

OSRAM LTRBRASF

Datasheet

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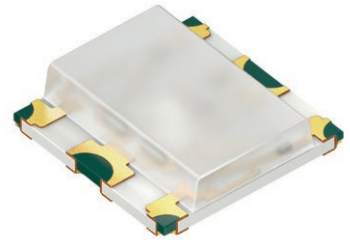
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Multi Chip LED

LTRB RASF

To fulfill the needs for pachinko- and gaming applications, this product is especially designed to achieve easy white binning and to reach high ESD level. The chips are configured in a triangle to get best color mixing already in the package.



Applications

- Appliances & Tools
- Entertainment

Features

- Package: SMT package, silicone resin
- Chip technology: Thinfilm / UX:3
- Typ. Radiation: 120° (Lambertian emitter)
- Color: $\lambda_{\text{dom}} = 530 \text{ nm}$ (● true green); $\lambda_{\text{dom}} = 621 \text{ nm}$ (● red); $\lambda_{\text{dom}} = 465 \text{ nm}$ (● blue)
- Color: $x = 0.249$, $y = 0.208$. acc. to CIE 1931 (white)
- Luminous Intensity: 2.010...3.550 mcd (white), typ. 2.000 mcd (true green), typ. 800 mcd (red), typ. 330 mcd (blue)

Ordering Information

Type

LTRBRASF-6B6C-0112

Ordering Code

Q65112A7231

Maximum Ratings

Parameter	Symbol		Values	Values	Values
			● true green	● red	● blue
Operating Temperature	T_{op}	min.	-40 °C	-40 °C	-40 °C
		max.	85 °C	85 °C	85 °C
Storage Temperature	T_{stg}	min.	-40 °C	-40 °C	-40 °C
		max.	85 °C	85 °C	85 °C
Junction Temperature	T_j	max.	115 °C	115 °C	115 °C
Forward Current $T_s = 25\text{ °C}$	I_F	min.	5 mA	5 mA	5 mA
		max.	30 mA	30 mA	30 mA
Surge Current $t \leq 10\text{ }\mu\text{s}$; $D = 0.005$; $T_s = 25\text{ °C}$	I_{FS}	max.	100 mA	100 mA	100 mA

Characteristics

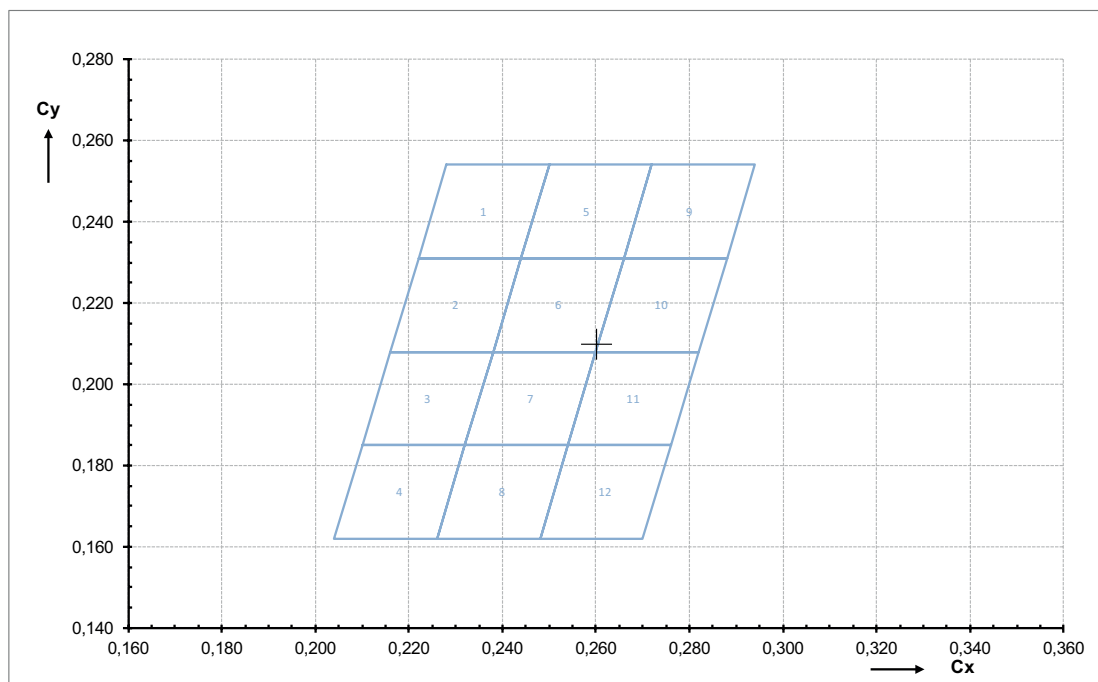
$I_F = 20 \text{ mA}$; $T_S = 25 \text{ °C}$

Parameter	Symbol		Values	Values	Values
			● true green	● red	● blue
Peak Wavelength	λ_{peak}	typ.	525 nm	632 nm	462 nm
Dominant Wavelength ¹⁾	λ_{dom}	typ.	530 nm	621 nm	465 nm
Spectral bandwidth at 50% $I_{\text{rel,max}}$	$\Delta\lambda$	typ.	30 nm	18 nm	23 nm
Viewing angle at 50% I_V	2ϕ	typ.	120 °	120 °	120 °
Forward Voltage ²⁾ $I_F = 20 \text{ mA}$	V_F	min.	2.20 V	1.80 V	2.70 V
		typ.	2.65 V	2.15 V	2.90 V
		max.	3.10 V	2.40 V	3.30 V
Real thermal resistance junction/ambient ³⁾⁴⁾	$R_{\text{thJA real}}$	max.	670 K / W	670 K / W	670 K / W
Real thermal resistance junction/solderpoint ³⁾	$R_{\text{thJS real}}$	max.	360 K / W	360 K / W	360 K / W

Brightness Groups

Group	Luminous Intensity ⁵⁾	Luminous Intensity ⁵⁾
	$I_F = 20 \text{ mA}$ min. I_v	$I_F = 20 \text{ mA}$ max. I_v
6B	2010 mcd	2240 mcd
7B	2240 mcd	2500 mcd
8B	2500 mcd	2800 mcd
5C	2800 mcd	3150 mcd
6C	3150 mcd	3550 mcd

