武汉中科锐择光电科技有限公司

CSRayzer Optical Technology Co., Ltd.

Instruction of Laser Diode and Photodiode Module Productline

Equipment and Instruments

Equipped with a 10,000-level dust-free workshop and a thousand-level dust-free workshop

Production Line

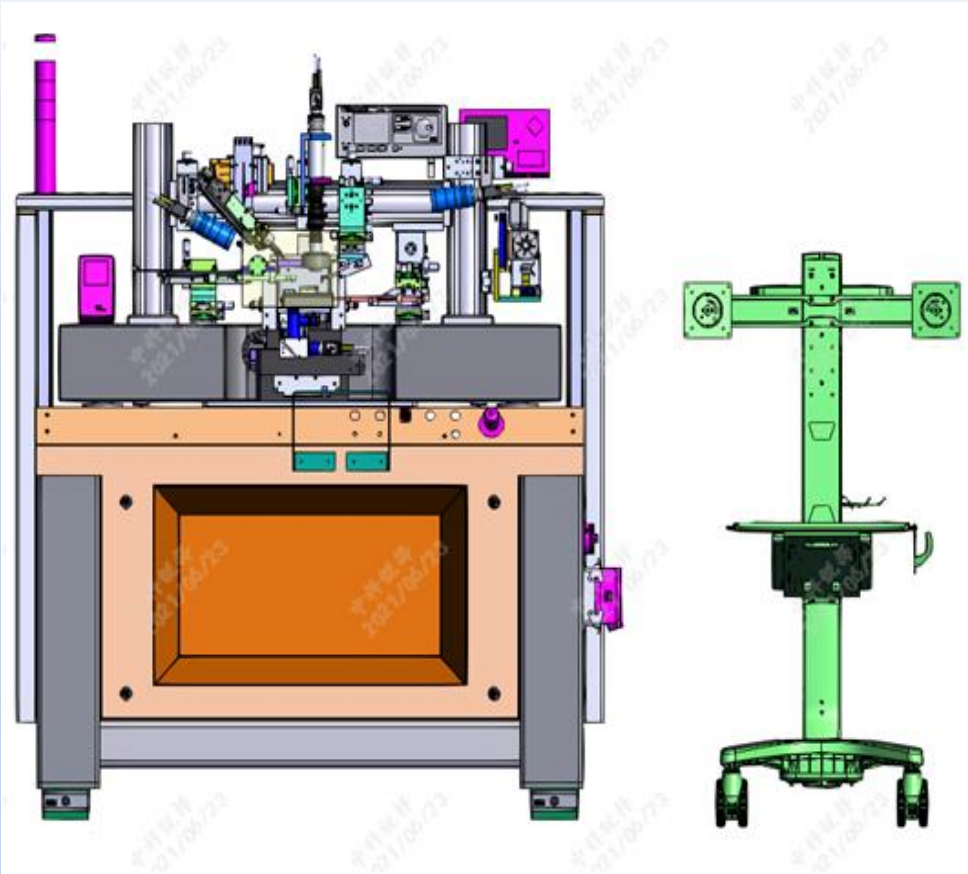
Plasma Cleaning System

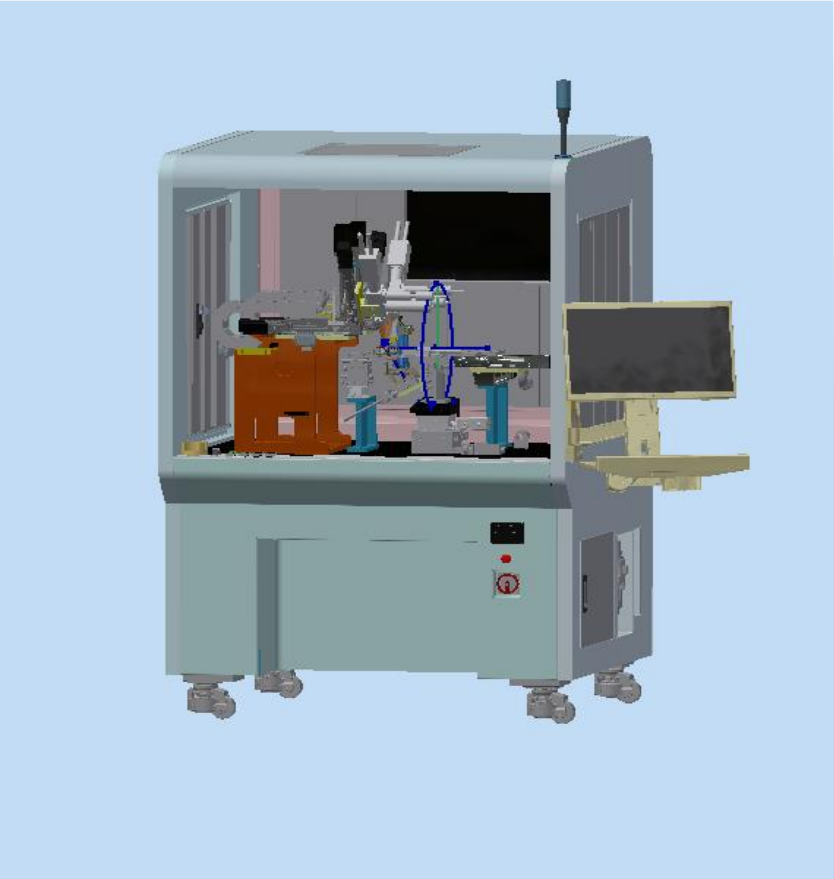
Eutectic chip system

HVS Reflow soldering system

Manual and Automatic
Gold Wire Bonding System

Push-pull Force Test System





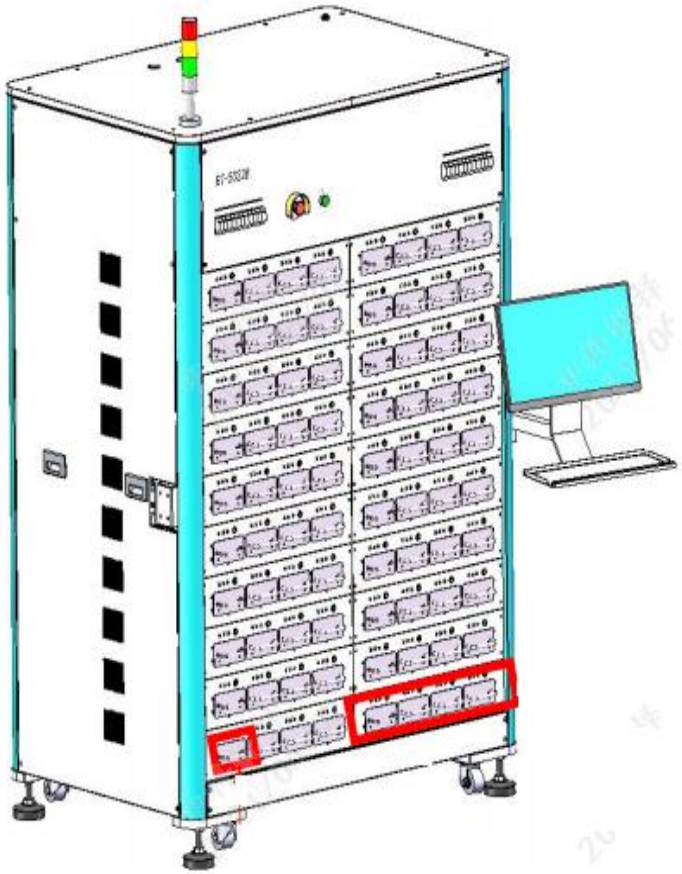
German Fully Automatic Coupling System
and
Coupling Welding System

