



HS05系列1064nm单模激光模块

Key Features

采用DoGain自研芯片

低应力14pin蝶形封装

最高连续输出功率200mW

工作温度范围-5°C至75°C

高效率TEC温度控制 ($T_s=25^\circ\text{C}$)

独有的耦合封装技术, 高效率, 高稳定性

可选单模光纤/保偏光纤/FC/PC接头

Applications

光纤激光器

光谱分析

频率转换

1064nm Cooled DFB Laser Module DG-HS05 Series



*产品图片仅供参考, 最终实物以发货为准

HS05系列1064nm单模激光模块(1064nm单模激光种子源)采用自主研发DFB芯片, 经过严格的性能、可靠性筛选, 保障了泵浦激光器的卓越性能和可靠性水平。

14-Pin低应力、高气密蝶形封装形式, 保证光纤稳定输出功率 > 200mW。

HS系列产品包含一个热电冷却器(TEC), 一个精密的NTC热敏电阻和一个背面监测光电二极管。

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1. 光电特性 ELECTRO-OPTICAL CHARACTERISTICS

1.1最大额定值 Absolute Maximum Ratings

序号 Item	模块参数 Module parameter	符号 Symbol	条件 Condition	限度Limits		单位 Unit
				最小值 Min.	最大值 Max.	
1	LD正向电流 LD Forward Current	I_f			1	A
2	LD反向电压 LD Reverse Voltage	V_r			1.8	V
3	LD反向电流 LD Reverse Current	I_r			10	μA
4	PD反向电压 PD Reverse Voltage	V_{PD}			25	V
5	PD正向电流 PD Forward Current	I_{PF}			10	mA
6	LD 静电释放 LD Electrostatic Discharge (ESD)	$V_{ESD\ LD}$	C = 100 pF, R = 1.5 k Ω , human body model		1000	V
7	PD 静电释放 PD Electrostatic Discharge (ESD)	$V_{ESD\ PD}$	C = 100 pF, R = 1.5 k Ω human body model		700	V
8	管壳工作温度 Operating Case Temperature Top	T_{op}		-5	75	$^{\circ}C$
9	相对工作湿度 Operating Relative Humidity	RH_{OP}	非冷凝 Noncondensing	5	95	%
10	相对存储湿度 Storage Relative Humidity	RH_{stg}		5	95	%
11	存储温度 Storage Temperature	T_{stg}	2000 hr	-40	85	$^{\circ}C$
12	引线焊接时间 Lead Soldering Time		300 $^{\circ}C$		10	s
13	轴向拉力 Axial Pull Force		3 x 10 s		5	N
14	侧拉力 Side Pull Force		3 x 10 s		2.5	N
15	光纤弯曲半径 Fiber Bend Radius			25		mm

Notes:

* BOL for $T_{Submount} = 25^{\circ}C$, $T_{case} = -5^{\circ}C$ to $75^{\circ}C$

* EOL forward current $I(EOL) = 1.1 \times I(BOL)$

* 规格参数, 如无特别说明, 都指适用于全温工作范围 ($T_{case} = -5 \sim 75^{\circ}C$)

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1.2 可用的峰值波长选择 (Available Peak Wavelength Selection)

产品代码 Product Code	中心波长最小值 Minimum Center Wavelength	中心波长最大值 Maximum Center Wavelength
DG-HS05-64xxB-xxxxx	1063nm	1065nm

1.3 Hi 1060光纤标称特性和公差 (Hi 1060 Fiber Nominal Characteristics and Tolerances)

参数 Parameters	规格 Specification
截止波长 Cutoff wavelength	920±50 nm
980 nm 处的最大衰减 Maximum attenuation at 980 nm	2.1 dB/km
包层外径 Cladding outside diameter	125 ±0.5 μm
涂覆层外径 Coating outside diameter	245 ±10 μm
芯包层同心度 Core-cladding concentricity	≤0.3 μm
模场直径 Mode field diameter	5.9 ±0.3 μm

