

Package: SOT-115J

Product Description

The OS8740230W is a hybrid high dynamic range optical receiver amplifier module. Two of the module pins are for connection to 24V (DC), one for amplifier supply voltage, the other for the PIN diode bias. The module contains a single mode optical input suitable for wavelengths from 1290nm to 1600nm, a terminal to monitor the PIN diode current, and an electrical output with an impedance of 75Ω. Fiberglass optical coupling; maximum tensile strength=5N; minimum bending radius=35mm.

Features

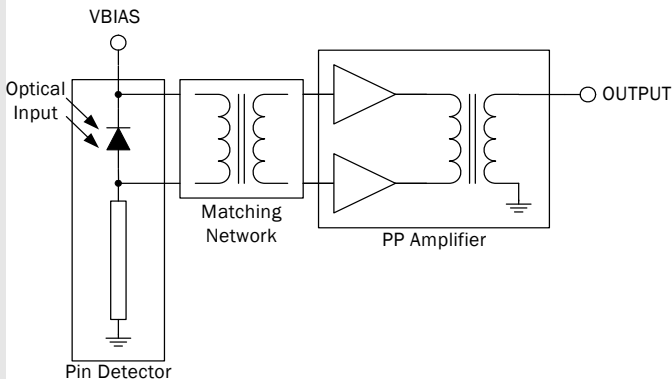
- Excellent Linearity
- Superior Return Loss Performance
- Extremely Low Distortion
- Optimal Reliability
- Low Noise
- Excellent Flatness
- 225mA Max. at 24VDC

Applications

- 40MHz to 870MHz CATV Amplifier Systems

Optimum Technology Matching® Applied

- GaAs HBT
- GaAs MESFET
- InGaP HBT
- SiGe BiCMOS
- Si BiCMOS
- SiGe HBT
- GaAs pHEMT
- Si CMOS
- Si BJT
- GaN HEMT
- RF MEMS



Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Overall					Bandwidth 40MHz to 870MHz; $V_B=24V$; $T_{MB}=30^\circ C$; $Z_L=75\Omega$
Responsivity	900			V/W	$\lambda = 1310\text{nm}$, $f = 40\text{MHz to } 870\text{MHz}$
Slope Straight Line	0.0		2.0	dB	$f = 40\text{MHz to } 870\text{MHz}$
Flatness Straight Line		0.7	1.0	dB	$f = 40\text{MHz to } 870\text{MHz}$
Optical Input Return Loss	45.0			dB	$f = 40\text{MHz to } 870\text{MHz}$
Output Return Loss	12.5			dB	$f = 40\text{MHz to } 870\text{MHz}$
Equivalent Input Noise			7.5	pA/ $\sqrt{\text{HZ}}$	$f = 40\text{MHz to } 750\text{MHz}$
			8.0	pA/ $\sqrt{\text{HZ}}$	$f = 750\text{MHz to } 870\text{MHz}$
Spectral Sensitivity	0.85			A/W	$\lambda = 1310+20\text{nm}$
	0.90			A/W	$\lambda = 1550+20\text{nm}$
Optical Wavelength	1290		1600	nm	
Total Current Consumption (DC)			225.0	mA	[1]
PIN Diode Bias Current		6.0	10.0	mA	

1. I_{TOT} is total current into hybrid with both pins 4 and 5 connected to $V_B=24V$

Absolute Maximum Ratings

Parameter	Rating	Unit
Frequency Range	40 to 870	MHz
Optical Input Power (continuous)	5	mW
ESD Sensitivity (Human Body Model; R=1.5kΩ, C=pF)	500	V
Storage Temperature	-40 to +85	°C
Operating Mounting Base Temperature	-20 to +85	°C



Caution! ESD sensitive device.

Exceeding any one or a combination of the Absolute Maximum Rating conditions may cause permanent damage to the device. Extended application of Absolute Maximum Rating conditions to the device may reduce device reliability. Specified typical performance or functional operation of the device under Absolute Maximum Rating conditions is not implied.

RoHS status based on EU Directive 2002/95/EC (at time of this document revision).

