



Optical Device Product Manual

● 光技术产品手册-接入网



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● 企业简介

厦门市三安集成电路有限公司是中国首家6英寸化合物半导体晶圆代工厂，致力于成为世界级的化合物半导体芯片研发、制造和服务平台。通过产业链垂直整合和大规模产能投入，从衬底、外延、先进制程到芯片的封装和测试，可根据“无线射频、电力电子和光技术”三大领域客户的需求，提供全面可灵活定制的合作方式和解决方案。

三安集成成立于2014年5月，是隶属于上市公司三安光电（SSE：600703）的全资子公司，总投资45亿元，建设面积达180,000m²。其中光器件板块规划超过11,000m²的洁净室生产车间，规划产能月产2,000片6寸晶圆以及50,000,000颗芯片。

三安集成的光芯片产品涵盖多种速率和波长的收发光芯片，包括适用于CWDM4/6以及MWDM的2.5G/10G/25G DFB，覆盖850nm-1550nm的多种高速PD，以及高速VCSEL和消费类VCSEL芯片。产品应用领域包括数据通信、接入网、感测类以及消费类应用。

三安集成已通过ISO9001国际质量管理体系认证和IATF16949汽车行业质量管理体系认证，并积极投身国际行业标准制定，是JEDEC JC-70宽禁带功率半导体标准委员会成员。

三安集成将用丰富的大规模生产管理经验和丰沛的产能，支持客户和光芯片产业，成为您可信赖的一站式光芯片伙伴。

光技术产品手册-接入网

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芯片类型	料号	波长(nm)	速率(Gb/s)	页码
MPD ▶	S-11ACPD08-G	1310/1550	NA	01
	S-12ACPD08-G	1310/1550	NA	02
	S-15ECPD12-G	1310/1550	NA	03
	S-16ACPD15-G	1310/1550	NA	04
Edge MPD ▶	S-12AEPD08-G	1310/1550	NA	05
	S-14AEPD01-G	1310/1550	NA	06
PD ▶	S-10ACPD02-D	1310/1550	1.25G	07
	S-10BCPD10-G	1310/1550	2.5~8G	08
APD ▶	S-10AAPD01-G	1310/1550	2.5G	09
	S-10BAPD02-G	1310/1550	2.5G	11
	S-13AAPD10-G	1310/1550	10G	13
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DFB ▶	S-DL02S27-000	1270	2.5G	17
	S-DL02S31-000	1310	2.5G	19
	S-DL10SXX-001	1270/1310	10G	21

S-11ACPD08-G

Introduction

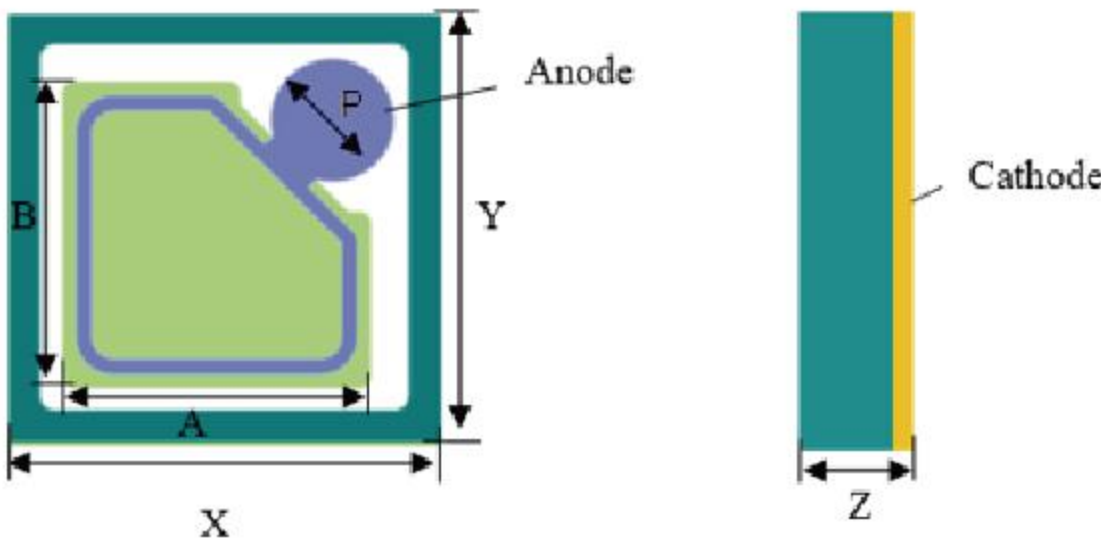
S-11ACPD08-G is a front-side illuminated InGaAs PIN chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for various LD monitoring application.

Key Features

- Optical aperture: 200μm
- Operating temperature range: -40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- Back facet laser power monitoring



Physical Parameters

	Die Dimension		Aperture			Pad
Symbol	X	Y	Z	A	B	P
Min	255	255	135	195	195	Φ75
Typ	280	280	150	200	200	Φ80
Max	305	305	165	205	205	Φ85
Unit	μm	μm	μm	μm	μm	μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V_{op}		20	V
Operating Temperature	T_{op}	-40	85	°C
Storage Temperature	T_c	-45	125	°C

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range			1210	1310/1550	1310/1550	nm
Dark Current	I_0	$V_R=5V$		1	1	nA
Capacitance	C	$V_R=5V$		2.5	2.5	pF
Responsivity	R_e	$V_R=5V$ $\lambda=1550nm$	0.90	0.95	0.95	A/W
3dB Bandwidth	BW	$V_R=5V$ $\lambda=1550nm$	-0.8			GHz

