OG-AP-080-12 APD

Optogration
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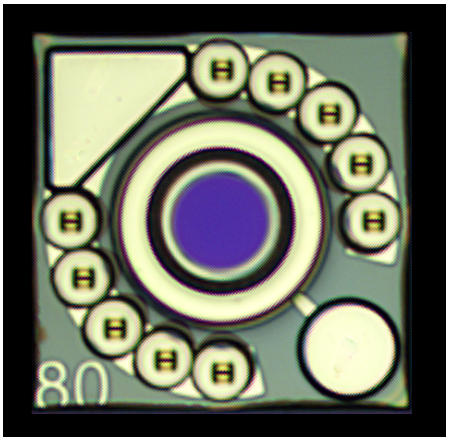
Product Brief

Our Photodiodes, Your Circuits



Features:
- High damage threshold
- Fast Recovery
- Wide dynamic range
- Low noise
- Low capacitance
- High reliability
- Also available in back-entry version

Applications:
- Laser range finding
- Remote Sensing
- Machine vision
- Defense and Security
- Free-space optical communication

Overview:
Our APDs offer a wide dynamic range with high damage threshold and fast recovery from high power optical pulses. These APDs are perfect for laser range finding applications that require high tolerance to large optical returns, while still able to detect low power signal levels. They are also suitable for free-space optical communication systems. These APDs come in various aperture sizes ranging from 30 microns to 350 microns. The back-entry version for lower capacitance and lensed version for enhanced sensitivity are available per request.

Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1	0.85	0.90	1.0	A/W
Dark Current @ M=10	-	1	15	nA
Operating Voltage, Vr @ M=10		55	70	volts
Breakdown Voltage (Id = 10 µA)	40	65	80	volts
Aperture Diameter	78	80	82	µm
Capacitance @ M=10	0.32	0.35	0.4	pF
Temperature coeff. of Vbr	0.05	0.06	0.07	V/°C
Bandwidth @ M = 10	2.0	2.5	3.0	GHz
Bandwidth @ M = 20	1.5	2.2	2.5	GHz
Excess Noise Factor, F @ M=10	-	3.2	3.7	
Excess Noise Factor, F @ M=20	-	5.5	6.0	
Noise Equivalent Power, NEP @ M=10	-	0.01	0.04	fW/√Hz

Absolute Maximum Conditions

Parameter	Min	Max	Units
Operating Temp Range	-40	85	°C
Storage Temp Range	-55	125	°C
Max Reverse Current	-	1	mA
Max Forward Current	0	10	mA
Optical Input (10 nsec pulse)		>200	kW/cm²
Optical Input (average)	-	0	dBm

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OG-AP-050-12 APD

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Product Brief

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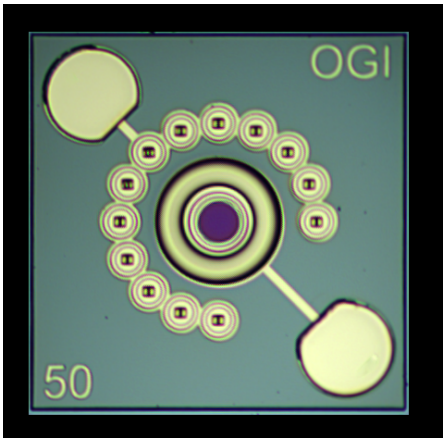

Features:
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Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1	0.85	0.90	1.0	A/W
Dark Current @ M=10	-	1	10	nA
Operating voltage, Vr @ M=10		55	70	volts
Breakdown Voltage (Id = 10 µA)	40	65	80	volts
Aperture Diameter	48	50	52	µm
Capacitance @ M=10	0.22	0.25	0.3	pF
Temperature coeff. of Vbr	0.05	0.06	0.07	V/°C
Bandwidth @ M = 10	2.5	3	3.5	GHz
Bandwidth @ M = 20	1.5	2.5	3	GHz
Excess Noise Factor, F @ M=10	-	3.2	3.7	
Excess Noise Factor, F @ M=20	-	5.5	6.0	
Noise Equivalent Power, NEP @ M=10	-	-	0.03	fW/√Hz