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Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
Distortion data					$V_B = 24V$; $T_{MB} = 30^\circ C$; $Z_L = 75\Omega$
Second order distortion ^[2]			-73.0	dBc	$f_m = 54.0\text{MHz}$ ^[3]
			-68.0	dBc	$f_m = 446.5\text{MHz}$ ^[4]
			-67.0	dBc	$f_m = 548.5\text{MHz}$ ^[5]
			-63.0	dBc	$f_m = 746.5\text{MHz}$ ^[6]
			-63.0	dBc	$f_m = 854.5\text{MHz}$ ^[7]
Third order distortion ^[8]			-80.0	dBc	$f_m = 55.25\text{MHz}$ ^[9]
			-80.0	dBc	$f_m = 445.25\text{MHz}$ ^[10]
			-80.0	dBc	$f_m = 547.25\text{MHz}$ ^[11]
			-75.0	dBc	$f_m = 745.25\text{MHz}$ ^[12]
			-75.0	dBc	$f_m = 853.25\text{MHz}$ ^[13]

2. Two laser test; each laser with 40% modulation index; $P_{OPT} = 1\text{mW}$ (total).

3. $f_m = 54\text{MHz}$; $f_1 = 187.25\text{MHz}$; $f_2 = 133.25\text{MHz}$.

4. $f_m = 446.5\text{MHz}$; $f_1 = 97.25\text{MHz}$; $f_2 = 349.25\text{MHz}$.

5. $f_m = 548.5\text{MHz}$; $f_1 = 109.25\text{MHz}$; $f_2 = 439.25\text{MHz}$.

6. $f_m = 746.5\text{MHz}$; $f_1 = 133.25\text{MHz}$; $f_2 = 613.25\text{MHz}$.

7. $f_m = 854.5\text{MHz}$; $f_1 = 133.25\text{MHz}$; $f_2 = 721.25\text{MHz}$.

8. Three laser test; each laser with 60% modulation index; $P_{OPT} = 1\text{mW}$ (total).

9. $f_m = 55.25\text{MHz}$; $f_1 = 109.25\text{MHz}$; $f_2 = 133.25\text{MHz}$; $f_3 = 187.25\text{MHz}$.

10. $f_m = 445.25\text{MHz}$; $f_1 = 193.25\text{MHz}$; $f_2 = 349.25\text{MHz}$; $f_3 = 97.25\text{MHz}$.

11. $f_m = 547.25\text{MHz}$; $f_1 = 217.25\text{MHz}$; $f_2 = 439.25\text{MHz}$; $f_3 = 109.25\text{MHz}$.

12. $f_m = 745.25\text{MHz}$; $f_1 = 133.25\text{MHz}$; $f_2 = 265.25\text{MHz}$; $f_3 = 613.25\text{MHz}$.

