

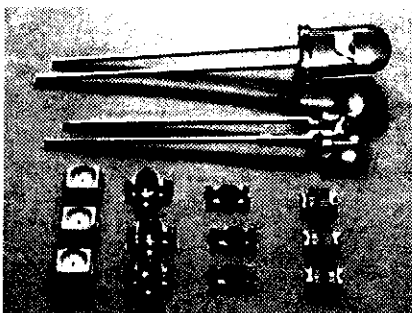
Chips

- ◆ visible
- ◆ infrared
- ◆ special design



AutoSelective Photodiodes

- ◆ ultraviolet
- ◆ visible
- ◆ infrared



LEDs, SMDs in different designs

- ◆ visible
- ◆ infrared
- ◆ high-power
- ◆ high-speed

Type Designation System

LED Chips:

E	L	C	-	1234	-	5	6	7	-	8
	Light emitting	Chip		Wavelength λ [nm]		Polarity	Size ($\pm 10 \mu\text{m}$) [μm]	Emission area [μm]		Chip design
						1 = anode up 2 = cathode up 3 = flip chip 4 = one side contacts	1 = 235 2 = 255 3 = 265 4 = 295 5 = 325 6 = 350 7 = 365 8 = 465 9 = special	1 = $\varnothing 25$ 2 = $\varnothing 50$ 3 = $\varnothing 75$ 4 = $\varnothing 100$ 5 = $\varnothing 150$ 6 = $\varnothing 200$ 7 = $\varnothing 250$ 8 = $\varnothing 300$ 9 = special		

LEDs:

E	L	X	-	1234	-	5	6	7	-	8
	Light emitting	Type		Wavelength λ [nm]*		Package diameter [mm]	Viewing angle φ [deg]	Forward current I_F [mA]		LED design
		D = Diode (standard packages) S = SMD A = Array J = Jumbo I = Illuminator P = Point-source				0 = TO-case 1 = $\varnothing 10$ 2 = $\varnothing 12$ 3 = $\varnothing 3$ 5 = $\varnothing 5$ 6 = $\square(2 \times 4)$ 7 = $\square(2 \times 5)$ 8 = $\square(2 \times 7)$ 9 = special	0 < 4 1 = 4 - 14 2 = 15 - 24 3 = 25 - 34 4 = 35 - 44 5 = 45 - 54 6 = 55 - 64 7 = 65 - 74 8 = 75 - 84 9 = 85 - 94	1 = 1 2 = 2 3 = 20 4 = 50 5 = 100 6 = 150 7 = 200 8 = 250 9 = 300 0 > 300		

*W- for white

Photodiodes and photodiode chips:

E	P	X	-	1234	-	5	/	6, 7	-	8
	Photo	Type		Wavelength λ [nm]		Packaging		Chip size [mm]		Chip design
		D = Diode (standard packages) C = Chip				0 = TO-case 1 = SMD 3 = $\varnothing 3 \text{ mm}$ 5 = $\varnothing 5 \text{ mm}$ 9 = special C = chip		0.4 0.5 0.9 1.0 1.4 2.5 3.6		

Symbols and Terminology

Alphabetically

f - Frequency. [Hz, kHz, MHz].

I_F - Continuous, DC forward current. [A, mA].

I_{FM} - Peak forward current. [A, mA].

I_{FSM} - Surge forward current. [A, mA].

I_R - Reverse current, leakage current. [A, μ A, nA, pA].

I_{SC} - That value of the current which flows when a photovoltaic cell or a photodiode is short circuited ($R_L \ll R_i$), at its terminals. [A, μ A, nA, pA].

I_v - Luminous intensity (of a source in a given direction). [cd=lm/sr, mcd].

I_{v typ} - Luminous intensity, typical. [cd, mcd].

m - mass. [kg, g].

P - Power dissipation. [W, mW].

S_p - Spectral sensitivity (responsivity) at a wavelength λ_p . [A/W].

T - Period (duration). [s, ms, μ s, ns].

T_{amb} - Ambient temperature. [$^{\circ}$ C].

T_p - Pulse duration. [s, ms, μ s, ns]. The pulse duration (width) is the interval between the 10% amplitude points on the leading and trailing edges of a pulse.

t_r - Rise time. [s, ms, μ s, ns].

t_f - Fall time. [s, ms, μ s, ns].

t_r, t_f - Rise and fall time are the interval between the 10% and 90% amplitude points on the leading and trailing edges of a pulse.

T_{op} - Operating temperature range. [$^{\circ}$ C].

T_{sd} - Soldering temperature. Maximum allowable temperature for soldering with a specified distance from the case and its duration. [$^{\circ}$ C].

T_{stg} - Storage temperature range. [$^{\circ}$ C].

V_F - Forward voltage. [V].

V_{F max} - Forward voltage, maximal. [V].

V_{F typ} - Forward voltage, typical. [V].

V_{OC} - Open circuit voltage. The voltage measured between the photovoltaic cell or photodiode terminals at a specified radiation/illumination if the circuit is open. [V].

V_R - Reverse voltage. Voltage drop which results from the flow of reverse current. [V].

ϕ - Viewing angle [degrees]. Full angle of half intensity or sensitivity.