1.4 保偏 980光纤标称特性和公差 (PM 980 Fiber Nominal Characteristics and Tolerances)

参数 Parameters	规格 Specification
工作波长 Operating Wavelength	980nm
截止波长 Cutoff Wavelength	870-950 nm
980 nm 处的最大衰减 Maximum Attenuation at 980 nm	2.5 dB/km
包层外径 Cladding outside diameter	125 ±1 μm
涂覆层外径 Coating outside diameter	245 ±15 μm
芯包层同心度 Core-cladding concentricity	≤0.5 μm
模场直径 Mode field diameter	6.6 ±0.5 μm

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1.5 CW性能规格 Performance Specification

序号 Item	模块参数 Module parameter	符号 Symbol	条件 Condition	限度Limits		单位 Unit
				最小值 Min.	最大值 Max.	
1	阈值电流 Threshold Current	I_{th}			50	mA
2	光纤输出功率范围 ^{*1} Fiber Output Power Range ^{*1}	P_f		30	200	mW
3	扭结输出功率 Kinkfree Output Power	P_{max}	$I_f = I_{max}$		220	mW
4	正向工作电流 Operating Forward Current	I_{op}	连续电流以保持输出功率 Continuous current to maintain output power P_{op}		500	mA
5	正向电压 Forward Voltage	V_f	$I_f = I_{op}$		2.0	V
6	光谱宽度 Spectral Width	$\Delta\lambda_{RMS}$	$50\text{ mW} < P_f < P_{op}$		0.12	nm
7	中心发射波长 ^{*2} Center Emission Wavelength ^{*2}	λ_m	覆盖 P_f 范围 Over P_f range	1063	1065	nm
8	带内功率比 Power in pump band	P_{pump}	Pump band = $\lambda_c \pm 1.5\text{nm}$, $30\text{ mW} < P_f < P_{op}$	90		%
9			Pump band = $\lambda_c \pm 1.5\text{nm}$, $P_{min} < P_f < 30\text{ mW}$	80		%
10	波长调谐与温度的关系 Wavelength Tuning vs. Temperature	$\Delta\lambda/T$	$I_f = I_{op}$		0.08	nm/°C
11	光电二极管响应 Monitor Diode Response	R_m	At P_{op} , $V_{PD} = -5\text{V}$	1	10	$\mu\text{A/mW}$
12	光电二极管暗电流 Monitor Diode Dark Current	I_{dark}	在整个温度范围内保持5V 反向偏置 5V reverse bias, over the whole temperature range		500	nA
13	热敏电阻阻值 Thermistor Resistance	R_{th}	$T_{set} = 25^\circ\text{C}$	9.5	10.5	k Ω
14	热敏电阻系数 Thermistor Constant	β		3800	4200	K
15	热敏电阻 Thermistor	ΔR_{th}	热敏电阻值相对于BOL值的变化 Change in thermistor value relative to BOL value	-5	5	%
16	半导体制冷器电流 TEC Current	I_{TEC}		-1	4.4	A
17	半导体制冷器电压TEC Voltage(BOL/EOL)	V_{TEC}			4.3	V
18	偏振消光比 Polarization extinction ratio	PR		13		dB

Notes:

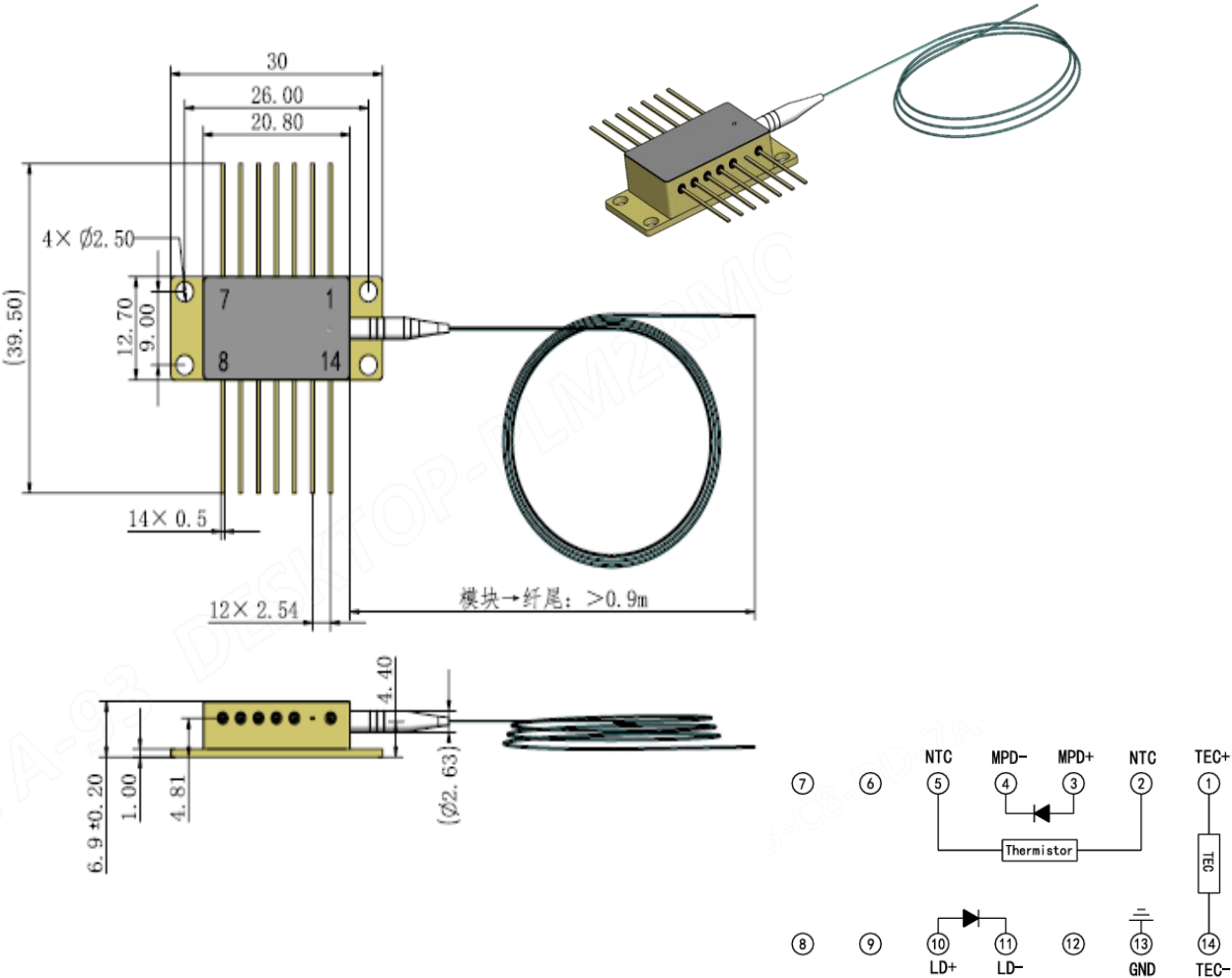
- *1 根据客户需求可定制光纤输出功率30~200mW
- * BOL for $T_{Submount} = 25^\circ\text{C}$, $T_{case} = -5^\circ\text{C}$ to 75°C
- * EOL forward current $I(EOL) = 1.1 \times I(BOL)$
- * 如无特别说明, 规格参数都指适用于全温工作范围 ($T_{case} = -5 \sim 75^\circ\text{C}$)

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2. Dimensions & Pin Assignment