Chromaticity Coordinate Groups

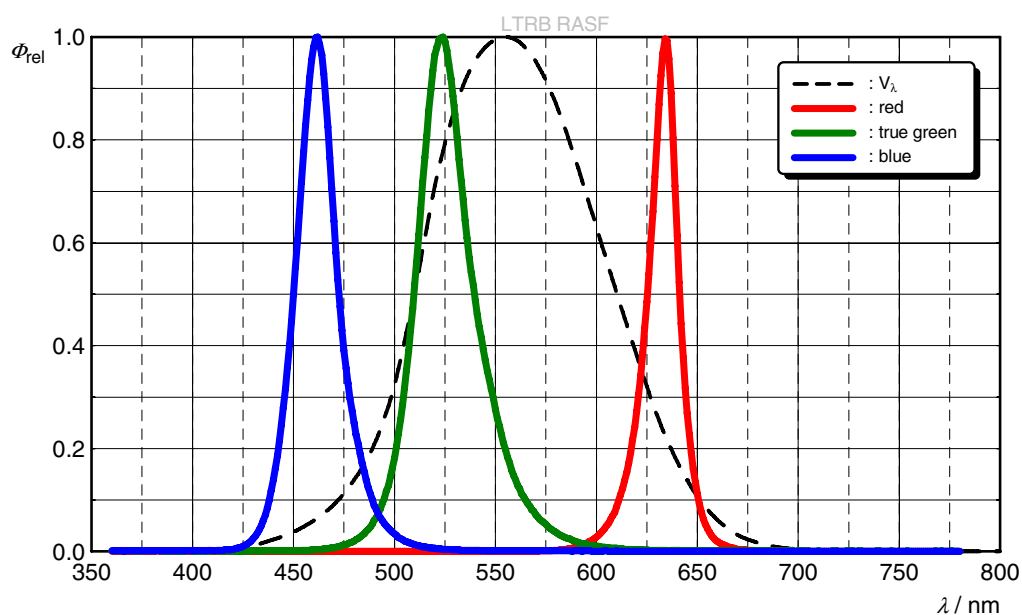


Chromaticity Coordinate Groups

Group	Cx	Cy	Group	Cx	Cy	Group	Cx	Cy
1	0.2280	0.2540	2	0.2220	0.2310	6	0.2440	0.2310
	0.2220	0.2310		0.2160	0.2080		0.2380	0.2080
	0.2440	0.2310		0.2380	0.2080		0.2600	0.2080
	0.2500	0.2540		0.2440	0.2310		0.2660	0.2310
10	0.2660	0.2310	3	0.2160	0.2080	7	0.2380	0.2080
	0.2600	0.2080		0.2100	0.1850		0.2320	0.1850
	0.2820	0.2080		0.2320	0.1850		0.2540	0.1850
	0.2880	0.2310		0.2380	0.2080		0.2600	0.2080
11	0.2600	0.2080	4	0.2100	0.1850	8	0.2320	0.1850
	0.2540	0.1850		0.2040	0.1620		0.2260	0.1620
	0.2760	0.1850		0.2260	0.1620		0.2480	0.1620
	0.2820	0.2080		0.2320	0.1850		0.2540	0.1850
12	0.2540	0.1850	5	0.2500	0.2540	9	0.2720	0.2540
	0.2480	0.1620		0.2440	0.2310		0.2660	0.2310
	0.2700	0.1620		0.2660	0.2310		0.2880	0.2310
	0.2760	0.1850		0.2720	0.2540		0.2940	0.2540

