

AAWG Series

Arrayed
Waveguide
Grating

One Stop Production Solution
High yield & High bandwidth

1. Accurate Laser dicing for AWG Chips
2. Excellent Temperature Compensation Design
3. High Accuracy Fiber Array Assembly
4. Automation Coupling
5. Automation Testing & Traceability Test System
6. Customized Package Design Available.



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Arrayed Waveguide Grating

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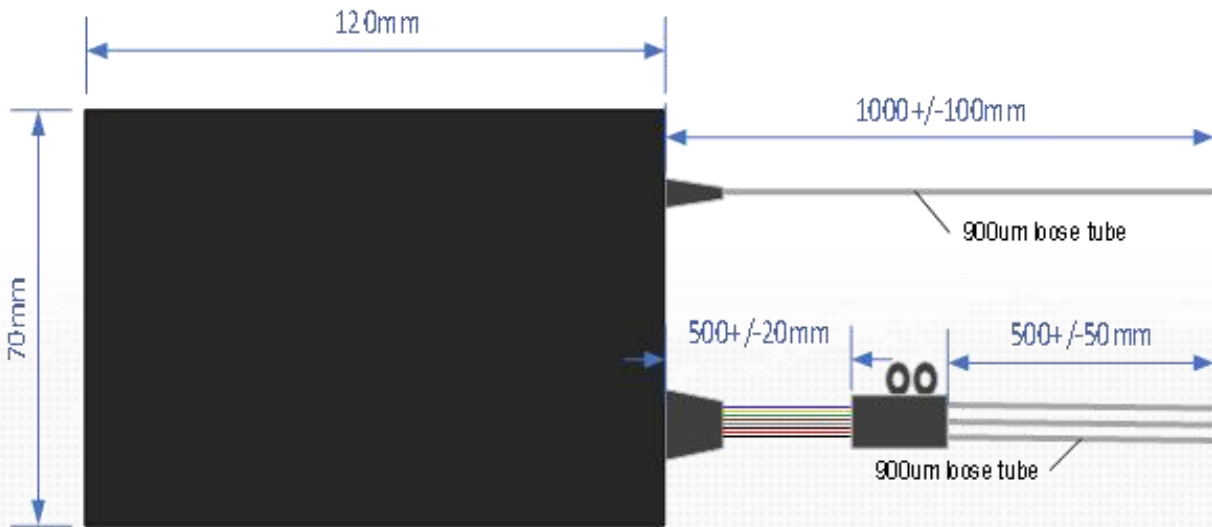
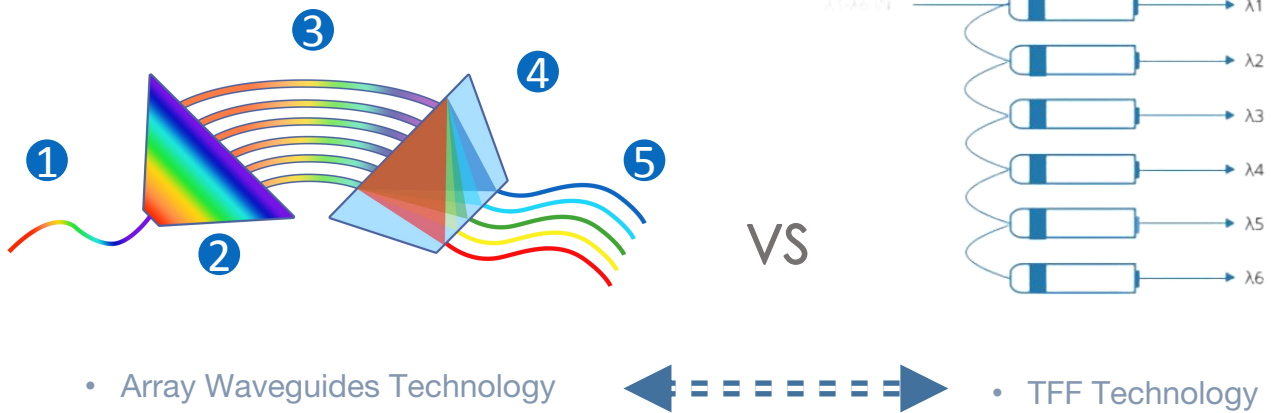
AAWG

Product

- 50GHz 96CH AAWG(Flat Top) Module
- 75GHz 64CH AAWG(Flat Top) Module
- 100GHz 48CH AAWG Module
- 150GHz O-band 17CH AAWG(Gaussian) Module
- 150GHz 32CH AAWG(Flat Top) Module
- AAWG 200GHz spacing

Introduction

Arrayed waveguide gratings (AWG) are commonly used as optical (de)multiplexers in wavelength division multiplexed (WDM) systems.