Venus IV Parallel Welding System

Sealed Leak Detection System

High and Low Temperature Cycling Test System

Full Temperature Test System

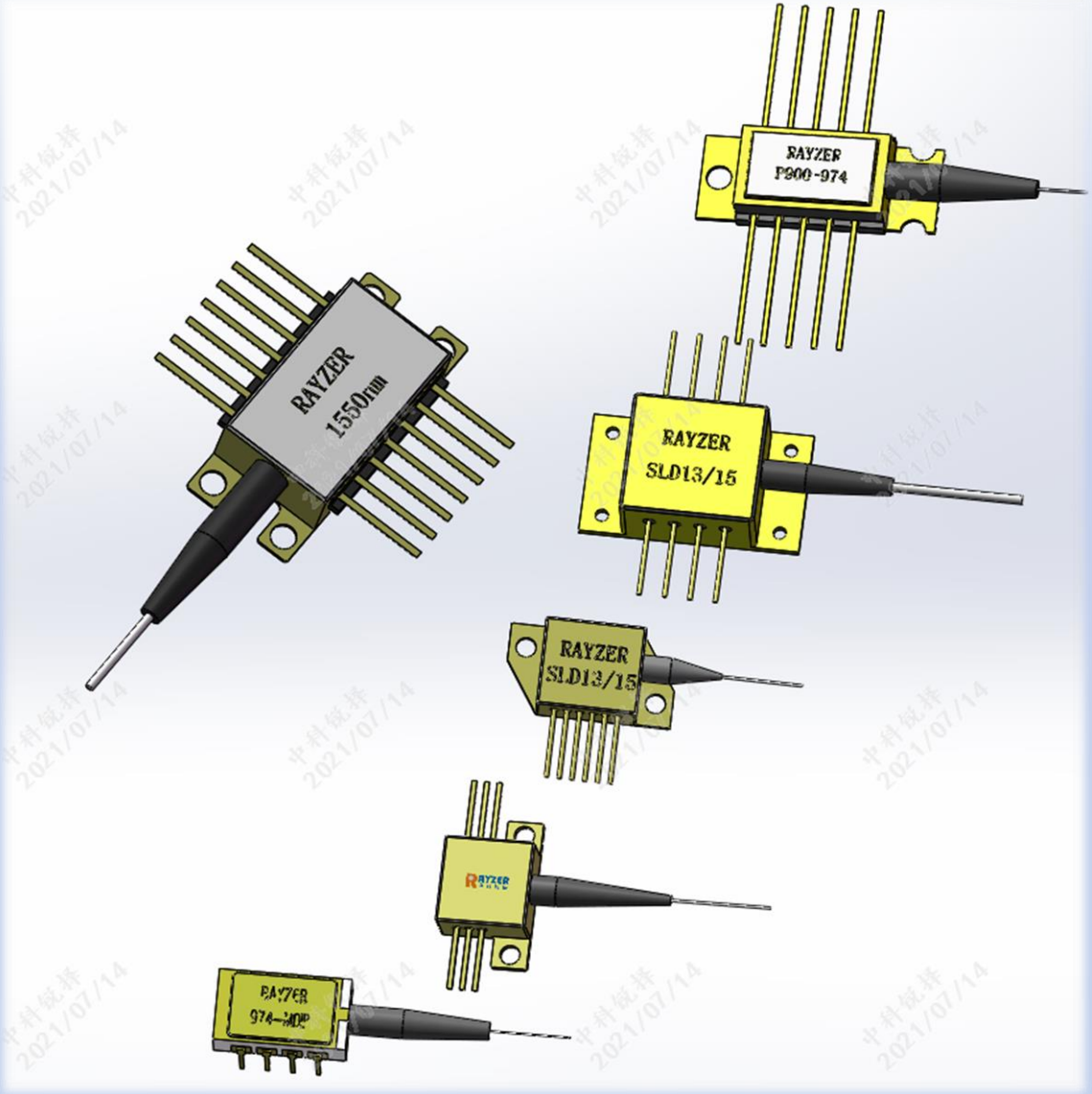


Powering High Temperature Aging Test System

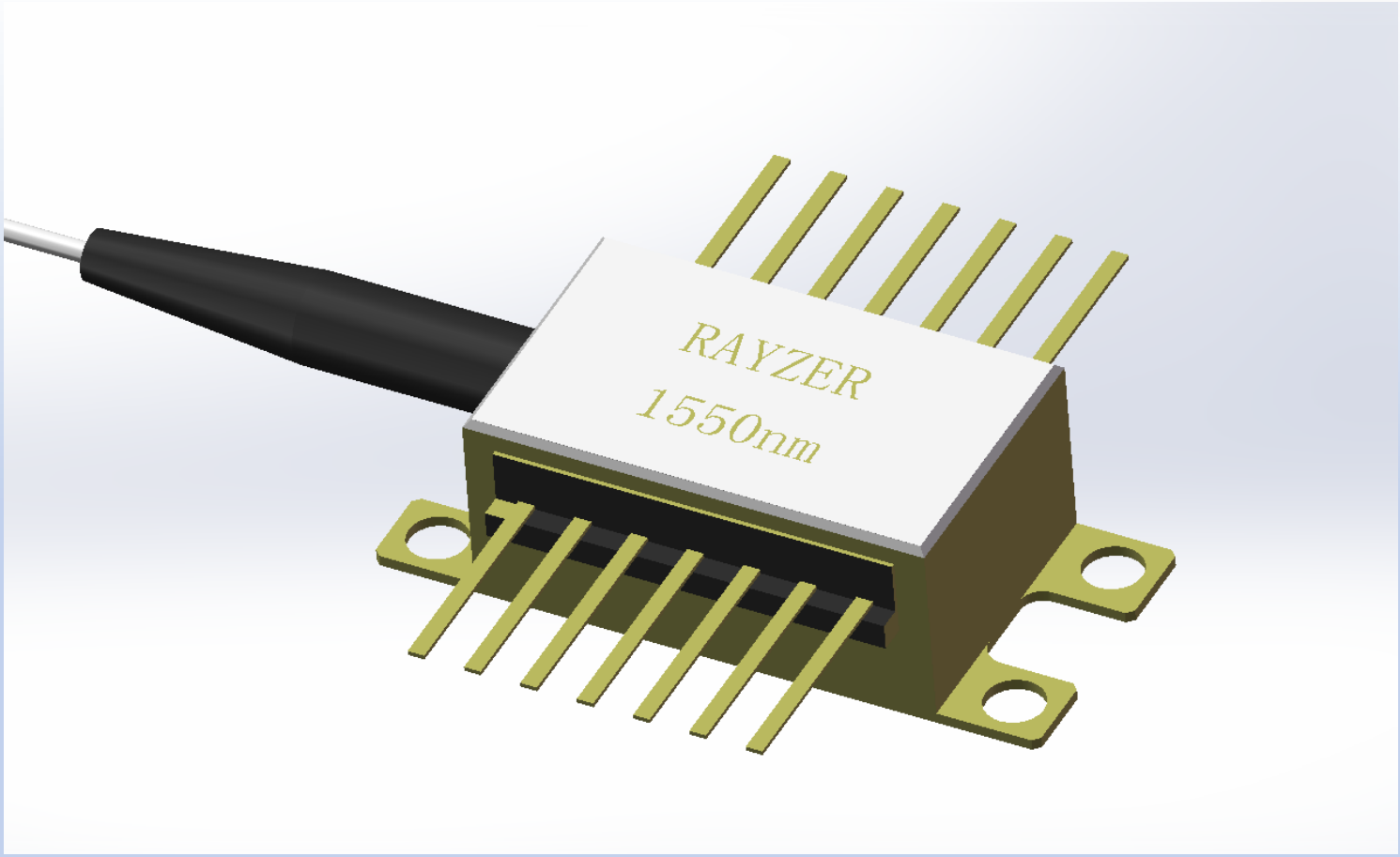
PIV and LIV Test System

- Current Production Capacity is 1000 ~ 2000 pcs /Month
- Fully automatic equipment is continuously updated.
- Other supporting laser diode product lines are under preparation.