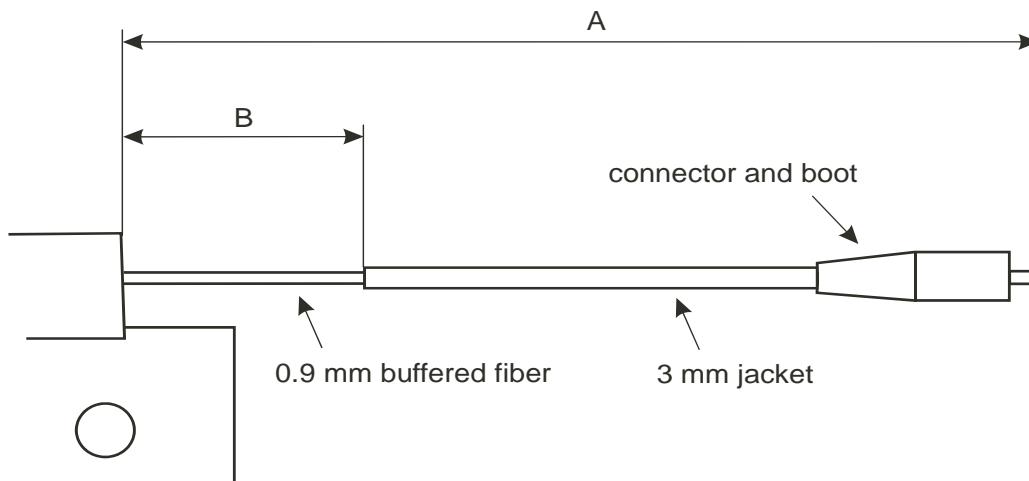
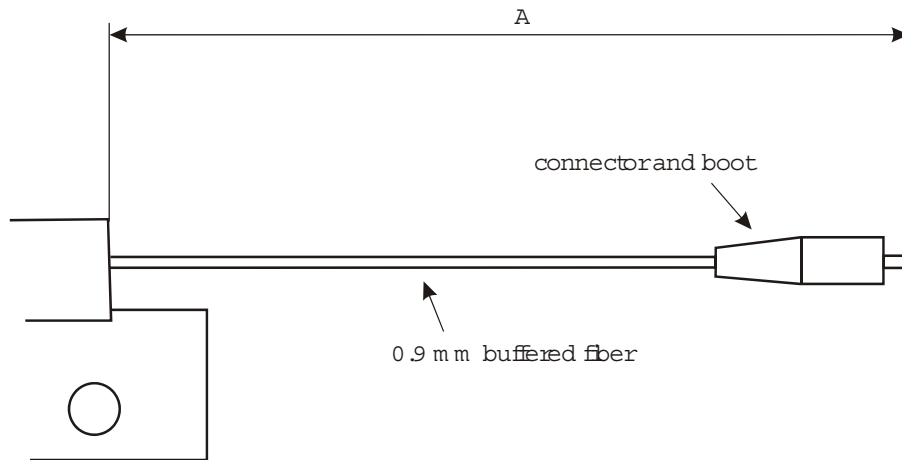
13. $f_m = 853.25\text{MHz}$; $f_1 = 133.25\text{MHz}$; $f_2 = 265.25\text{MHz}$; $f_3 = 721.25\text{MHz}$.

Cable Lengths and Connector Types

Tab	Dimension A				Optical Connector Type
	Inches	Tolerance	mm	Tolerance	
-012	33.4	-4 to +0.5	848	-102 to +13	FC/APC
-013	33.4	-4 to +0.5	848	-102 to +13	SC/APC
-014	37.5	-3.5 to +0.5	952	-89 to +13	FC/APC
-015	37.5	-3.5 to +0.5	952	-89 to +13	SC/APC
-016	21.1	-1.5 to +0.5	536	-38 to +13	FC/APC
-017	21.1	-1.5 to +0.5	536	-38 to +13	SC/APC

Cable Lengths and Connector Types (cont.)