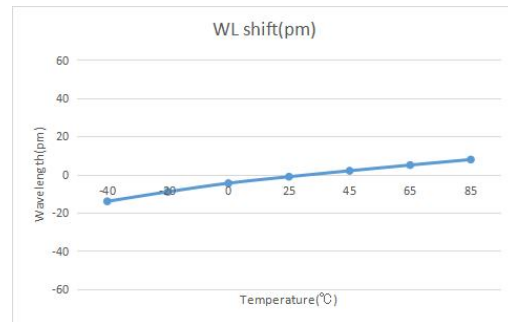
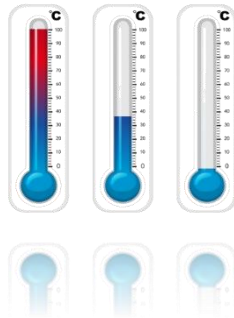
Feature AAWG Summary



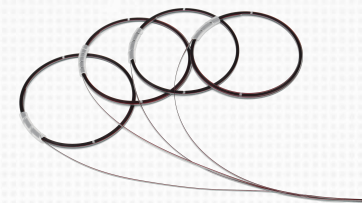
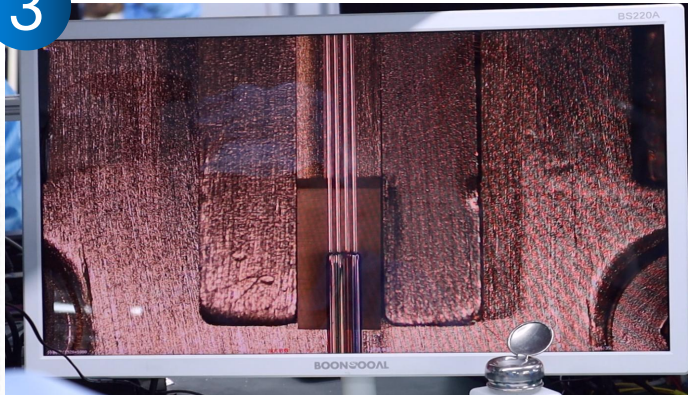
1 Accurate Laser dicing for AWG Chips



2 Excellent Temperature Compensation Design



3 High Accuracy Fiber Array Assembly



Feature AAWG Summary



4 Automation Coupling



5 Automation Testing & Traceability Test System



Barcode Tracking System



6 Customized Package Design Available



Feature AAWG Summary

Parameters	100G AAWG	100G AAWG	50G AAWG	75G AAWG	150G AAWG	150G AAWG
Chip Type	Gaussian	Flat top	Flat top	Flat top	Gaussian	Flat top
Operating Wavelength(nm)	1525-1570 (C-band)	1525-1570 (C-band)	1525-1570 (C-band)	1525-1570 (C-band)	1260-1360 (O-band)	1525-1570 (C-band)
Channel	16 ~ 48	16 ~ 48	80/96	64	17	32
Channel Wavelength(nm)	1529.55~1567.13 (ITU C13~C60)	1529.55~1567.13 (ITU C13~C60)	191.35~196.10	fc	See channel plan	See channel plan
Channel Frequency Interval(GHz)	100	100	50	75	150	150
Center Wavelength Bandwidth	±0.1(nm)	±0.1(nm)	±6.25(GHz)	fc ±31.5(GHz)	±18.75(GHz)	±16.25(GHz)
Center Wavelength Accuracy(nm)	±0.05	±0.05	±0.05	fc ± 9.0(GHz)	±0.05	±0.05
-1dB Bandwidth(nm)	≥0.22	≥0.4	≥0.2	>22.5(@-0.5dB)	≥0.23	≥75(GHz)
-3dB Bandwidth(nm)	≥0.42	≥0.6	≥0.28	>36.0	≥0.42	≥90(GHz)
-20dB Bandwidth(nm)	≤1.2	≤1.2	--	--	≤1.2	--
Pass band Insertion Loss (dB)	≤4.0	≤5.5	≤6.0	≤6.2	≤3.0	≤6.0
Adjacent Isolation(dB)	≥25	≥25	≥25	≥13	≥25	≥13
Non-Adjacent Isolation(dB)	≥30	≥30	≥30	≥30	≥30	≥30
Total Cross Talk	≥22	≥22	≥22	≥11	≥24	≥11
Insertion Loss Uniformity at ITU	≤1.5	≤1.5	≤1.3	≤1.5	≤1.2	≤1.5
Passband Ripple @±0.1nm(dB)	≤1.5	≤0.5	≤0.5	≤0.5	≤1.5	≤0.6
Polarization-related losses(dB)	≤0.5	≤0.5	≤0.5	≤1.1	≤0.5	≤0.5
Polarization Mode Dispersion(ps)	≤0.5	≤0.5	≤1	≤1	≤0.5	≤0.5
Return Loss(dB)	≥45	≥45	≥45	≥36	≥40	≥40
Directivity(dB)	≥50	≥50	≥45	≥45	≥45	≥45
Chromatic Dispersion(ps/nm)	-20~+20	-20~+20	-20~+20	-33~+33	-20~+20	--
Max Optical Power(mW)	250	250	500	500	250	250
Operating Temperature(°C)	-40~+85	-40~+85	-5~+65	-5~+65	-40~+85	-5~+65
Storage Temperature(°C)	-40~+85	-40~+85	-40~+85	-40~+85	-40~+85	-40~+85



