



ROF-DML series of analog broadband direct light transmission module

Product description:

The ROF -DML -XX series of analog broadband direct-tuning transmitters use a highly linear microwave direct-coupled DFB laser (DML), a fully transparent operating mode without RF drive amplifiers and integrated automatic power control (APC) and automatic temperature control (ATC) circuit to ensure that the laser can transmit up to 18 GHz of microwave RF signals with long distances, high bandwidth and flat response, providing excellent linear optical fiber communication for a variety of analog broadband microwave applications. Due to the avoidance of expensive coaxial cable or waveguide, the transmission distance limit is canceled, which greatly improves the signal quality and reliability of microwave communication, being widely used in remote wireless, timing and reference signal distribution, telemetry and delay lines and other communication field.

Features

- Excellent RF response flatness
- Wide dynamic range
- Entire transparent work applicable signal coding communication standard network protocols
- Wavelength options: 1550nm DWDM wavelength
- Integrate automatic power control and automatic temperature circuit
- No built-in drive RF amplifier, providing more flexibility

Applications:

- Remote antenna
- Long-distance analog optical fiber communication
- Military three wave communication
- Tracking telemetry and control
- Delay lines
- Phased array





Performance parameters

Parameter	Unit	Min	Typ	Max	Remarks
Optical characteristics					
Laser type		DFB			
Operating wavelength	nm	1530	1550	1570	DWDM is optional
Equivalent noise intensity	dB/Hz			-145	
SMSR	dB	35	45		
Light isolation	dB	30			
Output light power	mW	10			
Light return loss	dB	50			
Optical fiber type		SMF-28E			
Optical fiber connector		FC/APC			
RF characteristics					
Operating frequency@-3dB	GHz	0.1		6	
		0.1		10	
		0.1		18	
Input RF range	dBm	-60		20	
Input 1dB compression point	dBm		15		
In-band flatness	dB	-1.5		+1.5	
Standing wave ratio				1.5	
RF reflection loss	dB	-10			
Input impedance	Ω		50		
Output impedance	Ω		50		
RF connector		SMA-F			
Power supply					
Power supply	DC	V		5	
		V		-5	
Consumption	W			10	



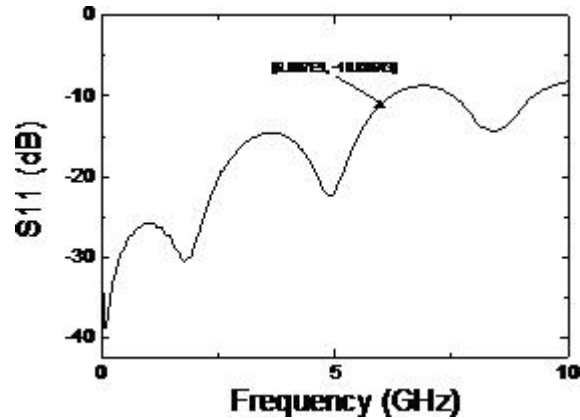
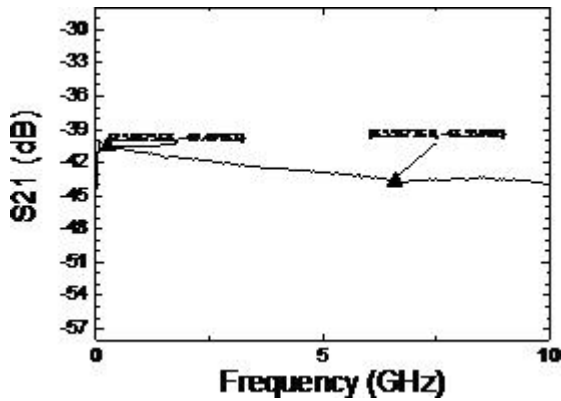
Power supply interface		Wear capacitance	
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Limit conditions:

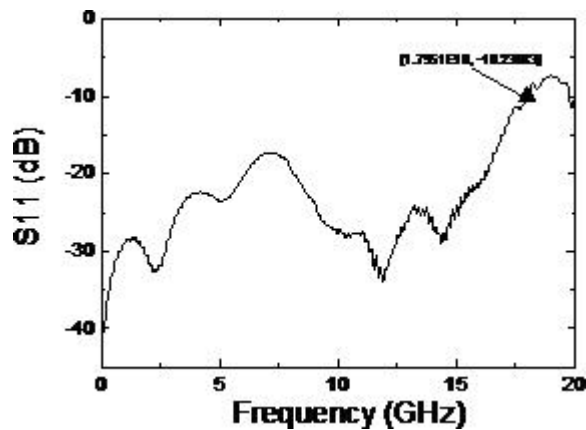
Parameter	Unit	Min	Typical	Max	Remarks
Input RF power	dBm			20	
Operating voltage	V			13	
Operating temperature	°C	-40		+70	
Storage temperature	°C	-40		+85	
Operating relative humidity	%	5		95	

Dimensions:

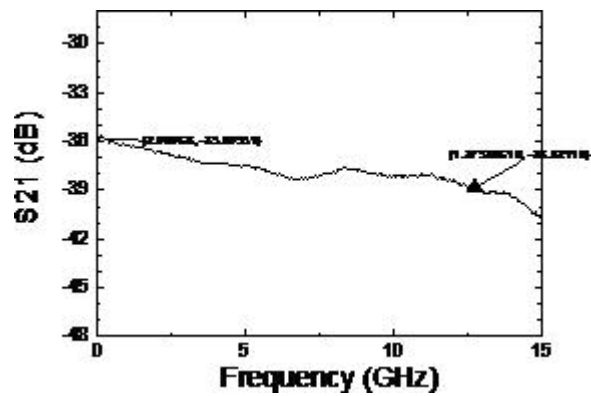
Unit: mm



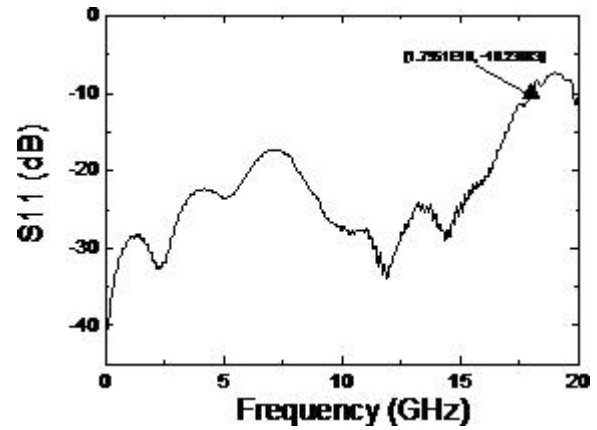
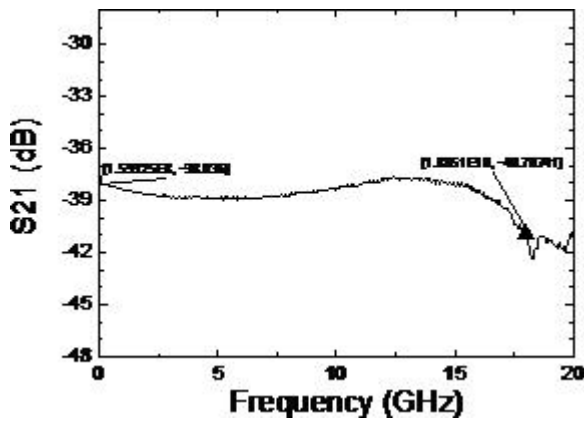
Characteristic curve:



6G S21&S11curve



10G S21&S11curve



18G S21&S11curve

Ordering information:

ROF-DML	XX	XX	X	X	X	X
Direct-tuning modulation transmitter module	Operating wavelength : 15-1550nm XX—DWDM channel	Modulation bandwidth : 06G-06GHz 10G-10GHz 18G-18GHz	Package type: M—standard module	Output power: 06---6dBm 10---10dBm	Optical fiber connector : FP ---FC/PC FA ---FC/APC SP---user specified	Operating temperature: empty-- -20~60°C G---- 40~70°C J---- 55~70°C

DFB Lasers

Features

- ITU wavelength and high output power is optional
- Line width options: <10MHz, <1MHz, <200KHz
- Built-in optical isolator
- Multiple operating modes are available
- Module package、desktop package