S-12ACPD08-G

Introduction

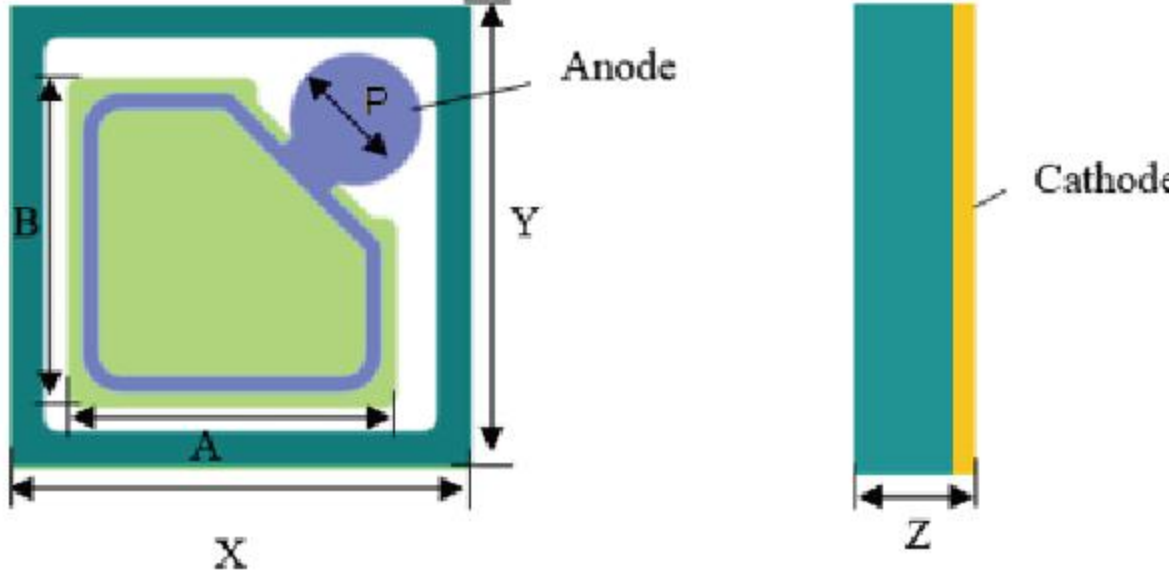
S-12ACPD08-G is a front-side illuminated InGaAs PIN chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for various LD monitoring application.

Key Features

- Optical aperture: 200μm
- Operating temperature range: -40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- Back facet laser power monitoring



Physical Parameters

	Die Dimension		Aperture			Pad
Symbol	X	Y	Z	A	B	P
Min	255	255	135	195	195	Φ75
Typ	280	280	150	200	200	Φ80
Max	305	305	165	205	205	Φ85
Unit	μm	μm	μm	μm	μm	μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V_{op}		20	V
Operating Temperature	T_{op}	-40	85	°C
Storage Temperature	T_c	-45	125	°C

Specifications (T=250C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range			1210	1310/1550	1310/1550	nm
Dark Current	I_0	$V_R=5V$		1	1	nA
Capacitance	C	$V_R=5V$		2.5	2.5	pF
Responsivity	R_e	$V_R=5V$ $\lambda=1550nm$	0.90	0.95	0.95	A/W
-3dB Bandwidth	BW	$V_R=5V$ $\lambda=1550nm$	-0.8			GHz

S-15ECPD12-G

Introduction

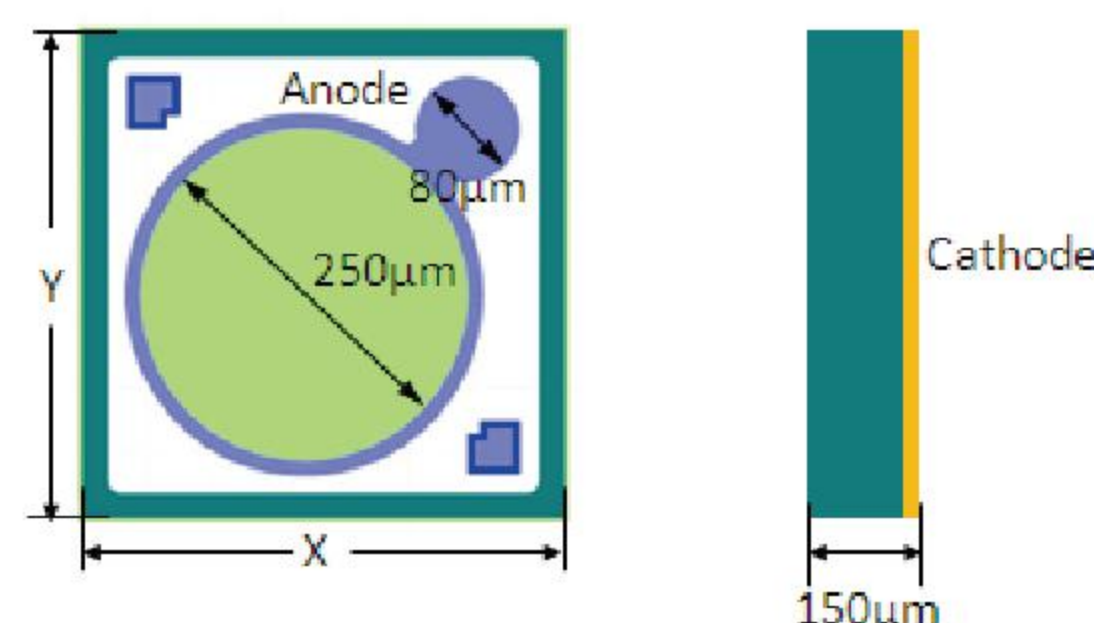
S-15ECPD12-G is a front-side illuminated InGaAs PIN chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for various Id monitoring application.

Key Features

- Optical aperture: 200 μ m
- Operating temperature range: -40 to +85 $^{\circ}$ C
- 100% testing and inspection
- RoHS compliant

Applications

- Back facet laser power monitoring



Physical Parameters

	Die Dimension			Aperture	Pad
Symbol	X	Y	Z	A	P
Min	345	345	135	Φ 245	Φ 75
Typ	370	370	150	Φ 250	Φ 80
Max	395	395	165	Φ 255	Φ 85
Unit	μ m	μ m	μ m	μ m	μ m

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V_{op}		20	V
Forward Current	I_F		10	mA
Reverse Current	I_R		5	mA
Operating Temperature	T_{op}	-40	85	$^{\circ}$ C
Storage Temperature	T_s	-45	125	$^{\circ}$ C

Specifications (T=25 $^{\circ}$ C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range			1210	1310/1550	1650	nm
Dark Current	I_D	$V_R=5V$		1	5	nA
Capacitance	C	$V_R=5V$		3.7	6.0	pF
Responsivity	R_e	$V_R=5V$ $\lambda=1550nm$	0.90	0.95		A/W

