

OSRAM ODB4040UX3.A6

Datasheet

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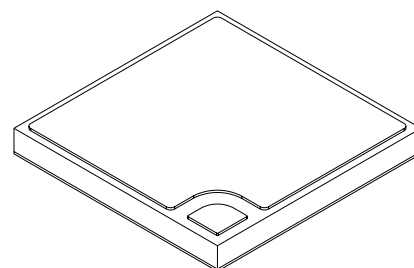
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OS-CORE™ UX:3

ODB4040UX3.A6



Features

- Polarity: p-side up
- Chip technology: UX:3
- Color: • blue
- Chipsize: 40 mil x 40 mil

Ordering Information

Type
ODB4040UX3.A6-MM-MM-1-C

Ordering Code
Q65113A6393

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Maximum Ratings

Parameter	Symbol		Values
Operating Temperature	T_{op}	min.	-40 °C
		max.	125 °C
Storage Temperature ¹⁾	T_{stg}	min.	-40 °C
		max.	125 °C
Recommended Die Storage Temperature ≤ 60% RH	$T_{stg\ die}$	max.	30 °C
Junction Temperature	T_j	max.	150 °C
Junction temperature for short time applications*	T_j	max.	175 °C
Forward Current $T_j = 25\text{ °C}$	I_F	min.	20 mA
		max.	1300 mA
Forward Current Pulsed $t \leq 10\text{ }\mu\text{s}$; $D = 0.005$; $T_j = 25\text{ °C}$	$I_{F\ pulse}$	max.	2500 mA
ESD withstand voltage acc. ANSI/ESDA/JEDEC JS-001 (HBM, Class 0)	V_{ESD}	ESD sensitive device	
Reverse voltage ²⁾	V_R	Not designed for reverse operation	

* The median lifetime (L70/B50) for $T_j = 175\text{ °C}$ is 100h.

Characteristics

$I_F = 350\text{ mA}$; $T_j = 25\text{ °C}$

Parameter	Symbol		Values
Dominant Wavelength ³⁾ $I_F = 350\text{ mA}$	λ_{dom}	min.	440.0 nm
		max.	480.0 nm
Forward Voltage ⁴⁾ $I_F = 350\text{ mA}$	V_F	min.	2.65 V
		typ.	2.90 V
		max.	3.20 V

Additional Information

Die bonding	Metalization frontside	Metalization backside
Adhesive bonding	Gold	Gold

Brightness and Wavelength Groups ⁵⁾³⁾

I_F = 350 mA

Radiant Intensity I _e a. u.	Dominant Wavelength				
	λ _{dom} nm				
	440.0 - 442.5	442.5 - 445.0	445.0 - 447.5	447.5 - 450.0	450.0 - 452.5
120 - 124	A10	B10	C10	D10	E10
124 - 128	A13	B13	C13	D13	E13
128 - 132	A16	B16	C16	D16	E16
132 - 136	A19	B19	C19	D19	E19
136 - 140	A22	B22	C22	D22	E22
140 - 144	A25	B25	C25	D25	E25
144 - 148	A28	B28	C28	D28	E28
148 - 152	A31	B31	C31	D31	E31
152 - 156	A34	B34	C34	D34	E34
156 - 160	A37	B37	C37	D37	E37
160 - 180	A40	B40	C40	D40	E40

Radiant Intensity I _e a. u.	Dominant Wavelength	
	λ _{dom} nm	
	452.5 - 455.0	455.0 - 457.5
120 - 124	F10	G10
124 - 128	F13	G13
128 - 132	F16	G16
132 - 136	F19	G19
136 - 140	F22	G22
140 - 144	F25	G25
144 - 148	F28	G28
148 - 152	F31	G31
152 - 156	F34	G34
156 - 160	F37	G37
160 - 180	F40	G40

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Correlation Factor ⁶⁾

Unit	Value	Condition
CF (mW/sr / a.u.)	1.58	chip to air
CF (mW / a.u.)	5.18	chip with silicone

Brightness and Wavelength Groups ⁵⁾³⁾

$I_F = 350 \text{ mA}$

Luminous Intensity Dominant Wavelength

I_v a. u.	λ_{dom} nm				
	462.5 - 465.0	465.0 - 467.5	467.5 - 470.0	470.0 - 472.5	472.5 - 475.0
60 - 65	J10	K10	L10	M10	N10
65 - 70	J13	K13	L13	M13	N13
70 - 75	J16	K16	L16	M16	N16
75 - 80	J19	K19	L19	M19	N19
80 - 85	J22	K22	L22	M22	N22
85 - 90	J25	K25	L25	M25	N25
90 - 95	J28	K28	L28	M28	N28
95 - 100	J31	K31	L31	M31	N31
100 - 110	J34	K34	L34	M34	N34

