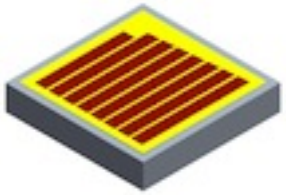
C4L-H40T6

Hyper Red LED die 40 mil

CHIPS 4 LIGHT

This die specification contains the basic features of the 6th generation thinfilm dice from OSRAM Opto Semiconductors. Remarkable light extraction is reached by a particular top emitting design with vertical chip structure. Furthermore the LED die shows excellent reliability and withstands ESD voltages up to 2kV according to JESD22-A114-F.



Features

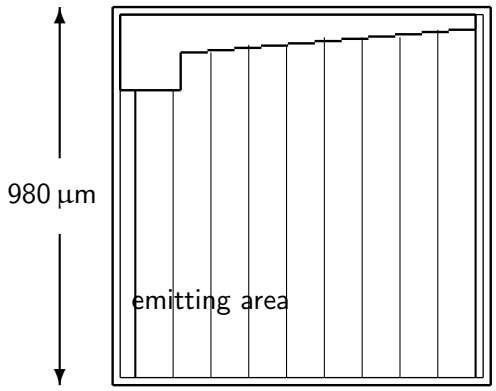
- Highest brightness AlInGaP chip
- Polarity n-side up
- Chip size: 40 mil
- Grouping: radiant power, wavelength
- Top emitting device

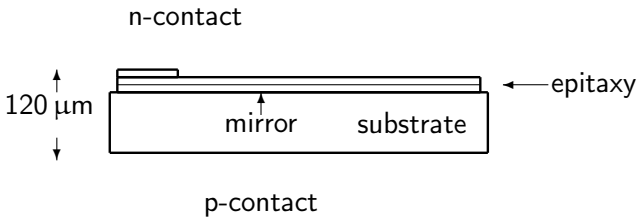
Applications

- Solid state lighting
- Displays
- Light indicators
- Lighting for greenhouses

Ordering information: C4L-H40T6-3133-X (645 ... 665 nm, 250 ... 500 mW)

Delineation





Mechanical characteristics

Description		Minimum	Typical[1]	Maximum
Chip size	(µm)	930	980	1030
Chip height	(µm)	100	120	140
Bond pad diameter	(µm)	130	150	170
Left contact		Cathode (n), gold		
Right contact		Anode (p), gold		
Die attach		Epoxy bonding		

Preliminary data

Electro-optical characteristics ($T_A = 25°C$)[2]

Parameter	Symbol	Condition	Min.	Typ.[1]	Max.	Unit
Forward voltage	V_F	$I_F = 350\,mA$	1.80		2.50	V
Peak wavelength	λ_{peak}	$I_F = 350\,mA$	645		665	nm
Radiant power	Φ_e	$I_F = 350\,mA$	250	400	500	mW
Reverse voltage	V_R	$I_R = 10\,\mu A$	5			V

Maximum ratings ($T_A = 25°C$)[3]

Parameter	Symbol	Value	Unit
Operating temperature range	T_{op}	-40 ... 125	°C
LED junction temperature	T_j	150	°C
Forward minimum current	I_F	20	mA
Forward maximum current	I_F	1000	mA
Forward peak current ($t < 10\mu s; D = 0.005; T_S = 25°C$)	I_{FM}	2500	mA

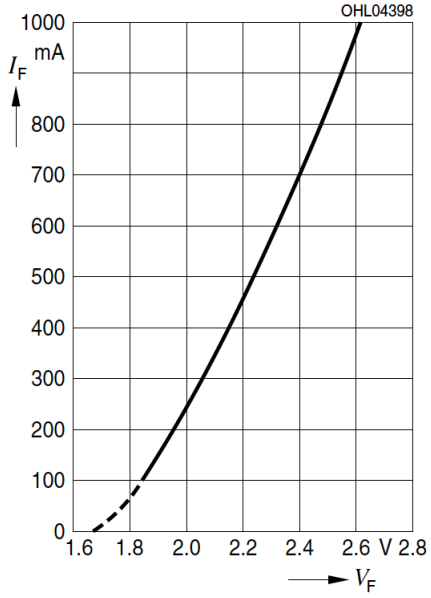
Binning ($I_F = 350\,mA$)[4]

		Wavelength (nm)						
		645-650	647.5-652.5	650-655	652.5-657.5	655-660	657.5-662.5	660-665
Radiant power (mW)	> 250	W31	WM31	X31	XM31	Y31	YM31	Z31
	> 320	W32	WM32	X32	XM32	Y32	YM32	Z32
	> 400	W33	WM33	X33	XM33	Y33	YM33	Z33

The binning table does not represent the actual sorting specifications. It is a general classification for wavelength and brightness.