Absolute Maximum Conditions

Parameter	Min	Max	Units
Operating Temp Range	-40	85	°C
Storage Temp Range	-55	125	°C
Max Reverse Current	-	1	mA
Max Forward Current	0	10	mA
Optical Input (10 nsec pulse)		>200	kW/cm2
Optical Input (average)	-	0	dBm

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OG-AP-200-12 APD

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Product Brief

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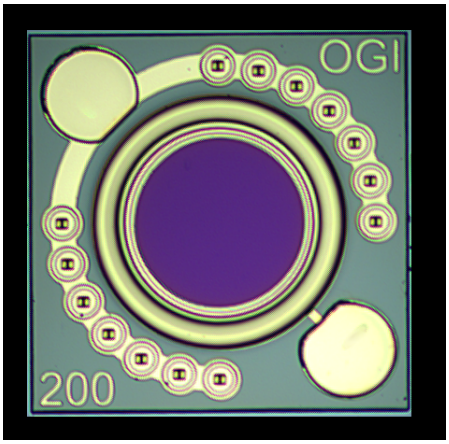

Features:
- High damage threshold
- Fast Recovery
- Wide dynamic range
- Low noise
- Low capacitance
- High reliability
- Also available in back-entry version

Applications:
- Laser range finding
- Remote Sensing
- Machine vision
- Defense and Security
- Free-space optical communication

Overview:
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Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1 1550nm wavelength	0.85	0.90	0.95	A/W
Dark Current @ M=10	-	8	25	nA
Operating voltage, Vr @ M=10	43	55	75	volts
Breakdown Voltage, Vbr (Id = 10 µA)	50	63	83	volts
Aperture Diameter	200	205	210	µm
Capacitance		1.5	2.0	pF
Temperature coeff. of Vbr		0.075		V/°C
Bandwidth @ M = 5	0.5	1.5	2.0	GHz
Bandwidth @ M = 10	1	1.5	2.0	GHz
Bandwidth @ M = 20	0.5	1.0	1.5	GHz
Excess Noise Factor, F @ M=10	-	3.2	3.7	-
Excess Noise Factor, F @ M=20	-	5.5	6.0	-
Noise Equivalent Power, NEP @ M=10	-	0.032	0.1	fW/√Hz

Absolute Maximum Conditions

Parameter	Min	Max	Units
Operating Temp Range	-40	85	°C
Storage Temp Range	-55	125	°C
Max Reverse Current	-	1	mA
Max Forward Current	0	10	mA
Optical Input (10 nsec pulse)		>200	kW/cm2
Optical Input (average)	-	0	dBm

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OG-AP-350-12 APD

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Product Brief

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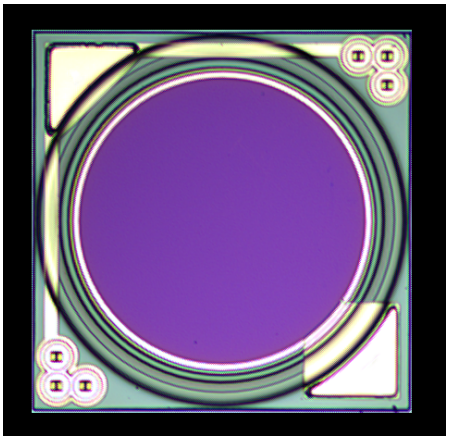

Features:
- High damage threshold
- Fast Recovery
- Wide dynamic range
- Low noise
- Low capacitance
- High reliability
- Also available in back-entry version

Applications:
- Laser range finding
- Remote Sensing
- Machine vision
- Defense and Security
- Free-space optical communication

Overview:
Our APDs offer a wide dynamic range with high damage threshold and fast recovery from high power optical pulses. These APDs are perfect for laser range finding applications that require high tolerance to large optical returns, while still able to detect low power signal levels. They are also suitable for free-space optical communication systems. These APDs come in various aperture sizes ranging from 30 microns to 350 microns. The back-entry version for lower capacitance and lensed version for enhanced sensitivity are available per request.

Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1	0.85	0.90	0.95	A/W
Dark Current @ M=10	-	30	250	nA
Operating voltage, Vr @ M=10	37	52	68	volts
Breakdown Voltage (Id = 10 µA)	45	60	75	volts
Aperture Diameter	350	352	355	µm
Capacitance @ M=10	-	3.2	4.0	pF
Temperature coeff. of Vbr	0.05	0.06	0.07	V/°C
Bandwidth @ M = 10	-	0.6	-	GHz
Bandwidth @ M = 20	-	0.6	-	GHz
Excess Noise Factor, F @ M=10	-	3.2	3.7	-
Excess Noise Factor, F @ M=20	-	5.5	6.0	-
Noise Equivalent Power, NEP @ M=10	-	0.08	-	fW/√Hz

Absolute Maximum Conditions

Parameter	Min	Max	Units
Operating Temp Range	0	70	°C
Storage Temp Range	-40	85	°C
Max Reverse Current	-	1	mA
Max Forward Current	0	10	mA
Optical Input	-	0	dBm

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OG-QP-1000-60 BE-pin

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Product Brief

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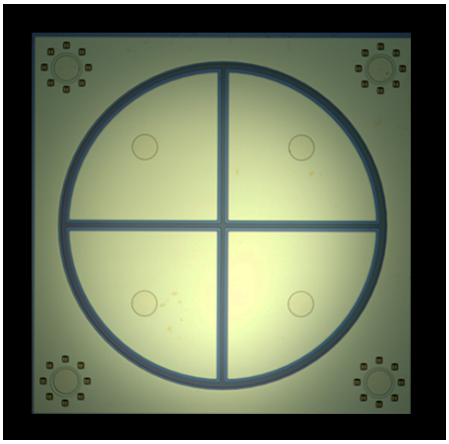

Features:
- Low dark current
- Low capacitance
- High quantum efficiency

Applications:
- Position sensing
- Laser spot tracking
- Defense and Security

Overview:
Our PIN quad pixel arrays have low defect density, low capacitance, and low dark current that provides an ideal solution for reliable position sensing applications. These arrays come in 1 mm and 7 mm diameter versions.

Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1	0.85	0.95	-	A/W
Dark Current @ M=10	-	2		nA
Operating voltage, Vr @ M=10		0	11	volts
Breakdown Voltage (Id = 10 µA)	15	20	65	volts
Capacitance @ M=10		50		pF
Capacitance @ M=10		10		µm

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128x128 InAlAs-InGaAs APD Array

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Product Brief

Our Photodiodes, Your Circuits

Features:
- High uniformity across the FPA
- Wide operating gain range
- Large dynamic range
- High damage threshold
- Fast Recovery
- Low noise
- Low capacitance
- Built-in lens option available

Applications:
- Precision vehicle maneuvering
- Machine vision
- Defense and Security

Overview:
Our 2D APD arrays offer a wide dynamic range with high damage threshold and pixel gain uniformity across the array. These arrays are critical for precision vehicle maneuvering in space and defense applications. OGi designs these APDs in close collaboration with customer's requirements e.g. pixel pitch and can incorporate built-in lens on pixels for enhanced sensitivity.

Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1 1550nm wavelength (1550nm optimized AR coating)	0.80	0.85	0.90	A/W
Dark Current @ M=10	-	2	20	nA
Operating voltage, Vr @ M=10	46	55	73	volts
Breakdown Voltage, Vbr (Id = 10 µA)	55	63	82	volts
Active Diameter (without lens, @90% maximum)	48	50	60	µm
Capacitance		0.08	0.1	pF
Temperature coeff. of Vbr		0.07		V/°C
A-factor, M = A / (Vbr-Vop)	70	85	100	volts
Bandwidth @ M = 10	1.5	2.5	3	GHz
Bandwidth @ M = 20	1	1.5	2	GHz
Excess Noise Factor, F @ M=10	-	3.2	3.7	-
Excess Noise Factor, F @ M=20	-	5.5	6.0	-
Noise Equivalent Power, NEP @ M=10	-	0.01	0.05	fW/√Hz