Luminous Intensity

I_v a. u.	Dominant Wavelength	
	λ_{dom} nm	475.0 - 480.0
60 - 65	O10	
65 - 70	O13	
70 - 75	O16	
75 - 80	O19	
80 - 85	O22	
85 - 90	O25	
90 - 95	O28	
95 - 100	O31	
100 - 110	O34	

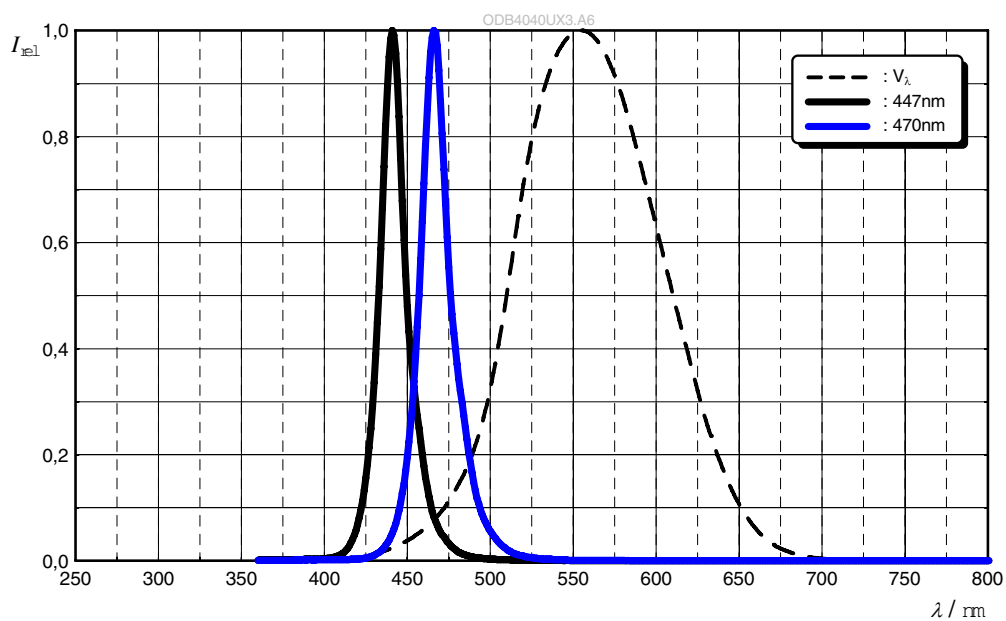
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Correlation Factor ⁶⁾

Unit	Value	Condition
CF (mcd / a.u.)	156	chip to air
CF (mlm / a.u.)	530	chip with silicone

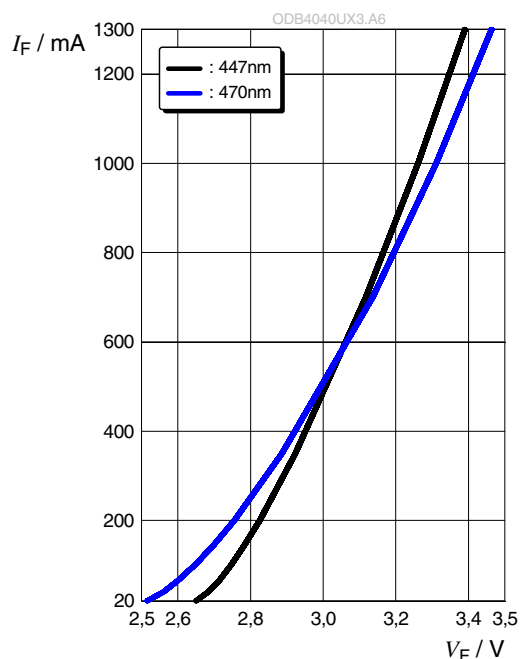
Relative Spectral Emission ⁷⁾

$I_{\text{rel}} = f(\lambda)$; $I_F = 350 \text{ mA}$; $T_S = 25 \text{ }^\circ\text{C}$



