



AM Series Intensity Modulator

Description



The LiNbO₃ intensity modulator is widely used in high-speed optical communication system, laser sensing and ROF systems because of well electro-optic performance. The R-AM series based on MZ push-pull structure and X-cut design, has stable physical and chemical characteristics, which can be applied both in laboratory experiments and industrial systems.

Features

- Low insertion loss
- High Bandwidth
- Low half-wave voltage
- Customization option

Applications

- ROF systems
- Quantum key distribution
- Laser sensing systems
- Side-band modulation

Wavelength

- 850nm
- 1064nm
- 1310nm
- 1550nm

Bandwidth

- 300MHz
- 2.5GHz
- 10GHz
- 20GHz

Operating wavelength	850nm	1064nm	1310nm	1550nm	
3dB Bandwidth	~10GHz	~10GHz	~10GHz	~10GHz	~20GHz
Insertion Loss	< 5dB	< 5dB	< 5dB	< 5dB	
Extinction ratio @DC	> 23dB	> 23dB	> 23dB	> 23dB	
V _π @RF (1KHz)	< 3V	< 4V	<4.5V	<5.5V	<6V
V _π @Bias	< 3.5V	<5V	<6V	<7V	

Ordering Information

R	AM	15	10G	XX	XX
	Type: AM---Intensity Modulator	Wavelength: 08---850nm 10---1060nm 13---1310nm 15---1550nm	3dB bandwidth: 2.5G---10GHz 10G---10GHz 20G---20GHz	In-Out Fiber type: PP---PM/PM PS---PM/SMF	Optical connector: FA --- FC/APC FP --- FC/PC SP --- Customization



R-AM-08-10G

Wavelength 850nm 10GHz Intensity modulator

Parameter		Symbol	Min	Typ	Max	Unit
Optical parameters						
Operating wavelength		λ	830	850	870	nm
Insertion loss		IL		4.5	5	dB
Optical return loss		ORL			-45	dB
Switch extinction ratio @DC		ER@DC	20			dB
Dynamic extinction ratio		DER		13		dB
Optical fiber	Input port		850nm PM fiber(125/250 μ m)			
	output port		850nm PM fiber(125/250 μ m)			
Optical fiber interface			FC/PC、FC/APC Or Customization			
Electrical parameters						
Operating bandwidth (-3dB)		S ₂₁	10	12		GHz
Half-wave voltage V _{pi}	RF	@1KHz		2.5	3	V
	Bias	@1KHz		3	4	V
Electrical return loss		S ₁₁		-12	-10	dB
Input impedance	RF	Z _{RF}	50			Ω
	Bias	Z _{BIAS}	1M			Ω
Electrical interface			SMA(f)			

Limit Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Input optical power@850nm	P _{in,Max}	dBm			10
Input RF power		dBm			28
bias voltage	V _{bias}	V	-15		15
Operating temperature	T _{op}	°C	-10		60
Storage temperature	T _{st}	°C	-40		85
Humidity	RH	%	5		90



R-AM-10-10G

Wavelength 1064nm 10GHz Intensity modulator

Parameter		Symbol	Min	Typ	Max	Unit
Optical parameters						
Operating wavelength		λ	980	1060	1150	nm
Insertion loss		IL		4	5	dB
Optical return loss		ORL			-45	dB
Switch extinction ratio @DC		ER@DC	20	25		dB
Dynamic extinction ratio		DER		13		dB
Optical fiber	Input port		980nm PM fiber (125/250 μ m)			
	output port		980nm PM fiber (125/250 μ m)			
Optical fiber interface			FC/PC、FC/APC Or Customization			
Electrical parameters						
Operating bandwidth (-3dB)		S ₂₁	10	12		GHz
Half-wave voltage V _{pi}	RF	@50KHz		3.5	4	V
	Bias	@Bias		4	5	V
Electrical return loss		S ₁₁		-12	-10	dB
Input impedance	RF	Z _{RF}	50			Ω
	Bias	Z _{BIAS}	1M			Ω
Electrical interface			SMA(f)			

Limit Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Input optical power	P _{in,Max}	dBm			20
Input RF power		dBm			28
bias voltage	V _{bias}	V	-15		15
Operating temperature	T _{op}	°C	-10		60
Storage temperature	T _{st}	°C	-40		85
Humidity	RH	%	5		90



R-AM-13-10G

Wavelength 1310nm 10GHz Intensity modulator

Parameter	Symbol	Min	Typ	Max	Unit
Optical parameters					
Operating wavelength	λ	1290	1310	1330	nm
Insertion loss	IL		4	5	dB
Optical return loss	ORL			-45	dB
Switch extinction ratio @DC	ER@DC	20	25		dB
Dynamic extinction ratio	DER		13		dB
Optical fiber	Input port		Panda PM Fujikura SM		
	output port		Panda PM Fujikura SM		
Optical fiber interface		FC/PC、FC/APC Or user to specify			
Electrical parameters					
Operating bandwidth (-3dB)	S ₂₁	10	12		GHz
Half-wave voltage V _{pi}	RF	@50KHz		4.0	V
	Bias	@Bias		5.5	V
Electrical return loss	S ₁₁		-12	-10	dB
Input impedance	RF	Z _{RF}	50		Ω
	Bias	Z _{BIAS}	1M		Ω
Electrical interface		SMA(f)			

Limit Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Input optical power	P _{in,Max}	dBm			20
Input RF power		dBm			28
bias voltage	V _{bias}	V	-20		20
Operating temperature	T _{op}	°C	-10		60
Storage temperature	T _{st}	°C	-40		85
Humidity	RH	%	5		90