Optical Performance

50GHz 96CH AAWG(Flat Top) Module



Parameters	Specifications
Operating Wavelength(nm)	1525-1570 (C-band)
Channel	80/96
Channel Wavelength(THz)	191.35~196.10
Channel Frequency Interval(GHz)	50
Center Wavelength Bandwidth(GHz)	±6.25
Center Wavelength Accuracy(nm)	±0.05
-1dB Bandwidth(nm)	≥0.2
-3dB Bandwidth(nm)	≥0.28
Pass band Insertion Loss (dB)	≤6.0
Adjacent Isolation(dB)	≥25
Non-Adjacent Isolation(dB)	≥30
Total Cross Talk(dB)	≥22
Insertion Loss Uniformity(dB)	≤1.3
Passband Ripple(dB)	≤0.5
Polarization-related losses(dB)	≤0.5
Polarization Mode Dispersion(ps)	≤1
Return Loss(dB)	≥45
Directivity(dB)	≥45
Chromatic Dispersion(dB)	-20~+20
Max Optical Power(mW)	500
Operating Temperature(°C)	-5~+65
Storage Temperature(°C)	-40~+85
*Notes: 1.Insertion Loss tested without connector.	

*Notes: 1.Insertion Loss tested without connector.



Optical Performance

75GHz 64CH AAWG(Flat Top) Module



Parameters	Specifications
Operating Wavelength(nm)	1525-1570 (C-band)
Channel	64
Center Frequency(THz)	f_c
Channel Frequency Interval(GHz)	75
Working Bandwidth (ITU Band) -WB	$f_c \pm 31.5$
Isolation Bandwidth - IBW	$f_c \pm 9.0$
-0.5dB net half Bandwidth(GHz)	>22.5
-3dB net half Bandwidth(GHz)	>36.0
Insertion Loss at ITU Grid EOL(dB)	≤ 6.2
Adjacent Isolation(dB)	≥ 13
Non-Adjacent Isolation(dB)	≥ 30
Cumulative Isolation(dB)	≥ 11
Insertion Loss Uniformity(dB)	≤ 1.5
Passband Ripple(dB)	≤ 0.5
Polarization-related losses(dB)	≤ 1.1
Polarization Mode Dispersion(ps)	≤ 1
Return Loss(dB)	≥ 36
Directivity(dB)	≥ 45
Chromatic Dispersion(dB)	-33~+33
Max Optical Power(mW)	500
Operating Temperature($^{\circ}$ C)	-5~+65
Storage Temperature($^{\circ}$ C)	-40~+85
*Notes: 1.Insertion Loss tested without connector.	



Optical Performance

100GHz 48CH AAWG Module



Parameters	Specifications	
	Flat top	Gaussian
Operating Wavelength(nm)	1525-1570 (C-band)	
Channel	16 ~ 48	
Channel Wavelength(nm)	1529.55~1567.13 (ITU C13~C60)	
Channel Frequency Interval(GHz)	100	
Center Wavelength Bandwidth(nm)	±0.1	
Center Wavelength Accuracy(nm)	±0.05	
-1dB Bandwidth(nm)	≥0.4	≥0.22
-3dB Bandwidth(nm)	≥0.6	≥0.42
-20dB Bandwidth(nm)	≤1.2	≤1.2
Pass band Insertion Loss (dB)	≤5.5	≤4.0
Adjacent Isolation(dB)	≥25	
Non-Adjacent Isolation(dB)	≥30	
Total Cross Talk	≥22	
Insertion Loss Uniformity at ITU	≤1.5	
Passband Ripple @±0.1nm(dB)	≤0.5	≤0.5
Polarization-related losses(dB)	≤0.5	
Polarization Mode Dispersion(ps)	≤0.5	
Return Loss(dB)	≥45	
Directivity(dB)	≥50	
Chromatic Dispersion(dB)	-20~+20	
Max Optical Power(mW)	250	
Operating Temperature(°C)	-40~+85	
Storage Temperature(°C)	-40~+85	

*Notes: 1.Insertion Loss tested without connector.