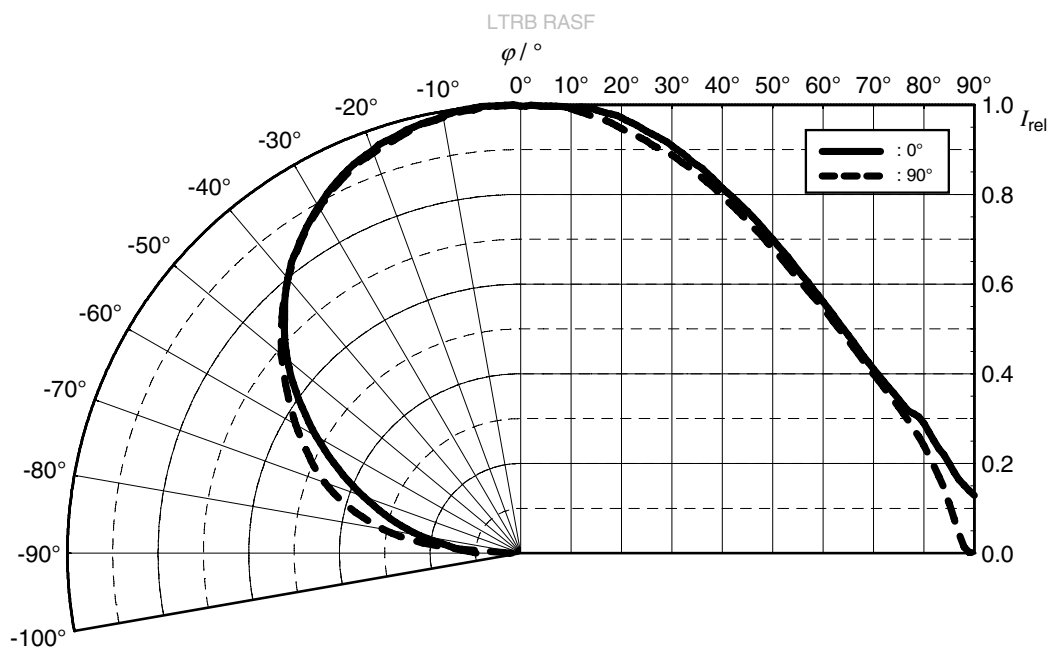
Relative Spectral Emission ⁶⁾

$$I_{\text{rel}} = f(\lambda); I_F = 20 \text{ mA}; T_S = 25 \text{ °C}$$



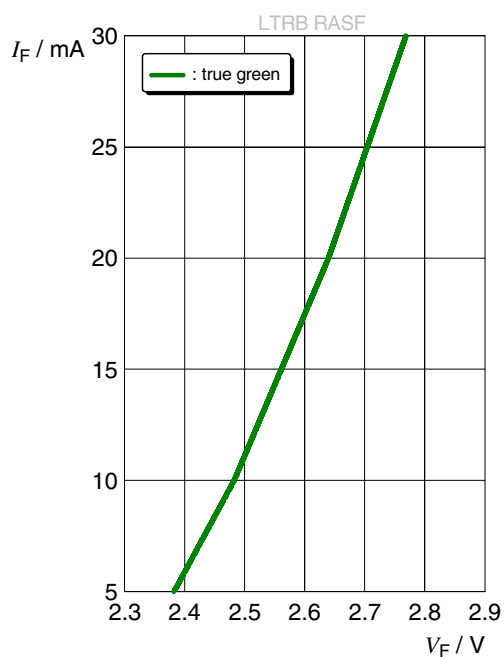
Radiation Characteristics ^{6), 7)}

$$I_{\text{rel}} = f(\phi); T_S = 25 \text{ °C}$$

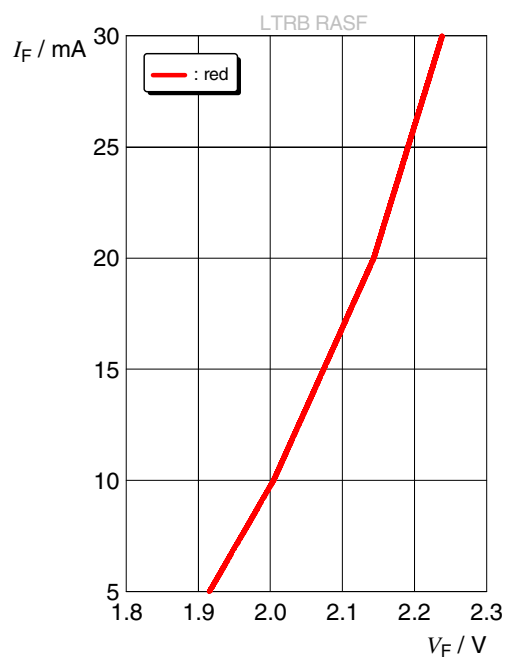


Forward current ⁶⁾

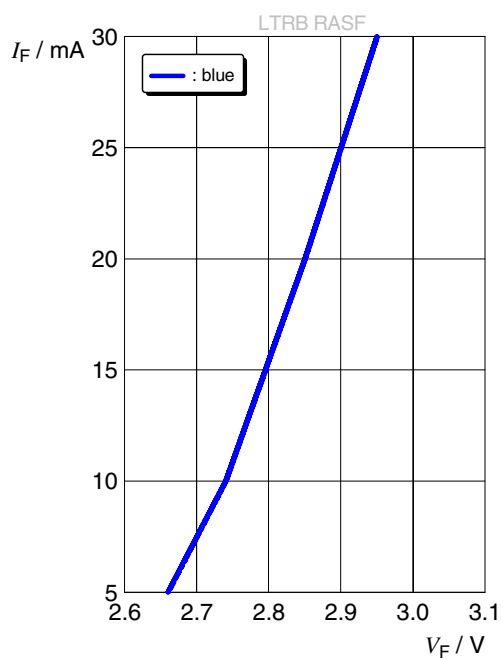
$$I_F = f(V_F); T_S = 25\text{ °C}$$

**Forward current** ⁶⁾

$$I_F = f(V_F); T_S = 25\text{ °C}$$

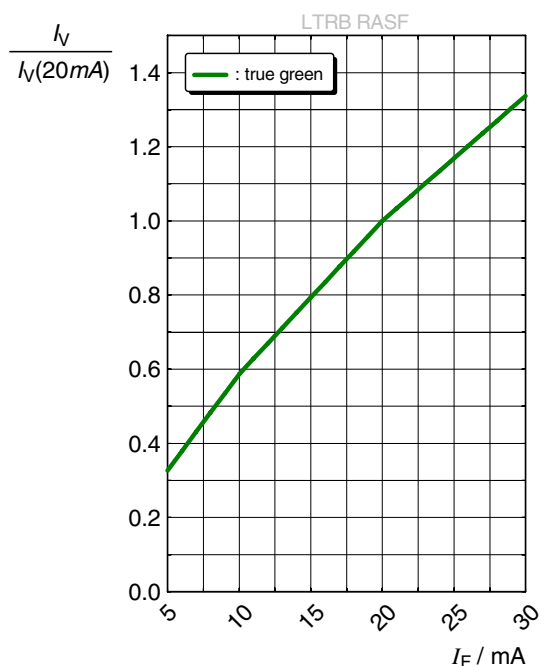
**Forward current** ⁶⁾

$$I_F = f(V_F); T_S = 25\text{ °C}$$

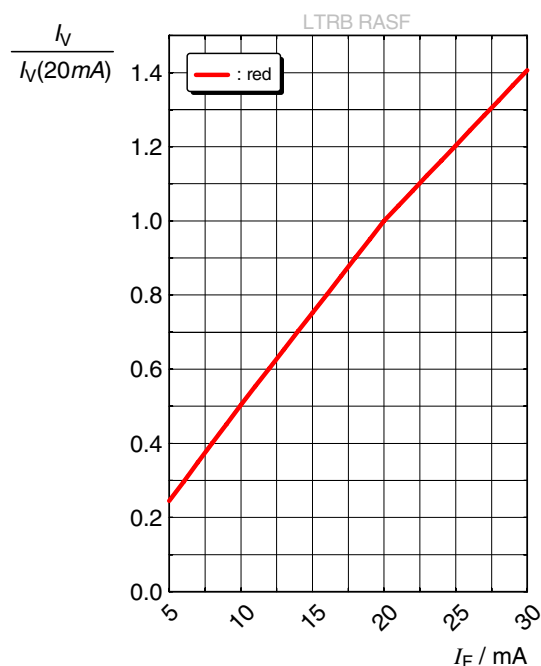


Relative Luminous Intensity ^{6), 8)}

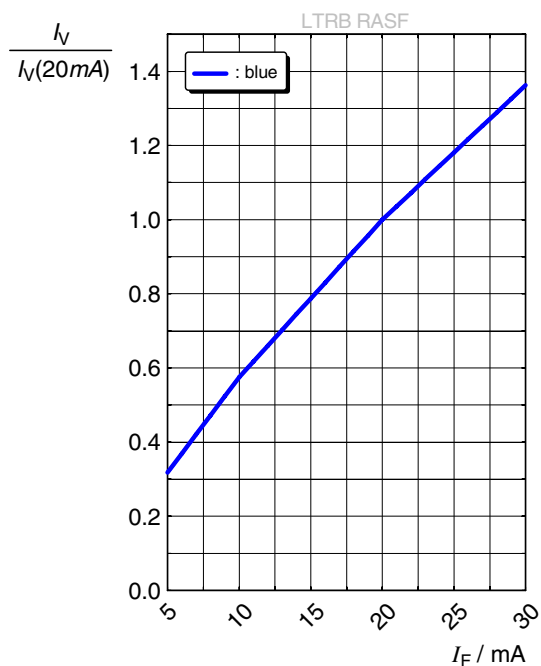
$$I_V/I_V(20\text{ mA}) = f(I_F); T_S = 25\text{ °C}$$

**Relative Luminous Intensity** ^{6), 8)}

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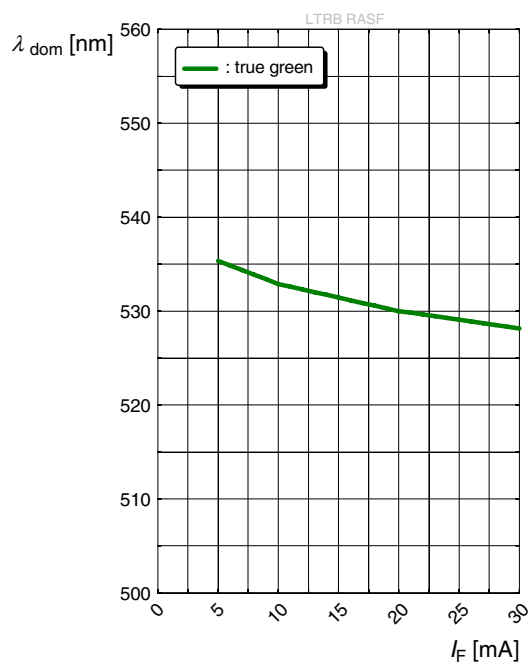
**Relative Luminous Intensity** ^{6), 8)}

$$I_V/I_V(20\text{ mA}) = f(I_F); T_S = 25\text{ °C}$$

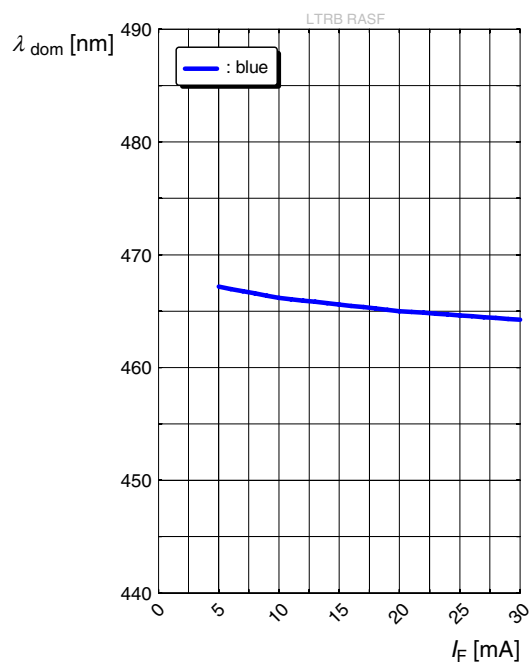


Dominant Wavelength ⁶⁾

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

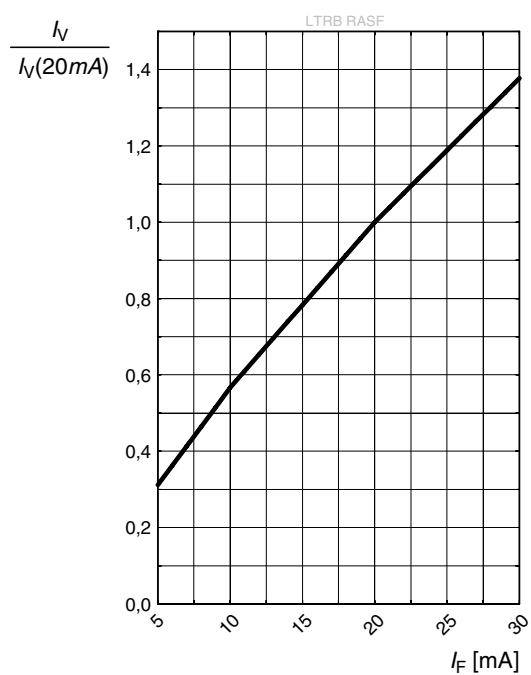
**Dominant Wavelength** ⁶⁾

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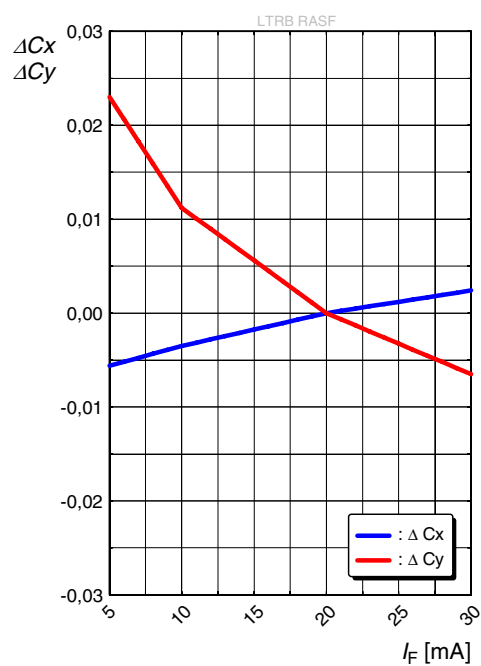