Butterfly Packaged Products



Products



Name：
Narrow linewidth laser
Pulsed laser
SLD laser
CWDM/MWDM/DWDM /LANWDM Laser

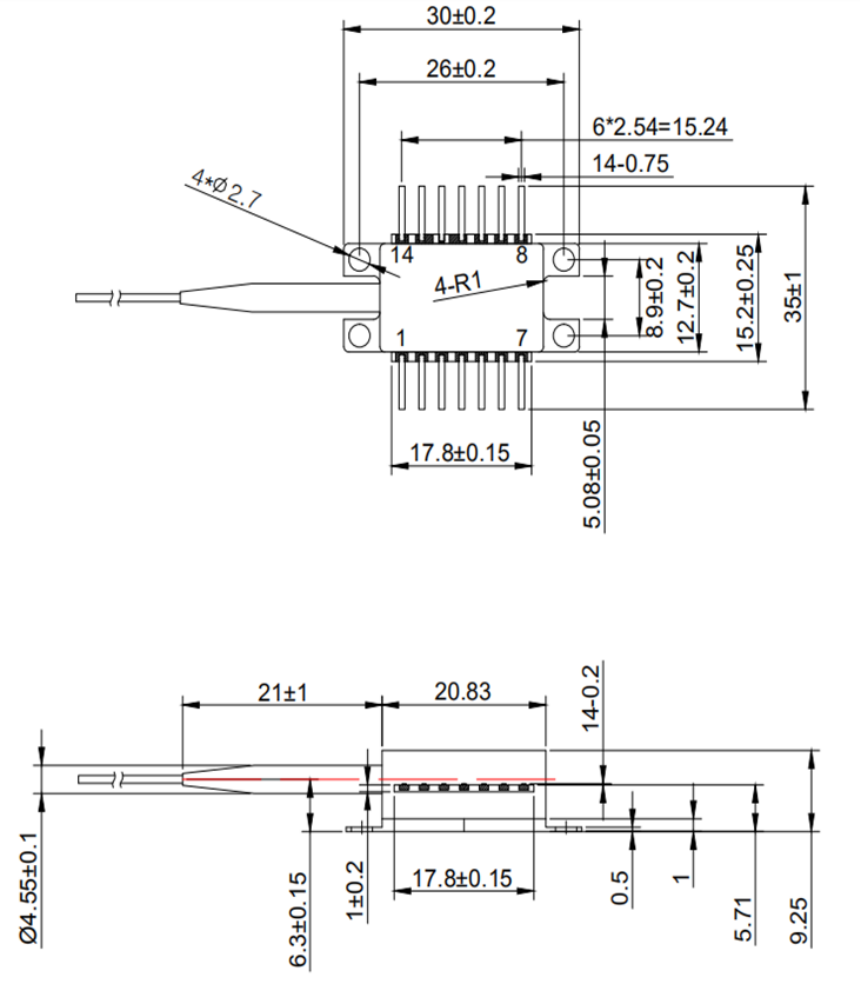
Features:
1. Single longitudinal mode
2. DWDM band or custom
3. Low phase noise and narrow line width
4. High SMSR high power output
5. Single mode or PM fiber
6. Built-in temperature control

Application:
1. Fiber optic sensing
2. National Defense Security
3. Oil and gas exploration and production
4. Lidar
5. RF and microwave photonics
6. Metrology and coherent communication, instrumentation

Parameter and Specification

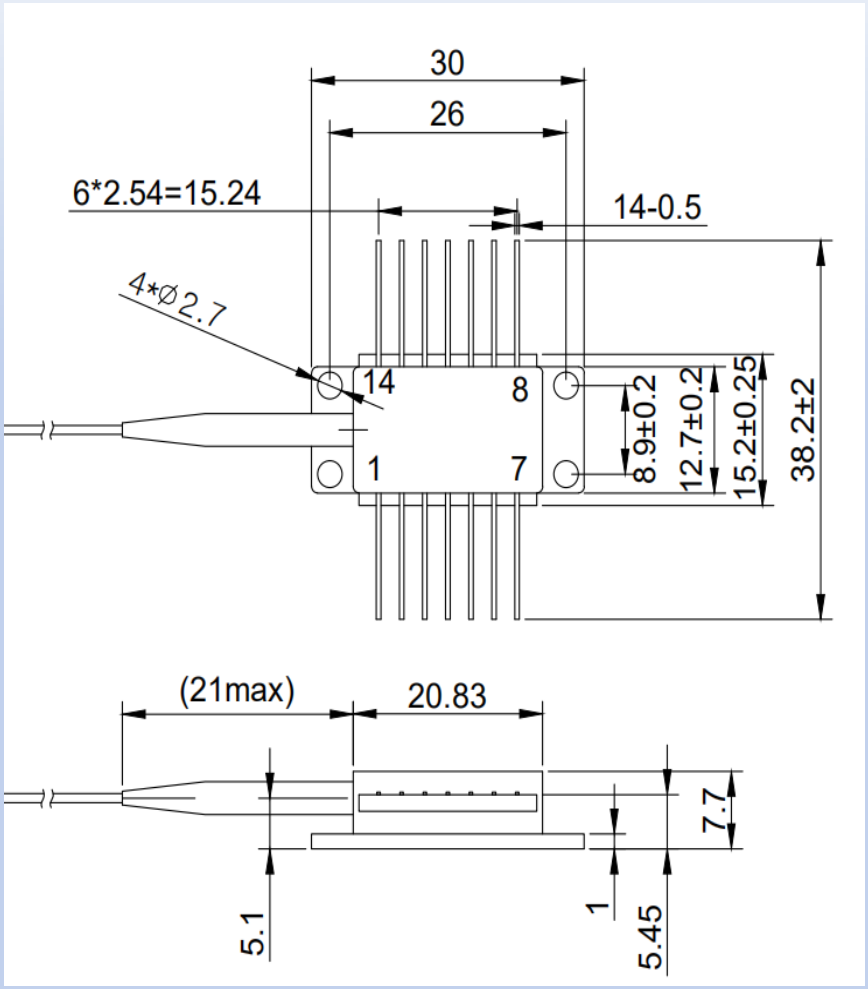
参数/Parameter	符号/Symbol	最小/Min.	典型/Typ.	最大/Max.	单位/Unit	测试条件/Test Conditions
出光功率/Output power	Po	10	-	-	mW	CW
驱动电流/Operating Current	Iop	-	-	500	mA	-
阈值/Threshold Current	Ith	-	10	50	mA	CW
监视电流/Monitor Current	Im	100	-	2000	uA	CW,VRD=5V
PD暗电流/Monitor Dark Current	Id	-	-	50	nA	CW,VRD=5V
驱动电压/Operating Voltage	Vop	-	-	2.5	V	CW
工作波长/Central Wavelength	λC	-	1550	-	nm	CW
边摸抑制比/Side mode suppression ratio	SMSR	35	45	-	dB	CW
线宽(只针对窄线宽激光器)/Line Width(可选)	Δυ	3		1000	kHz	CW，@1GHz
波长温度变化/Wavelength temperature coefficient	△λ/△T	-	0.08	0.12	nm/°C	
相对强度噪声/Relative Intensity Noise	RIN			-140	dB/Hz	CW，@1GHz
热敏电阻/Thermistor	Rth	9.5	10	10.5	KΩ	25℃
制冷电流/Thermoelectric cooler current	Icooler	-	-	1500	mA	CW,-5℃~60℃
制冷电压/Thermoelectric cooler voltage	Vcooler	-	-	1.5	V	CW,-5℃~60℃
隔离度（如有）/optical isolator（可选）	iso	30	-	-	dB	
连接器重复性/Connector Repeatability	-	-	-	0.3	dB	CW