λ - Wavelength. The wavelength of an electromagnetic radiation. [nm].

λ_d - Dominant wavelength. [nm].

λ_p - Peak wavelength. Wavelength of peak sensitivity or emission. [nm].

$\Delta\lambda_{0.5}$ - Spectral bandwidth at 50% of the maximum value of the spectral sensitivity or spectral emission. [nm].

$\Phi_{e min}$ - Minimal emitted (optical) power. [mW].

$\Phi_{e typ}$ - Typical emitted (optical) power. [mW].

Φ_v - Luminous flux. [lm].

LED Chips

visible

High-power

Type	Material	Peak wavelength λ_p [nm]	$V_{F\text{ typ}}$ [V]	$V_{F\text{ max}}$ [V]	$\Phi_e\text{ typ}^*$ [mW]	I_F [mA]
ELC-645-29-1	AllnGaP/GaAs	645	2.2	2.6	22	300
ELC-685-29-2	AllnGaP/GaAs	685	1.7	2.1	4.8	50

High-brightness

Type	Material	Peak wavelength λ_p [nm]	$V_{F\text{ typ}}$ [V]	$V_{F\text{ max}}$ [V]	$I_v\text{ typ}^*$ [mcd]	I_F [mA]
ELC-580-13	AllnGaP/GaAs	583	2.1	2.6	70	20
ELC-590-13	AllnGaP/GaAs	592	2.4	2.6	80	20
ELC-610-13	AllnGaP/GaAs	610	2.4	2.6	70	20
ELC-620-13	AllnGaP/GaAs	620	2.4	2.6	70	20
ELC-625-14	AllnGaP/GaAs	625	2.15	2.5	90	20
ELC-630-13	AllnGaP/GaAs	630	2.2	2.5	60	20
ELC-630-14	AllnGaP/GaAs	633	2.15	2.5	70	20
ELC-640-13	AllnGaP/GaAs	644	2.4	2.6	40	20
ELC-650-23	AlGaAs/GaAs	650	1.85	2.1	14	20
ELC-655-23	AlGaAs/AlGaAs	655	1.95	2.3	28	20

Standard

Type	Material	Peak wavelength λ_p [nm]	$V_{F\text{ typ}}$ [V]	$V_{F\text{ max}}$ [V]	$I_v\text{ typ}^*$ [mcd]	I_F [mA]
ELC-560-13	GaP/GaP	556	2.3	2.6	2.0	20
ELC-568-13	GaP:N/GaP	568	2.25	2.5	16.5	20
ELC-588-13	GaAsP/GaP	588	2.2	2.5	6.0	20
ELC-635-13	GaAsP/GaP	635	2.1	2.5	5.0	20

*Bare chip on TO-header

Note: Special wavelengths, brightness and chip designs on request

LED Chips

infrared

Type	Material	Peak wave-length λ_p [nm]	V_F typ [V]	V_F max [V]	Φ_e min* [mW]	Φ_e typ* [mW]	I_F [mA]
ELC-700-25	AlGaAs/AlGaAs	700	1.9	2.1	2.2	2.7	20
ELC-740-25	AlGaAs/AlGaAs	740	1.9	2.1	2.2	2.7	20
ELC-770-25	AlGaAs/AlGaAs	770	1.7	2.1	2.2	2.7	20
ELC-810-27	AlGaAs/AlGaAs	810	1.6	2.1	2.5	3.2	20
ELC-840-27	AlGaAs/AlGaAs	840	1.7	2.1	2.5	3.5	20
ELC-870-17	AlGaAs/AlGaAs	870	1.3	1.5	3.2	3.7	20
ELC-870f-17	AlGaAs/AlGaAs	870	1.3	1.5	3.2	3.7	20
ELC-870-27	AlGaAs/AlGaAs	870	1.35	1.6	4.6	5.4	20
ELC-905-17	AlGaAs/AlGaAs	905	1.25	1.5	2.8	3.2	20
ELC-920-17	AlGaAs/AlGaAs	920	1.25	1.5	2.8	3.2	20
ELC-940-17	AlGaAs/GaAs/GaAs	940	1.2	1.4	2.0	2.4	20
ELC-980-17	AlGaAs/GaAs/GaAs	980	1.2	1.4	0.5	0.6	20
ELC-1020-28	InGaAs/GaAs	1020	1.1	1.3	0.5	0.7	20
ELC-1300-25	InGaAs/InP	1300	0.95	1.2	0.5	0.6	20

Bare chip on TO-header*Note: Special wavelengths, power and chip designs on request**

Point-source LED Chips visible and infrared

Preliminary data

Optoelektronik GmbH has developed for high-end optical applications new point-source light emitting diodes that emit at 595, 645 and 870 nm. The point-source LED is a suitable light source for a photo sensor because it has a small emission area. It is composed of AlInGaP or AlGaAs material, features round emitting surface and has special design to provide high intensity of visible or infrared light within a small emission area. AlInGaP is more reliable in humid conditions in comparison with traditional AlGaAs LEDs. The devices are available in either chip form or mounted in a package. They can also be mounted on printed circuit boards or other substrates. Applications include medical (activation of photosensitive drugs), scanning systems, adjustment of optical devices.

