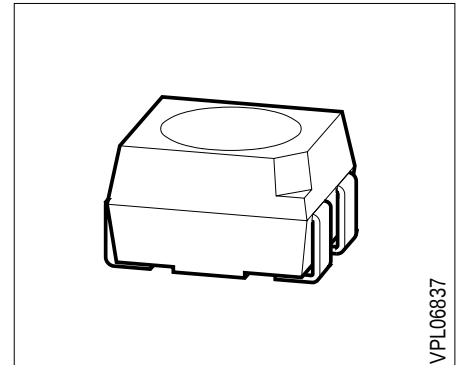


## Multi TOPLED®

LSG T670, LSP T670, LSY T670  
LOP T670, LYG T670, LYP T670

### Besondere Merkmale

- Gehäusebauform: P-LCC-4
- Gehäusefarbe: weiß
- als optischer Indikator einsetzbar
- zur Hinterleuchtung, Lichtleiter- und Linseneinkopplung
- beide Leuchtdiodenchips getrennt ansteuerbar
- hohe Signalwirkung durch Farbwechsel der LED möglich
- bei geeigneter Ansteuerung, Farbwechsel von pure green über gelb und orange bis super-rot möglich
- für alle SMT-Bestück- und Löttechniken geeignet
- gegurtet (8-mm-Filmgurt)
- Störimpulsfest nach DIN 40839



### Features

- P-LCC-4 package
- color of package: white
- for use as optical indicator
- for backlighting, optical coupling into light pipes and lenses
- both chips can be controlled separately
- high signal efficiency possible by color change of the LED
- with appropriate controlling it is possible to change color from pure green to yellow and orange to super-red
- suitable for all SMT assembly and soldering methods
- available taped on reel (8 mm tape)
- load dump resistant acc. to DIN 40839

LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670

| Typ          | Emissions-<br>farbe      | Farbe der<br>Lichtaustritts-<br>fläche | Lichtstärke                                                        |                      | Bestellnummer |
|--------------|--------------------------|----------------------------------------|--------------------------------------------------------------------|----------------------|---------------|
| Type         | Color of<br>Emission     | Color of the<br>Light Emitting<br>Area | Luminous Intensity<br>$I_F = 10 \text{ mA}$<br>$I_V \text{ (mcd)}$ |                      | Ordering Code |
|              |                          |                                        | color 1                                                            | color 2              |               |
| LSG T670     | super-red/<br>green      | colorless clear                        | $\geq 4.0$ (8 typ.)                                                | $\geq 4.0$ (10 typ.) | Q62703-Q4316  |
| LSG T670-J+J |                          |                                        | 4.0 ... 8.0                                                        | 4.0 ... 8.0          |               |
| LSG T670-J+K |                          |                                        | 4.0 ... 8.0                                                        | 6.3 ... 12.5         |               |
| LSG T670-J+L |                          |                                        | 4.0 ... 8.0                                                        | 10.0 ... 20.0        |               |
| LSG T670-K+J |                          |                                        | 6.3 ... 12.5                                                       | 4.0 ... 8.0          |               |
| LSG T670-K+K |                          |                                        | 6.3 ... 12.5                                                       | 6.3 ... 12.5         |               |
| LSG T670-K+L |                          |                                        | 6.3 ... 12.5                                                       | 10.0 ... 20.0        |               |
| LSG T670-L+J |                          |                                        | 10.0 ... 20.0                                                      | 4.0 ... 8.0          |               |
| LSG T670-L+K |                          |                                        | 10.0 ... 20.0                                                      | 6.3 ... 12.5         |               |
| LSG T670-L+L |                          |                                        | 10.0 ... 20.0                                                      | 10.0 ... 20.0        |               |
| LSY T670     | super-red/<br>yellow     | colorless clear                        | $\geq 4.0$ (8 typ.)                                                | $\geq 4.0$ (10 typ.) | Q62703-Q4317  |
| LSY T670-J+J |                          |                                        | 4.0 ... 8.0                                                        | 4.0 ... 8.0          |               |
| LSY T670-J+K |                          |                                        | 4.0 ... 8.0                                                        | 6.3 ... 12.5         |               |
| LSY T670-J+L |                          |                                        | 4.0 ... 8.0                                                        | 10.0 ... 20.0        |               |
| LSY T670-K+J |                          |                                        | 6.3 ... 12.5                                                       | 4.0 ... 8.0          |               |
| LSY T670-K+K |                          |                                        | 6.3 ... 12.5                                                       | 6.3 ... 12.5         |               |
| LSY T670-K+L |                          |                                        | 6.3 ... 12.5                                                       | 10.0 ... 20.0        |               |
| LSY T670-L+J |                          |                                        | 10.0 ... 20.0                                                      | 4.0 ... 8.0          |               |
| LSY T670-L+K |                          |                                        | 10.0 ... 20.0                                                      | 6.3 ... 12.5         |               |
| LSY T670-L+L |                          |                                        | 10.0 ... 20.0                                                      | 10.0 ... 20.0        |               |
| LSP T670     | super-red/<br>pure green | colorless clear                        | $\geq 4.0$ (8 typ.)                                                | $\geq 1.6$ (3 typ.)  | Q62703-Q4318  |
| LSP T670-H+G |                          |                                        | 2.5 ... 5.0                                                        | 1.6 ... 3.2          |               |
| LSP T670-H+H |                          |                                        | 2.5 ... 5.0                                                        | 2.5 ... 5.0          |               |
| LSP T670-J+G |                          |                                        | 4.0 ... 8.0                                                        | 1.6 ... 3.2          |               |
| LSP T670-J+H |                          |                                        | 4.0 ... 8.0                                                        | 2.5 ... 5.0          |               |
| LSP T670-J+J |                          |                                        | 4.0 ... 8.0                                                        | 4.0 ... 8.0          |               |
| LSP T670-K+G |                          |                                        | 6.3 ... 12.5                                                       | 1.6 ... 3.2          |               |
| LSP T670-K+H |                          |                                        | 6.3 ... 12.5                                                       | 2.5 ... 5.0          |               |
| LSP T670-K+J |                          |                                        | 6.3 ... 12.5                                                       | 4.0 ... 8.0          |               |
| LYP T670     | yellow/pure<br>green     | colorless clear                        | $\geq 4.0$ (10 typ.)                                               | $\geq 1.6$ (3 typ.)  | Q62703-Q2868  |
| LYP T670-J+G |                          |                                        | 4.0 ... 8.0                                                        | 1.6 ... 3.2          |               |
| LYP T670-J+H |                          |                                        | 4.0 ... 8.0                                                        | 2.5 ... 5.0          |               |
| LYP T670-K+G |                          |                                        | 6.3 ... 12.5                                                       | 1.6 ... 3.2          |               |
| LYP T670-K+H |                          |                                        | 6.3 ... 12.5                                                       | 2.5 ... 5.0          |               |
| LYP T670-L+H |                          |                                        | 10.0 ... 20.0                                                      | 2.5 ... 5.0          |               |

LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670

| Typ          | Emissions-<br>farbe   | Farbe der<br>Lichtaustritts-<br>fläche | Lichtstärke                                                       |                      | Bestellnummer |
|--------------|-----------------------|----------------------------------------|-------------------------------------------------------------------|----------------------|---------------|
| Type         | Color of<br>Emission  | Color of the<br>Light Emitting<br>Area | Luminous Intensity<br>$I_F = 10 \text{ mA}$<br>$I_V (\text{mcd})$ |                      | Ordering Code |
|              |                       |                                        | color 1                                                           | color 2              |               |
| LYG T670     | yellow/<br>green      | colorless clear                        | $\geq 4.0$ (9 typ.)                                               | $\geq 4.0$ (10 typ.) | Q62703-Q4502  |
| LYG T670-J+J |                       |                                        | 4.0 ... 8.0                                                       | 4.0 ... 8.0          |               |
| LYG T670-J+K |                       |                                        | 4.0 ... 8.0                                                       | 6.3 ... 12.5         |               |
| LYG T670-J+L |                       |                                        | 4.0 ... 8.0                                                       | 10.0 ... 20.0        |               |
| LYG T670-K+J |                       |                                        | 6.3 ... 12.5                                                      | 4.0 ... 8.0          |               |
| LYG T670-K+K |                       |                                        | 6.3 ... 12.5                                                      | 6.3 ... 12.5         |               |
| LYG T670-K+L |                       |                                        | 6.3 ... 12.5                                                      | 10.0 ... 20.0        |               |
| LYG T670-L+J |                       |                                        | 10.0 ... 20.0                                                     | 4.0 ... 8.0          |               |
| LYG T670-L+K |                       |                                        | 10.0 ... 20.0                                                     | 6.3 ... 12.5         |               |
| LYG T670-L+L |                       |                                        | 10.0 ... 20.0                                                     | 10.0 ... 20.0        |               |
| LOP T670     | orange/<br>pure green | colorless clear                        | $\geq 4.0$ (8 typ.)                                               | $\geq 1.6$ (3 typ.)  | Q62703-Q4319  |
| LOP T670-J+G |                       |                                        | 4.0 ... 8.0                                                       | 1.6 ... 3.2          |               |
| LOP T670-J+H |                       |                                        | 4.0 ... 8.0                                                       | 2.5 ... 5.0          |               |
| LOP T670-J+J |                       |                                        | 4.0 ... 8.0                                                       | 4.0 ... 8.0          |               |
| LOP T670-K+G |                       |                                        | 6.3 ... 12.5                                                      | 1.6 ... 3.2          |               |
| LOP T670-K+H |                       |                                        | 6.3 ... 12.5                                                      | 2.5 ... 5.0          |               |
| LOP T670-K+J |                       |                                        | 6.3 ... 12.5                                                      | 4.0 ... 8.0          |               |