Outline Dimension and Pin Definition

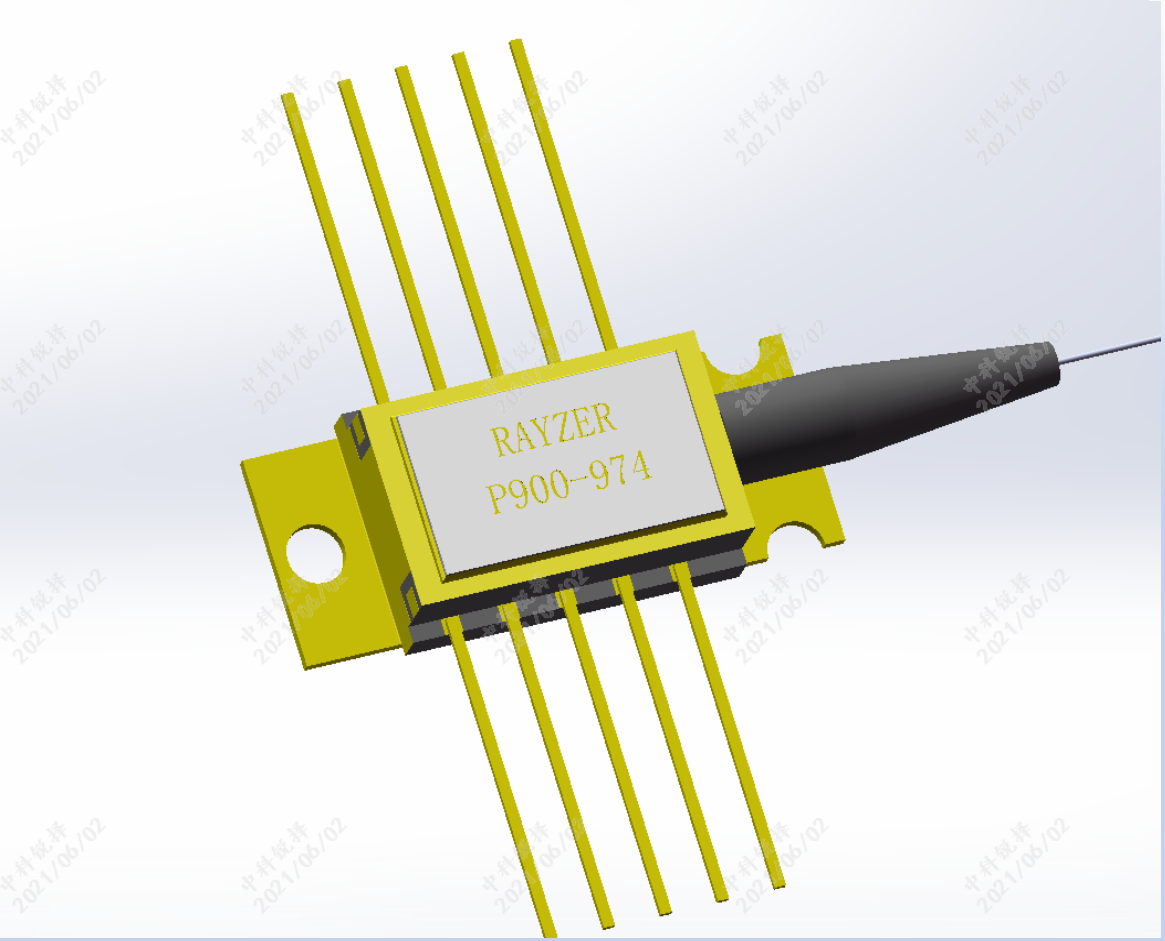


编号/PIN	针脚定义/Description
1	热敏电阻/Thermistor
2	热敏电阻/Thermistor
3	激光器负极/LD-
4	PD正极/PD Anode
5	PD负极/PD Cathode
6	制冷器正极/TEC Cooler+
7	制冷器负极/TEC Cooler-
8	接地/Ground
9	接地/Ground
10	空/NC
11	激光器正极/LD+(可选接地)
12	激光器射频负极/Laser RF cathode
13	激光器正极/LD+(可选接地)
14	空/NC

Outline Dimension and Pin Definition



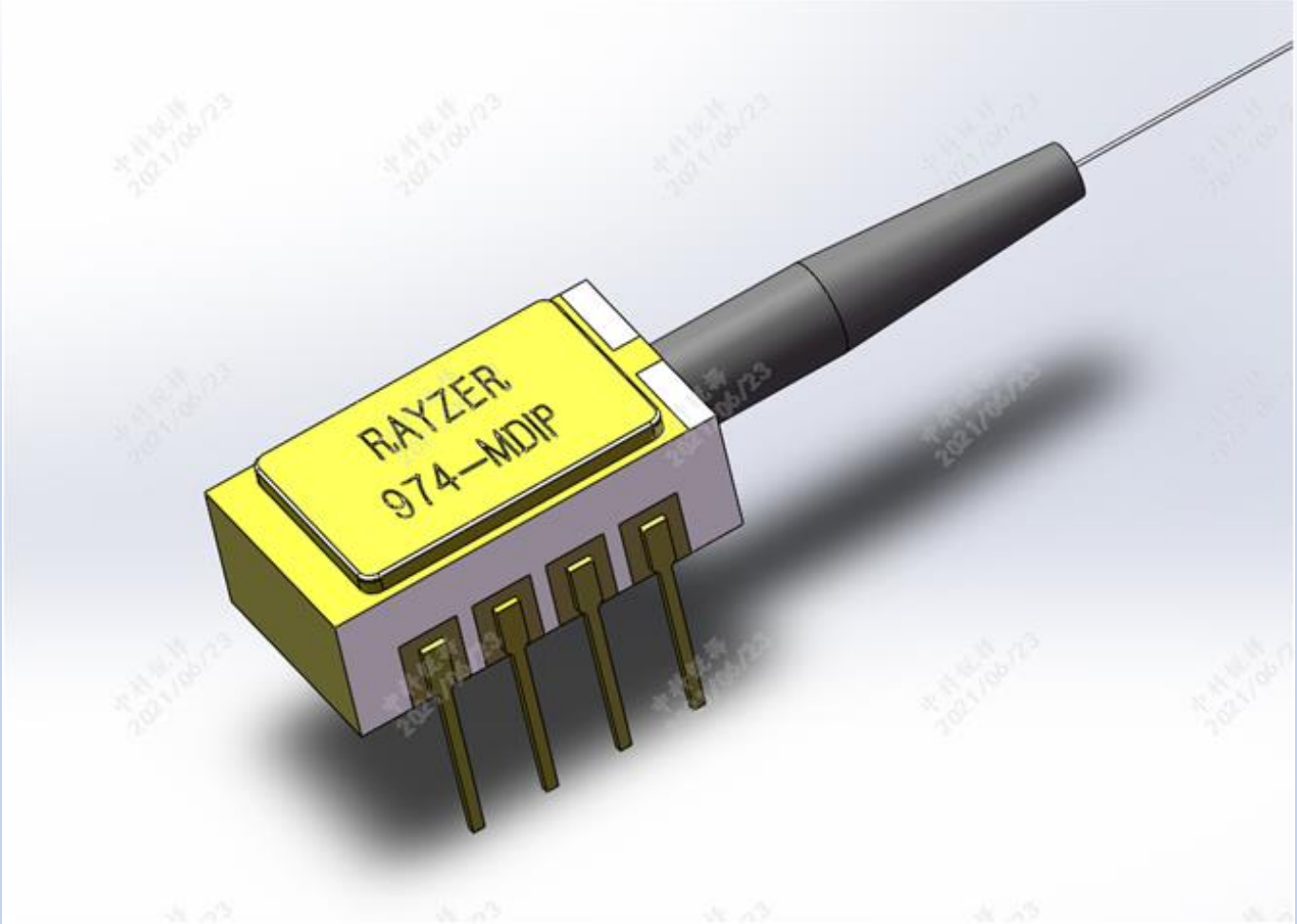
编号/PIN	针脚定义/Description
1	制冷器正极/TEC Cooler+
2	热敏电阻/Thermistor
3	PD正极/PD Anode
4	PD负极/PD Cathode
5	热敏电阻/Thermistor
6	空/NC
7	空/NC
8	空/NC
9	空/NC
10	激光器正极/LD+
11	激光器负极/LD-
12	空/NC
13	接地/Ground
14	制冷器负极/TEC Cooler-