S-16ACPD15-G

Introduction

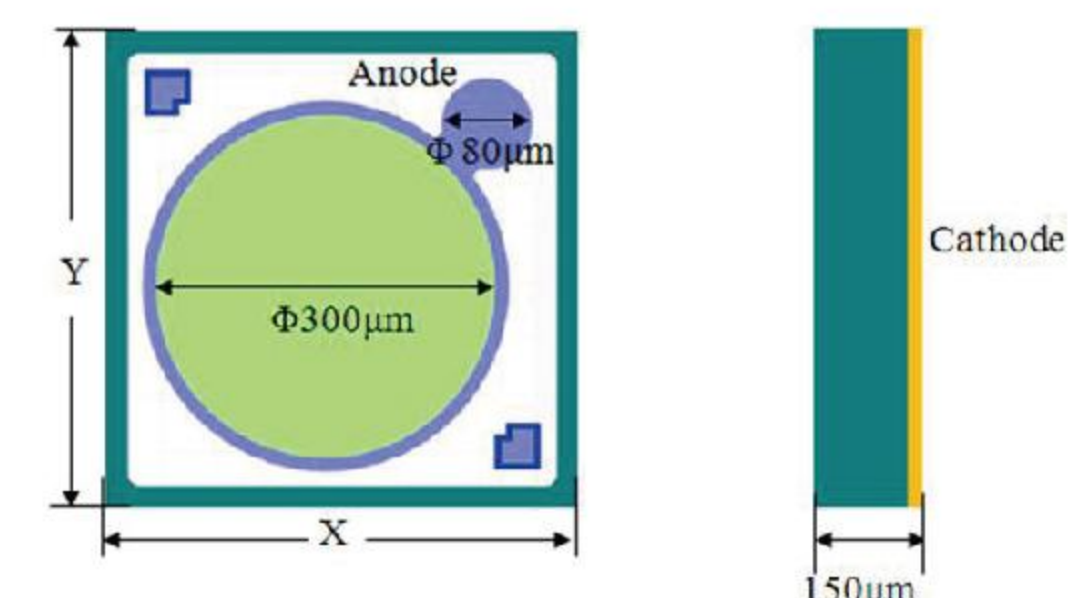
S-16ACPD15-G is a front-side illuminated InGaAs PIN chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for various Id monitoring application.

Key Features

- Optical aperture: 300 μ m
- Operating temperature range: -40 to +85 $^{\circ}$ C
- 100% testing and inspection
- RoHS compliant

Applications

- Back facet laser power monitoring



Physical Parameters

	Die Dimension			Aperture	Pad
Symbol	X	Y	Z	A	P
Min	395	395	135	Φ 295	Φ 75
Typ	420	420	150	Φ 300	Φ 80
Max	445	445	165	Φ 305	Φ 85
Unit	μ m	μ m	μ m	μ m	μ m

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V_{op}		20	V
Forward Current	I_F		10	mA
Reverse Current	I_R		5	mA
Operating Temperature	T_{op}	-40	85	$^{\circ}$ C
Storage Temperature	T_s	-45	125	$^{\circ}$ C

Specifications (T=25 $^{\circ}$ C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range			1210	1310/1550	1650	nm
Dark Current	I_D	$V_R=5V$		1	5	nA
Capacitance	C	$V_R=5V$		3.7	6.0	pF
Responsivity	R_e	$V_R=5V$ $\lambda=1550nm$	0.90	0.95		A/W

S-12AEPD08-G

Introduction

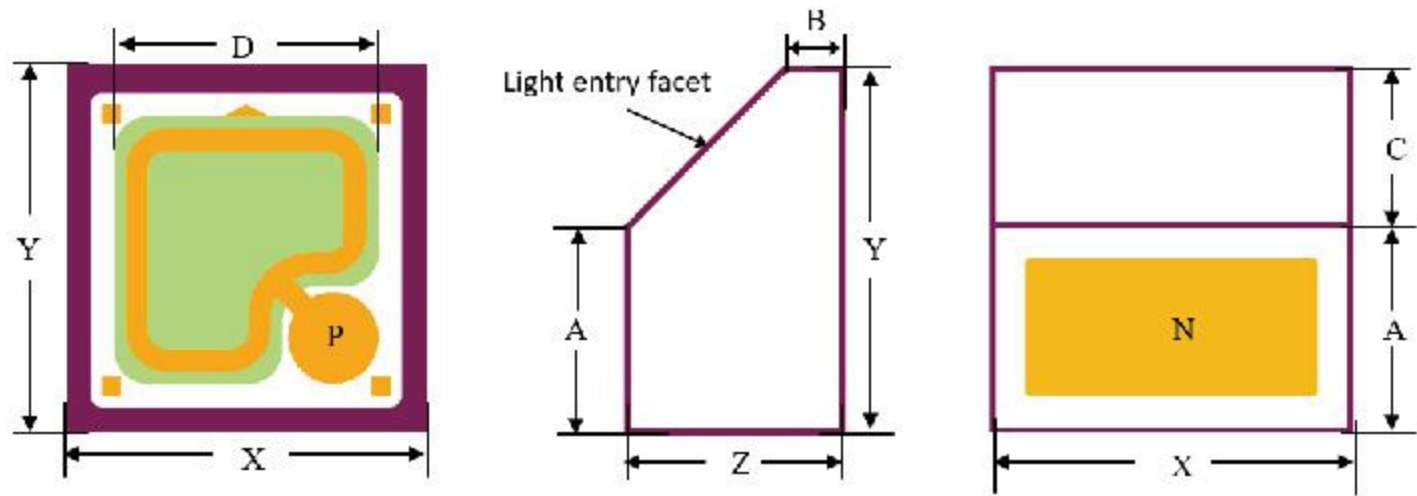
Is an edge illuminated ingaas pin chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for low cost, high-speed data communication designs.