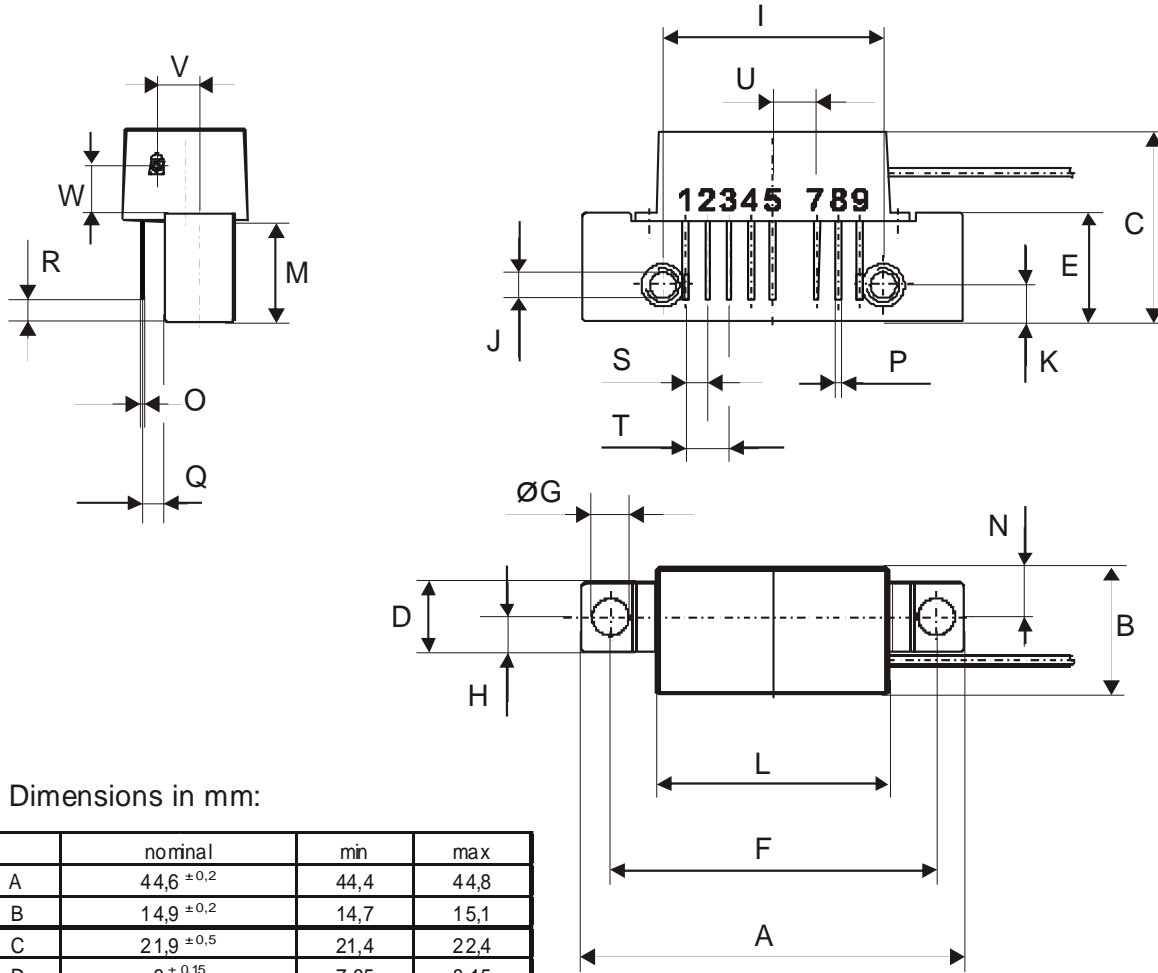
Tab	Dimension B	
	Inches	mm
-012	No outer jacket	
-013	No outer jacket	
-014	0.135 to 0.710	8.0 to 18.0
-015	0.135 to 0.710	8.0 to 18.0
-016	0.135 to 0.710	8.0 to 18.0
-017	0.135 to 0.710	8.0 to 18.0



OS8740230W



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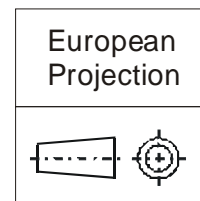
All Dimensions in mm:


	nominal	min	max
A	44,6 ±0,2	44,4	44,8
B	14,9 ±0,2	14,7	15,1
C	21,9 ±0,5	21,4	22,4
D	8 ±0,15	7,85	8,15
E	12,6 ±0,15	12,45	12,75
F	38,1 ±0,1	38,0	38,2
G	4 +0,2 / -0,05	3,95	4,2
H	4 ±0,2	3,8	4,2
I	25,4 ±0,2	25,2	25,6
J	UNC 6-32	-	-
K	4,2 ±0,2	4,0	4,4
L	28,7 ±0,2	28,5	28,9
M	11,6 ±0,5	11,1	12,1
N	5,8 ±0,4	5,4	6,2
O	0,25 ±0,02	0,23	0,27
P	0,45 ±0,03	0,42	0,48
Q	2,54 ±0,3	2,24	2,84
R	2,54 ±0,5	2,04	3,04
S	2,54 ±0,25	2,29	2,79
T	5,08 ±0,25	4,83	5,33
U	5,08 ±0,25	4,83	5,33
V	5,0 ±0,2	4,8	5,2
W	5,35		

Pinning:

1	PHOTODIODE CURRENT MONITOR
2	GND
3	GND
4	PHOTODIODE BIAS
5	+VB
6	
7	GND
8	GND
9	OUTPUT

Notes:



0 5 10mm

 scale

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