

FEATURES

- Excellent linearity
- Extremely low noise
- Excellent flatness
- Switch CATV on/off
- PWDW
- AGC

DESCRIPTION

SMO-P15 is a low power, but good performance optical receiver. AGC function make output level stably when in the range of -15~-5dBm. Small size which can be assembled in a small case. The output RF can be switched by I2C control.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNITS
f	Frequency range		45	900	MHz
S ₂₂	Output return losses	f=45 to 900MHz	-	-12	dB
I _{out}	Total current consumption(DC)	V _B =5V	240	270	mA

HANDLING

Fiberglass optical coupling: maximum tensile strength=5N; minimum bending radius=30mm

LIMITING VALUES

In accordance with the Absolute Maximum Rating System

SYMBOL	PARAMETER	CONDITION	MIN.	MAX.	UNITS
Pin	Optical input power		-16	+5	dBm
	Optical return loss	0dBm		-35	dB
Tstg	Storage temperature		-40	+85	°C
Tmb	Operating mounting base temperature	continuous	-20	+85	°C
ESD	ESD sensitivity	Human body model; R=1.5KΩ;C=100pF	500	-	V

CHARACTERISTICS

(Bandwidth 45 to 900MHz; $T_{mb}=25^{\circ}\text{C}$, $V_B=5\text{V}$, $Z_S=Z_L=75\Omega$)

SYMBOL	PARAMETER	UNIT	MIN.	TYP.	MAX.	CONDITIONS
S	responsively	V/W	0.9	-	-	$\lambda=1550\text{nm}$
FL1	Flatness of frequency response	dB	-	± 1.0	± 1.5	f=45 to 900 MHz, wide band flatness
FL2	Flatness of frequency	dB	-	-	± 0.4	Narrow bandwidth per 7MHz
SL	Slope	dB	0	2.0	4.0	f=45 to 900 MHz
S22	Output Return Loss	dB		-	-12	f=45 to 900 MHz
Itot	Total Current Consumption	mA	240	-	270	$V_B=5\text{V}$
Automatic Gain Control Receiving Power: -15-5dBm (According to customer requirements)						
Vo1	Output Voltage	dBuV	73	75	77	Popt= -15--5dBm @176.25MHz 42 channels T=25°C OMI=4% per channel

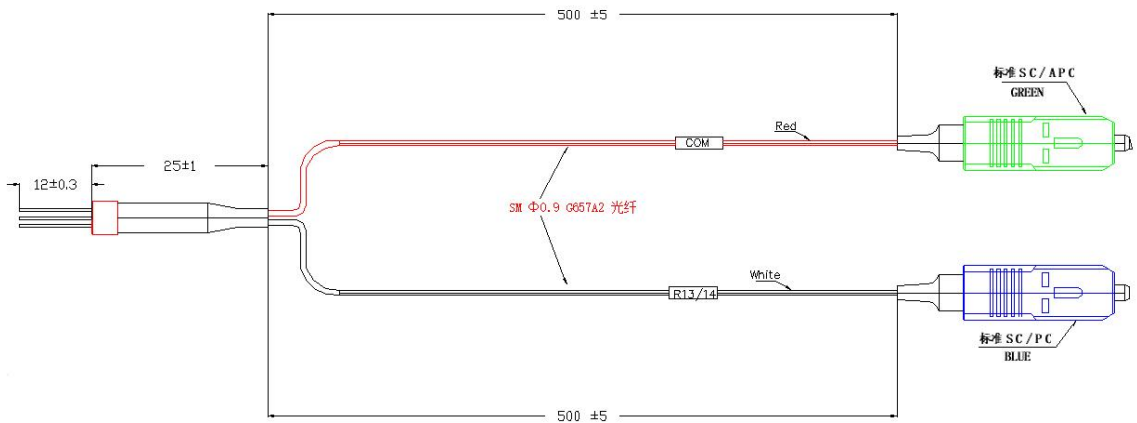
SYMBOL	PARAMETER	UNIT	MIN.	TYP.	MAX.	CONDITIONS
CTB	Composite Triple Beat	dB	-	-	-57	Optical power-0dBm 42channels PAL-D.176.25MHz OMI=4% per channel
CSO	Composite Second Order distortion	dB	-	-	-57	
C-spurious	Carrier to spurious	dB	-	-	-57	
CNR	Noise carrier rating	dB	44	-	-	Optical power/-8dBm 42channels PAL-D.176.25MHz OMI=4% per channel