Optical and electrical characteristics

Type	Material	Peak wavelength λ_p [nm]	Diameter, μm	V_F typ [V]	I_V typ [mcd]*	Φ_e typ [mW]*	Φ_v typ [mlm]*	I_F [mA]
ELC-595-29-2	AlInGaP/GaAs	595	50	2.65	25	0.12	70	20
ELC-595-29-4	AlInGaP/GaAs	595	100	2.55	40	0.20	115	20
ELC-595-29-5	AlInGaP/GaAs	595	150	2.20	50	0.25	140	20
ELC-645-29-2	AlInGaP/GaAs	645	50	2.50	8	0.25	25	20
ELC-645-29-4	AlInGaP/GaAs	645	100	2.30	13	0.40	40	20
ELC-645-29-5	AlInGaP/GaAs	645	150	2.20	16	0.50	50	20
ELC-870-29-2	AlGaAs/GaAs	870	50	1.40	-	0.12	-	20
ELC-870-29-4	AlGaAs/GaAs	870	100	1.40	-	0.40	-	20
ELC-870-29-5	AlGaAs/GaAs	870	150	1.35	-	0.55	-	20

*Bare chip on TO-header

Note: Special wavelengths, power, brightness and chip designs on request

Selective Photodiode Chips

ultraviolet, visible, infrared

Ultraviolet Selective Photodiode Chips

Type	Peak sensitivity wavelength λ_p [nm]	Spectral bandwidth at 50% $\Delta\lambda_{0.5}$ [nm]	Responsivity S_p at λ_p [A/W]	Material, technology	Applications
EPC-440/0.9 EPC-440/1.4 EPC-440/2.5 EPC-440/3.6	440	180	0.12	GaP, Schottky barrier	Medical engineering, flame detection, UV lamp control, radiation control and water purification

Visible Range Selective Photodiode Chips

Type	Peak sensitivity wavelength λ_p [nm]	Spectral bandwidth at 50% $\Delta\lambda_{0.5}$ [nm]	Responsivity S_p at λ_p [A/W]	Material, technology	Applications
EPC-470/0.9 EPC-470/1.4* EPC-470/2.5*	470	100	0.18	GaP, p-n-junction	alarm systems, light barriers, special sensors for automotive industry
EPC-550/0.5* EPC-550/0.9 EPC-550/1.4* EPC-550/2.5*	550	70	0.21	GaP, p-n-junction	alarm systems, light barriers, special sensors for automotive industry
EPC-660/0.4* EPC-660/0.5 EPC-660/0.9*	660	80	0.42	AlGaAs/GaAs	alarm systems, light barriers, special sensors

Infrared Selective Photodiode Chips

Type	Peak sensitivity wavelength λ_p [nm]	Spectral bandwidth at 50% $\Delta\lambda_{0.5}$ [nm]	Responsivity S_p at λ_p [A/W]	Material, technology	Applications
EPC-740/0.4 EPC-740/0.5* EPC-740/0.9*	740	80...100	0.5	AlGaAs/GaAs	Optical communication, remote control, alarm systems, light barriers, rain sensors
EPC-850/0.4* EPC-850/0.5* EPC-850/0.9*	850	80...100	0.6	AlGaAs/GaAs	Optical communication, remote control, alarm systems, light barriers, special sensors

* Under development

Note: Special wavelengths and chip sizes on request

Selective Photodiodes

ultraviolet, visible, infrared

Ultraviolet Selective Photodiodes

Type	Peak sensitivity wavelength λ_p [nm]	Spectral bandwidth at 50% $\Delta\lambda_{0.5}$ [nm]	Responsivity S_p at λ_p [A/W]	Packages	Applications
EPD-150-0*	440	180	0.12	TO-39	Medical engineering, flame detection, UV lamp control, radiation control and water purification
EPD-365-0	365	85	0.07	TO-46, TO-39	Medical engineering, flame detection, UV lamp control, radiation control and water purification
EPD-440-0	440	180	0.12	TO-46, TO-39	Medical engineering, flame detection, UV lamp control, radiation control

* Low wavelength limit ~150 nm.

Visible Range Selective Photodiodes

Type	Peak sensitivity wavelength λ_p [nm]	Spectral bandwidth at 50% $\Delta\lambda_{0.5}$ [nm]	Responsivity S_p at λ_p [A/W]	Packages	Applications
EPD-440-0	440	180	0.12	TO-46, TO-39	Medical engineering, flame detection, radiation control
EPD-470-0** EPD-470-1	470	100	0.18	TO, SMD	alarm systems, light barriers, special sensors for automotive industry
EPD-550-0** EPD-550-1	550	70	0.21	TO, SMD	alarm systems, light barriers, special sensors
EPD-660-0** EPD-660-1** EPD-660-5	660	80	0.42	TO, SMD, \varnothing 5 mm	alarm systems, light barriers, special sensors

