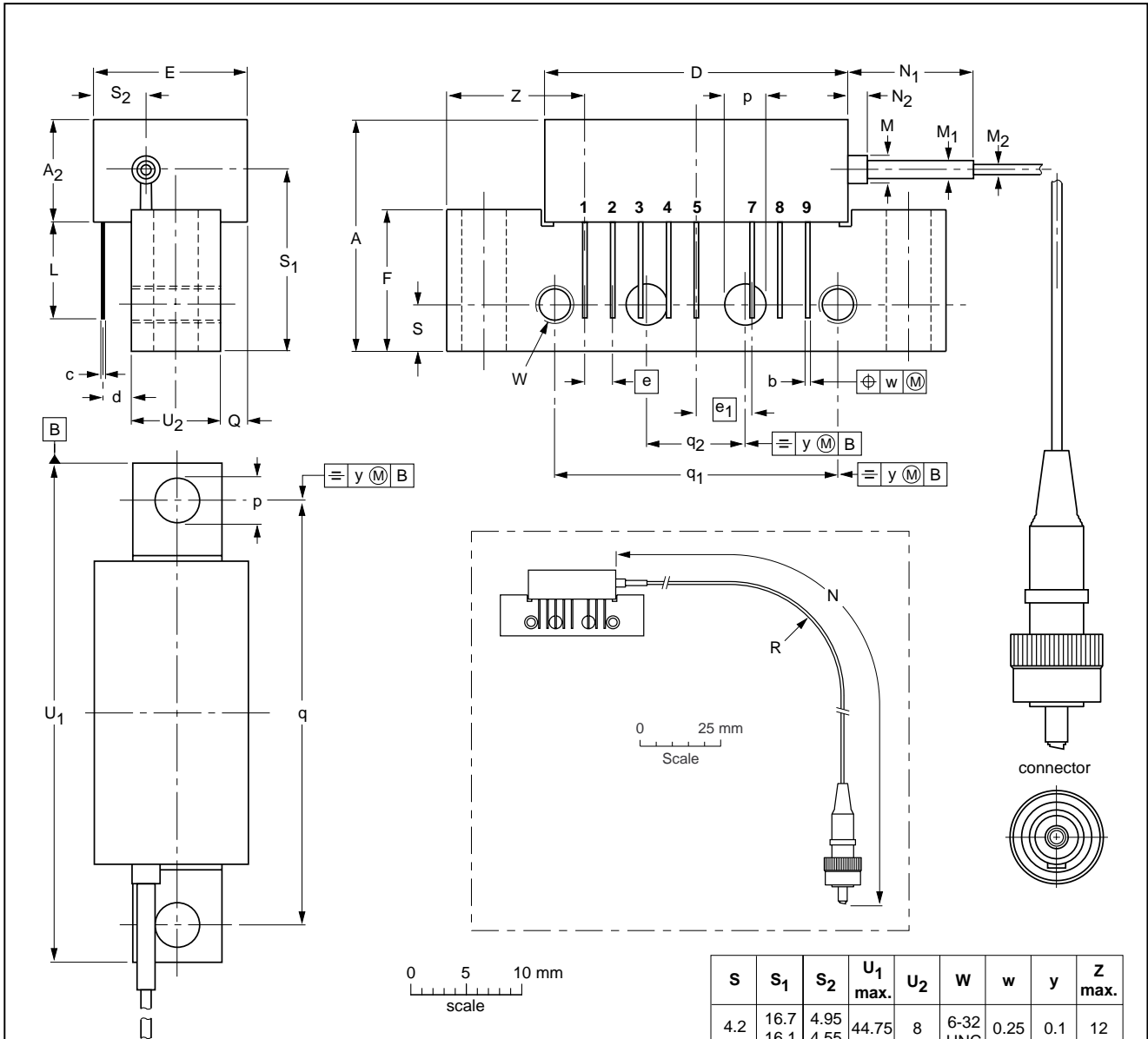
OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT115T					99-04-13 01-08-10

870 MHz optical receiver

BGE847BO; BGE847BO/FC0;
BGE847BO/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