Optical Performance

150GHz O-band 17CH AAWG(Gaussian) Module 

Parameters	Specifications
Operating Wavelength(nm)	1260-1360 (O-band)
Channel	17
Channel Wavelength(THz)	See channel plan
Channel Frequency Interval(GHz)	150
Center Wavelength Bandwidth(GHz)	±18.75
Center Wavelength Accuracy(nm)	±0.05
-1dB Bandwidth(nm)	≥0.23
-3dB Bandwidth(nm)	≥0.42
-3dB Bandwidth(nm)	≤1.20
Pass band Insertion Loss (dB)	≤3.0
Adjacent Isolation(dB)	≥25
Non-Adjacent Isolation(dB)	≥30
Total Cross Talk(dB)	≥24
Insertion Loss Uniformity(dB)	≤1.2
Passband Ripple(dB)	≤1.5
Polarization-related losses(dB)	≤0.5
Polarization Mode Dispersion(ps)	≤0.5
Return Loss(dB)	≥40
Directivity(dB)	≥45
Max Optical Power(mW)	250
Chromatic Dispersion(ps/nm)	±20
Operating Temperature(°C)	-40~+85
Storage Temperature(°C)	-40~+85
*Notes: 1.Insertion Loss tested without connector.	



Optical Performance

150GHz 32CH AAWG(Flat Top) Module



Parameters		Specifications
Operating Wavelength(nm)		C-band
Channel		32
Channel Frequencies		ITU Grid
Available Channel Frequency Range(THz)		191.70~196.40
Channel Frequency Interval(GHz)		150
Reference Pass-band	(GHz)	±60
	(nm)	λ±0.48
Center Wavelength Accuracy	(nm)	±0.05
	(GHz)	±6.25
-1.5dB Bandwidth(GHz)		≥135
-3dB Bandwidth(GHz)		≥160
-20dB Bandwidth(GHz)		≤310
Insertion Loss (dB)	@Center Wavelength	≤5.5
	Full Bandwidth	≤6.0
Adjacent Isolation(dB)		≥13
Non-Adjacent Isolation(dB)		≥30
Total Cross Talk(dB)		≥11
Insertion Loss Uniformity(dB)		≤1.5
Passband Ripple(dB)		≤0.6
Polarization-related losses(dB)		≤0.5
Polarization Mode Dispersion(ps)		≤0.5
Return Loss(dB)		≥40
Directivity(dB)		≥45
Max Optical Power(mW)		250
Operating Temperature(°C)		-5~+65

*Notes: 1.Insertion Loss tested without connector.



Optical Performance

AAWG 200GHz spacing



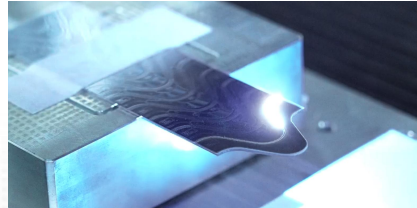
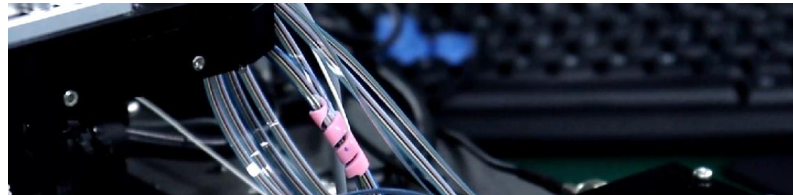
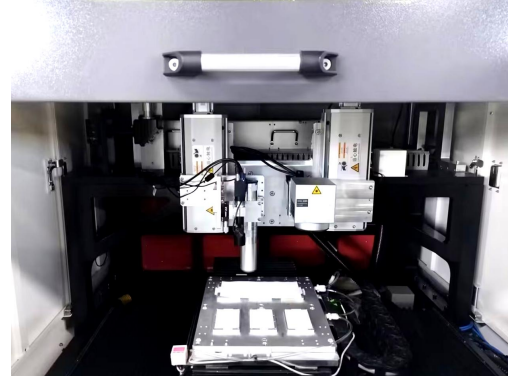
Parameter	Unit	200GHz	
		Gaussian	Flat-top type
Wavelength accuracy	nm	±0.07	±0.07
Filter bandwidth@-1.0db	nm	>0.4	>0.7
Filter bandwidth@-3.0db	nm	>0.7	>1.0
Insertion Loss	db	4	5
Uniformity	db	0.8	0.8
Crosstalk between adjacent channels	db	27	27
Non-Crosstalk between adjacent channels	db	30	30
Return loss	db	>40	>40
The polarization loss	db	<0.5	<0.5
Size	mm	120X70X10.5	
Temperature	°C	-5-70	



Production Workshop



Chip Dicing



Standard Compliance :





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