Infrared Selective Photodiodes

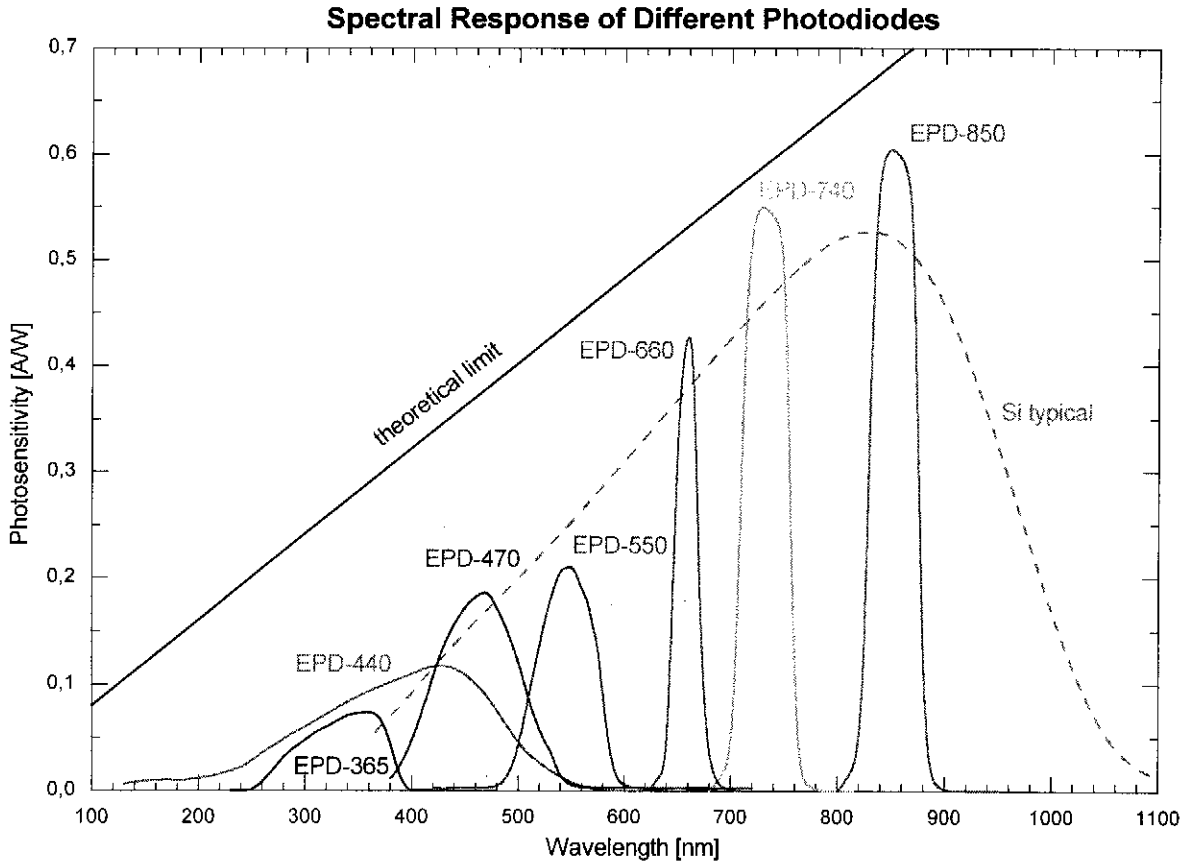
Type	Peak sensitivity wavelength λ_p [nm]	Spectral bandwidth at 50% $\Delta\lambda_{0.5}$ [nm]	Responsivity S_p at λ_p [A/W]	Package	Applications
EPD-740-1 EPD-740-5	740	80...100	0.5	SMD \varnothing 5 mm	Optical communication, remote control, alarm systems, light barriers, rain sensors
EPD-850-1** EPD-850-5**	850	80...100	0.6	SMD, \varnothing 5 mm	Optical communication, remote control, alarm systems, light barriers,

** Under development

Note: Special wavelengths and packages are available on request

Photodiodes are tested according to MIL-STD-750D and GR-468-CORE standards

Selective Photodiodes spectral response



3 mm Standard LEDs
in waterclear plastic package*

Type	Peak wavelength λ_p [nm]	Luminous intensity I_v typ at $I_F = 20$ mA [mcd]	Material	Viewing angle ϕ [deg]
ELD-556-333	556	15	GaP/GaP	30
ELD-568-333	568	200	GaP:N/GaP	30
ELD-588-333	588	120	GaAsP/GaP	30
ELD-635-333	635	40	GaAsP/GaP	30
ELD-650-333	650	300	AlGaAs/GaAs	30

Note: Special wavelengths, brightness and packages on request

Maximum Ratings at $T_{amb} = 25$ °C :

Parameter	Symbol	Value	Units
Forward Current (DC)	I_F	30	mA
Peak Operating Forward Current ($t_p \leq 100$ μ s, $t_p/T = 1/10$)	I_{Fm}	100	mA
Reverse Voltage ($I_R = 10$ μ A)	V_R	5	V
Power Dissipation	P	100	mW
Operating Temperature Range	T_{op}	-20...+100	°C
Storage Temperature Range	T_{stg}	-55...+100	°C

*Packages are available both with and without standoff

5 mm Standard LEDs
in waterclear plastic package*

Type	Peak wavelength λ_P [nm]	Luminous intensity $I_{v, typ}$ at I_F = 20 mA [mcd]	Material	Viewing angle ϕ [deg]
ELD-556-523	556	70	GaP/GaP	20
ELD-556-543	556	25	GaP/GaP	40
ELD-568-523	568	400	GaP:N/GaP	20
ELD-568-543	568	270	GaP:N/GaP	40
ELD-558-523	558	200	GaAsP/GaP	20
ELD-635-523	635	200	GaAsP/GaP	20
ELD-650-523	650	400	AlGaAs/GaAs	20
ELD-650-543	650	140	AlGaAs/GaAs	40