Streuung der Lichtstärke in einer Verpackungseinheit  $I_{V \max} / I_{V \min} \leq 2.0$ .<sup>1)</sup>

Streuung der Lichtstärke in einer LED  $I_{V \max} / I_{V \min} \leq 3.0$  (LSG T670, LOG T670, LSY T670),  
 $\leq 4.0$  (LSP T670, LOP T670, LYP T670).

<sup>1)</sup> Bei MULTILED® bestimmt die Helligkeit des jeweils dunkleren Chips in einem Gehäuse die Helligkeitsgruppe der LED.

Luminous intensity ratio in one packaging unit  $I_{V \max} / I_{V \min} \leq 2.0$ .<sup>1)</sup>

Luminous intensity ratio in one LED  $I_{V \max} / I_{V \min} \leq 3.0$  (LSG T670, LOG T670, LSY T670),  
 $\leq 4.0$  (LSP T670, LOP T670, LYP T670).

<sup>1)</sup> In case of MULTILED®, the brightness of the darker chip in one package determines the brightness group of the LED.

**LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670**

**Grenzwerte  
Maximum Ratings**

| Bezeichnung<br>Parameter                                                           | Symbol<br>Symbol | Wert<br>Value  | Einheit<br>Unit |
|------------------------------------------------------------------------------------|------------------|----------------|-----------------|
| Betriebstemperatur<br>Operating temperature range                                  | $T_{op}$         | – 55 ... + 100 | °C              |
| Lagertemperatur<br>Storage temperature range                                       | $T_{stg}$        | – 55 ... + 100 | °C              |
| Sperrschichttemperatur<br>Junction temperature                                     | $T_j$            | + 100          | °C              |
| Durchlaßstrom<br>Forward current                                                   | $I_F$            | 30             | mA              |
| Stoßstrom<br>Surge current<br>$t \leq 10 \mu s, D = 0.005$                         | $I_{FM}$         | 0.5            | A               |
| Sperrspannung<br>Reverse voltage                                                   | $V_R$            | 5              | V               |
| Verlustleistung<br>Power dissipation                                               | $P_{tot}$        | 100            | mW              |
| Wärmewiderstand<br>Thermal resistance<br>Sperrschicht / Umgebung<br>Junction / air |                  |                |                 |
| Montage auf PC-Board*) (Padgröße $\geq 16 \text{ mm}^2$ )                          | $R_{th JA}^{1)}$ | 480            | K/W             |
| mounted on PC board*) (pad size $\geq 16 \text{ mm}^2$ )                           | $R_{th JA}^{2)}$ | 650            | K/W             |

\*) PC-board: FR4

1) nur ein Chip betrieben

1) one system only

2) beide Chips betrieben

2) both systems on simultaneously

**Notes**

Die angegebenen Grenzdaten gelten für einen Chip.

The stated maximum ratings refer to one chip.

LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670

Kennwerte ( $T_A = 25^\circ\text{C}$ )