Relative Luminous Intensity ^{6), 8)}

$$I_V/I_V(20\text{ mA}) = f(I_F); T_S = 25\text{ °C}$$

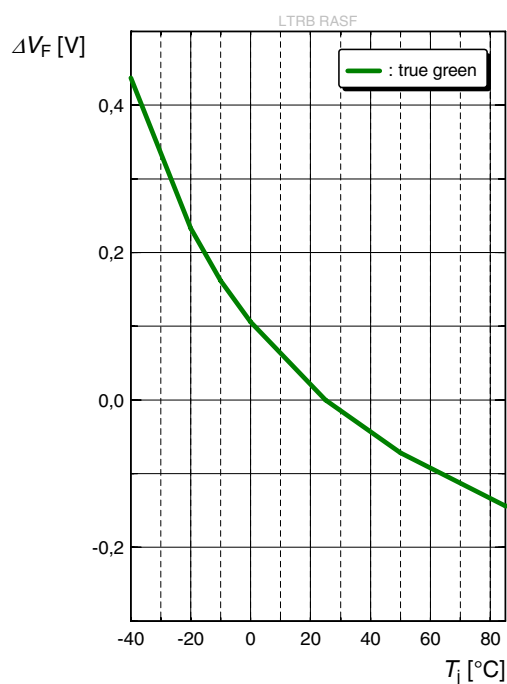
**Chromaticity Coordinate Shift** ⁶⁾

$$Cx, Cy = f(I_F); T_S = 25\text{ °C}$$

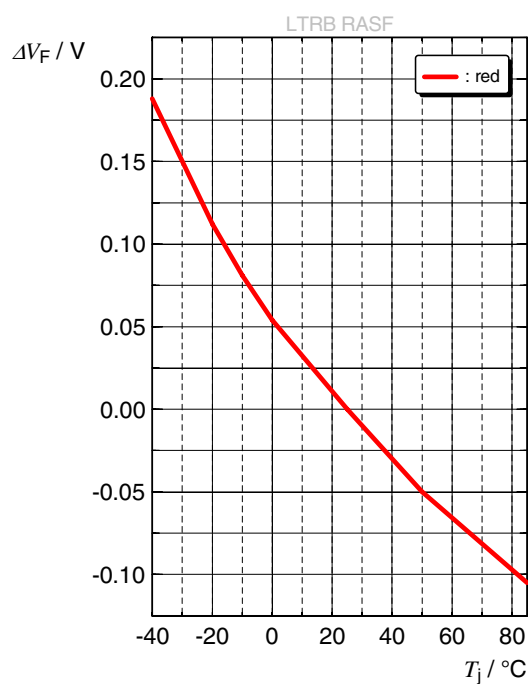


Forward Voltage ⁶⁾

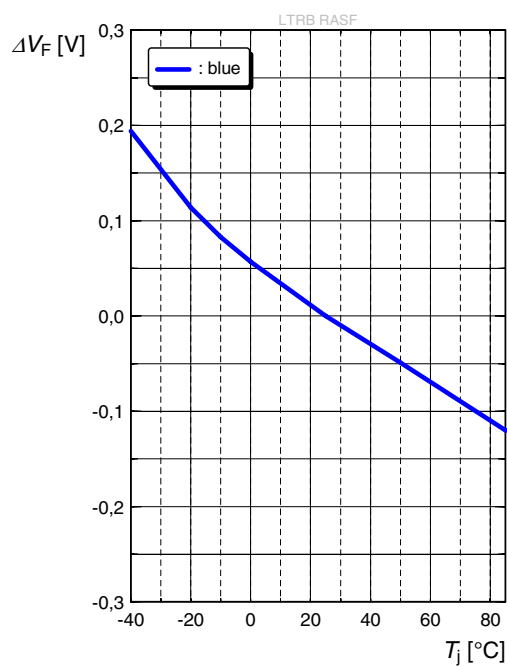
$$\Delta V_F = V_F - V_F(25\text{ °C}) = f(T_j); I_F = 20\text{ mA}$$

**Forward Voltage** ⁶⁾

$$\Delta V_F = V_F - V_F(25\text{ °C}) = f(T_j); I_F = 20\text{ mA}$$

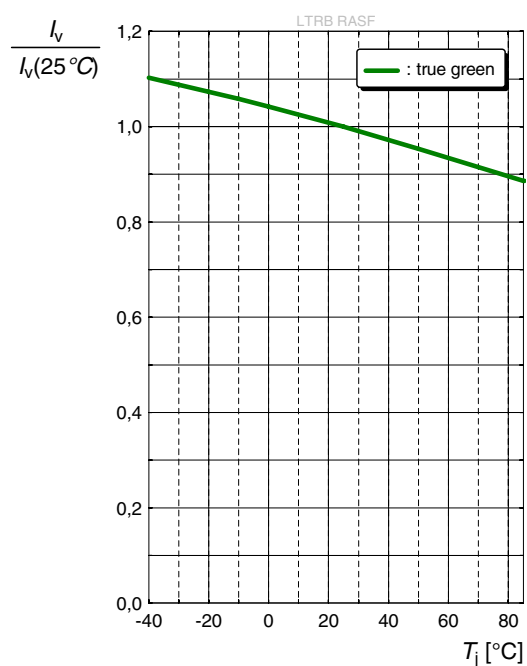
**Forward Voltage** ⁶⁾

$$\Delta V_F = V_F - V_F(25\text{ °C}) = f(T_j); I_F = 20\text{ mA}$$

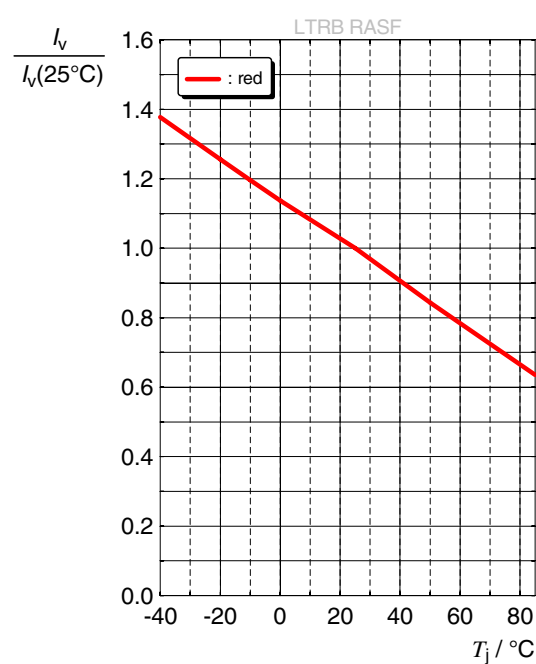


Relative Luminous Intensity ⁶⁾

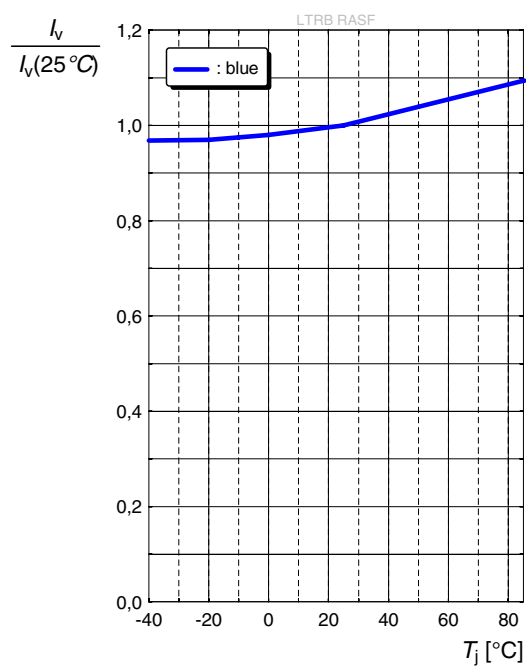
$$I_V/I_V(25\text{ °C}) = f(T_j); I_F = 20\text{ mA}$$