Name：
Pump laser
SLD laser
CWDM/MWDM/DWDM /LANWDM Laser

Features:
1. High power output
2. Small airtight butterfly package
3. Built-in temperature control system and monitoring
4. Fiber grating and PM fiber output

Application:
1. DWDM EDFAS with small package design
2. High rate and high channel EDFAS
3. Instrumentation, OCT



Name：
1.Pump laser
2.SLED laser
3.CWDM/MWDM/DWDM/ LANWDM Laser

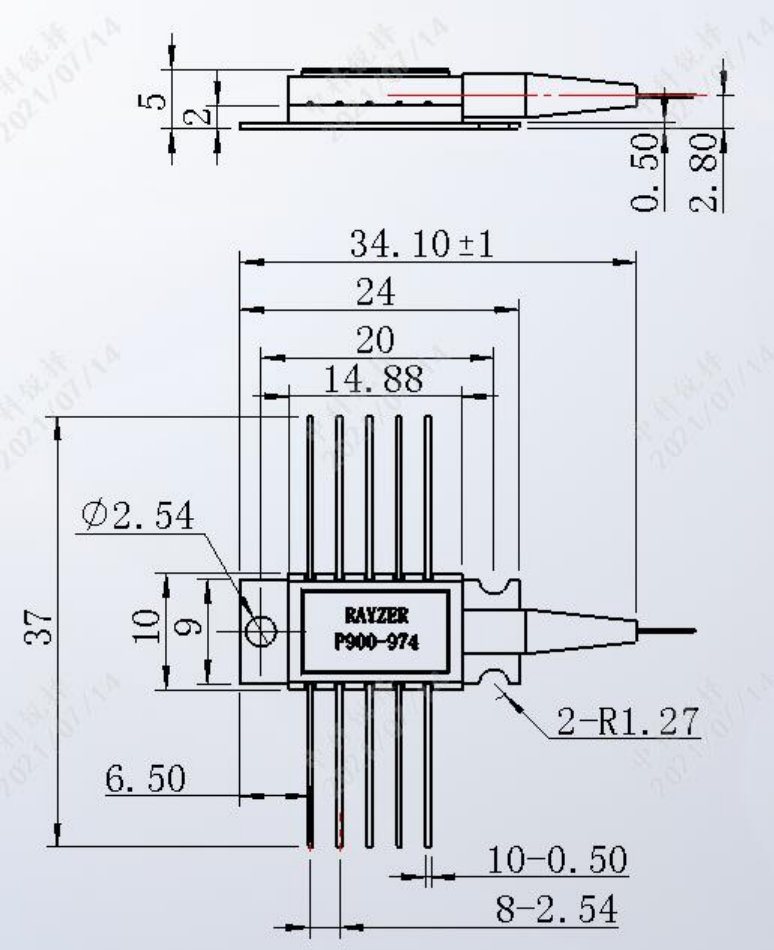
Features:
1. High power output
2. MINI package
3. Integrated thermistor
4. Fiber grating and PM fiber output

Application:
1. Dense wavelength division multiplexing DWDM erbium-doped fiber amplifier
2. Reduced PUMP EDFA structure system
3. Release of ultra-long-distance trunk lines and high-node networks

Parameter and Specification

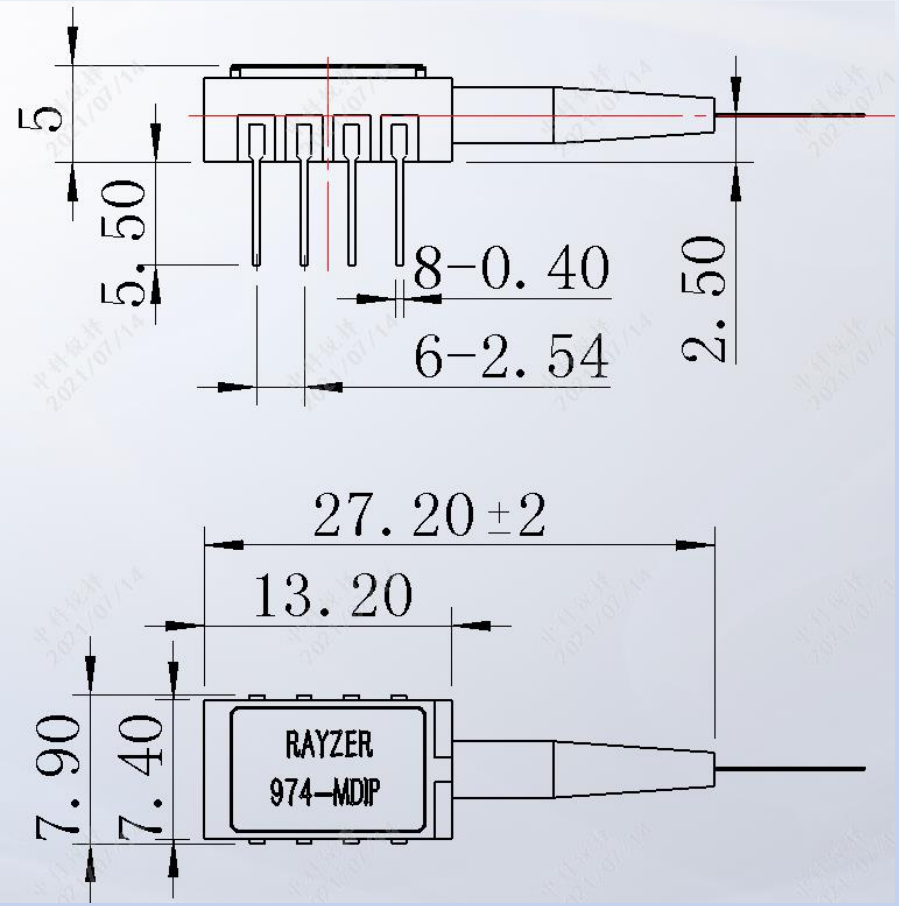
参数/Parameter	符号/Symbol	最小/Min.	典型/Typ.	最大/Max.	单位/Unit	测试条件/Test Conditions
出光功率/Output power	Po	50	-	1200	mW	CW
驱动电流/Operating Current	Iop	-	-	1500	mA	-
阈值/Threshold Current	Ith	-	-	100	mA	CW
监视电流/Monitor Current	Im	100	-	2000	uA	CW,VRD=5V
PD暗电流/Monitor Dark Current	Id	-	-	50	nA	CW,VRD=5V
驱动电压/Operating Voltage	Vop	-	-	2.5	V	CW
工作波长/Central Wavelength	λC	-	980	-	nm	CW
边摸抑制比/Side mode suppression ratio	SMSR	30	40	-	dB	CW
热敏电阻/Thermistor	Rth	9.5	10	10.5	KΩ	25℃
制冷电流/Thermoelectric cooler current	Icooler	-	-	1500	mA	CW,-20℃~70℃
制冷电压/Thermoelectric cooler voltage	Vcooler	-	-	1.5	V	CW,-20℃~70℃