Note: Special wavelengths, brightness and packages (viewing angles) on request

Maximum Ratings at $T_{amb} = 25\text{ }^\circ\text{C}$:

Parameter	Symbol	Value	Units
Forward Current (DC)	I_F	30	mA
Peak Forward Current ($t_P \leq 100\text{ }\mu\text{s}$, $t_P/T = 1/10$)	I_{Fm}	100	mA
Reverse Voltage ($I_R = 100\text{ }\mu\text{A}$)	V_R	5	V
Power Dissipation	P	100	mW
Operating Temperature Range	T_{amb}	-20...+100	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55...+100	$^\circ\text{C}$

***Packages are available both with and without standoff**

3 mm High Brightness LEDs in waterclear plastic package*

Type	Peak wavelength λ_p [nm]	Luminous intensity I_V typ at $I_F = 20$ mA [mcd]	Material	Viewing angle ϕ [deg]
ELD-570-333	573	1000	AllnGaP	25
ELD-580-333	583	1000	AllnGaP	25
ELD-590-333	590	1500	AllnGaP	25
ELD-610-333	610	2000	AllnGaP	25
ELD-620-333	620	2000	AllnGaP	25
ELD-630-333	630	1500	AllnGaP	25
ELD-640-333	644	1000	AllnGaP	25
ELD-655-333	655	800	AlGaAs/AlGaAs	25

Note: Special wavelengths, brightness and packages (viewing angles) on request

Maximum Ratings at $T_{amb} = 25$ °C :

Parameter	Symbol	Value	Units
Forward current (DC)	I_F	30	mA
Peak forward current ($t_p \leq 50$ μ s, $t_p/T = 1/10$)	I_{Fm}	100	mA
Reverse voltage ($I_R = 100$ μ A)	V_R	5	V
Power dissipation	P	100	mW
Operating temperature range	T_{op}	-20...+100	°C
Storage temperature range	T_{stg}	-55...+100	°C

*Packages are available both with and without standoff

5 mm High Brightness LEDs in waterclear plastic package*

Type	Peak wavelength λ_p [nm]	Luminous intensity I_V typ at $I_F = 20$ mA [mcd]	Material	Viewing angle φ [deg]
ELD-450W-523	450**	4200	InGaN/Al ₂ O ₃	20
ELD-465-523	465	1750	InGaN/Al ₂ O ₃	20
ELD-470W-523	470**	3200	InGaN/Al ₂ O ₃	20
ELD-575-523	576	600	AllnGaP	20
ELD-575-543	576	125	AllnGaP	40
ELD-580-523	583	1100	AllnGaP	20
ELD-580-523	583	275	AllnGaP	40
ELD-590-523	592	1500	AllnGaP	20
ELD-590-543	592	375	AllnGaP	40
ELD-610-523	610	1900	AllnGaP	20
ELD-610-543	610	475	AllnGaP	40
ELD-620-523	620	2000	AllnGaP	20
ELD-620-543	620	500	AllnGaP	40
ELD-625-523	625	2650	AllnGaP	20
ELD-625-543	625	660	AllnGaP	40
ELD-630-523-4	630	3300	AllnGaP	20
ELD-630-543	630	400	AllnGaP	40
ELD-640-523	644	1100	AllnGaP	20
ELD-640-543	644	275	AllnGaP	40
ELD-655-523	655	1000	AlGaAs/AlGaAs	20
ELD-655-543	655	250	AlGaAs/AlGaAs	40
ELD-670-524	670	240	AllnGaP	20
ELD-670-544	670	60	AllnGaP	40

Note: Special wavelengths, brightness and packages (viewing angles) on request

**of blue chip

Maximum Ratings at $T_{amb} = 25$ °C:

Parameter	Symbol	Value	Units
Forward current (DC)	I_F	30	mA
Peak forward current ($t_P \leq 100$ μ s, $t_P/T = 1/10$)	I_{Fm}	100	mA
Reverse voltage ($I_R = 100$ μ A)	V_R	5	V
Power dissipation	P	100	mW
Operating temperature range	T_{op}	-20...+100***	°C

Storage temperature range	T_{stg}	-55...+100****	°C
---------------------------	-----------	----------------	----

***Packages are available both with and without standoff**

***-40...+85 °C for types ELD-450W-523, ELD-465-523, ELD-470W-523

****-40...+100 °C for types ELD-450W-523, ELD-465-523, ELD-470W-523

Bi-Color LEDs green-red

Type	Package dimension [mm]	Luminous intensity I_V typ at $I_F = 20$ mA [mcd]	Material	Viewing angle φ [deg]	Case color
ELD-568/660-333	3	100	GaP/AlGaAs	30	waterclear or diffused
ELD-568/660-523	5	100	GaP/AlGaAs	20	waterclear or diffused
ELD-568/660-603	rectangular 2 x 4	30	GaP/AlGaAs	100	diffused
ELD-568/660-803	rectangular 2 x 7	30	GaP/AlGaAs	100	diffused