Key Features

- Edge illuminated
- Backside common cathode and topside anode
- Operating temperature range:-40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- Back facet laser power monitoring



Physical Parameters

	Die Dimension						Aperture	Pad	
Symbol	X	Y	Z	A	B	C	D	P	N
Min	275	275	165	160	40	120	215	Φ70	235×105
Typ	300	300	180	170	50	130	220	Φ75	240×110
Max	325	325	195	180	60	140	225	Φ80	245×115
Unit	μm	μm	μm	μm	μm	μm	μm	μm	μm*μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V _{op}		20	V
Forward Current	I _F		10	mA
Reverse Current	I _R		5	mA
Operating Temperature	T _{op}	-40	85	°C
Storage Temperature	T _s	-45	125	°C

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range	λ		1210	1310/1550	1650	nm
Breakdown Voltage	V _{BR}	I ₀ =10VμA	30			V
Dark Current	I ₀	V _R =5V		0.1	0.5	nA
Responsivity	R _e	V _R =5V λ=1550nm	0.30	0.50		A/W
Capacitance	C	V _R =5V		2.7	5.0	pF

S-14AEPD01-G

Introduction

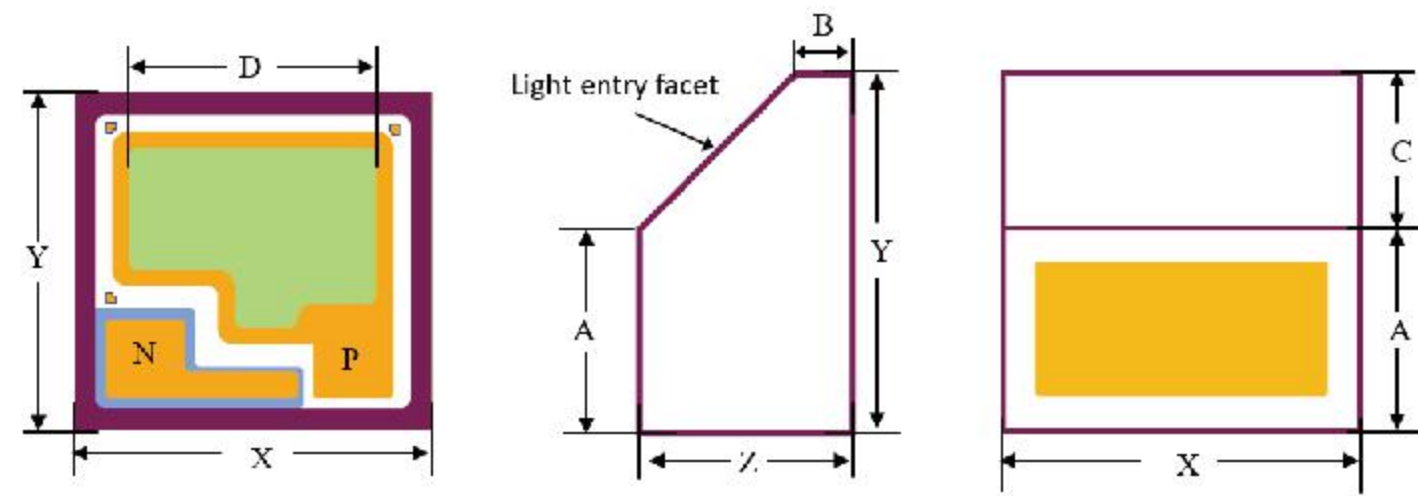
S-14AEPD01-G is an edge illuminated InGaAs PIN chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suitedfor low cost, high-speed data communication designs.

Key Features

- Edge illuminated
- Topside cathode and anode
- Operating temperature range:-40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- Back facet laser power monitoring



Physical Parameters

	Die Dimension						Aperture	Pad	
Symbol	X	Y	Z	A	B	C	D	P	N
Min	315	295	165	180	40	120	230	70*70	70*70
Typ	340	320	180	190	50	130	235	75*75	75*75
Max	365	345	195	200	60	140	240	80*80	80*80
Unit	μm	μm	μm	μm	μm	μm	μm	μm	μm*μm

Absolute maximum ratings

Parameter	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V _{op}		20	V
Forward Current	I _F		10	mA
Reverse Current	I _R		5	mA
Operating Temperature	T _{op}	-40	85	°C
Storage Temperature	T _s	-45	125	°C

Specifications (T=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Wavelength Range	λ		1210	1310/1550	1650	nm
Breakdown Voltage	V _{BR}	I ₀ =10VμA	20			V
Dark Current	I ₀	V _R =5V		1	10	nA
Responsivity	R _e	V _R =5V λ=1550nm	0.30	0.50		A/W
Capacitance	C	V _R =5V		3.5	5.0	pF

S-10ACPD02-D

Introduction

Is a front-side illuminated ingaas pin chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for low cost, high-speed data communication designs.

Key Features

- Optical aperture: 60μm
- Low capacitance: 0.6pF Max
- Backside common cathode and topside anode
- Operating temperature range:-40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- 1.25 Gbps Receiver Module
- EPON ONU

Physical Parameters

	Die Dimension			Aperture	Pad
Symbol	X	Y	Z	A	P
Min	225	225	135	φ55	φ55
Typ	250	250	150	φ60	φ60
Max	275	275	165	φ65	φ65
Unit	μm	μm	μm	μm	μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V _{op}		20	V
Forward Current	I _F		10	mA
Reverse Current	I _R		5	mA
Operating Temperature	T _{op}	-40	85	°C
Storage Temperature	T _c	-45	125	°C

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range	λ		1210	1310/1550	1650	nm
Breakdown Voltage	V _{BR}	I ₀ =10VμA	30			V
Dark Current	I ₀	V _R =5V		0.1	0.5	nA
Responsivity	R _e	V _R =5V λ=1550nm	0.30	0.50		A/W
Capacitance	C	V _R =5V		2.7	5.0	pF