Outline Dimension and Pin Definition

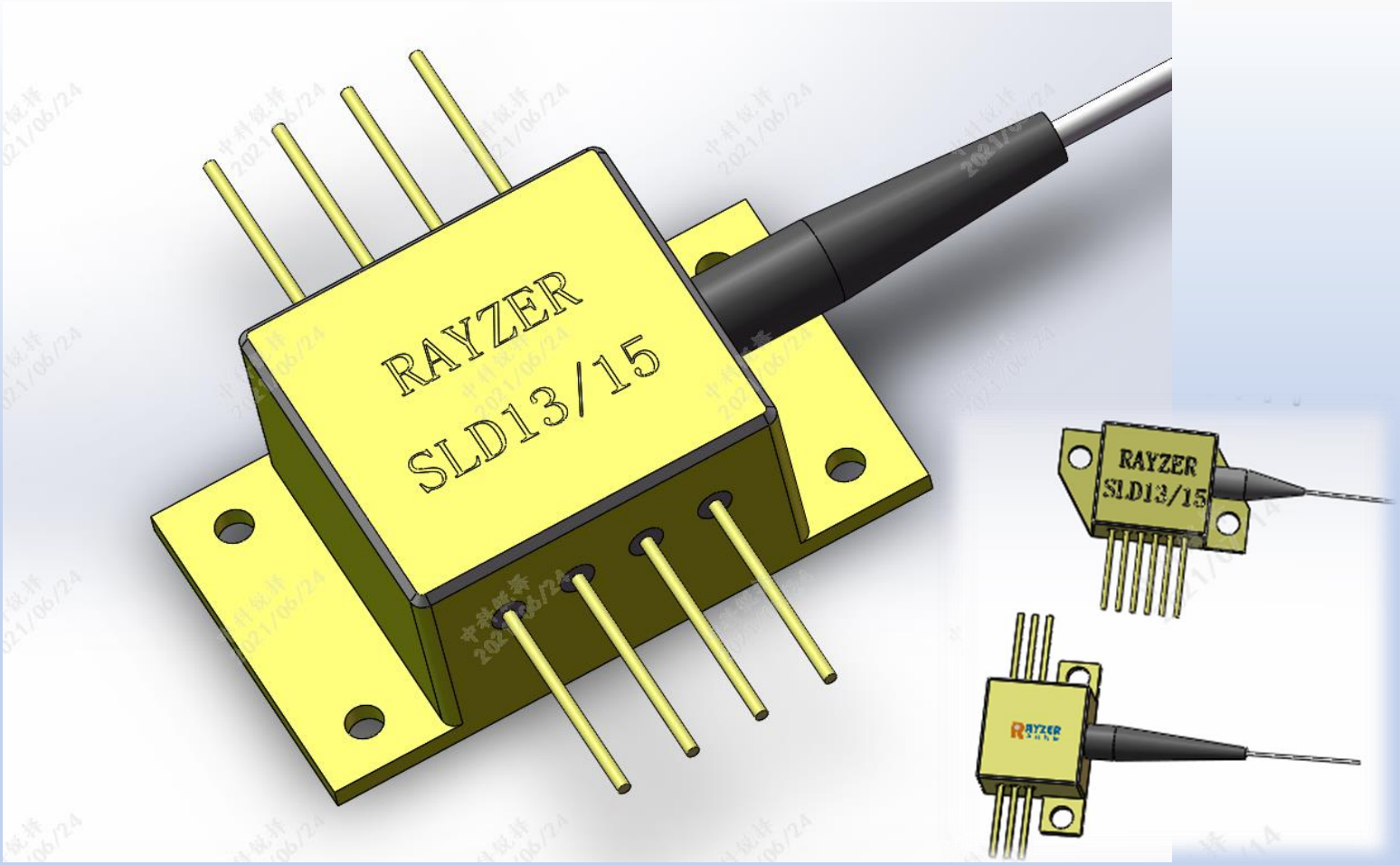


编号/PIN	针脚定义/Description
1	制冷器正极/TEC Cooler+
2	热敏电阻/Thermistor
3	PD正极/PD Anode
4	PD负极/PD Cathode
5	热敏电阻/Thermistor
6	激光器正极/LD+
7	激光器负极/LD-
8	空/NC
9	接地/Ground
10	制冷器负极/TEC Cooler-

Outline Dimension and Pin Definition



编号/PIN	针脚定义/Description
1	热敏电阻/Thermistor
2	接地/Ground
3	热敏电阻/Thermistor
4	PD正极/PD Anode
5	PD负极/PD Cathode
6	激光器负极/LD-
7	激光器正极/LD+
8	空/NC



Name：

1.SLD 1310/1550nm Butterfly LD Source
2.Pump laser
3.SLED laser
4.CWDM/MWDM/DWDM/ LANWDM Laser

Features:

1. High-performance broadband laser chip
2. Wavelength stability
3. Polarization maintaining fiber/single mode fiber output
4. Airtight butterfly temperature control package

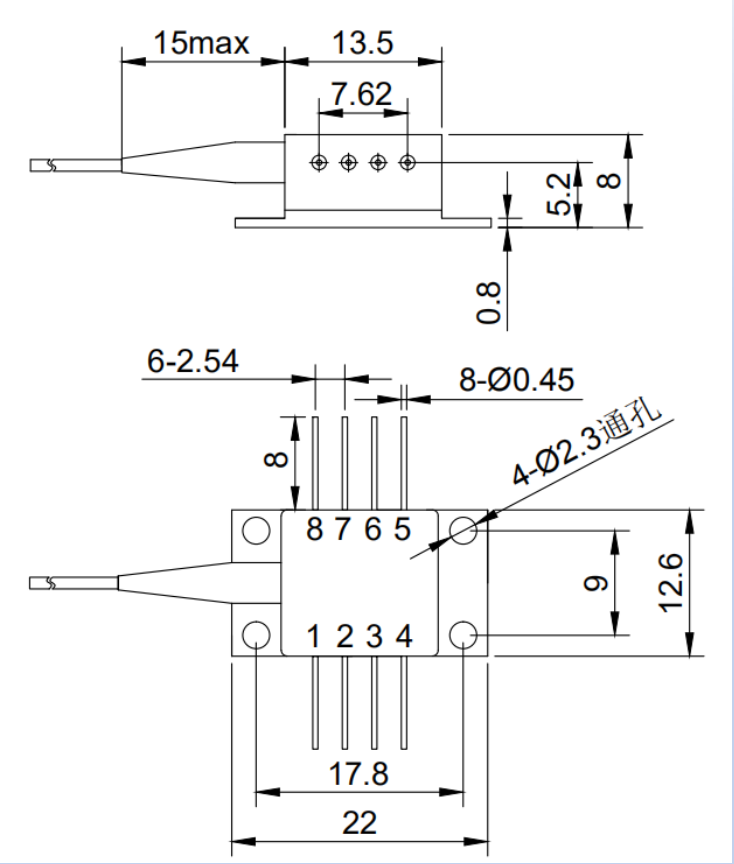
Application:

1. Gyroscope fiber optic sensing
2. Optical fiber measurement and control optical fiber transmission
3.OCT
4. Instrumentation