R-AM-15-10G

Wavelength 1550nm 10GHz Intensity modulator

Parameter		Symbol	Min	Typ	Max	Unit
Optical parameters						
Operating wavelength		λ	1530	1550	1565	nm
Insertion loss		IL		4	5	dB
Optical return loss		ORL			-45	dB
Switch extinction ratio @DC		ER@DC	20	25	45	dB
Dynamic extinction ratio		DER		13		dB
Optical fiber	Input port		Panda PM Fujikura SM			
	output port		Panda PM Fujikura SM			
Optical fiber interface			FC/PC、FC/APC Or user to specify			
Electrical parameters						
Operating bandwidth (-3dB)		S ₂₁	10	12		GHz
Half-wave voltage V _{pi}	RF	@50KHz		4.5	5	V
	Bias	@Bias		6	7	V
Electrical return loss		S ₁₁		-12	-10	dB
Input impedance	RF	Z _{RF}	50			Ω
	Bias	Z _{BIAS}	1M			Ω
Electrical interface			SMA(f)			

Limit Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Input optical power	P _{in,Max}	dBm			20
Input RF power		dBm			28
bias voltage	V _{bias}	V	-20		20
Operating temperature	T _{op}	°C	-10		60
Storage temperature	T _{st}	°C	-40		85
Humidity	RH	%	5		90



R-AM-15-20G

Wavelength 1550nm 20GHz Intensity modulator

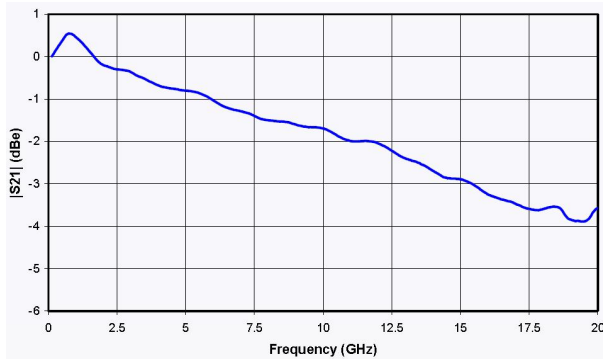
Parameter	Symbol	Min	Typ	Max	Unit	
Optical parameters						
Operating wavelength	λ	1530	1550	1565	nm	
Insertion loss	IL		4	5	dB	
Optical return loss	ORL			-45	dB	
Switch extinction ratio @DC	ER@DC	20	25	45	dB	
Dynamic extinction ratio	DER		13		dB	
Optical fiber	Input port	Panda PM Fujikura SM				
	output port	Panda PM Fujikura SM				
Optical fiber interface		FC/PC、FC/APC Or user to specify				
Electrical parameters						
Operating bandwidth (-3dB)	S ₂₁	18	20		GHz	
Half-wave voltage V _{pi}	RF	@50KHz		4.5	5	V
	Bias	@Bias		6	7	V
Electrical return loss	S ₁₁		-12	-10	dB	
Input impedance	RF	Z _{RF}	50		Ω	
	Bias	Z _{BIAS}	1M		Ω	
Electrical interface		SMA(f)				

Limit Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Input optical power	P _{in,Max}	dBm			20
Input RF power		dBm			28
bias voltage	V _{bias}	V	-20		20
Operating temperature	T _{op}	°C	-10		60
Storage temperature	T _{st}	°C	-40		85
Humidity	RH	%	5		90

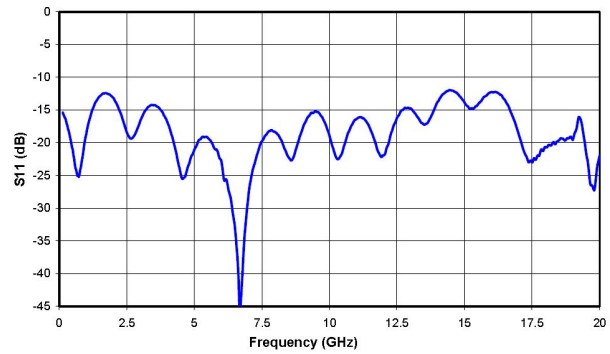


S21 Curve



S21 Curve

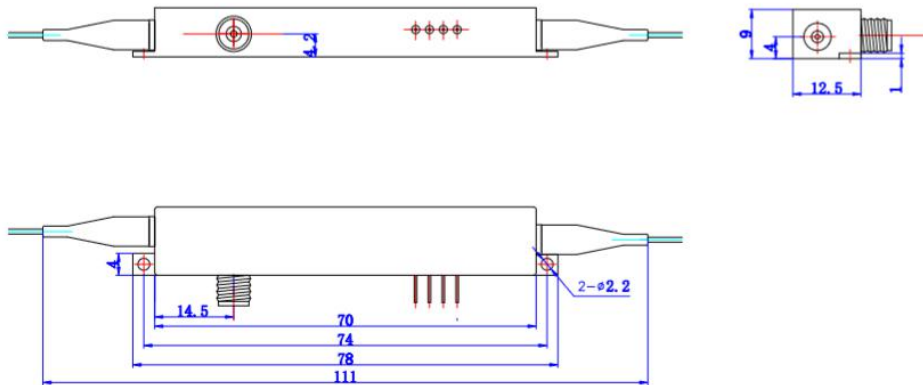
&S11 Curve



S11 Curve

S21&s11 curves of R-AM-15-10G

Mechanical Diagram



PORT	Symbol	Note
In	Optical input port	PM Fiber (125μm/250μm)
Out	Optical output port	PM and SMF option
RF	RF input port	SMA(f)
Bias	Bias control port	1,2 Bias, 34-N/C

RF Driver and Bias control circuit board information are provided on website (www.rof-oc.com), you can also contact us for more information by email (sales@rof-oc.com).