S-10BCPD10-G

Introduction

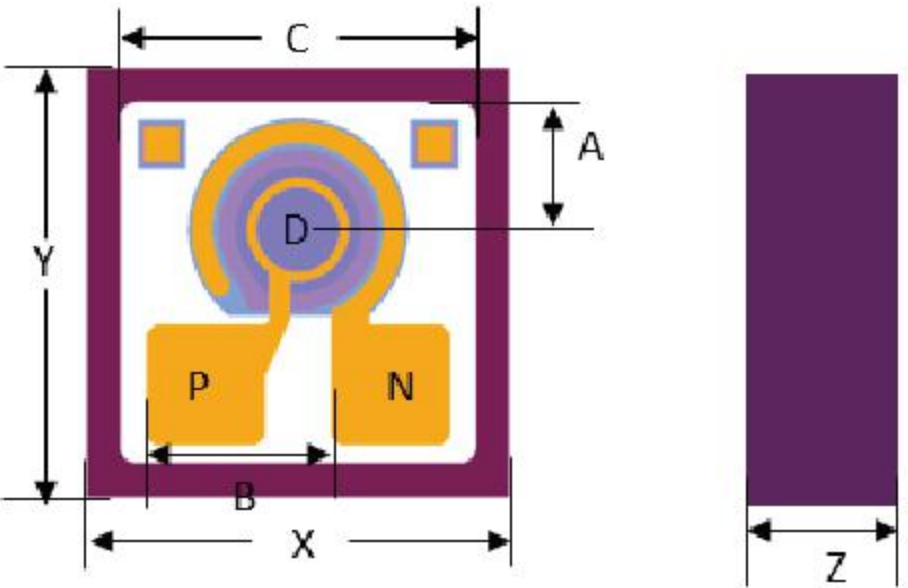
Is a front-side illuminated ingaas pin chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for low cost, high-speed data communication designs.

Key Features

- Topside anode & cathode configuration
- Operating temperature range:-40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- GPON B+ (with super TIA)
- 10GBASE-LRM
- SONET/SDH OC-192
- 10Gigabit Ethernet
- 8G Fiber Channel
- ATM, CATV



Physical Parameters

	Die Dimension						Aperture	Pad	
Symbol	X	Y	Z	A	B	C	D	P	N
Min	225	225	135	70	100	200		65*65	65*65
Typ	250	250	150	75	110	210	φ50	70*70	70*70
Max	365	275	165	80	120	220		75*75	75*75
Unit	μm	μm	μm	μm	μm	μm	μm	μm*μm	μm*μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V _{op}		5	V
Forward Current	I _F		5	mA
Reverse Current	I _R		3	mA
Operating Temperature	T _{op}	-40	85	°C
Storage Temperature	T _s	-45	125	°C

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range	λ		1250	1310/1550	1650	nm
Dark Current	I ₀	V _R =3V			10	nA
Responsivity	R _e	V _R =3V λ=1550nm	0.09	0.95		A/W
Capacitance	C	V _R =3V			0.30	pF
-3dB Bandwidth	BW	V _R =3V	8.0			GHz

S-10AAPD01-G

Introduction

Is a front-side illuminated ingaas apd chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for low cost, high-speed data communication designs

Key Features

- Optical aperture: 50μm
- Low capacitance: 0.5pF Max
- Backside common cathode and topside anode
- Top-sided coplanar GS contact pads
- 100% testing and inspection
- RoHS compliant

Applications

- GPON
- SONET OC48
- Ethernet
- Fiber Channel

Physical Parameters

	Die Dimension			Aperture	Pad
Symbol	X	Y	Z	D	P
Min	225	225	135		Φ60
Typ	250	250	150	Φ50	Φ65
Max	275	275	165		Φ70
Unit	μm	μm	μm	μm	μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V _{op}		V _{BR}	V
Forward Current	I _F		5	mA
Reverse Current	I _R		3	mA
Operating Temperature	T _{op}	-40	85	°C
Storage Temperature	T _c	-45	125	°C

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range	λ		1210	1310/1550	1650	nm
Breakdown Voltage	V _{BR}	I ₀ =1μA	38		60	V
Punch-through Voltage	V _P	λ=1550nm P ₀ =1μW M=1.1	18		30	V
Dark Current	I ₀	V _R =V _{BR} -3V T=25°C			20	nA
		V _R =V _{BR} -3V T=85°C			500	nA
Responsivity	R _e	λ=1550nm P ₀ =1μW M=1.1	0.85	0.90		A/W
Multiplication Factor	M	λ=1550nm P ₀ =1μW V _R =V _{BR} -3V	8			
Capacitance	C	V _R =V _{BR} -3V			0.5	pF
-3dB Bandwidth	BW	V _R =V _{BR} -3V	2.5			GHz
Temperature coefficient of V _{BR}	Y	+20~+85°C	0.05	0.07	0.12	
		+20~+85°C	0.07	0.11	0.15	

S-10BAPD02-G

Introduction

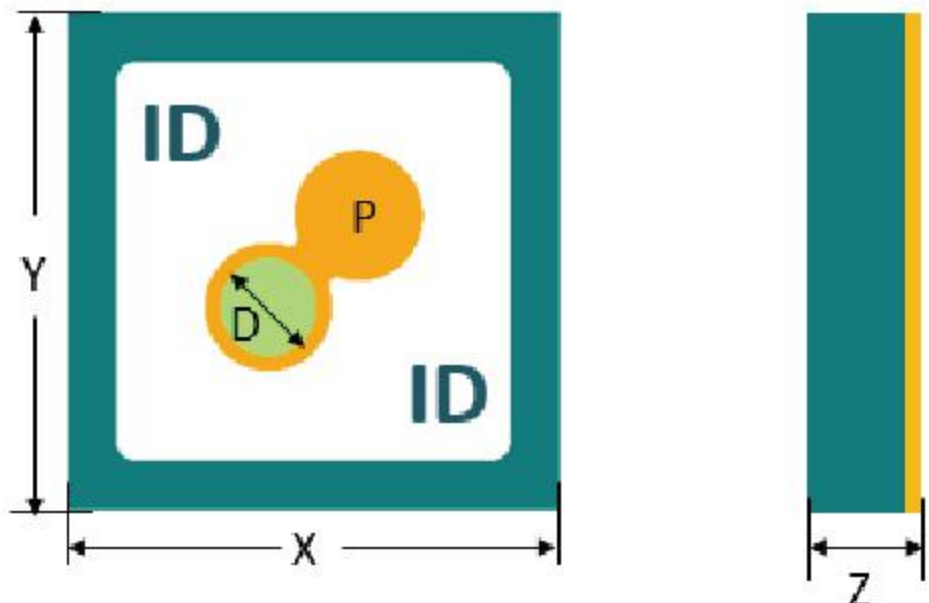
Is a front-side illuminated ingaas apd chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for low cost, high-speed data communication designs.