Parameter and Specification

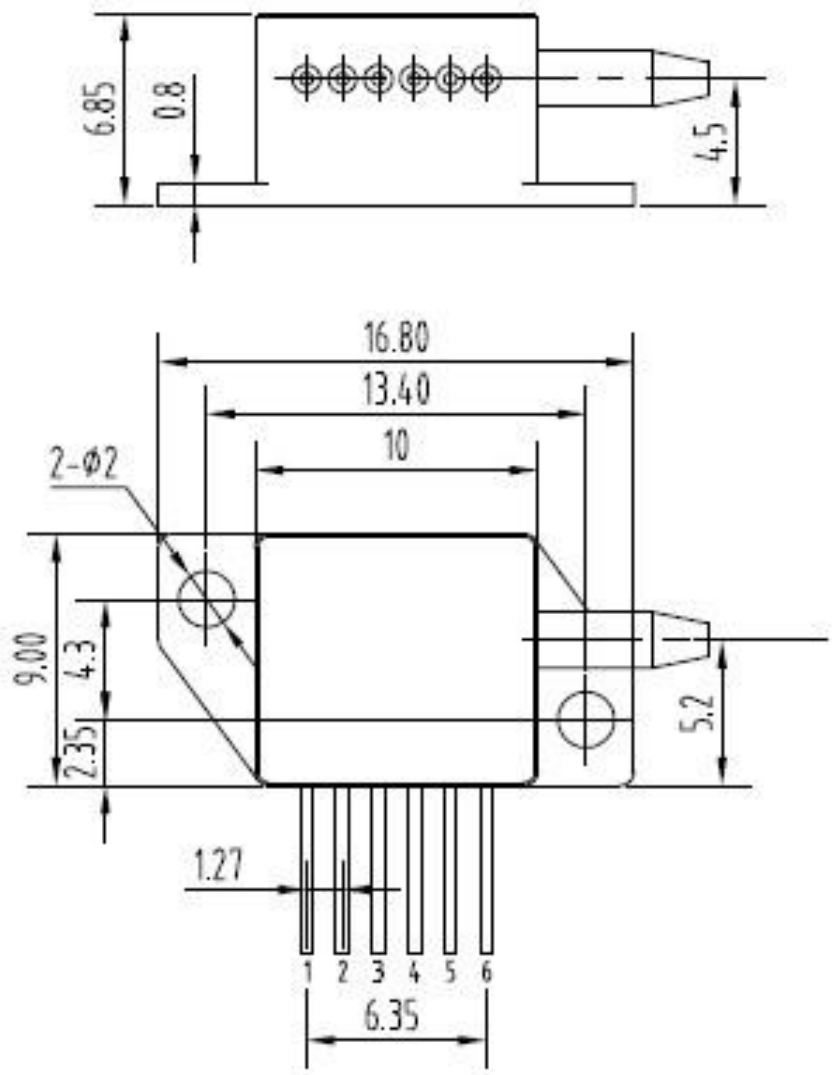
参数/Parameter	符号/Symbol	最小/Min.	典型/Typ.	最大/Max.	单位/Unit	测试条件/Test Conditions
出光功率/Output power	Po	200	-	3000	uW	CW
驱动电流/Operating Current	Iop	-	-	150	mA	-
驱动电压/Operating Voltage	Vop	-	-	2.5	V	CW
工作波长/Central Wavelength	λC	1280 1530	-	1330 1570	nm	CW
3dB带宽/3dB bandwidth	dB	30			nm	CW
消光比/Extinction ratio	dB	- 17	-	2 -	dB	低偏/Low bias 高偏/High deviation
纹波/Ripple	ER	-	-	0.5	dB	CW
热敏电阻/Thermistor	Rth	9.5	10	10.5	KΩ	25℃
制冷电流/Thermoelectric cooler current	Icooler	-	-	1500	mA	CW,-20℃~70℃
制冷电压/Thermoelectric cooler voltage	Vcooler	-	-	1.5	V	CW,-20℃~70℃

Outline Dimension and Pin Definition



编号/PIN	针脚定义/Description
1	制冷器正极/TEC Cooler+
2	热敏电阻/Thermistor
3	热敏电阻/Thermistor
4	激光器正极/SLED+
5	激光器负极/SLED-
6	空/NC(可选热敏电阻）
7	空/NC(可选热敏电阻）
8	制冷器负极/TEC Cooler-

Outline Dimension and Pin Definition



引脚定义(顶视图):