Array Uniformity (within a single array with 100 µm pitch)

Parameter	Variation	Units
V10 non-uniformity	+/-0.5	V
A-factor non-uniformity	+/-2	%
Id20 non-uniformity	+/-5	nA
k_{eff} non-uniformity	+/-5	%
Responsivity non-uniformity at V for M=10	+/-7	%

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OG-AP-030-12 APD

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Product Brief

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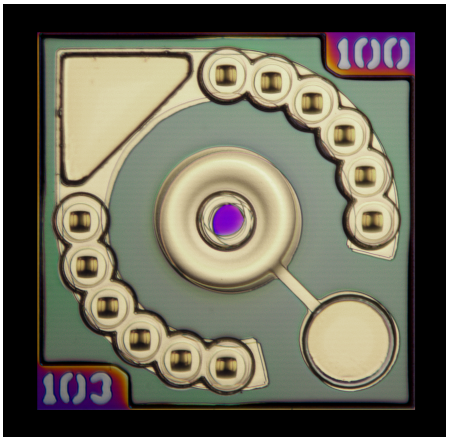

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Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1	-	0.90	-	A/W
Dark Current @ M=10	-	0.2	10	nA
Operating Voltage, Vr @ M=10	32	52	72	volts
Breakdown Voltage (Id = 10 µA)	40	60	80	volts
Aperture Diameter	-	30	-	µm
Capacitance @ M=10	-	0.14	-	pF
Temperature coeff. of Vbr	0.05	0.06	0.08	V/°C
Bandwidth @ M = 10	-	6	-	GHz
Bandwidth @ M = 20	-	4.5	-	GHz
Excess Noise Factor, F @ M=10	-	3.2	3.7	
Excess Noise Factor, F @ M=20	-	5.5	6.0	
Noise Equivalent Power, NEP @ M=10	-	-	-	fW/√Hz

Absolute Maximum Conditions

Parameter	Min	Max	Units
Operating Temp Range	-40	85	°C
Storage Temp Range	-55	125	°C
Max Reverse Current	-	1	mA
Max Forward Current	0	10	mA
Optical Input (10 nsec pulse)		>200	kW/cm²
Optical Input (average)	-	0	dBm

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OG-AP-020-12 APD

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Product Brief

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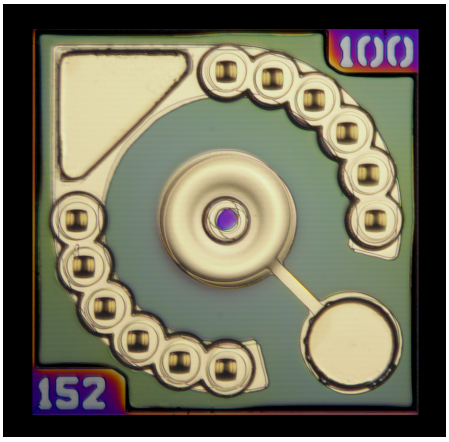

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Operating Characteristics: Temperature = 25°C

Parameter	Min	Typ	Max	Units
Wavelength Range	1000	-	1630	nm
Responsivity @ M = 1 1550 nm	-	0.90	-	A/W
Dark Current @ M=10	-	0.15	10	nA
Operating Voltage, Vr @ M=10	32	52	72	volts
Breakdown Voltage (Id = 10 µA)	40	60	80	volts
Aperture Diameter	-	20	-	µm
Capacitance @ M=10	-	0.09	-	pF
Temperature coeff. of Vbr	0.05	0.06	0.08	V/°C
Bandwidth @ M = 10	-	6	-	GHz
Bandwidth @ M = 20	-	4.5	-	GHz
Excess Noise Factor, F @ M=10	-	3.2	3.7	
Excess Noise Factor, F @ M=20	-	5.5	6.0	
Noise Equivalent Power, NEP @ M=10	-	-	-	fW/√Hz

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Operating Temp Range	-40	85	°C
Storage Temp Range	-55	125	°C
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Max Forward Current	0	10	mA
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Optical Input (average)	-	0	dBm

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