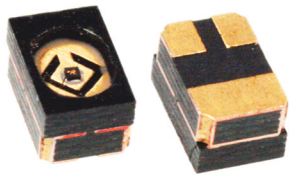
Miniature Surface Mount

LED—OPR5200, OPR5200H

Phototransistor—OPR5500

Features:

- Stackable on 2 mm centers
- Vertical or horizontal mounting
- Automatic pick-and-place compatible
- Combine OPR5200 and OPR5500 to create miniature switch



Description:

The **OPR5200** is a miniature high efficiency GaAlAs light emitting diode in a high temperature polyamide chip carrier that is well suited to space-limited applications which require close channel spacing.

The **OPR5500** is a miniature NPN silicon phototransistor housed in a high temperature polyamide chip carrier that is well suited to space-limited applications which require close channel spacing.

When combing the OPR5200 and OPR5500 (miniature phototransistor), this lateral mounting option can be used to create a non-focused reflective or slotted switch configuration.

These parts can be automatically placed with standard SMD equipment and can be reflow soldered by virtually any conventional means. Wraparound contacts allow it to be mounted face up or on edge for a beam direction parallel to the seating plane.

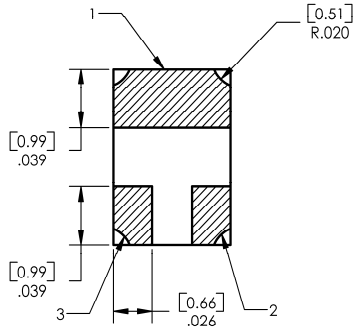
See Application Bulletin 237 for handling instructions

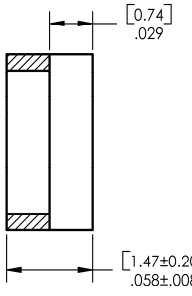
Applications:

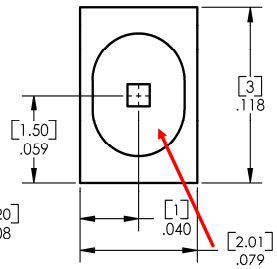
- Slotted switches
- Industrial environments
- Space-limited applications

Ordering Information

Part Number	LED Peak Wavelength	Output Power (µW) Min	I_F (mA) Typ / Max	Total Beam Angle (Degrees)	Rise / Fall Times (nS) Typ	Packaging
OPR5200	890 nm	350	20 / 50	90	500 / 250	Chip Tray
OPR5200H	880 nm	500	20 / 50	90	20 / 20	Chip Tray
Part Number	**Sensor**	**Light Current $I_{C(ON)}$ (µA) Min**	**V_{CE} Max**	**Input Power E_E (µW/cm²)**	**Viewing Angle (Degrees)**	**Packaging**
OPR5500	Transistor	36	30	150	120	Chip Tray







TOLERANCE IS ± .005 [0.13]

DIMENSIONS ARE IN: [MILLIMETERS] INCHES

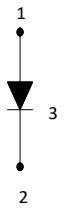
OPR5200

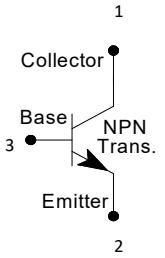
Pin #	LED
1	Anode
2	Cathode
3	N.C.

OPR5500

Pin #	Transistor
1	Collector
2	Emitter
3	Base

Warning: Front Window is pressure sensitive. Do not apply pressure or high vacuum to window.





RoHS

MOISTURE (Level-4)

ESD (Human Body Model)

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Electrical Specifications

OPR5200 Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage and Operating Temperature	-55° C to +125° C
Continuous Forward Current	50 mA
Peak Forward Current (1 µs pulse width, 10% duty cycle) OPR5200	1.0 A
Peak Forward Current (1 µs pulse width, 10% duty cycle) OPR5200H	400 mA
Power Dissipation(1)	100 mW
Solder reflow time within 5° C of peak temperature is 20 to 40 seconds(2)	250° C

OPR5200 Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
P_O	Output Power	350	-	-	µW	I_F = 20 mA
V_F	Forward Voltage	-	-	1.8	V	I_F = 20 mA
I_R	Reverse Current	-	-	100	µA	V_R = 2 V
λ_P	Peak Wavelength	-	890	-	nm	I_F = 20 mA
λ_{BW}	Spectral Bandwidth	-	80	-	nm	I_F = 20 mA
θ_{HP}	Emission Angle	-	±45 °	-	-	at half power points
t_r	Output Rise Time	-	500	-	ns	I_P = 100 mA, PW = 10.0 µs, D.C. = 10 %
t_f	Output Fall Time	-	250	-	ns	

Notes:
(1) Derate at 1.00 mW/° C above 25° C.
(2) Solder time less than 5 seconds at temperature extreme.

