



## 1. Product profile

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### 1.1 General description

High dynamic range optical receiver amplifier modules in a standard SOT115 package where the non-jacketed fiber 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 8 V (DC).

The modules have a mono mode optical input suitable for 1290 nm to 1600 nm wavelengths, a terminal to monitor the photo diode current and an electrical output having a characteristic impedance of  $75 \Omega$ .

### 1.2 Features

- Excellent linearity
- Low noise
- Excellent flatness
- Standard CATV outline
- Rugged construction
- Gold metallization ensures excellent reliability
- AGC: 19dBmV/channel RF output
- InGaP pHEMT IC technology

### 1.3 Applications

- CATV optical node systems operating in the 40 MHz to 870 MHz frequency range.

## 1.4 Quick reference data

Table 1: Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
f	frequency range		40	-	870	MHz
$S_{22}$	output return losses	f = 40 MHz to 870 MHz	-	-	-10	dB
	optical input return losses		45	-	-	dB
$d_2$	second order distortion	f = 543.25 MHz	-	-	-65	dB
F	equivalent noise input	f = 40 MHz to 870 MHz	-	-	8.5	pA/√ Hz
$I_{tot}$	total current consumption (DC)	$V_B = 8V$	140	-	180	mA

## 2. Pinning information

Table 2: Pinning

Pin	Description
1	monitor current
2	common
3	common
5	+ $V_B$ of the amplifier
7	common
8	common
9	output

### 3. Ordering information

**Table 3: Ordering information**

Type number	Package		
	Name	Description	Version
CMO880AGC	-	rectangular single-ended package; aluminium flange; 2 vertical mounting holes; 2 6-32 UNC and 2 extra horizontal mounting holes; optical input; 8 gold-plated in-line leads	SOT115T

### 4. Limiting values

**Table 4: Limiting values**

In accordance with the Absolute Maximum Rating System (IEC 0134).

Symbol	Parameter	Conditions	Min	Max	Unit
f	frequency range		40	870	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	-	3	mW
ESD	ESD sensitivity	human body model; R = 1.5 kΩ ; C = 100 pF	500	-	V

### 5. Characteristics

**Table 5: Characteristics**

In accordance with the Absolute Maximum Rating System (IEC 0134); bandwidth 40 MHz to 870 MHz; V<sub>B</sub> = 8 V; T<sub>mb</sub> = 30°C; Z<sub>L</sub> = 75 Ω.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
S	responsivity	λ = 1300 nm	850	-	-	V/W
FL	flatness straight line (peak to valley)	f = 40 MHz to 870 MHz	-	-	±0.75	dB
SL	slope straight line	f = 40 MHz to 870 MHz	1	-	2	dB
V <sub>o</sub>	Output voltage	Optical power receiving at -7~+1dBm	-	79	-	dBμV
s <sub>22</sub>	output return losses	f = 40 MHz to 870 MHz	10	-	-	dB
	optical input return losses		45	-	-	dB
d <sub>2</sub>	second order distortion	f <sub>m</sub> = 446.5 MHz	[1][2] -	-	-68	dB
		f <sub>m</sub> = 746.5 MHz	[1][3] -	-	-65	dB
		f <sub>m</sub> = 854.5 MHz	[1][4] -	-	-60	dB
d <sub>3</sub>	third order distortion	f <sub>m</sub> = 853.25 MHz	[5][6] -	-	-70	dB

**Table 5: Characteristics** ...continued

In accordance with the Absolute Maximum Rating System (IEC 0134); bandwidth 40 MHz to 870 MHz;  $V_B = 8V$ ;  $T_{mb} = 30^{\circ}C$ ;  $Z_L = 75 \Omega$ .

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
F	equivalent noise input	f = 40 MHz to 450 MHz	-	-	7	pA/√ Hz
		f = 450 MHz to 750 MHz	-	-	8	pA/√ Hz
		f = 750 MHz to 870 MHz	-	-	8.5	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 fiber; SM type; 9/125μm		1	-	-	m
I <sub>tot</sub>	total current consumption (DC)		140	-	180	mA

[1] Two laser test; each laser with a modulation index of 40%; P<sub>opt</sub> = 1 mW (total).

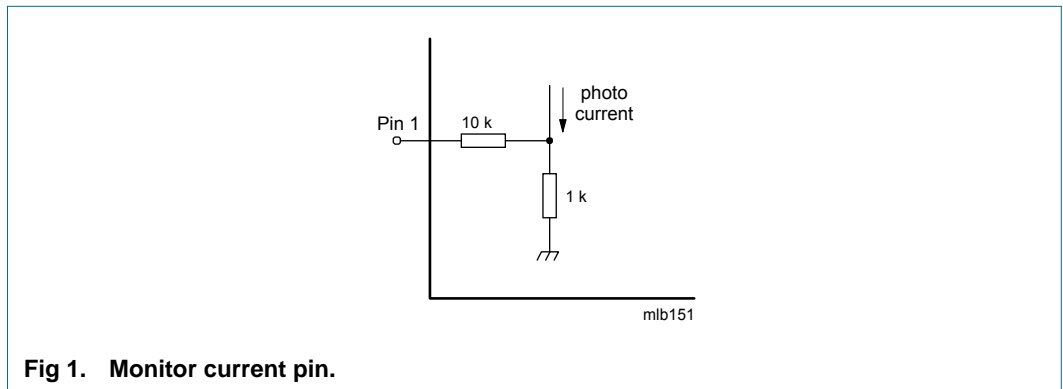
[2] f<sub>m</sub> = 446.5 MHz; f<sub>p</sub> = 97.25 MHz; f<sub>q</sub> = 349.25 MHz.