**Relative Luminous Intensity** ⁶⁾

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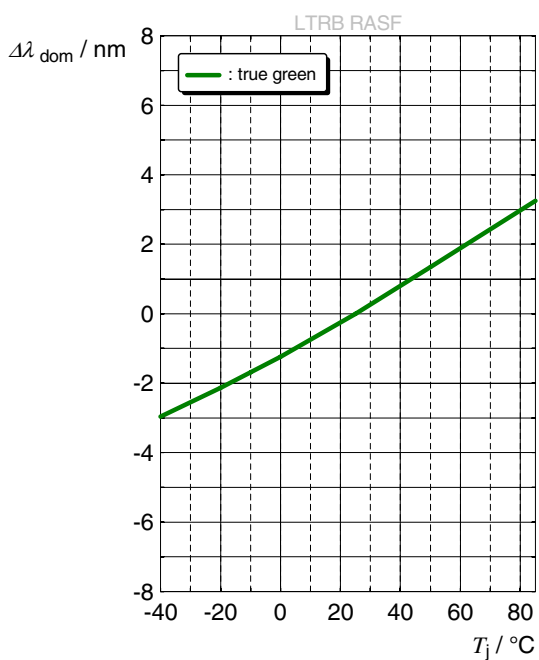
**Relative Luminous Intensity** ⁶⁾

$$I_V/I_V(25\text{ °C}) = f(T_j); I_F = 20\text{ mA}$$

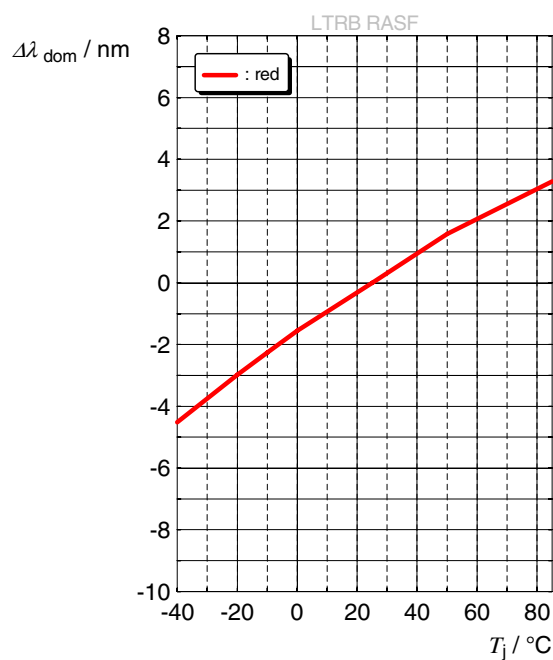


Dominant Wavelength ⁶⁾

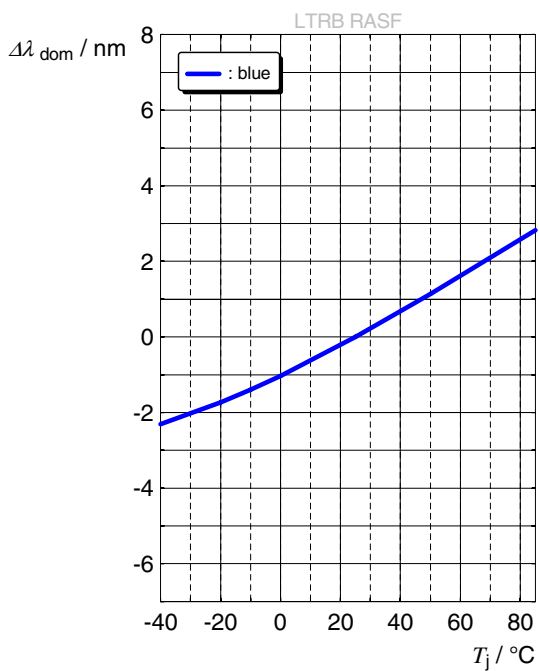
$$\lambda_{\text{dom}} = f(T_j); I_F = 20 \text{ mA}$$

**Dominant Wavelength** ⁶⁾

$$\lambda_{\text{dom}} = f(T_j); I_F = 20 \text{ mA}$$

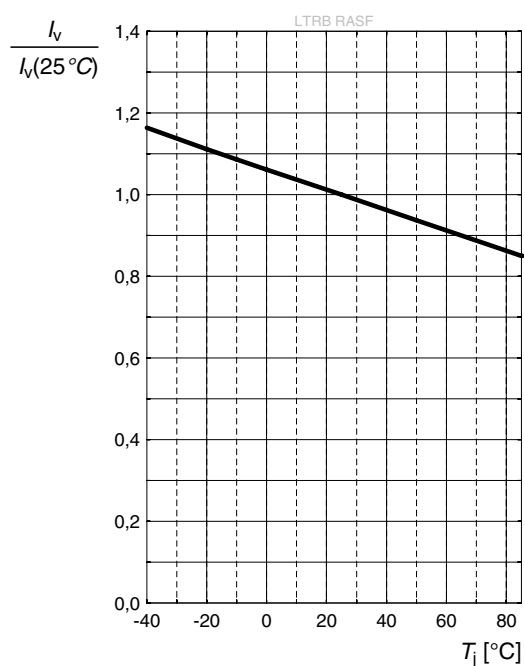
**Dominant Wavelength** ⁶⁾

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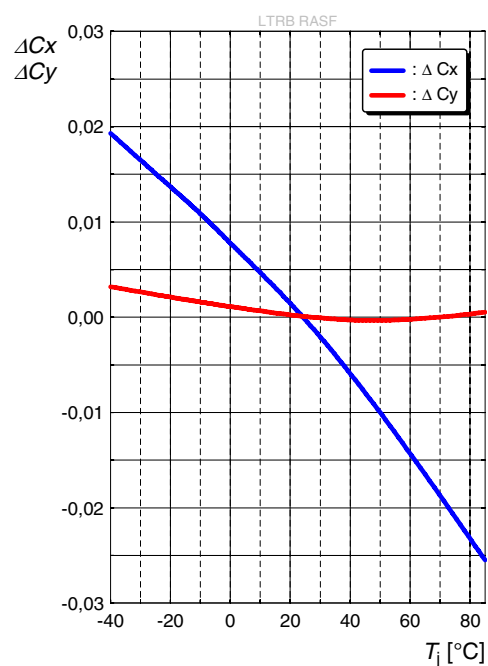