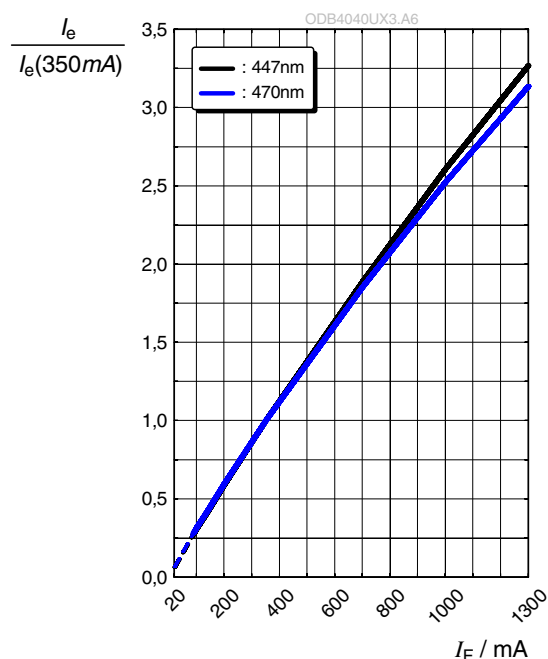
Forward current ⁷⁾

$$I_F = f(V_F); T_S = 25^\circ\text{C}$$



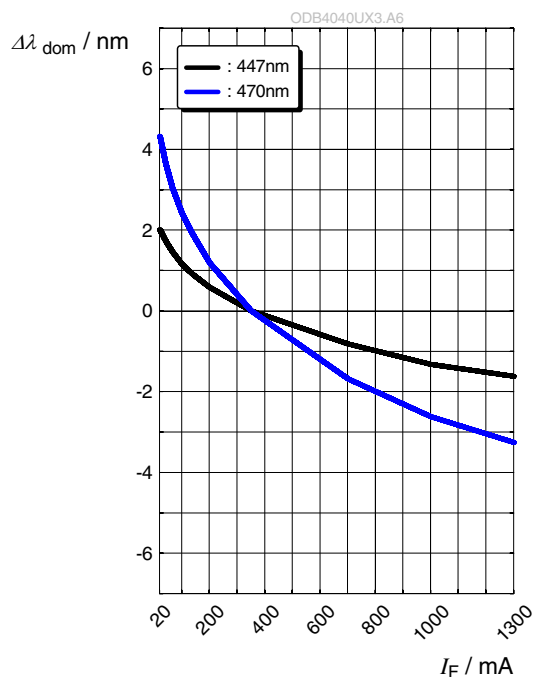
Relative Radiant Intensity ^{7), 8)}

$$I_E/I_E(350\text{ mA}) = f(I_F); T_S = 25^\circ\text{C}$$



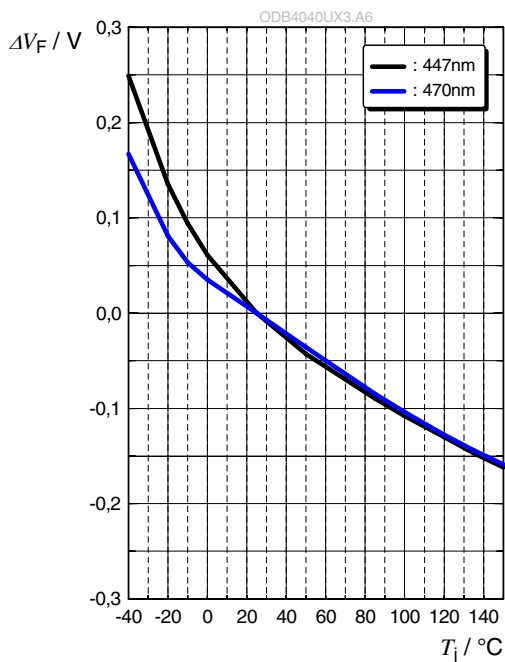
Dominant Wavelength ⁷⁾

$$\lambda_{\text{dom}} = f(I_F); T_S = 25^\circ\text{C}$$



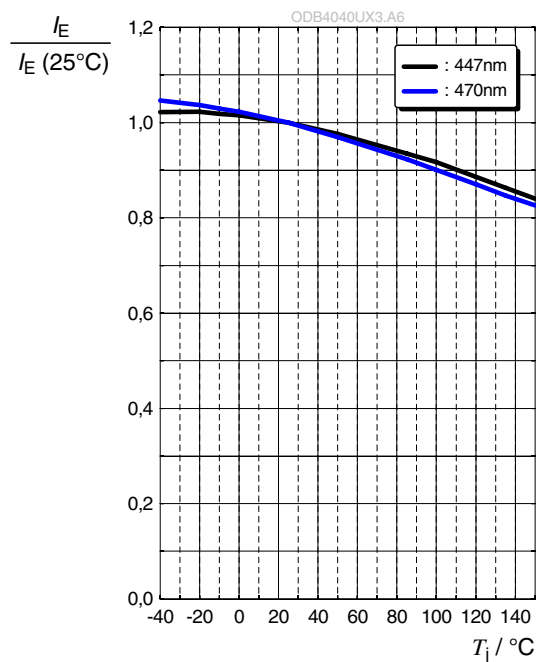
Forward Voltage ⁷⁾

$$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 350\text{ mA}$$



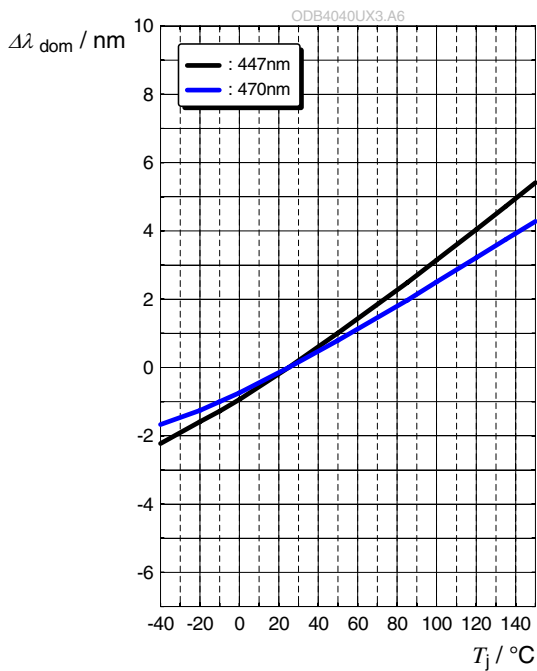
Relative Radiant Intensity ⁷⁾

$$I_E / I_E(25^\circ\text{C}) = f(T_j); I_F = 350\text{ mA}$$

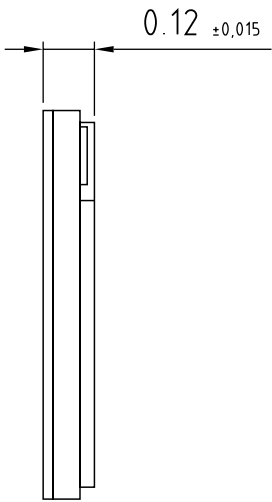
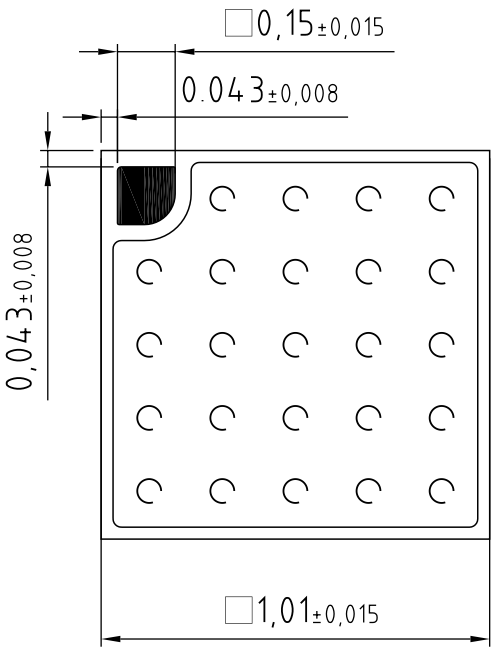


Dominant Wavelength ⁷⁾

$$\lambda_{\text{dom}} = f(T_j); I_F = 350\text{ mA}$$



Dimensional Drawing ⁹⁾



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Glossary

- 1) **Shelf life:** Temperature refer solely to storage of finished LED product (Not valid for chip on die sheet).
- 2) **Reverse Operation:** Not designed for reverse operation. Continuous reverse operation can cause migration and damage of the device.
- 3) **Wavelength:** The wavelength is measured at a current pulse of typically 10 ms and with an internal reproducibility of ± 1 nm (with a coverage factor of $k = 3$).
- 4) **Forward Voltage:** The forward voltage is measured during a current pulse of typically 5 ms and with an internal reproducibility of ± 0.1 V (with a coverage factor of $k = 3$).
- 5) **Brightness:** Brightness values are measured during a current pulse of typically 10 ms and with an internal reproducibility of ± 8 % (with a coverage factor of $k = 3$).
- 6) **Correlation Factor:** The exemplary correlation factor (CF) was estimated by sample build of the chip in a reference package and describes the exemplary correlation between the chip brightness measured in arbitrary units (a.u.) and the brightness in a reference package: $CF = I/\Phi(\text{package}) / I(\text{chip})$. This factor is purely given as an indication of possible package brightness values. It may vary for different packages due to influences of geometries, reflectivity/refractive index of package materials or other material properties.
- 7) **Typical Values:** Due to the special conditions of the manufacturing processes of semiconductor devices, 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.
- 8) **Characteristic curve:** In the range where the line of the graph is broken, you must expect higher differences between single devices within one packing unit.
- 9) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.

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