Optical and Electrical Characteristics (T=25°C)

Parameter		Symbol	Min	Type	Max	Unit	Test Condition
Pass Channel Wavelength Range		λ	1535	1550	1570	nm	
Reflect Channel Wavelength Range		λ_2	1260	1310	1360	nm	
		λ_3	1480	1490	1500	nm	
Responsivity		R	0.85	0.93		A/W	$\lambda=1550\text{nm}$
Isolation	Pass Channel	Iso	32				$\lambda=1310\text{nm}$, $\lambda=1490\text{nm}$
	Reflect Channel		20				$\lambda=1550\text{nm}$
Polarization Dependent loss	Reflect Channel	PDL			0.05	dB	$\lambda=1550\text{nm}$
	Pass Channel				0.05		$\lambda=1310\text{nm}$ $\lambda=1490\text{nm}$

Directivity		D	50			dB	$\lambda=1550\text{nm}$
Return loss		RL	-40			dB	$\lambda=1550\text{nm}$
Insert Loss	Reflect Channel	IL			0.7	dB	$\lambda=1310\text{nm}$, $\lambda=1490\text{nm}$.
	Pass Channel				0.7		$\lambda=1550\text{nm}$

WDM MECHANICAL DIMENSION



Immunity test

According to ICE61000-4-3 standard.

Test was performed in lab using SANLAND SMO-P15 measuring equipment according to requirements. All test was conducted in chamber. Distance between DUT and antenna 3m. All test was conducted for two antenna orientation - vertical and horizontal and for three frequency ranges from 80MHz to 1GHz; 1GHz to 2GHz; 2GHz to 3GHz three ranges use same antenna.

1、Immunity signal parameters:

- Field strength 3V/m
- Frequency step 1%
- Step time 3s
- 1KHz AM modulation 80%

2、Measuring equipment:

- Spectrum analyzer
- Converter 75R to 50R
- RF cable VIABLUETVR 2.0 SILVER 120 dB Class A+

3、Spectrum analyzer configuration:

- VBW 10KHz
- RBW 30KHz
- Reference level 80dBuV
- Sweep time 1.5s
- Attenuator 0dB
- Trace max hold

4、DUT configuration

- CATV enable
- DUT in vertical position
- DUT powered by 5V stabilized PSU

5、Test result:

- 80MHz to 1GHz pass
- 1GHz to 2GHz pass
- 2GHz to 3GHz pass

Certification

The measurement result is according to ANSI_SCTE 06 2009.ICE61000-4-3.

EN 607286 Cable networks for television signals, sound signals and interactive services.

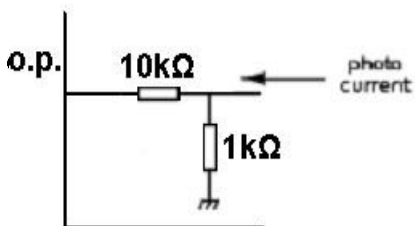
Part6: Optical equipment services

EN 607283 Cable networks for television signals, sound signals and interactive services.

Part3: Active wide band equipment for cable services.