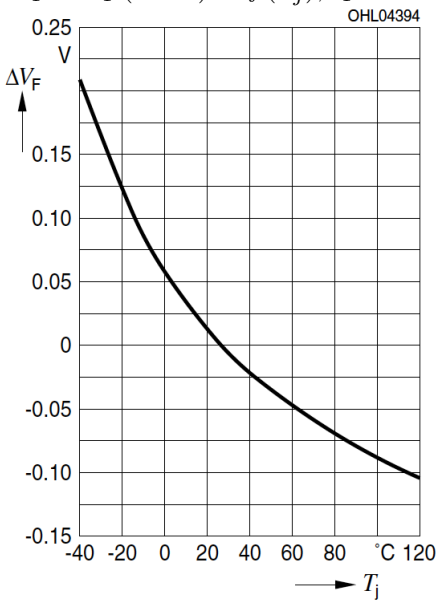
Forward Current

$I_F = f(V_F); T_S = 25°C$



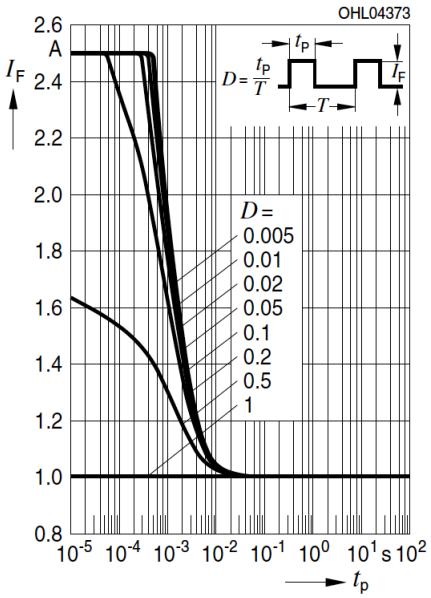
Relative forward voltage

$\Delta V_F - V_F(25°C) = f(T_j); I_F = 350\,mA$



Permissible Pulse Handling Capability

D: Duty cycle; $T_S = 25°C$



The values shown in the diagrams above, represent the chip in a Golden Dragon Plus package.

Handling and Storage Conditions

Storage time for wafers in sealed condition shall not exceed 6 months (storage ambient conditions: $T_a = 15 \ldots 30°C$; relative humidity: $< 60\%$).The hermetically sealed shipment lot shall be opened under temperature and moisture controlled cleanroom environment only. Customers have to follow the according rules for desposition as the material can be hazardous for humans and the environment. Chips are placed on a blue foil, which may contain the following substance in a concentration of circ.18% wt: Bis (2-ethyl(hexyl)phthalate) (DEHP) [CAS #: 117-81-7; EC # 204-211-0]. Dice have to be handled ESD sensitive.

Packing

Chips are placed on a blue foil inside a 6 inch ring or alternatively on a blue foil (mylar). For shipment the wafers of a shipment lot are arranged to stacks. The stack is put in a plastic ESD bag with maximum of 14 wafers in one bag. Maximum of 4 bags is put in a packaging box. Maximum of 5 packaging boxes is put in a shipping carton which is sealed for storage and shipment. Please use the recycling operators familiar to you. If required you can ask for our help. Please get in touch with your nearest sales office. By agreement we will take packing material back, if sorted. Transport costs of any kind must be paid by customers. For packing material that is returned to us unsorted or which we are not obliged to accept, any costs incurred will be invoiced to you.

Design Objectives

The chip design was developed and released based on the producer's standard assembly procedures and packaging. Bond strength properties are in accordance to MIL-STD-750D, method 2037. Whether the chip fits to the customer's products with its according die and wire bond procedures and packaging must be evaluated by the customer himself. If workability problems arise after this release a mutually conducted problem solving procedure has to be set up, if the chips are suspected of contributing to the problems.The chips are produced with best effort, but on chip level a subset of the chip characteristics can be determined only. Performance of the chip in the customer's products can only be determined by the customer himself.

Returns and Complaints

For complaints and returns of material a RMA-number is necessary. Samples for analysis purposes can be send to us without credit.

Shipping Conditions

If not otherwise arranged, the "General Terms of Business of Chips 4 Light GmbH" apply for any shipment. If this document is not familiar to you, please request it at our nearest sales office.

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Attention please!

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  Critical components[5] may only be used in life-support devices[6] or systems with the express written approval by us.
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- The information describes the type of component and shall not be considered as assured characteristics. Due to technical requirements components may contain dangerous substances. For information on the types in question please contact our Sales Organization.
- Lead free product - RoHS compliant.

- The quality level of the final visual inspection shall comply to an AQL of 1.0 (according to MIL-STD-105E, level II), if the customer performes an incoming visual inspection of a shipment.
- All chips are checked according to the producer's specification of the visual inspection. If this document is not familiar to you, please request it at our nearest sales office.

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[1]Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.

[2]Measurements are done with an accuracy of ±15%. Correlation to customer's equipment and products is required.

[3]Maximum ratings are package dependent and may differ between packages. The forward current is not limited by the die but by the effect of the LED junction temperature on the package. If you need more information on pulsed operation, please contact your next sales office about possible driving conditions. If not otherwise specified the maximum pulse current may not exceed the maximum current in continuous mode.

[4]There may be more than one bin on one single foil. Single bins cannot be ordered.

[5]A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

[6]Life support devices or systems are intended(a) to be implanted in the human body,or(b) to support and/or maintain and sustain human life.If they fail, it is reasonable to assume that the health and the life of the user may be endangered..