Note: Special wavelengths, color- / infrared- combinations, high brightness and special packages on request

Maximum Ratings at $T_{amb} = 25$ °C :

Parameter	Symbol	Value	Units
Forward current (DC)	I_F	20	mA
Peak forward current ($t_p \leq 100$ μ s, $t_p/T = 1/10$) (red/green)	I_{Fm}	100/60	mA
Reverse voltage ($I_R = 100$ μ A)	V_R	5	V
Operating temperature range	T_{op}	-20...+85	°C
Storage temperature range	T_{stg}	-30...+100	°C

3 mm High Power and High Speed Infrared LEDs in waterclear plastic package*

Type	Package diameter [mm]	Radiant power $\Phi_{e\ typ}$ [mW]	Peak wave-length λ_P [nm]	Spectral bandwidth $\Delta\lambda_{0.5}$ [nm]	Switching times $t_r; t_f$ [ns]	Viewing angle φ [deg]	I_F [mA]
ELD-700-344	3	10	700	45	20; 25	40	50
ELD-740-344	3	10	740	30	15; 20	40	50
ELD-770-344	3	10	770	30	30; 20	40	50
ELD-810-345	3	28	810	35	40; 40	40	100
ELD-870-345	3	32	870	45	20; 20	40	100
ELD-870f-345	3	24	870	65	10; 10	40	100
ELD-905-345	3	28	905	25	400; 400	40	100
ELD-920-345	3	32	920	35	300; 300	40	100
ELD-950-345	3	23	950	70	500; 500	40	100

*Note: Special wavelengths, radiant power and packages on request

Maximum Ratings at $T_{amb} = 25\text{ }^\circ\text{C}$:

Parameter	Symbol	Value	Units
Forward current (DC)**	I_F	50/100	mA
Peak forward current ($t_p \leq 50\ \mu\text{s}$, $t_p/T = 1/2$)**	I_{Fm}	100/200	mA
Surge forward current ($t_p \leq 10\ \mu\text{s}$)**	I_{Fsm}	1/2	A
Reverse voltage ($I_R = 100\ \mu\text{A}$)	V_R	5	V
Operating temperature range	T_{op}	-20...+100	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55...+100	$^\circ\text{C}$

**First value corresponds to wavelengths from 700 to 770 nm

5 mm High Power and High Speed Infrared LEDs in waterclear plastic package*

Type	Package diameter [mm]	Radiant power $\Phi_{e\text{ typ}}$ [mW]	Peak wave-length λ_P [nm]	Spectral bandwidth $\Delta\lambda_{0.5}$ [nm]	Switching times t_r ; t_f [ns]	Viewing angle φ [deg]	I_F [mA]
ELD-700-524	5	10	700	45	20; 25	20	50
ELD-740-524	5	10	740	30	15; 20	20	50
ELD-770-524	5	10	770	30	30; 20	20	50
ELD-810-525	5	28	810	35	40; 40	20	100
ELD-870-525	5	32	870	45	20; 20	20	100
ELD-870f-525	5	24	870	65	10; 10	20	100
ELD-905-525	5	28	905	75	400; 400	20	100
ELD-920-525	5	32	920	75	300; 300	20	100
ELD-950-525	5	23	950	50	500; 500	20	100
ELD-700-544	5	10	700	45	20; 25	40	50
ELD-740-544	5	10	740	30	15; 20	40	50
ELD-770-544	5	10	770	30	30; 20	40	50
ELD-810-545	5	28	810	35	40; 40	40	100
ELD-870-545	5	32	870	45	20; 20	40	100
ELD-870f-545	5	24	870	65	10; 10	40	100
ELD-905-545	5	28	905	75	400; 400	40	100
ELD-920-545	5	32	920	75	300; 300	40	100
ELD-950-545	5	23	950	50	500; 500	40	100

*Note: Special wavelengths, radiant power and packages on request

Maximum Ratings at $T_{amb} = 25\text{ }^\circ\text{C}$:

Parameter	Symbol	Value	Units
Forward current (DC)**	I_F	50/100	mA
Peak forward current ($t_p \leq 50\text{ }\mu\text{s}$, $t_p/T = 1/2$)**	I_{Fm}	100/200	mA
Surge forward current ($t_p \leq 10\text{ }\mu\text{s}$)**	I_{Fsm}	1/2	A
Reverse voltage ($I_R = 100\text{ }\mu\text{A}$)	V_R	5	V
Operating temperature range	T_{op}	-20...+100	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55...+100	$^\circ\text{C}$

**First value corresponds to wavelengths from 700 to 770 nm

SMD-LEDs

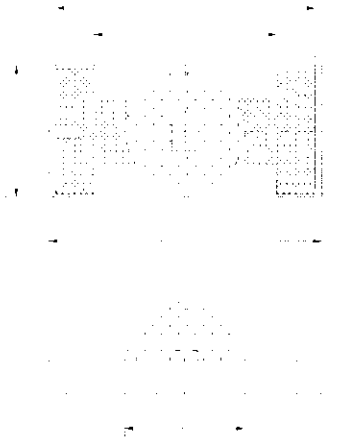
on silicon carrier

Description

High-power, AlGaAs double heterostructure with removed substrate on heatsink for „up side down“ mounting