Key Features

- Optical aperture: 50μm
- Low capacitance: 0.5pF Max
- Backside common cathode and topside anode
- Top-sided coplanar GS contact pads
- 100% testing and inspection
- RoHS compliant

Applications

- GPON
- SONET OC48
- Ethernet
- Fiber Channel



Physical Parameters

	Die Dimension			Aperture	Pad
Symbol	X	Y	Z	D	P
Min	225	225	135		Φ60
Typ	250	250	150	Φ50	Φ65
Max	275	275	165		Φ70
Unit	μm	μm	μm	μm	μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V_{op}		V_{BR}	V
Forward Current	I_F		5	mA
Reverse Current	I_R		3	mA
Operating Temperature	T_{op}	-40	85	°C
Storage Temperature	T_c	-45	125	°C
ESD Susceptibility		400		

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range	λ		1210	1310/1550	1650	nm
Breakdown Voltage	V_{BR}	$I_D=1\mu A$	38		60	V
Punch-through Voltage	V_P	$\lambda=1550nm$ $P_O=1\mu W$ $M=1.1$	18		30	V
Dark Current	I_D	$V_R=V_{BR}-3V$ $T=25^{\circ}C$			20	nA
		$V_R=V_{BR}-3V$ $T=85^{\circ}C$			500	nA
Responsivity	R_e	$\lambda=1550nm$ $P_O=1\mu W$ $M=1.1$	0.80	0.90		A/W
Multiplication Factor	M	$\lambda=1550nm$ $P_O=1\mu W$ $V_R=V_{BR}-3V$	10			
Capacitance	C	$V_R=V_{BR}-3V$			0.5	pF
-3dB Bandwidth	BW	$V_R=V_{BR}-3V$	2.5			GHz
Temperature coefficient of V_{BR}	γ	+20~+85°C	0.07		0.12	V/°C
		+20~+85°C	0.09		0.15	

S-13AAPD10-G

Introduction

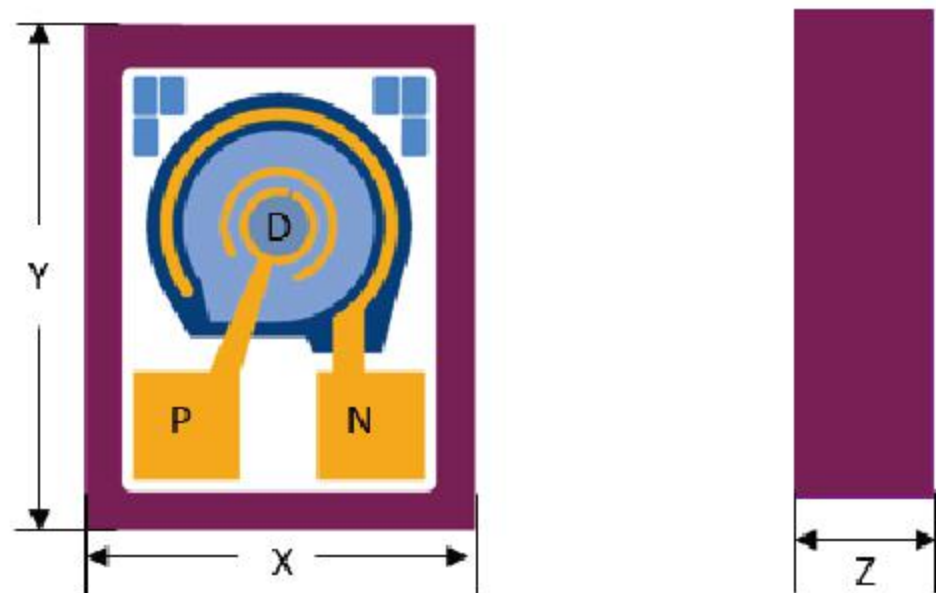
S-13AAPD10-G is a front-side illuminated InGaAs APD chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for low cost, high-speed data communication designs.

Key Features

- Optical aperture: 40μm
- Topside cathode and anode
- Operating temperature range: -40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- 10G PON
- Long-haul networks
- Single mode datacom and telecom



Physical Parameters

	Die Dimension			Aperture	Pad	
Symbol	X	Y	Z	D	N	P
Min	225	295	135	38	65*65	65*65
Typ	250	320	150	40	70*70	70*70
Max	275	345	165	42	75*75	75*75
Unit	μm	μm	μm	μm	μm*μm	μm*μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V_{op}		V_{BR}	V
Forward Current	I_F		5	mA
Reverse Current	I_R		3	mA
Operating Temperature	T_{op}	-40	85	°C
Storage Temperature	T_c	-45	125	°C

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range	λ		1210	1310/1550	1650	nm
Breakdown Voltage	V_{BR}	$I_0=10\mu A$	25	31	34	V
Dark Current	I_0	$V_R=V_{BR}-3V$		10	100	nA
Responsivity	R_e	$\lambda=1550nm$ $P_0=1\mu W$ $M=1$	0.65	0.8		A/W
Multiplication Factor	M	$\lambda=1550nm$ $P_0=1\mu W$ $V_R=V_{BR}-3V$	8			
Capacitance	C	$V_R=V_{BR}-3V$		0.29	0.32	pF
-3dB Bandwidth	BW	$V_R=V_{BR}-3V$	7.0			GHz
Temperature coefficient of V_{BR}	Y	-40~+85°C	0.040	0.044	0.070	V/°C