Applications

- Laser distance measurement
- Seed light source
- Optical fiber communication
- Optical sensing system

Parameters



Parameter	Symbol	Min	Typ	Max	Unit
Operating wavelength	λ	852/1064/1310/1550/1653/2000			nm
Output optical power	P _o	-	13	16	dBm
3dB spectral width	Δλ*	0.2	2	10	MHz
SMSR	SMSR	30	45		dB
Relative noise intensity	RIN		-160	-150	dB/Hz
Power stability**	PSS			±0.005	dB/5min
	PLS			±0.01	dB/8h
Output isolation	ISO	30	35		dB
Specification		Desktop		Module	
Dimensions L x W x H		320×220×90 mm		90×70×18 mm	
Power requirements		AC 220V ± 10% 30W		DC +5V GND	
Output optical fiber		SMF/PMF			
Operating mode		CW、 internal modulation ,external signal modulation			
Optical connector		FC/PC , FC/APC or user specified			

ns-Pulse Lasers

Features

- The narrowest pulse is up to 3ns
- Pulse width is tunable
- Pulse repetition frequency is tunable
- Internal trigger and external trigger are optional
- Desktop and module package are optional
- Can be customized according to customer's requirements

Applications

- laser distance measurement
- Seed light source
- Optical fiber sending
- Passive device testing

Parameters

Parameter index	Min	Typ	Max	Unit
Central wavelength	851	852	853	nm
Peak pulse optical power	50			mW
Spectral line width		1	2	nm
Pulse width	3		100	ns
Light pulse repetition frequency	1		1000	KHz
Optical power stability	<1			%
Wavelength stability	<0.01			nm
Pulse width adjustment accuracy	1			ns
Pulse width adjustment step size	5			ns
Re-adjust the step size	5			KHz
Output optical isolation	30			dB
Optical fiber connector	FC/PC、FC/APC or user specified			
Optical fiber type	HI 780 or 62.5μm MMF			



Tunable Lasers

Features

- Wavelength tuning range
- Output power 10mw
- Narrow line width
- Internal locked of wavelength
- Remote control is available



Applications

- WDM device testing
- Optical fiber sensing & OCT
- PMD and PDL testing

Parameter		Symbol	Min	Typ	Max	Unit
Wavelength	C-band	l	1524		1565	nm
	L-band	l	1560		1620	
Wavelength tuning range			40			nm
Channel spacing				50		GHz
Wavelength conversion speed				2		s
Wavelength accuracy			-1.5		1.5	GHz
Output optical power		Po	10			dBm
3dB spectral width		DI*		3	10	MHz
SMSR		SMSR	40	50		dB
Polarization extinction ratio		PEX	20			dB
Relative noise intensity		RIN		-145	-135	dB/Hz
Power stability **		PSS			±0.005	dB/5min
		PLS			±0.01	dB/8h
Power supply			AC 220V ± 10% 30W			
Output optical fiber			PMF			
Optical connector			FC/PC, FC/APC or user specified			

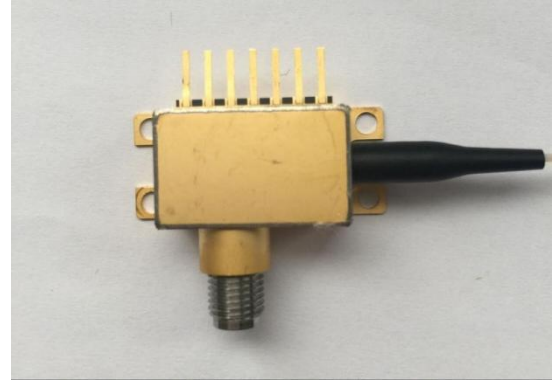
Broadband Analog Direct-Modulation Lasers

Features

- Wavelength options: 1310nm、1550nm、DWDM
- Bandwidth options: 6/10/18GHz
- Output power options: 8/10mW
- Excellent RF flatness
- Wide dynamic range
- Entire transparent work

Applications

- Remote antenna and phased array
- Long -distance analog optical fiber communication
- Military three wave communication
- Tracking telemetry and control



Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Threshold current	I _{th}	CW	-	-	25	mA
Operating current	I _{op}	CW	-	-	100	mA
Input impedance	Z _{in}	IF=I _{op}	-	50	-	Ω
Thermistor	RT	@+25℃	9.5	10	10.5	kΩ
Thermistor temperature coefficient		@+25℃	-	-4.4	-	%/℃
Output optical power	PF	CW, IF=I _{op} ,		10		mW
SMSR	SMSR	CW, IF=I _{op}	35	-	-	dB
Relative noise intensity	RIN	100MHz-3GHz		-150		dB/Hz
Monitor current	I _m	-	10	-	200	uA/mW
Optical isolation		-	30			dB
Input 1dB power compression point	P1dB		15			dBm

EA Modulation Lasers

Features

- Low drive voltage: <2.5V
- High bandwidth: >10G, >40G (optional)
- High extinction ratio: 10dB
- Module package desktop package

Applications

- 10Gbps high-speed optical fiber communication system
- 40Gbps high speed optical fiber system
- Microwave photonics



Parameter		Symbol	Min	Typ	Max	Unit
Central wavelength		λ_C	1530	-	1564	nm
Output average light power		P_{avg}	-4	0		dBm
3dB spectral width		DI		2	10	MHz
Wave stability					0.01	nm
SMSR		SMSR	30	45	-	dB
Power stability **		PSS			± 0.005	dB/5min
		PLS			± 0.01	dB/8h
Modulation drive voltage		V_{pp}		2.0	2.5	V
3dB bandwidth	EAS-10	BW	10	12	-	GHz
	EAS-40		32	35		GHz
Dynamic extinction ratio		ER		9	10	dB
Specification			Desktop		Module	
Dimensions		LxWxH	320×220×90 mm		90×70×18mm	
Power requirement			AC 220V $\pm 10\%$ 30W		DC +5V GND	
Input signal interface			SMA(f) / V(f)			
Output optical fiber			Single mode fiber smf-28			
Output optical interface			FC/PC FC/APC or user specified			

ASE Broadband Light Source

Features

- Well power stability
- Low degree of polarization output
- Intelligent microprocessor control
- Well average wavelength stability



Applications

- Spectral analysis and biomedical imaging
- Biomedical imaging
- Optical fiber sensing system
- Optical gyroscope testing

Parameter		Min	Typ	Max	Unit
Operating wavelength	C	1525	-	1565	nm
	L	1570	-	1610	
	C+L	1525		1610	
	1060	1030		1090	
Output power			10/13/17/23		dBm
Power spectral density		-20		-2	dBm
Power stability	15min @ 23°C	2.0	3.0	5.0	%
	8h@ 23°C	-	0.01	0.02	dB
3dBspectral width		37	40	42	nm
Spectral flatness			1.5	2	dB
Specification		Desktop		Module	
Dimensions L x W x H		320×220×90 mm		90×70×18mm	
Power requirement		AC 220V ± 10% 30W		DC +5V GND	
Optical fiber type		SMF-28 or PMF			
Connector type		FC/PC、FC/APC or user specified			

SLED Broadband Light Source

Features

- Low degree of coefficient
- High power stability
- Excellent spectral flatness
- Module mode desktop are optional

Applications

- Optical fiber sensing system
- Passive device testing production and testing
- Light test instrument

Parameters



Parameter	Typical				Unit
	850	1310	1550	1250~1650	
Central wavelength	850	1310	1550	1250~1650	nm
FWHM spectral width	>30	>45	>55	>400	nm
Output optical power	>3	>1	>0.5	>5	mW
Spectral wave	<0.2	<0.2	<0.2	<0.2	dB
Spectral stability@15 min	≤±0.05				dB
Short-term stability@15 min	≤±0.01				dB
Long-term stability@8hour	≤±0.03				dB
Operating mode	Continuous 、 Internal modulation、 external modulation				
Specification	Desktop		Module		
Dimensions L x W x H	320×220×90 mm		90×70×18mm		
Power supply	AC 220V ± 10% 30W		DC +5V GND		
Output optical fiber	SMF/PMF				
Optical light connector	FC/PC FC/APC or user specified				