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

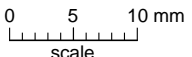
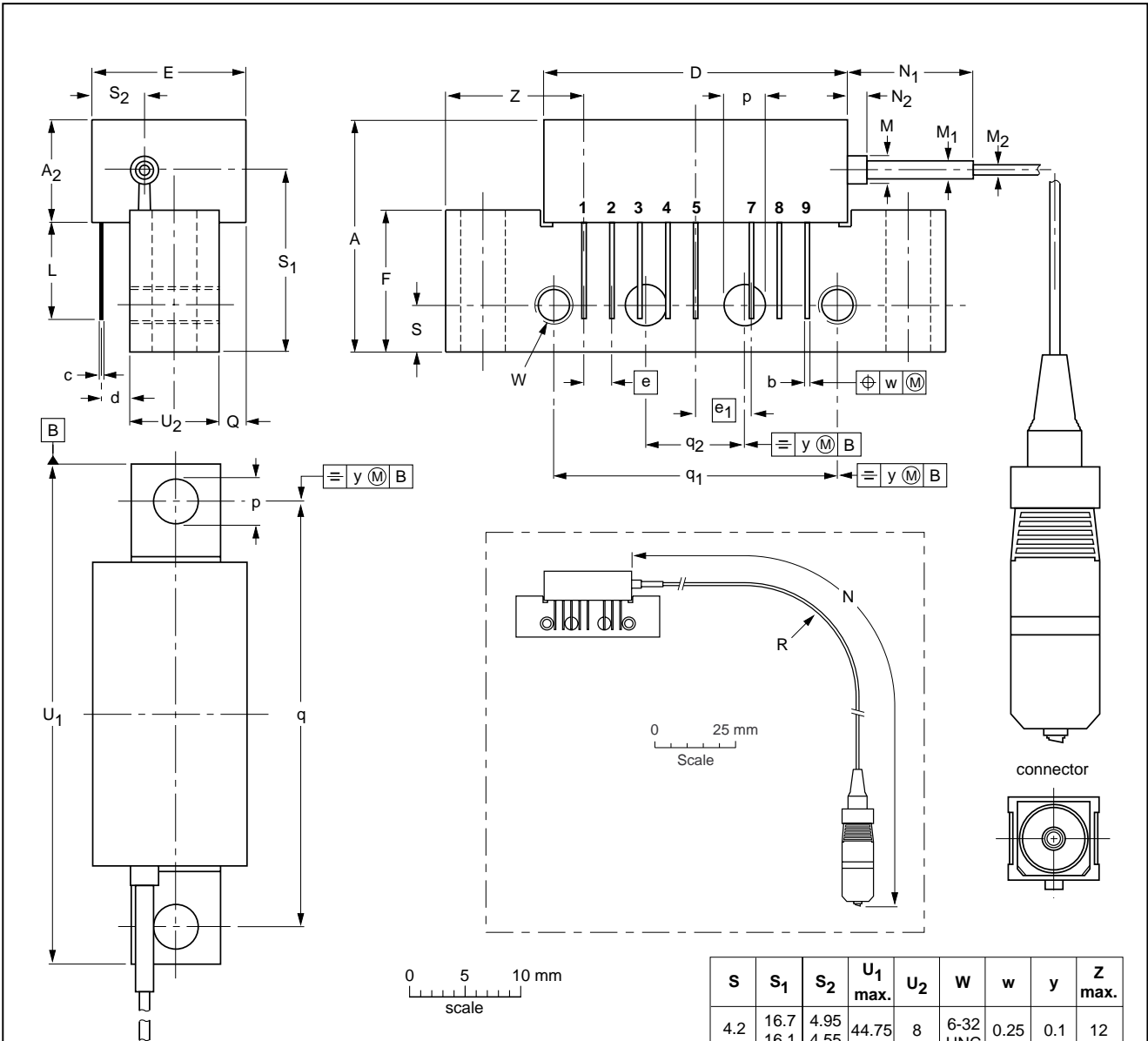
OUTLINE VERSION	REFERENCES			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ		
SOT115X					00-01-06- 01-08-10

870 MHz optical receiver

BGE847BO; BGE847BO/FC0;
BGE847BO/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 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 receiver

BGE847BO; BGE847BO/FC0;
BGE847BO/SC0

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.
Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Changes will be communicated according to the Customer Product/Process Change Notification (CPCN) procedure SNW-SQ-650A.

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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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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 receiver

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NOTES

870 MHz optical receiver

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BGE847BO/SC0

NOTES

870 MHz optical receiver

BGE847BO; BGE847BO/FC0;
BGE847BO/SC0

NOTES

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