Photodiode pin monitoring voltage corresponding to the table

O.P.Power	voltage	O.P.Power	voltage	O.P.Power	voltage	O.P.Power	Voltage	O.P.Power	voltage	O.P.Power	voltage
dBm	v	dBm	v	dBm	v	dBm	v	dBm	v	dBm	v
2.00	1.5849	-1.00	0.7943	-4.00	0.3981	-7.00	0.1995	-10.00	0.1000	-13.00	0.0501
1.90	1.5488	-1.10	0.7762	-4.10	0.3890	-7.10	0.1950	-10.10	0.0977	-13.10	0.0490
1.80	1.5136	-1.20	0.7586	-4.20	0.3802	-7.20	0.1905	-10.20	0.0955	-13.20	0.0479
1.70	1.4791	-1.30	0.7413	-4.30	0.3715	-7.30	0.1862	-10.30	0.0933	-13.30	0.0468
1.60	1.4454	-1.40	0.7244	-4.40	0.3631	-7.40	0.1820	-10.40	0.0912	-13.40	0.0457
1.50	1.4125	-1.50	0.7079	-4.50	0.3548	-7.50	0.1778	-10.50	0.0891	-13.50	0.0447
1.40	1.3804	-1.60	0.6918	-4.60	0.3467	-7.60	0.1738	-10.60	0.0871	-13.60	0.0437
1.30	1.3490	-1.70	0.6761	-4.70	0.3388	-7.70	0.1698	-10.70	0.0851	-13.70	0.0427
1.20	1.3183	-1.80	0.6607	-4.80	0.3311	-7.80	0.1660	-10.80	0.0832	-13.80	0.0417
1.10	1.2882	-1.90	0.6457	-4.90	0.3236	-7.90	0.1622	-10.90	0.0813	-13.90	0.0407
1.00	1.2589	-2.00	0.6310	-5.00	0.3162	-8.00	0.1585	-11.00	0.0794	-14.00	0.0398
0.90	1.2303	-2.10	0.6166	-5.10	0.3090	-8.10	0.1549	-11.10	0.0776	-14.10	0.0389
0.80	1.2023	-2.20	0.6026	-5.20	0.3020	-8.20	0.1514	-11.20	0.0759	-14.20	0.0380
0.70	1.1749	-2.30	0.5888	-5.30	0.2951	-8.30	0.1479	-11.30	0.0741	-14.30	0.0372
0.60	1.1482	-2.40	0.5754	-5.40	0.2884	-8.40	0.1445	-11.40	0.0724	-14.40	0.0363
0.50	1.1220	-2.50	0.5623	-5.50	0.2818	-8.50	0.1413	-11.50	0.0708	-14.50	0.0355
0.40	1.0965	-2.60	0.5495	-5.60	0.2754	-8.60	0.1380	-11.60	0.0692	-14.60	0.0347
0.30	1.0715	-2.70	0.5370	-5.70	0.2692	-8.70	0.1349	-11.70	0.0676	-14.70	0.0339
0.20	1.0471	-2.80	0.5248	-5.80	0.2630	-8.80	0.1318	-11.80	0.0661	-14.80	0.0331
0.10	1.0233	-2.90	0.5129	-5.90	0.2570	-8.90	0.1288	-11.90	0.0646	-14.90	0.0324
0.00	1.0000	-3.00	0.5012	-6.00	0.2512	-9.00	0.1259	-12.00	0.0631	-15.00	0.0316
-0.10	0.9772	-3.10	0.4898	-6.10	0.2455	-9.10	0.1230	-12.10	0.0617	-15.10	0.0309
-0.20	0.9550	-3.20	0.4786	-6.20	0.2399	-9.20	0.1202	-12.20	0.0603	-15.20	0.0302
-0.30	0.9333	-3.30	0.4677	-6.30	0.2344	-9.30	0.1175	-12.30	0.0589	-15.30	0.0295
-0.40	0.9120	-3.40	0.4571	-6.40	0.2291	-9.40	0.1148	-12.40	0.0575	-15.40	0.0288
-0.50	0.8913	-3.50	0.4467	-6.50	0.2239	-9.50	0.1122	-12.50	0.0562	-15.50	0.0282
-0.60	0.8710	-3.60	0.4365	-6.60	0.2188	-9.60	0.1096	-12.60	0.0550		
-0.70	0.8511	-3.70	0.4266	-6.70	0.2138	-9.70	0.1072	-12.70	0.0537		
-0.80	0.8318	-3.80	0.4169	-6.80	0.2089	-9.80	0.1047	-12.80	0.0525		
-0.90	0.8128	-3.90	0.4074	-6.90	0.2042	-9.90	0.1023	-12.90	0.0513		