Applications

Signalization and displays, alarm guard systems, photoelectric barriers, remote controls, illumination for CCD-cameras and night vision systems



A - $4,0 \pm 0,05$

B - $2,0 \pm 0,05$

C - $3,9 \pm 0,05$

D - $1,9 \pm 0,05$

E - $2,75 \pm 0,05$

F - $1,7 (2,1^*) \pm 0,1$

G - $0,5 \pm 0,1$

H - $0,75(2,1^*) \pm 0,05$

all dimensions in mm

Infrared SMD-Types

Type	Package dimensions, mm	Radiant power Φ_e at $I_F = 100$ mA [mW]	Peak wavelength λ_p at $I_F = 100$ mA [nm]	Switching times $t_r = t_f$ [ns]	Viewing angle φ [deg]	Spectral bandwidth $\Delta\lambda_{0,5}$ at $I_F = 100$ mA
ELS-810-638*	2x4	17	810	30	30	30
ELS-810-608	2x4	17	810	30	160	30
ELS-880-638*	2x4	20	880	30	30	45
ELS-880-608	2x4	20	880	30	160	45
ELS-920-638*	2x4	25	920	100; 350	30	60
ELS-920-608	2x4	25	920	100; 350	160	60

Maximum Ratings at $T_{amb} = 25$ °C :

Parameter	Test conditions	Symbol	Value	Unit
Forward current (DC)	on heatsink	I_F	250	mA
Peak forward current	$t_p \leq 10$ μ s, $f \leq 500$ Hz	I_{FM}	2	A
Reverse voltage	$I_R = 10$ μ A	V_R	5	V
Operating temperature range		T_{op}	-25 to +85	°C
Storage temperature range		T_{stg}	-55...+100	°C

SMD-LEDs

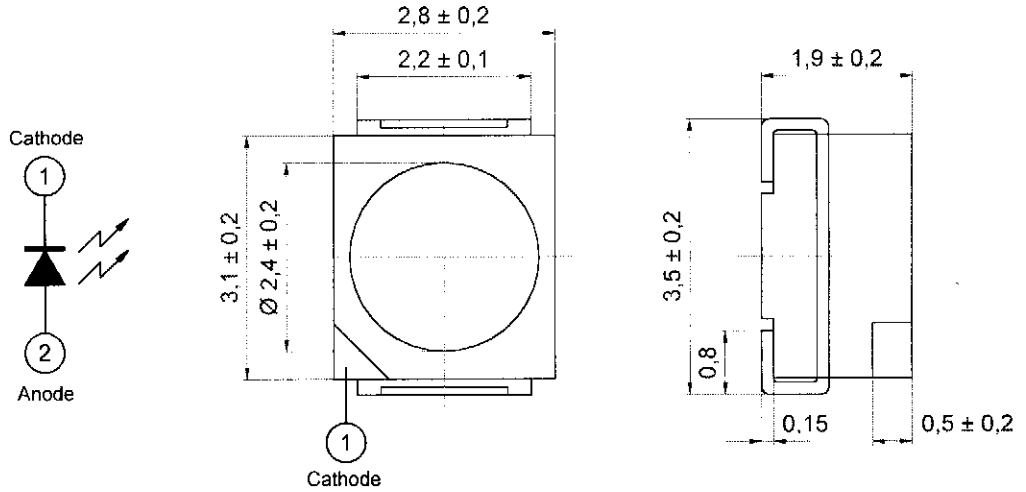
in PLCC-2 (TOP-LED) or SMD 1206 housing

Description

High-power, AlGaAs double heterostructure with removed substrate

Applications

Optical communication, safety equipment



Infrared SMD-Types

Type	Radiant power Φ_e at $I_F = 50$ mA [mW]	Peak wavelength λ_P at $I_F = 50$ mA [nm]	Switching times t_r, t_f [ns]	Viewing angle φ [deg]	Spectral bandwidth $\Delta\lambda_{0.5}$ at $I_F = 50$ mA
ELS-740-904	6.4	740	15; 20	120	30

Type	Radiant power Φ_e at $I_F = 100$ mA [mW]	Peak wavelength λ_P at $I_F = 100$ mA [nm]	Switching times t_r, t_f [ns]	Viewing angle φ [deg]	Spectral bandwidth $\Delta\lambda_{0.5}$ at $I_F = 100$ mA
ELS-870-905	16.5	870	20	120	45

Maximum Ratings at $T_{amb} = 25$ °C :

Parameter	Test conditions	Symbol	Value	Unit
Forward current (DC)		I_F	50/100*	mA
Peak forward current	$t_p \leq 50 \mu s, t_p/T = 1/2$	I_{FM}	100/200*	mA
Surge forward current	$t_p \leq 10 \mu s$	I_{FSM}	1/2*	A
Reverse voltage	$I_R = 100 \mu A$	V_R	5	V
Operating temperature range		T_{op}	-40...+90	°C
Storage temperature range		T_{stg}	-40...+85	°C