[3] f<sub>m</sub> = 746.5 MHz; f<sub>p</sub> = 133.25 MHz; f<sub>q</sub> = 613.25 MHz.

[4] f<sub>m</sub> = 854.5 MHz; f<sub>p</sub> = 133.25 MHz; f<sub>q</sub> = 721.25 MHz.

[5] Three laser test; each laser with a modulation index of 60%; P<sub>opt</sub> = 1 mW (total).

[6] f<sub>m</sub> = 853.25 MHz; f<sub>p</sub> = 133.25 MHz; f<sub>q</sub> = 265.25 MHz; f<sub>r</sub> = 721.25 MHz.



**Fig 1. Monitor current pin.**

6. Package outline

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

SOT115T

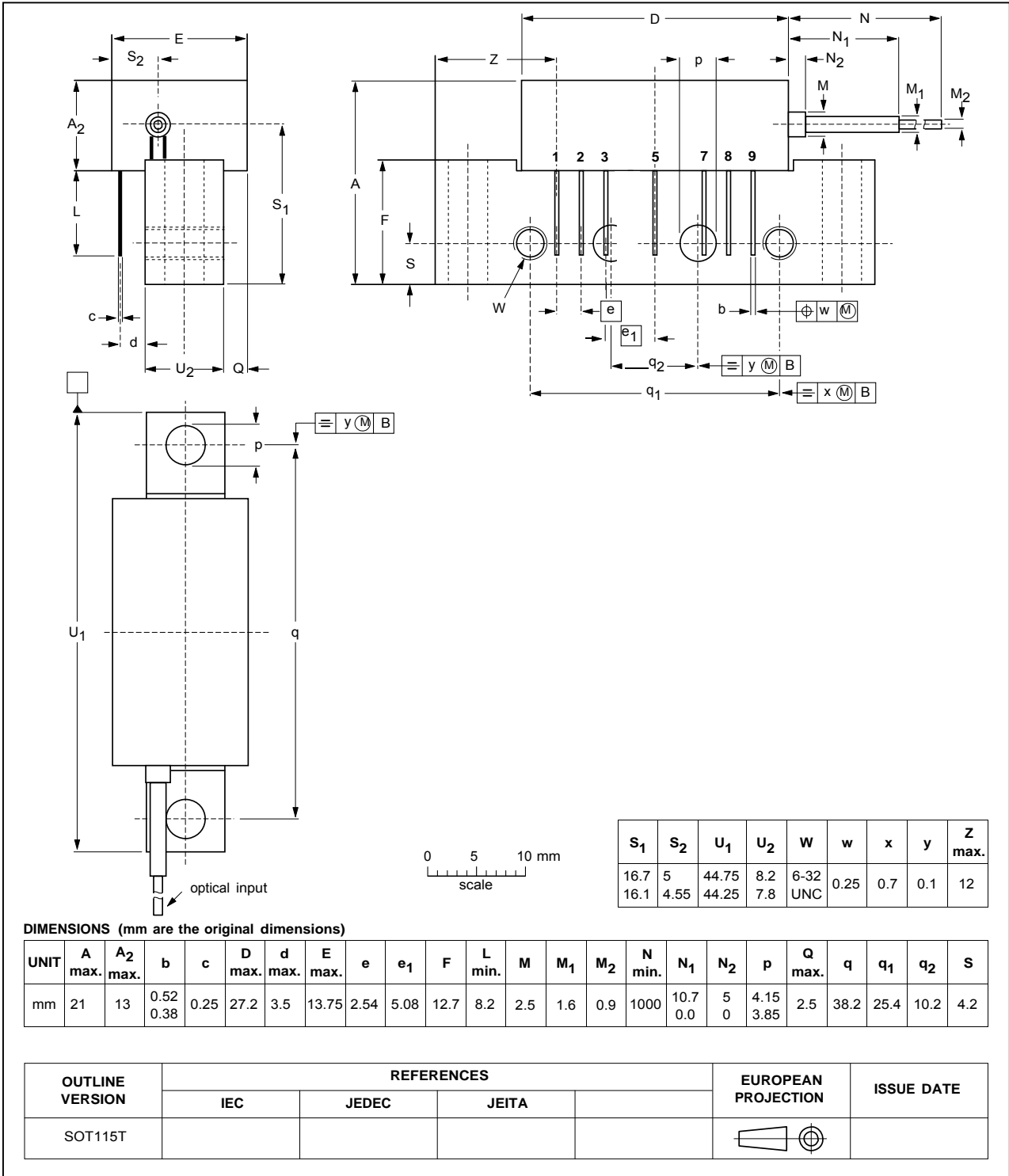


Fig 2. Package outline SOT115T.