OPR5200H Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
P_O	Output Power OPR5200H	500	-	-	µW	I_F = 20 mA
V_F	Forward Voltage	-	1.40	1.80	V	I_F = 20 mA
I_R	Reverse Current	-	-	10	µA	V_R = 5 V
λ_P	Peak Wavelength	-	883	-	nm	I_F = 20 mA
λ_{BW}	Spectral Bandwidth	-	55	-	nm	I_F = 20 mA
θ_{HP}	Emission Angle	-	±45 °	-	-	at half power points
t_r	Output Rise Time	-	20	-	ns	I_P = 100 mA, PW = 10.0 µs, D.C. = 10 %
t_f	Output Fall Time	-	20	-	ns	

Notes:
(1) Derate at 1.00 mW/° C above 25° C.
(2) Solder time less than 5 seconds at temperature extreme.

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Electrical Specifications

OPR5500 Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Storage and Operating Temperature	-55° C to +125° C
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation(1)	100 mW
Solder reflow time within 5°C of peak temperature is 20 to 40 seconds(2)	250° C

Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current	36	-	-	µA	V_{CE} = 5 V, E_e = 150 µW/cm^2 (890 nm light source)
I_{CEO}	Dark Current	-	-	100	nA	V_{CE} = 5 V, E_e = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	I_E = 100 µA
$V_{(SAT)}$	Saturation Voltage	-	-	0.4	V	I_C = 100 µA, E_e = 5 mW/cm^2
t_r, t_f	Output Rise and Fall Time	-	2.5	-	µs	V_{CC} = 5 V, I_C = 800 µA, R_L = 100 Ω

Notes:
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(2) Solder time less than 5 seconds at temperature extreme.

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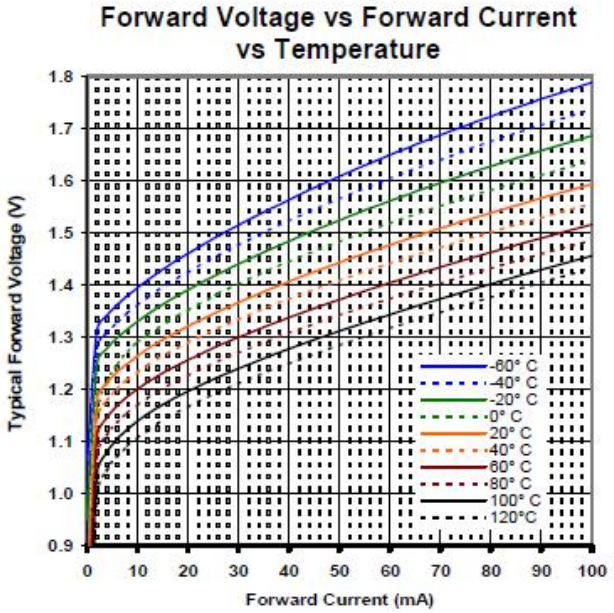
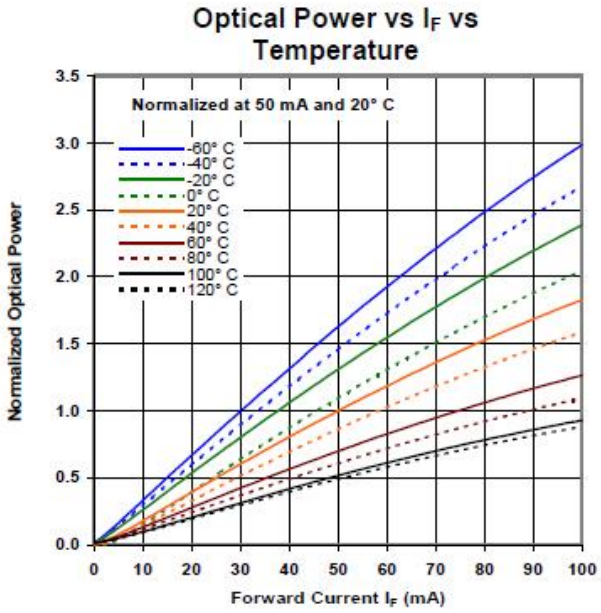
Performance

OPR5200





OPR5500