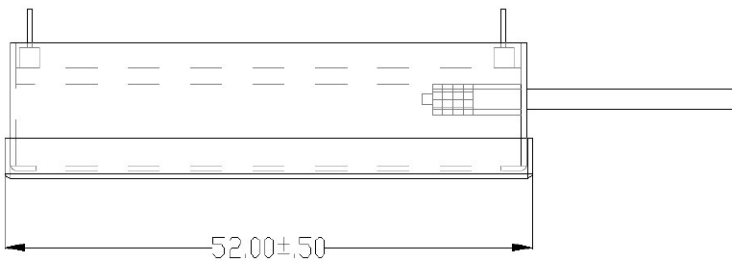
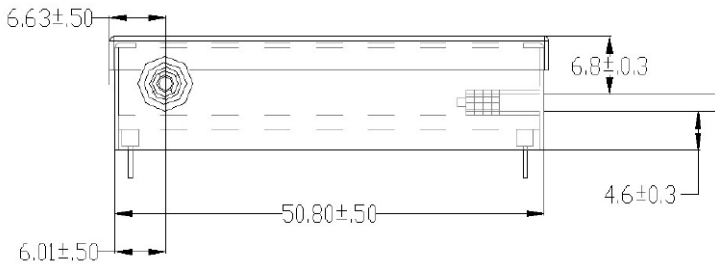
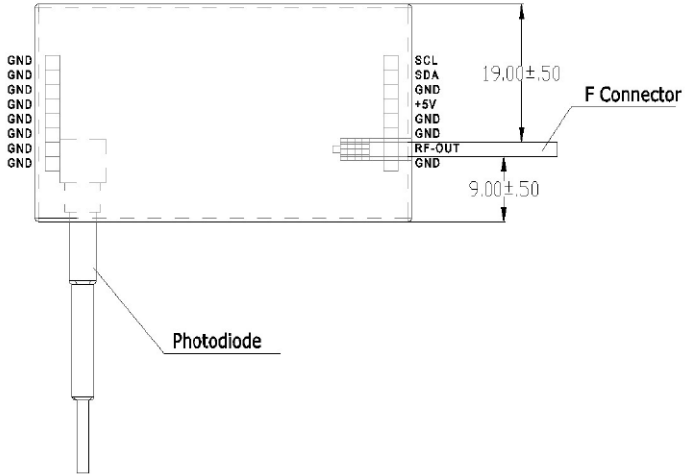


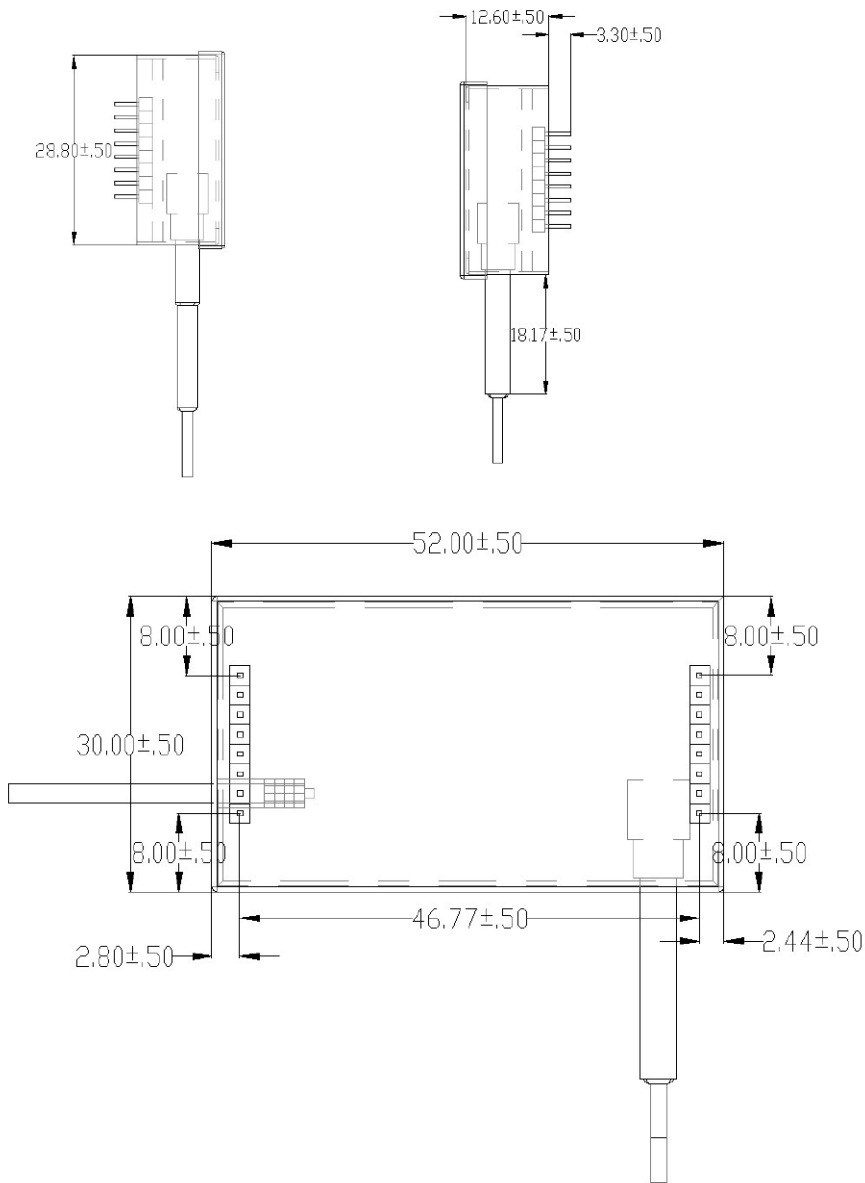
Notes:

The calculation formula of: $\text{dBm} = 10 \cdot \lg((\text{O.P.}) \cdot \text{mV}/R)$

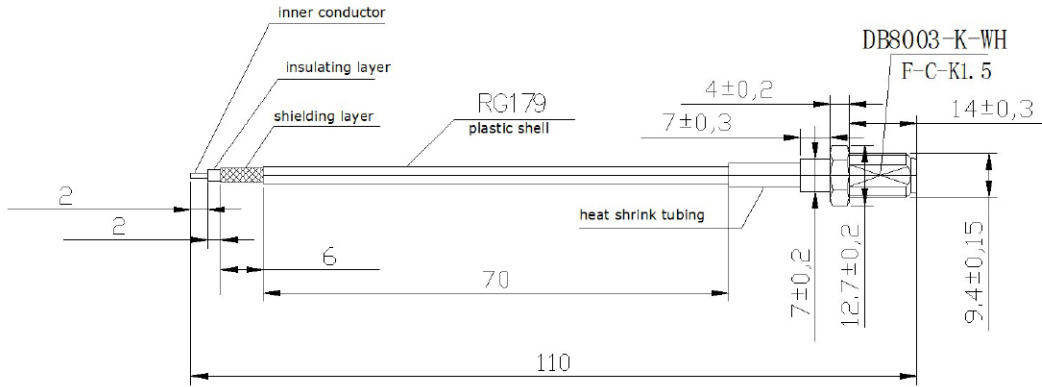
When measured the optical power corresponding to the monitor volt .may cause some tolerance that the range is $\pm 0.08\text{V}$

DIMENSION

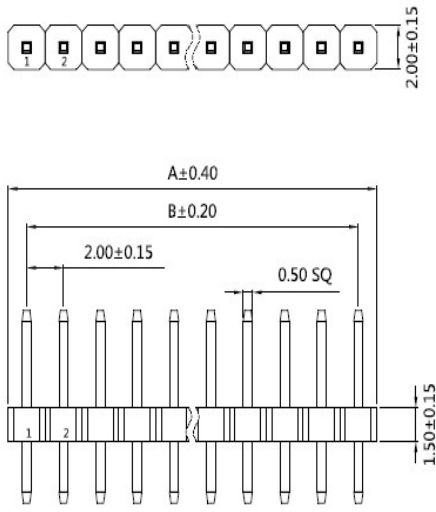




F Connector DISCRIPTION



PIN DEMENSION



Technical Data

Material:
 Contact material: Brass
 Plating: Gold Flash
 Insulator material: Black polyester UL94V-0
 Standard: PA6T+30%G.F

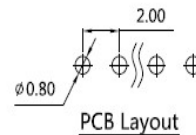
Electrical:

Current rating: 1.5Amps/contact max.
 Contact resistance: $\leq 20\text{m}\Omega/\text{contact}$
 Insulation resistance: $\geq 10000\text{M}\Omega$ at $V=100\text{V}$
 Withstanding voltage: 450V AC/minute

Mechanical:

Soldering temperature: $+260^\circ\text{C}$, 4s max

UNSPECIFIED TOLERANCE: ± 0.20



A=2.0*nP±0.40
 B=2.0*nP-2.0±0.20

Pin Number=1~40