Relative Luminous Intensity ⁶⁾

$$I_V/I_V(25\text{ °C}) = f(T_j); I_F = 20\text{ mA}$$

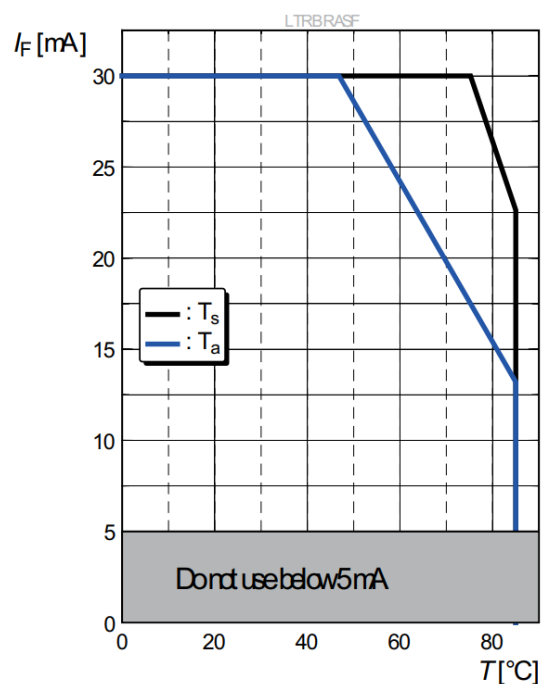
**Chromaticity Coordinate Shift ⁶⁾**

$$C_x, C_y = f(T_j); I_F = 20\text{ mA}$$



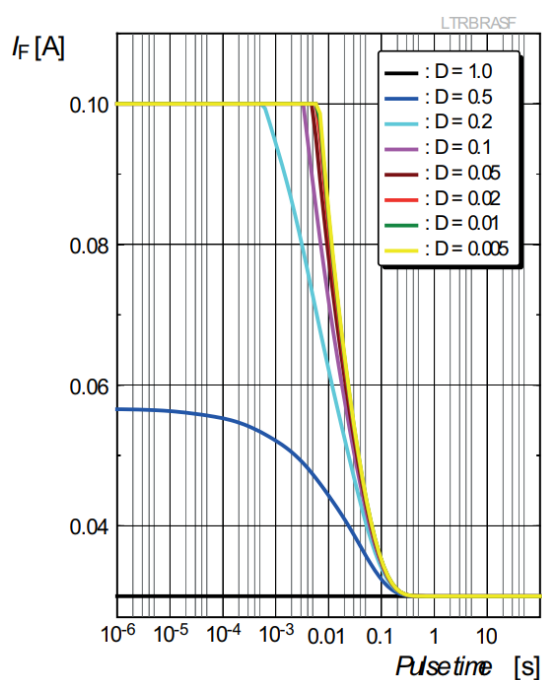
Max. Permissible Forward Current

$$I_F = f(T)$$



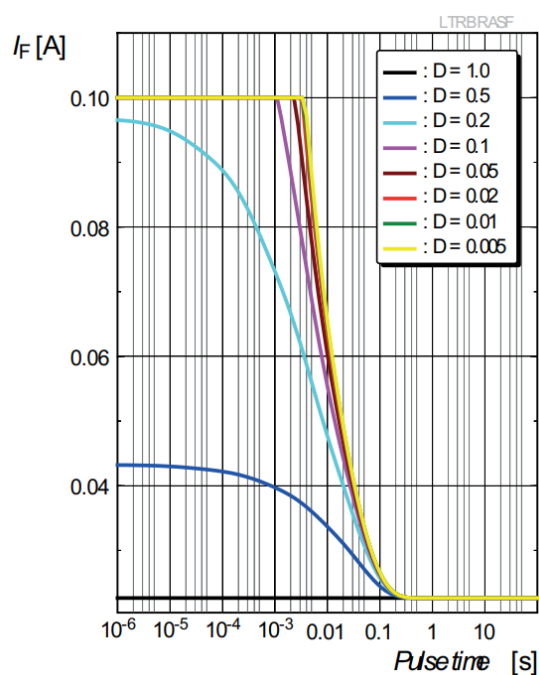
Permissible Pulse Handling Capability

$$I_F = f(tp); D: \text{Duty cycle}; T_s = 25^\circ\text{C}$$

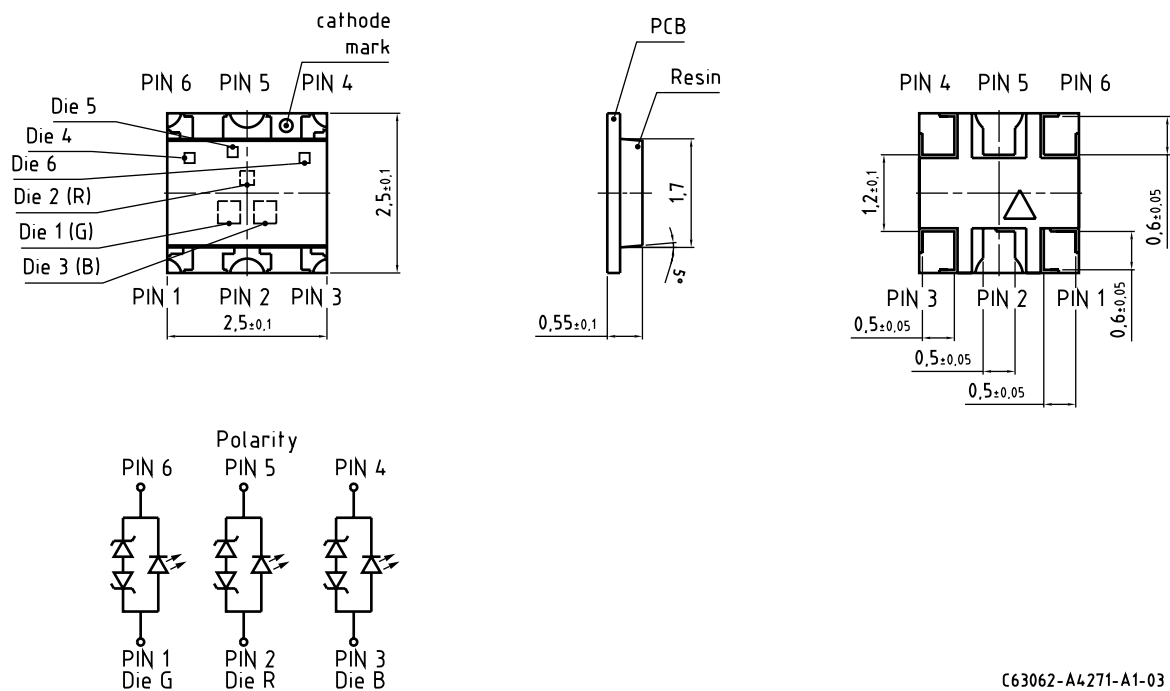


Permissible Pulse Handling Capability

$$I_F = f(tp); D: \text{Duty cycle}; T_s = 85^\circ\text{C}$$



Dimensional Drawing ⁹⁾

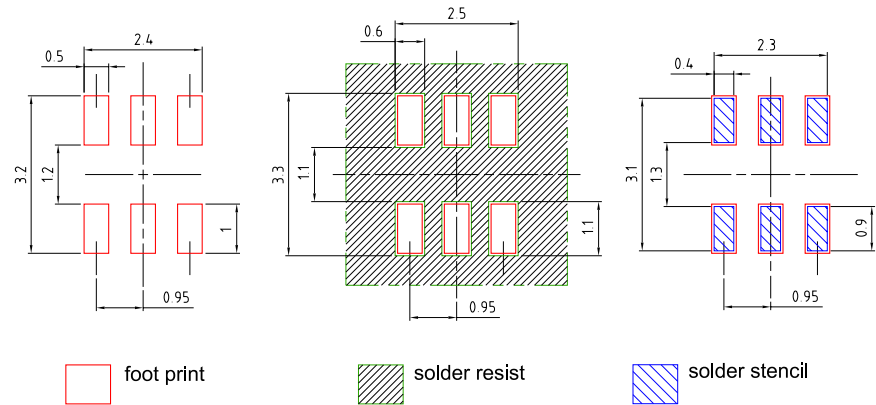


C63062-A4271-A1-03

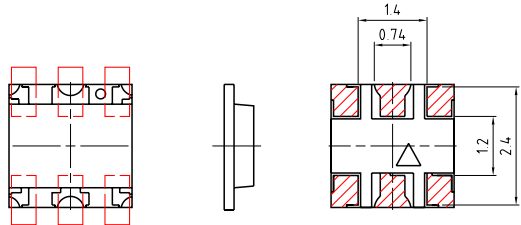
Further Information:

Approximate Weight: 5.2 mg

Recommended Solder Pad ⁹⁾



Component Location on Pad

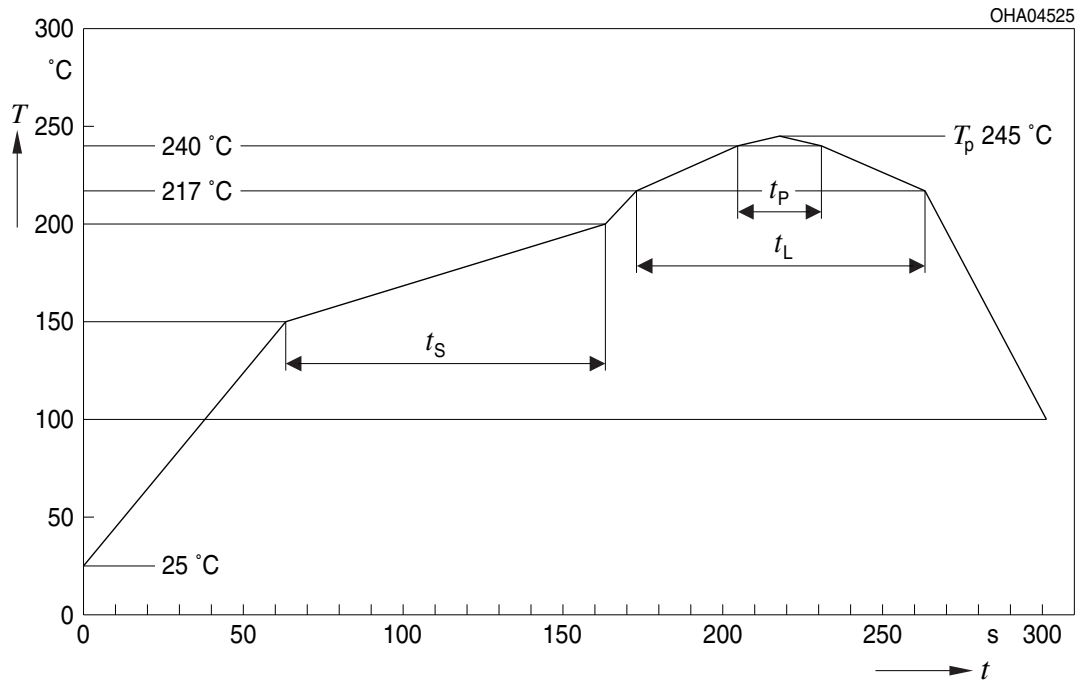


E062 3010.179 -01

For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere.