S-13BAPD10-G

Introduction

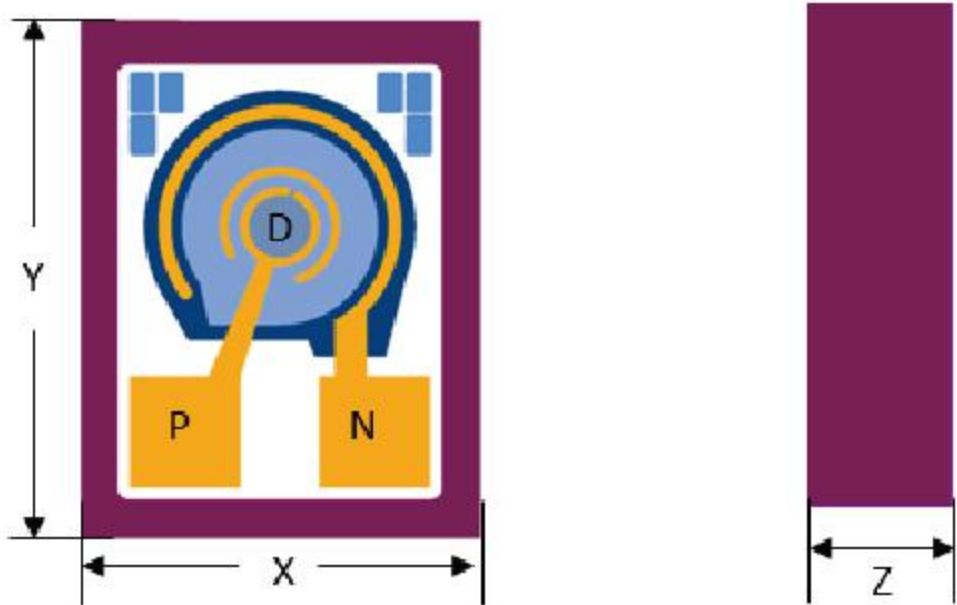
S-13BAPD10-G is a front-side illuminated InGaAs APD chip with a planar structure. This product has high responsivity, low dark current, and excellent reliability. It is ideally suited for low cost, high-speed data communication designs.

Key Features

- Optical aperture: 50μm
- Topside cathode and anode
- Operating temperature range: -40 to +85°C
- 100% testing and inspection
- RoHS compliant

Applications

- 10G PON (with super TIA)
- Long-haul networks
- Single mode datacom and telecom



Physical Parameters

	Die Dimension			Aperture	Pad	
Symbol	X	Y	Z	D	N	P
Min	225	295	135	45	65*65	65*65
Typ	250	320	150	50	70*70	70*70
Max	275	345	165	55	75*75	75*75
Unit	μm	μm	μm	μm	μm*μm	μm*μm

Absolute maximum ratings

Parameters	Symbol	Rating		Unit
		Min	Max	
Operation Voltage	V _{op}		V _{BR}	V
Forward Current	I _F		5	mA
Reverse Current	I _R		3	mA
Operating Temperature	T _{op}	-40	85	°C
Storage Temperature	T _c	-45	125	°C

Specifications (T=25°C)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Wavelength Range	λ		1210	1310/1550	1650	nm
Breakdown Voltage	V _{BR}	I _D =1μA	25	31	34	V
Dark Current	I _D	V _R =V _{BR} -3V		10	100	nA
Responsivity	R _e	λ=1550nm P _O =1μW M=1	0.65	0.8		A/W
Multiplication Factor	M	λ=1550nm P _O =1μW V _R =V _{BR} -3V	8			
Capacitance	C	V _R =V _{BR} -3V		0.42	0.5	pF
-3dB Bandwidth	BW	V _R =V _{BR} -3V	3.5			GHz
Temperature coefficient of V _{BR}	Y	-40~+85°C	0.040	0.044	0.070	V/°C

S-DL02S27-001 2.5 Gbps 1270nm DFB laser chip

Applications

- Passive Optical Networks
- 2.5 Gb/s Transmission

Key Features

- Advanced Digital Chip Design
- Uncooled Operation
- Low Threshold Current
- High Output Power
- Small Divergence Angle
- RoHS Compliant



Electro-optical Characteristics (T=25°C unless otherwise specified)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Center Wavelength	λ_c	I _{th} +20mA	1260	1270	1280	nm
Operating Temperature	T _{op}		-10	25	85	°C
Optical Output Power	P _o	25°C, I _{th} +20mA	7	8.5		mW
		85°C, I _{th} +20mA	5	6.5		
Threshold Current	I _{th}	25°C, 1-5mW	6	9.5	13	mA
		85°C, 1-2mW	10	20	35	
Slope Efficiency	η	25°C, I _{th} +20mA	0.32	0.4		W/A
		85°C, I _{th} +20mA	0.22	0.3		
Side Mode Suppression Ratio	SMSR	I _{th} +20mA	40	45		dB
Resistance	R	I _{th} +20mA	4	7	10	Ω
Farfield (Vertical)	$\theta_{\perp}$	30mA, FWHM	20	25	30	deg
Farfield (Horizontal)	$\theta_{\parallel}$	30mA, FWHM	15	20	25	deg
Reverse Current	I _{rev}	V _f =-2V		<0.1	1	μ A
Kink Deviation	kink	I _{th} +5mA~80mA			20	%

Absolute maximum ratings

Parameters	Symbol	Min	Max	Unit
Operating Temperature	T _{op}	-10	85	°C
Storage Temperature	T _{st}	-40	100	°C
Optical Output Power	P _o	0	30	mW
Laser Reverse Voltage	V _r	0	2	V
Continuous Operating Current	I _{op}	0	110	mA

DFB Chip Dimensions

Parameters	Symbol	Min	Typ	Max	Unit
Die Length	L	240	250	260	μ m
Die Width	W	190	200	210	μ m
Die Thickness	T	85	100	115	μ m
Bonding pad radius	L _{pad}	70	75	80	μ m

Suggested bonding conditions

Process	Recommended Conditions	
Die Bonding	Solder	AuSn
	Temperature	350°C
	Dwell time	20s
	Pressure	15g
	Atmosphere	N ₂
Wire Bonding	Au Wire	
	Ball bond	
	Diameter of Wire	0.8mil
	Temperature	160°C

S-DL02S27-001 2.5 Gbps 1270nm DFB laser chip

Applications

- Passive Optical Networks
- 2.5 Gb/s Transmission

Key Features

- Advanced Digital Chip Design
- Uncooled Operation
- Low Threshold Current
- High Output Power
- Small Divergence Angle
- RoHS Compliant



Electro-optical Characteristics (T=25°C unless otherwise specified)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Center Wavelength	λ_c	I _{th} +20mA	1300	1310	1320	nm
Operating Temperature	T _{op}		-10	25	85	°C
Optical Output Power	P _o	25°C, I _{th} +20mA	7	8.5		mW
		85°C, I _{th} +20mA	5	6.5		
Threshold Current	I _{th}	25°C, 1-5mW	6	9.5	13	mA
		85°C, 1-2mW	10	20	35	
Slope Efficiency	η	25°C, I _{th} +20mA	0.32	0.4		W/A
		85°C, I _{th} +20mA	0.22	0.3		
Side Mode Suppression Ratio	SMSR	I _{th} +20mA	40	45		dB
Resistance	R	I _{th} +20mA	4	7	10	Ω
Farfield (Vertical)	$\theta_{\perp}$	30mA, FWHM	20	25	30	deg
Farfield (Horizontal)	$\theta_{\parallel}$	30mA, FWHM	15	20	25	deg
Reverse Current	I _{rev}	V _f =-2V		<0.1	1	μ A
Kink Deviation	kink	I _{th} +5mA~80mA			20	%