1: SLED+

2: SLED-

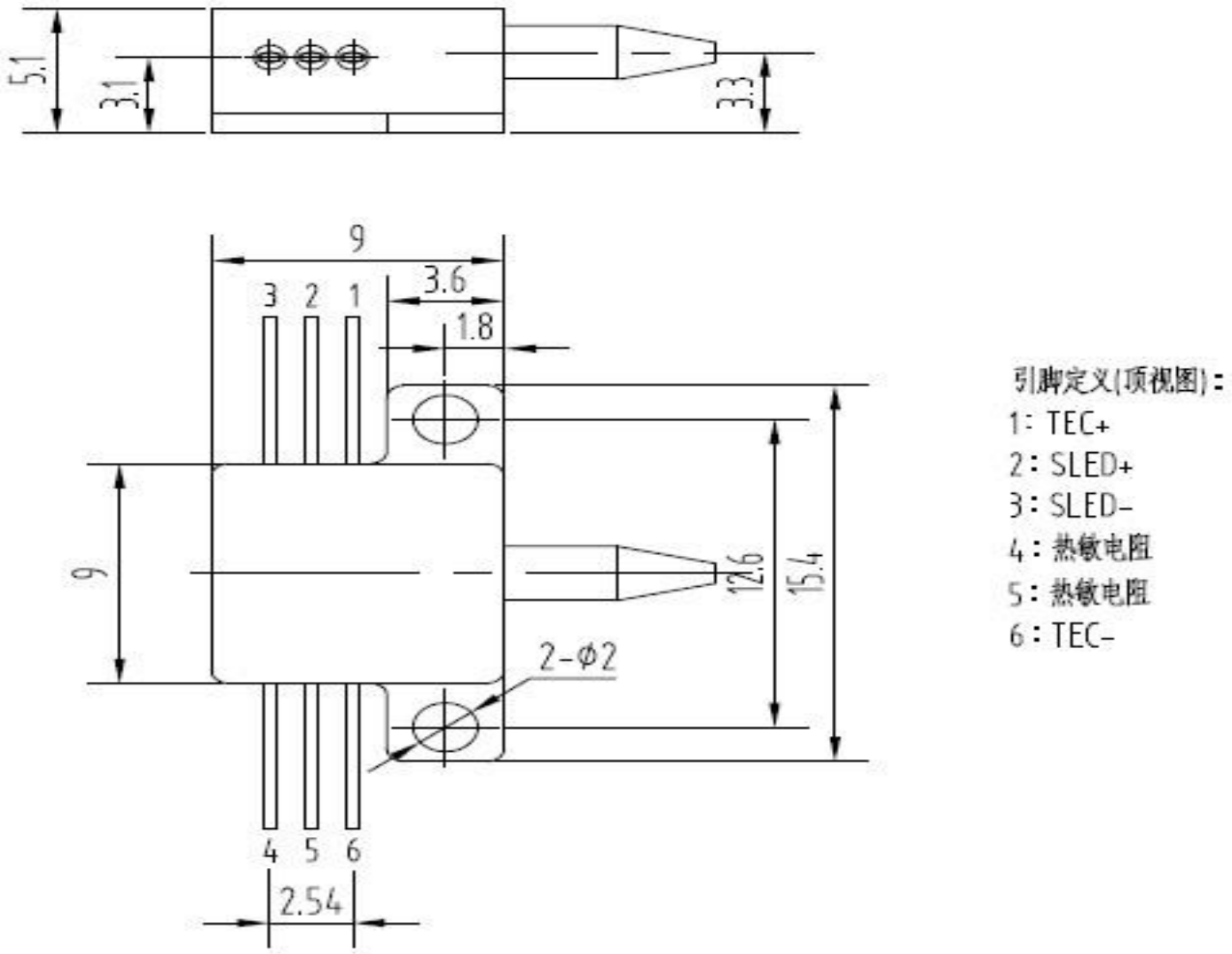
3: 热敏电阻

4: 热敏电阻

5: TEC-

6: TEC+

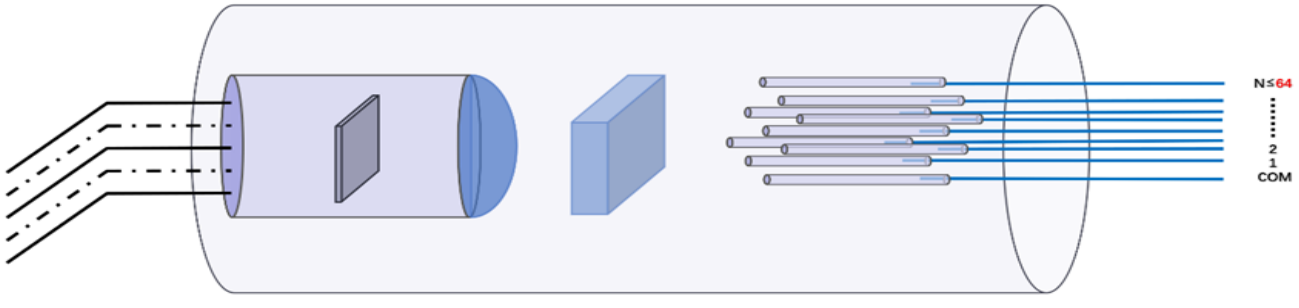
Outline Dimension and Pin Definition

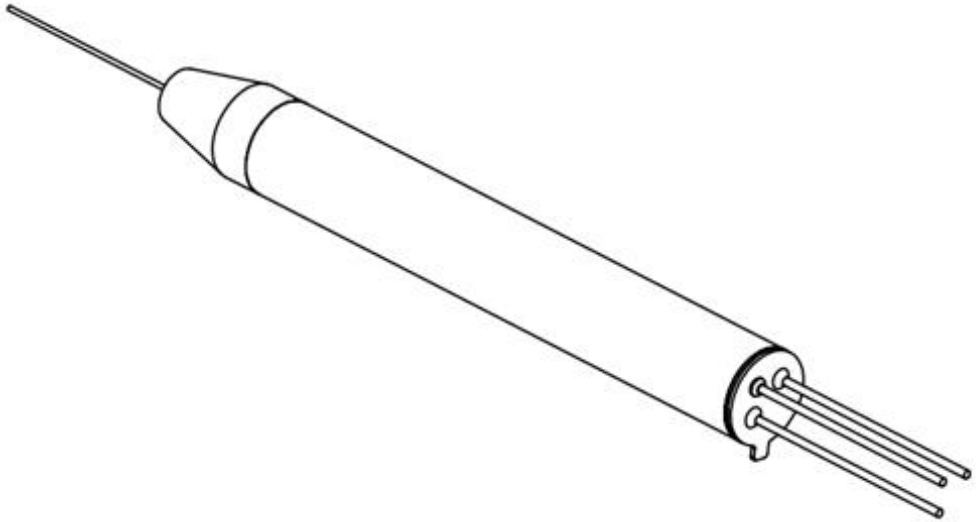


Butterfly Packaged LD Reliability Standards

- The product complies with the national standard GJB 548B and the communication industry standard Telcordia GR-468-CORE

Tests	Conditions	Standards
Temperature Cycling	Temperature cycle range: -40～85℃ Temperature change rate: ≥10℃/min Extreme heat preservation: 15min Temperature cycles: 20 times	GJB548 1010 GJB 8120-2013 4.5.3
High Temperature Storage	Ambient temperature: 85° C Storage time: 48h	GJB548 1008 GJB 8120-2013 4.11.4.1
High temperature aging	Ambient temperature: 75° C Working current: 100mA Duration: 48h	GJB 8120-2013 4.5.8
Full temperature test	Temperature change range: -50～75℃ Temperature change rate: ≥2℃/min Pole insulation: ≥15min	
Final test at room temperature	Environment temperature: 25℃ Working current: 100mA	





Name：
MEMS Optical attenuator
MEMS Optical Switch
Mems VOA / OSW

Features:
1. Compact size and low insertion loss
2. Low polarization dependent loss and low power consumption
3. High reliability and high stability

Application:
1. Power control and equalization
2. EDFA gain slope control
3. WDM Wavelength Division System
4. Optical test instrument

Parameter and Specification

No.	Parameters	Unit	MVOA
1	Operation Wavelength [1]	nm	1528~1565
2	Attenuation Type		Dark or Bright
3	Attenuation Range	dB	30
4	Insertion Loss [2]	dB	<0.8
5	Attenuation Resolution		Continue
6	WDL	dB	<1.0@15dB
7	PDL	dB	<0.2@15dB
8	Return Loss	dB	≥50
9	Response Time [3]	ms	1
10	Driving Voltage [4]	V	<6
11	Driving Power	μw	<5
12	Operating Temperature	℃	-5~70
13	Storage Temperature	℃	-40~85
14	Operation Humidity	%RH	5~85
15	Storage Humidity	%RH	5~85
16	Input Optical Power	mW	≤500
17	Max Optical Power	mW	500
18	Package Size（Dia× L）	mm	5.5×19(Without boot)
19	Durability	Cycle	≥10^9

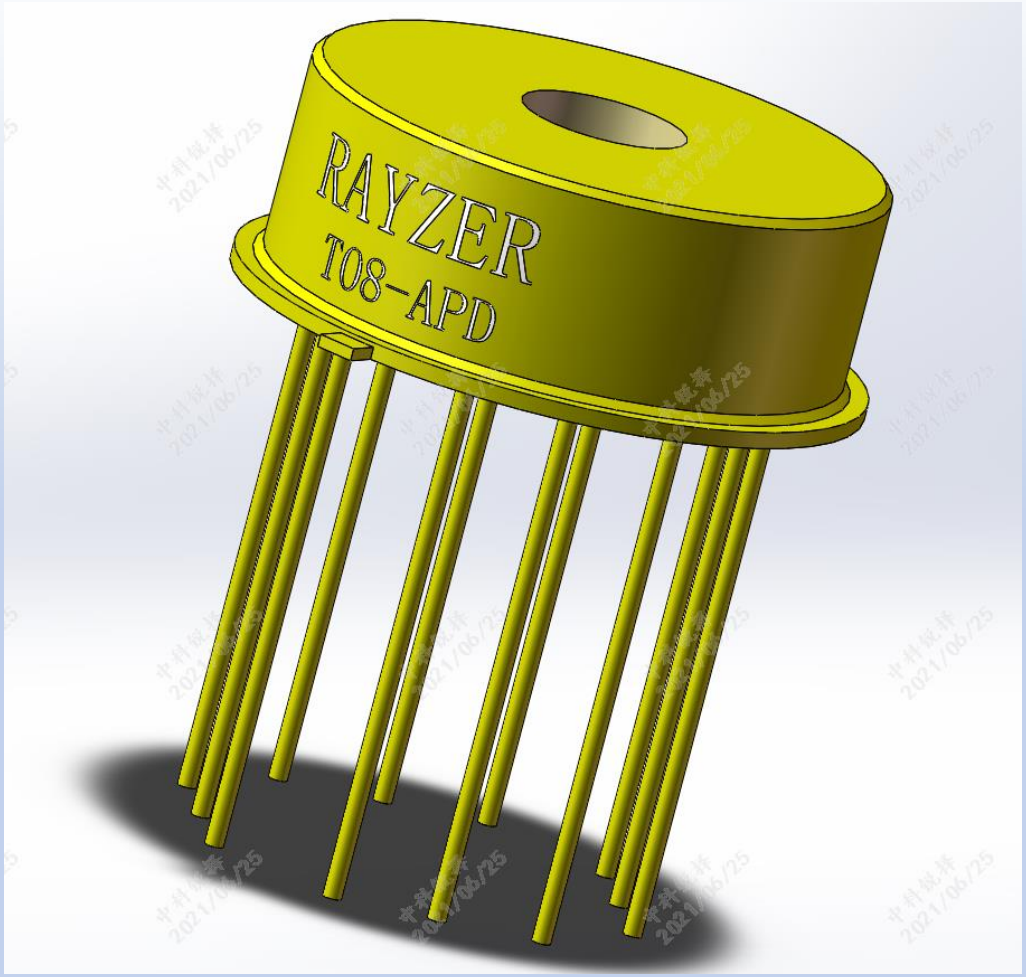
Note：1. Wavelength C, L, Full band is optional

2. Typical value 0.6dB, without connector

3. Full range

4. Maximum voltage for full range

RoHS and GR-1221 compliance (2000 hours)



Name：
TO8 APD Preamplifier

Features:
1. High sensitivity
2. High bandwidth
3. High reliability and low noise

Application:
1. Laser ranging
2. Lidar
3. Free space optical communication FSO

Parameter and Specification

项目	符号	特征值			单位	条件
		最小	典型	最大		
光谱响应范围	λ	900~1700			nm	
响应率	R		0.9		A/W	λ=1550nm，M=1
光敏面直径	D	-	400	-	um	
反向击穿电压	V_{br}	35	49	55	V	
组件供电电压	V_{cc}	3.0	3.3	3.5	V	
工作电流	I_{cc}		40		mA	
暗电流	I_d		3	5	nA	M=1
上升/下降时间	Tr/Tf		0.7		ns	10%-90%
比特率	BR		0.622		Gbps	
最小接收灵敏度	P_{min}		-32		dBm	1550nm@622Mbps, PRBS23,ER>=10dB, BER=E-10
光饱和功率	P_{sat}			-2	dBm	
偏置电压-温度系数	γ		0.127	0.15	V/℃	-40~85℃

BUSENISS REPORT

Thank you!

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