Reflow Soldering Profile

Product complies to MSL Level 2 acc. to JEDEC J-STD-020E

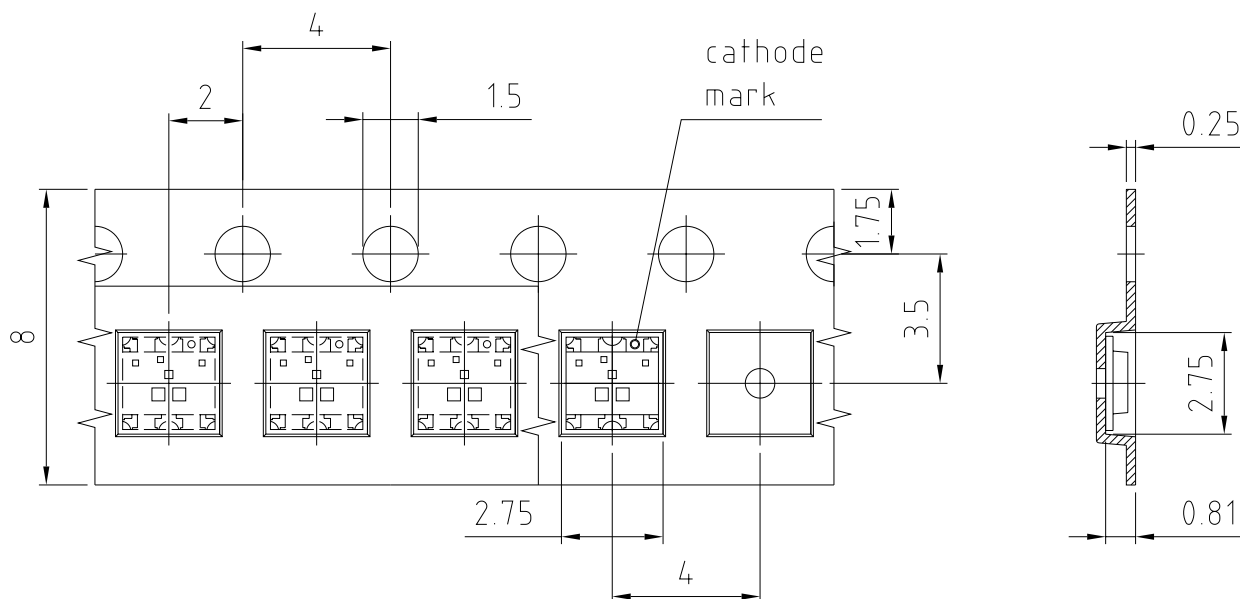


Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat*) 25 °C to 150 °C			2	3	K/s
Time t_s T_{Smin} to T_{Smax}	t_s	60	100	120	s
Ramp-up rate to peak*) T_{Smax} to T_p			2	3	K/s
Liquidus temperature	T_L		217		$^{\circ}\text{C}$
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_p		245	260	$^{\circ}\text{C}$
Time within 5 °C of the specified peak temperature $T_p - 5\text{ K}$	t_p	10	20	30	s
Ramp-down rate*) T_p to 100 °C			3	6	K/s
Time 25 °C to T_p				480	s

All temperatures refer to the center of the package, measured on the top of the component

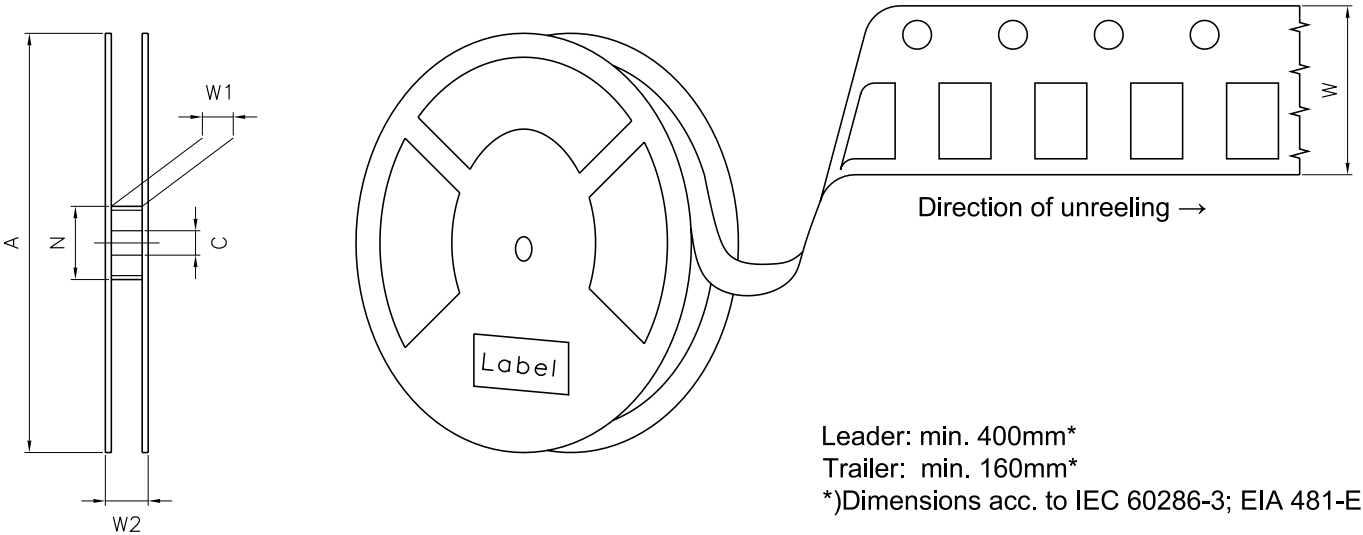
*) slope calculation DT/Dt : Dt max. 5 s; fulfillment for the whole T-range

Taping ⁹⁾



C63062-A4271-B1-03

Tape and Reel ¹⁰⁾



Reel Dimensions

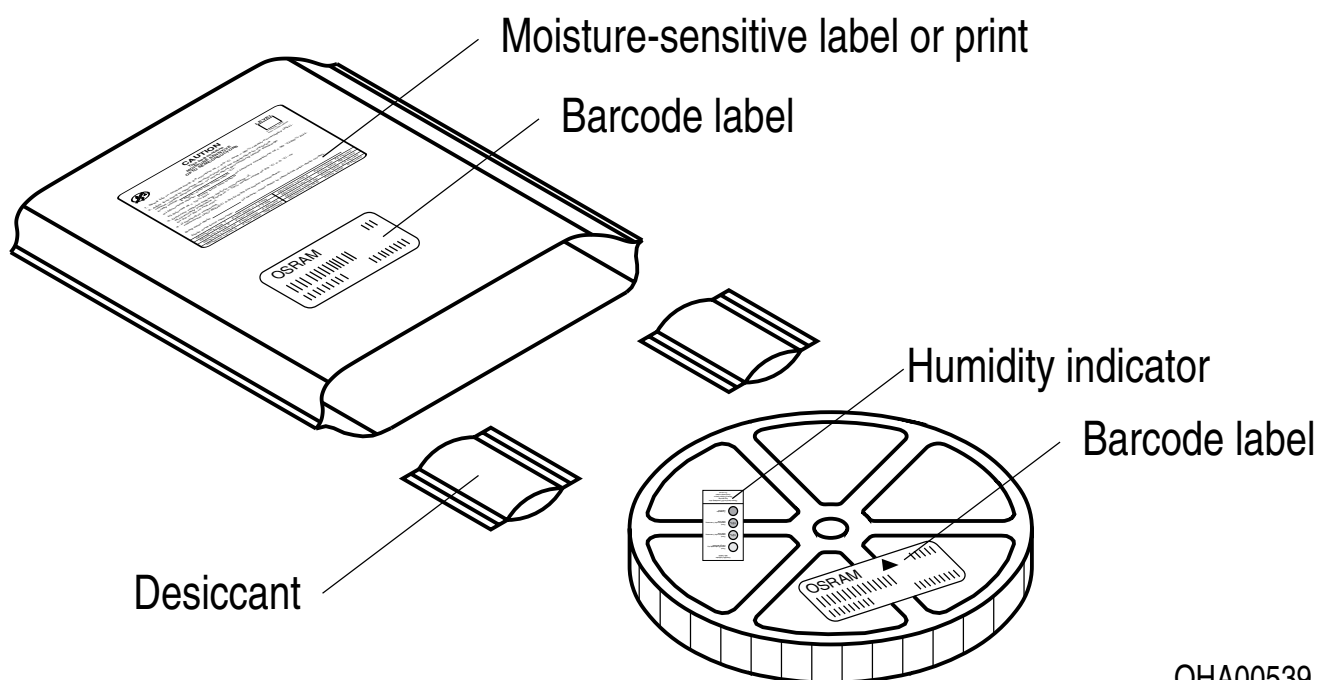
A	W	N _{min}	W ₁	W _{2 max}	Pieces per PU
180 mm	8 + 0.3 / - 0.1 mm	60 mm	8.4 + 2 mm	14.4 mm	3000