*First value corresponds to wavelengths up to 770 nm

Jumbo-LEDs

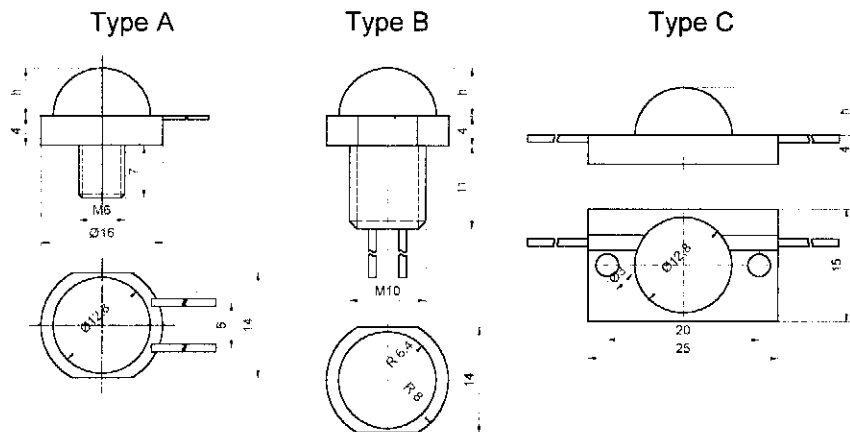
with waterclear plastic lens on metal case

Description

High-power visible or infrared modules, AlInGaP or double-hetero AlGaAs structures, six chips are soldered on metal stud or flat header, fast switching time.

Applications

Illumination for CCD-cameras, alarm guard systems, target designation for night-vision systems, remote control and optical communication.



Visible Jumbo-Types

Type	Peak wavelength λ_p at $I_F = 100$ mA [nm]	Luminous intensity I_v at $I_F=100$ mA [cd]	Material	Viewing angle ϕ [deg]
ELJ-575-225	575	5.5	AlInGaP/GaAs	20
ELJ-595-225	595	28	AlInGaP/GaAs	20
ELJ-630-225	630	32	AlInGaP/GaAs	20
ELJ-660-225	660	11	AlGaAs/AlGaAs	20
ELJ-660-245	660	8	AlGaAs/AlGaAs	40

Infrared Jumbo-Types

Type	Package Types	Radiant power Φ_e at $I_F=250$ mA [mW]	Peak wavelength λ_p at $I_F=250$ mA [nm]	Switching times $t_r = t_f$ [ns]	Viewing angles ϕ [deg]	Spectral bandwidth $\Delta\lambda_{0.5}$ [nm] at $I_F=250$ mA
ELJ-810-228	A,B,C	225	810	150	20	30
ELJ-810-248	A,B,C	225	810	150	40	30
ELJ-810-208	A,B,C	225	810	150	120, 140	30
ELJ-880-228	A,B,C	250	880	100	20	50
ELJ-880-248	A,B,C	250	880	100	40	50
ELJ-880-208	A,B,C	250	880	100	120, 140	50
ELJ-910-228	A,B,C	250	910	200	20	50
ELJ-910-248	A,B,C	250	910	200	40	50
ELJ-910-208	A,B,C	250	910	200	120, 140	50

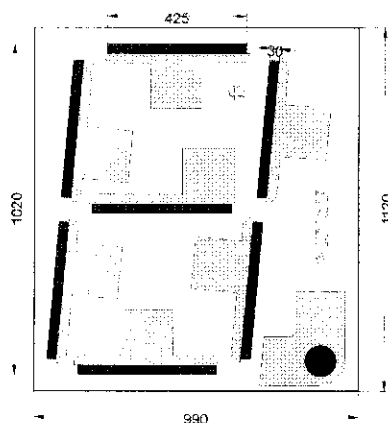
Note: LEDs with flat plastic windows are also available on request

Color	Type	Technology	Electrodes
Red	ELC-660-199	GaAsP/GaAs diffusion type	P (anode) up

Outline (dimensions in microns)

Application: This miniature device is an excellent choice for applications where small size and reduced space are important factors such as complex displays in optical devices for laboratory, measurement, control- and medical equipment.

Contact metallization: anode- aluminum, cathode- Au alloy.

**Optical and Electrical Characteristics**

$T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified

Parameter	Test conditions*	Symbol	Min	Typ	Max	Unit
Forward voltage	$I_F = 20 \text{ mA}$	V_F	1.5	1.7	1.9	V
Reverse voltage	$I_R = 10 \mu\text{A}$	V_R	5	15		V
Luminous intensity/segment	$I_F = 20 \text{ mA}$	I_V	180	300		μcd
Luminous intensity ratio segment to segment	$I_F = 20 \text{ mA}$				1.75	
Luminous intensity ratio to adjacent chip	$I_F = 20 \text{ mA}$				2.00	
Peak wavelength	$I_F = 20 \text{ mA}$	λ_p	645	660	665	nm
Dominant wavelength	$I_F = 20 \text{ mA}$	λ_D	624	639	644	nm
Spectral bandwidth at 50%	$I_F = 20 \text{ mA}$	$\Delta\lambda_{0.5}$		17		nm

* Current for one segment

Labeling

Type	Lot N°	I_V (typ, min, max)	Quantity
ELC-660-199			

Packing

Chips in wafer pack or on adhesive film with wire-bond side on top