2.1 尺寸图 / Dimensions Diagram



2.2 引脚分配 / PIN ASSIGNEMENT

Pin	Description	Pin	Description
1	TEC正极/Cooler (+)	8	空/N/C
2	热敏电阻/Thermistor	9	空/N/C
3	PD正极/Monitor PD anode (-)	10	激光器正极/Laser anode
4	PD负极/Monitor PD cathode (+)	11	激光器负极/Laser cathode
5	热敏电阻/Thermistor	12	空N/C
6	空/N/C	13	地/ground
7	空/N/C	14	TEC负极/Cooler (-)

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3. 产品订购信息

- Fiber Output Power: 30~200mW
- SM-Hi1060/PM Fiber or FC-UPC/APC连接头
- DG P/Number: DG- HS05-6425B-xxxxx*

DG-HSxx	64xxB	xxx (Code)	xx	x	x	x
HS05: 14-pin butterfly package	Wavelength Specification: 64 xxB for 1064nm xx25B for T _S =25°C	Fiber Output Power: 100:100mW 150:150mW 200:200mW	-PM: <i>PMF 980 or equivalent</i> -SM: <i>Single- mode fiber</i>	<i>D: DFB Laser</i>	<i>P: Rated power</i>	Y: <i>Photodiode</i> N: <i>No Photodiode</i>

* Example: DG-HS05-6425B-200SM-DPY-FC/APC

- ✓ 14pin蝶形封装, DFB激光器锁波1064nm, T_{Submount}=25°C, 200mW@Fiber Output Power 单芯出光
- ✓ Corning HI1060 Single Mode Fibre or Equivalent
- ✓ (PM) Nufern PMF 980 or equivalent
- ✓ (-FC/APC) Customized connector or equivalent

4. 产品工作参数

Product Code	Maximum Operating Power Pop (mW)	Maximum Operating Current Iop (mA)	Minimum Kink-Free Power Pmax (mW)	Maximum Kink-Free Current Imax (mA)
6425B-100SM	100	200	110	250
6425B-150SM	150	300	165	350
6425B-200SM	200	400	220	450

- * 度亘核芯还可以开发定制产品, 以满足广泛的技术要求。
- * 请联系你的销售经理了解详情。

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■ 1064nm单模激光种子源- HS05系列

Corning Hi1060 (or PM980 Fiber)	$\lambda_p = 1064.0\text{ nm}$, $T_{\text{submount}} = 25^\circ\text{C}$ Corning Hi1060	$\lambda_p = 1064.0\text{ nm}$, $T_{\text{submount}} = 25^\circ\text{C}$ PM980 Fiber
Nominal Power	Customer Part Number	Customer Part Number
100mW	DG-HS05-6425B-100SM-DPY	DG-HS05-6425B-100PM-DPY
150mW	DG-HS05-6425B-150SM-DPY	DG-HS05-6425B-150PM-DPY
200mW	DG-HS05-6425B-200SM-DPY	DG-HS05-6425B-200PM-DPY

5. 使用说明

- 输出激光是不可见光，使用时须遵守 IEC四级激光标准安全规范，避免激光直接或间接照射眼睛。
- The laser beam is invisible, please follow the standard safety procedures for IEC Class 4 lasers, avoid eyes exposure to radiation.
- 静电击穿导致半导体激光器失效，激光器安装人员须经过培训，操作时须佩戴防静电手腕带，工作台需接地；在供电连接头与激光器连接前，正负极应处于短接状态。
- ESD cause diode laser failure, The operator should be trained, wearing ESD grounding straps and the work surface should be grounded. The positive and negative poles shall be connected before the power supply is connected with the laser.
- 电流过冲可能损坏激光器，驱动电源须稳定无过冲。
- The current overshoot may damage the laser, and the driving power must be stable without overshoot.
- 超规格使用会导致激光器寿命下降，请严格按照产品规格书进行使用。
- Reduced lifetime if used above nominal operating condition, Please strictly follow the product specifications for use.

For more Info

度亘核芯光电技术(苏州)股份有限公司
[http: //www.dogain.com](http://www.dogain.com)
电话: +0512-62385166 / 61790076 - 8071