Absolute maximum ratings

Parameters	Symbol	Min	Max	Unit
Operating Temperature	T _{op}	-10	85	°C
Storage Temperature	T _{st}	-40	100	°C
Optical Output Power	P _o	0	30	mW
Laser Reverse Voltage	V _r	0	2	V
Continuous Operating Current	I _{op}	0	110	mA

DFB Chip Dimensions

Parameters	Symbol	Min	Typ	Max	Unit
Die Length	L	240	250	260	μ m
Die Width	W	190	200	210	μ m
Die Thickness	T	85	100	115	μ m
Bonding pad radius	L _{pad}	70	75	80	μ m

Suggested bonding conditions

Process	Recommended Conditions	
Die Bonding	Solder	AuSn
	Temperature	350°C
	Dwell time	20s
	Pressure	15g
	Atmosphere	N ₂
Wire Bonding	Au Wire	
	Ball bond	
	Diameter of Wire	0.8mil
	Temperature	160°C

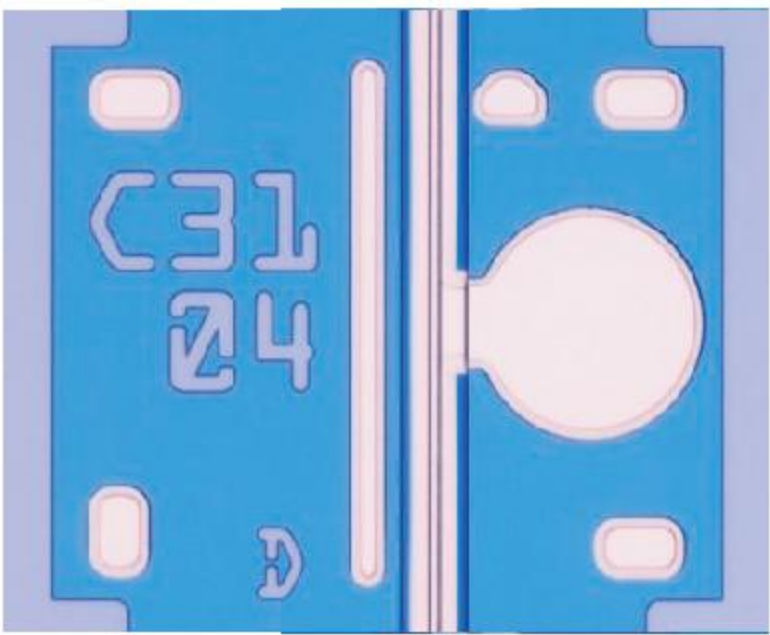
S-DL10SXX-001 10 Gbps 1270nm / 1310nm DFB laser chip

Applications

- Digital Uncooled Applications
- 10 Gb/s Transmission

Features

- Advanced Digital Chip Design
- Wide Operating Temperature Range:
-40 to +85°C
- Telcordia Technologies™ 468 Compliant
- RoHS Compliant



Electro Optical Characteristics

Parameter	Symbol	Condition	Specification/Rating			Units
			Min	Typical	Max	
Operating Temperature	T _{op}		-40	-25	-85	°C
Optical Output Power	P _{op}	T=25 oC , I _{th} + 30mA T=85 oC , I _{th} + 30mA	7 4	10 6		mW
Threshold Current	I _{th}	T=25 oC T=85 oC		10 24	15 30	mA
Slope Efficiency	η	T=25 oC T=85 oC	0.35 0.2			W/A
DC Resistance	R	T=25 oC , I _{th} + 30mA		9	12	Ω
Operating Voltage	V _{op}	T=25 oC , I _{th} + 30mA		1.4	1.7	V
Central Wavelength	λ	T=25 oC , I _{th} + 30mA	-3.5	LcR	+3.5	nm
Side Mode Suppression Ratio	SMSR	T=25 oC , I _{th} + 30mA T=85 oC , I _{th} + 30mA	35 35			dB
Temperature Dependence of Central Wavelength	Δλ/ΔT			0.09		nm/oC
Beam Divergence Angle, Vertical		T=25 oC , 30mA, FWHM		40		deg
Beam Divergence Angle, Horizontal		T=25 oC , 30mA, FWHM		20		deg
Kink deviation		T=25 oC , I _{th} to 120mA			10	%
Spectral Width	Δλ	T=25 oC , I _{th} + 30mA		0.25	1	nm
Modulation Bandwidth	f _{3dB}	T=25 oC , I _{th} + 30mA	12			GHz
Rise/Fall Ttime	t _r / t _f	20/80%			45	ps

Product Information

Product ID	LcR – Wavelength	unit
S-DL10S27-001	1270	nm
S-DL10S31-001	1310	nm

Absolute maximum ratings

Parameters	Symbol	Min	Max	Unit
Operating Temperature Range	T _{op}	-40	85	°C
Storage Temperature	T _{st}	-40	100	°C
Optical Output Power	P _o		22	mW
Laser Reverse Voltage	V _r		2.0	V
Continuous Operating Current	I _{op}		110	mA
ESD Susceptibility			500	V

DFB Chip Dimensions

Parameters	Symbol	Min	Typ	Max	Unit
Die Length	L	185	200	215	um
Die Width	W	240	250	260	um
Die Thickness	T	70	85	100	um
Bonding pad radius	Lpad	65	70	75	um

Suggested bonding conditions

Process	Recommended Conditions	
Die Attach (Die Bonding)	Solder	AuSn
	Temperature	350°C
	Dwell time	20s
	Pressure	15g
	Atmosphere	N2
Wire Bonding	Au Wire	
	Ball bond	
	Diameter of Wire	0.8mil
	Temperature	160°C

Ordering Information

Product Code	Data Rate	Description
S-DL10S27-001	10Gbps	1270 nm 10Gbps DFB Chip
S-DL10S31-001	10Gbps	1310 nm 10Gbps DFB Chip