Barcode-Product-Label (BPL)

OSRAM		LX XXXX	BIN1: XX-XX-X-XXX-X
(6P) BATCH NO: 1234567890		RoHS Compliant	
			ML Temp ST X XXX °C X
(1T) LOT NO: 1234567890	(9D) D/C: 1234		
		Pack: RXX DEMY XXX X_X123_1234.1234 X	
(X) PROD NO: 123456789		(Q) QTY: 9999	(G) GROUP: XX-XX-X-X
			

OHA04563

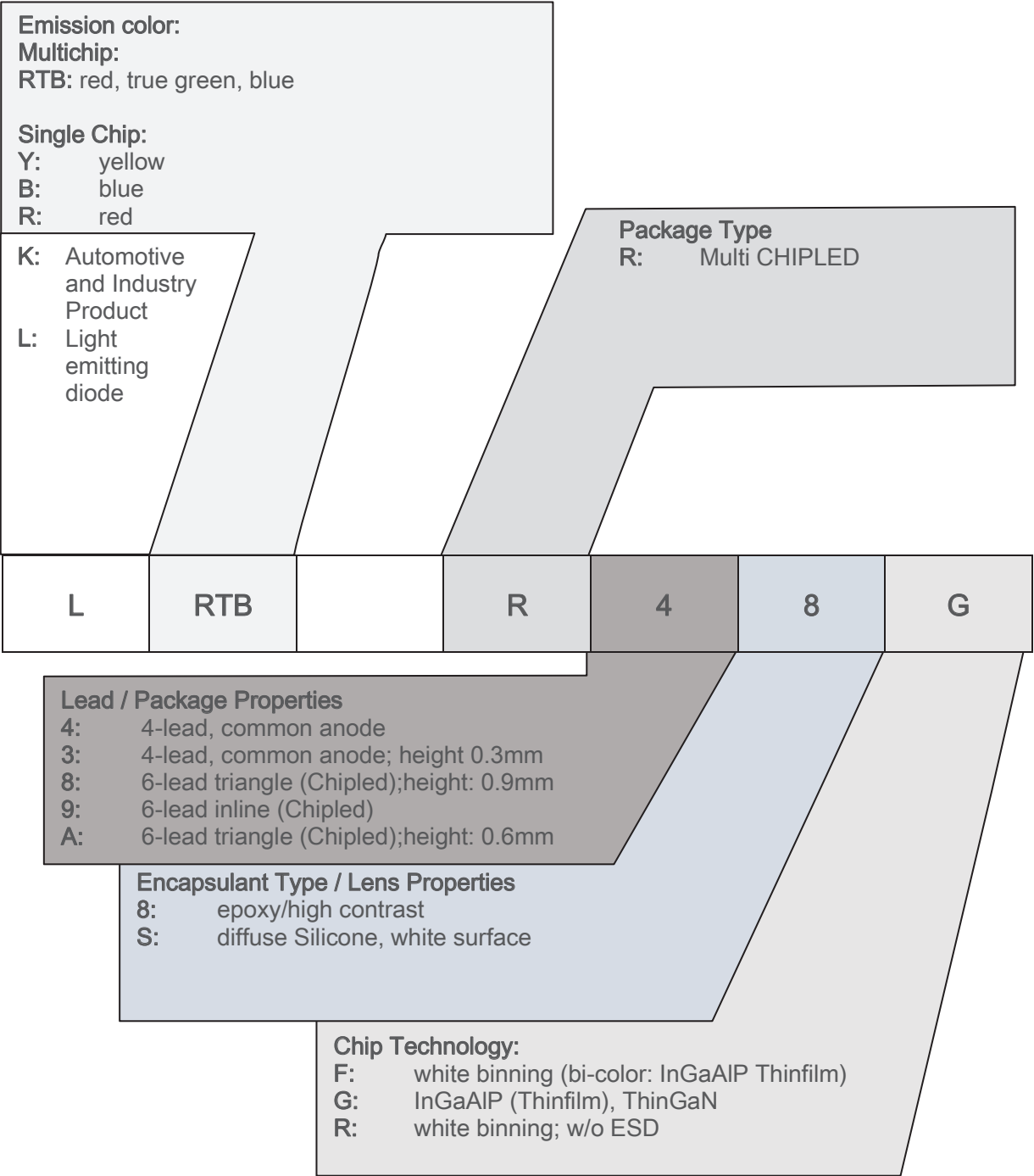
Dry Packing Process and Materials ⁹⁾



OH A00539

Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card according JEDEC-STD-033.

Type Designation System



Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2006 (photo biological safety of lamps and lamp systems). Within the risk grouping system of this IEC standard, the device specified in this data sheet fall into the class **exempt group (exposure time 10000 s)**. Under real circumstances (for exposure time, conditions of the eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. When looking at bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

Subcomponents of this device contain, in addition to other substances, metal filled materials including silver. Metal filled materials can be affected by environments that contain traces of aggressive substances. Therefore, we recommend that customers minimize device exposure to aggressive substances during storage, production, and use. Devices that showed visible discoloration when tested using the described tests above did show no performance deviations within failure limits during the stated test duration. Respective failure limits are described in the IEC60810.

For further application related information please visit www.osram-os.com/appnotes

Disclaimer

Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

For information on the types in question please contact our Sales Organization.

If printed or downloaded, please find the latest version on our website.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office. By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Product and functional safety devices/applications or medical devices/applications

Our components are not developed, constructed or tested for the application as safety relevant component or for the application in medical devices.

Our products are not qualified at module and system level for such application.

In case buyer – or customer supplied by buyer – considers using our components in product safety devices/ applications or medical devices/applications, buyer and/or customer has to inform our local sales partner immediately and we and buyer and /or customer will analyze and coordinate the customer-specific request between us and buyer and/or customer.

Glossary

- 1) **Wavelength:** Wavelengths are tested at a current pulse duration of 25 ms and a tolerance of ± 1 nm.
- 2) **Forward Voltage:** Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of ± 0.1 V.
- 3) **Thermal Resistance:** $R_{th\ max}$ is based on statistic values (6σ).
- 4) **Thermal Resistance:** R_{thJA} results from mounting on PC board FR 4 (pad size $\geq 5\text{ mm}^2$ per pad)
- 5) **Brightness:** Brightness groups are tested at a current pulse duration of 25 ms and a tolerance of $\pm 11\%$.
- 6) **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.
- 7) **Testing temperature:** $T_A = 25^\circ\text{C}$ (unless otherwise specified)
- 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.
- 10) **Tape and Reel:** All dimensions and tolerances are specified acc. IEC 60286-3 and specified in mm.

Revision History

Version	Date	Change
1.3	2019-12-04	Operating Conditions
1.3	2019-12-04	Operating Conditions
1.4	2021-09-30	Brand
1.5	2022-05-11	New Layout
1.6	2022-05-20	Dimensional Drawing
1.7	2022-12-09	Applications Electro - Optical Characteristics (Diagrams)
1.8	2023-03-02	Applications



EU RoHS and China RoHS compliant product

此产品符合欧盟 RoHS 指令的要求；
按照中国的相关法规和标准，
不含有毒有害物质或元素。

Published by ams-OSRAM AG

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[LTRBRASF_6B6C-0112-0](#)