Characteristics

| Bezeichnung<br>Parameter                                                                                                                                                                  | Symbol<br>Symbol        | Wert<br>Value |            |            |            |            | Ein-<br>heit<br>Unit           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------|------------|------------|------------|------------|--------------------------------|
|                                                                                                                                                                                           |                         | LS            | LO         | LG         | LP         | LY         |                                |
| Wellenlänge des emittierten Lichtes (typ.)<br>Wavelength at peak emission (typ.)<br>$I_F = 10\text{ mA}$                                                                                  | $\lambda_{\text{peak}}$ | 635           | 610        | 565        | 557        | 586        | nm                             |
| Dominantwellenlänge (typ.)<br>Dominant wavelength (typ.)<br>$I_F = 10\text{ mA}$                                                                                                          | $\lambda_{\text{dom}}$  | 628           | 605        | 570        | 560        | 590        | nm                             |
| Spektrale Bandbreite bei 50 % $I_{\text{rel max}}$ (typ.)<br>Spectral bandwidth at 50 % $I_{\text{rel max}}$ (typ.)<br>$I_F = 10\text{ mA}$                                               | $\Delta\lambda$         | 45            | 40         | 25         | 22         | 45         | nm                             |
| Abstrahlwinkel bei 50 % $I_V$ (Vollwinkel)<br>Viewing angle at 50 % $I_V$                                                                                                                 | $2\phi$                 | 120           | 120        | 120        | 120        | 120        | Grad<br>deg.                   |
| Durchlaßspannung (typ.)<br>Forward voltage (max.)<br>$I_F = 10\text{ mA}$                                                                                                                 | $V_F$<br>$V_F$          | 2.0<br>2.6    | 2.0<br>2.6 | 2.0<br>2.6 | 2.0<br>2.6 | 2.0<br>2.6 | V<br>V                         |
| Sperrstrom (typ.)<br>Reverse current (max.)<br>$V_R = 5\text{ V}$                                                                                                                         | $I_R$<br>$I_R$          | 0.01<br>10    | 0.01<br>10 | 0.01<br>10 | 0.01<br>10 | 0.01<br>10 | $\mu\text{A}$<br>$\mu\text{A}$ |
| Kapazität (typ.)<br>Capacitance<br>$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$                                                                                                                | $C_0$                   | 12            | 8          | 15         | 15         | 10         | pF                             |
| Schaltzeiten:<br>Switching times:<br>$I_V$ from 10 % to 90 % (typ.)<br>$I_V$ from 90 % to 10 % (typ.)<br>$I_F = 100\text{ mA}$ , $t_p = 10\text{ }\mu\text{s}$ , $R_L = 50\text{ }\Omega$ | $t_r$<br>$t_f$          | 300<br>150    | 450<br>200 | 450<br>200 | 450<br>200 | 300<br>150 | ns<br>ns                       |

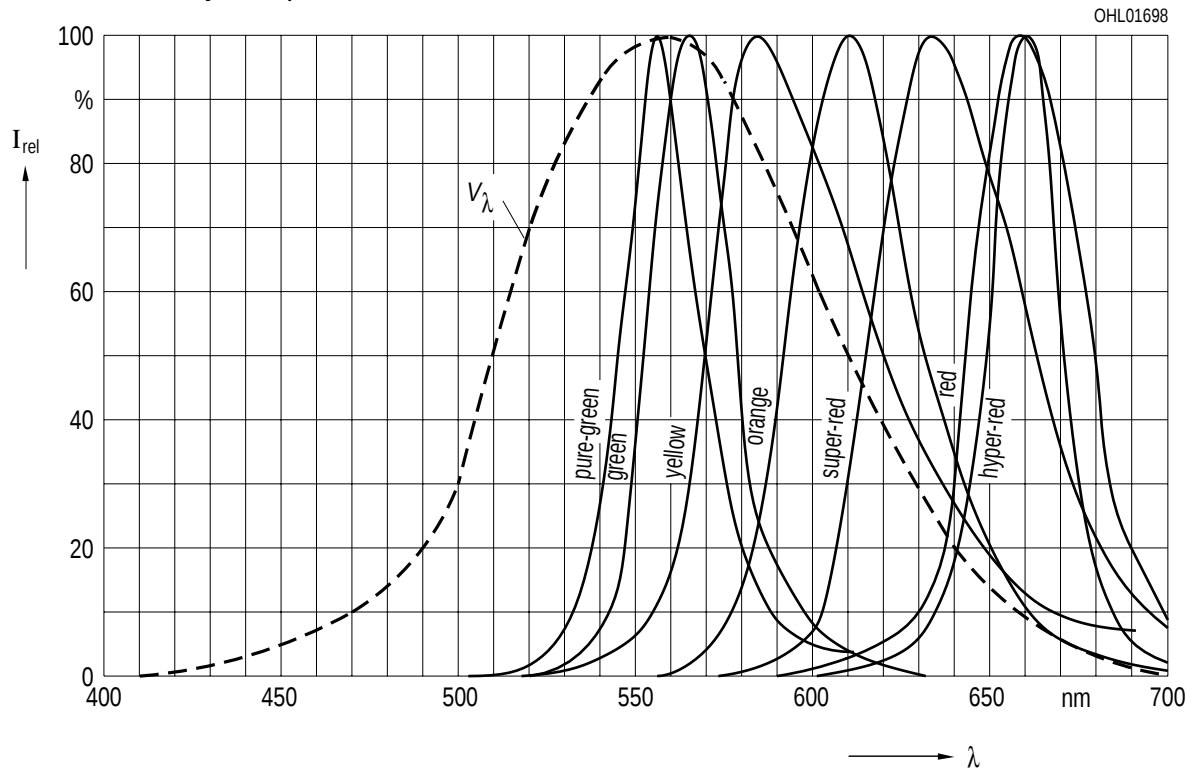
LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670

Relative spektrale Emission  $I_{\text{rel}} = f(\lambda)$ ,  $T_A = 25^\circ\text{C}$ ,  $I_F = 10\text{ mA}$

Relative spectral emission

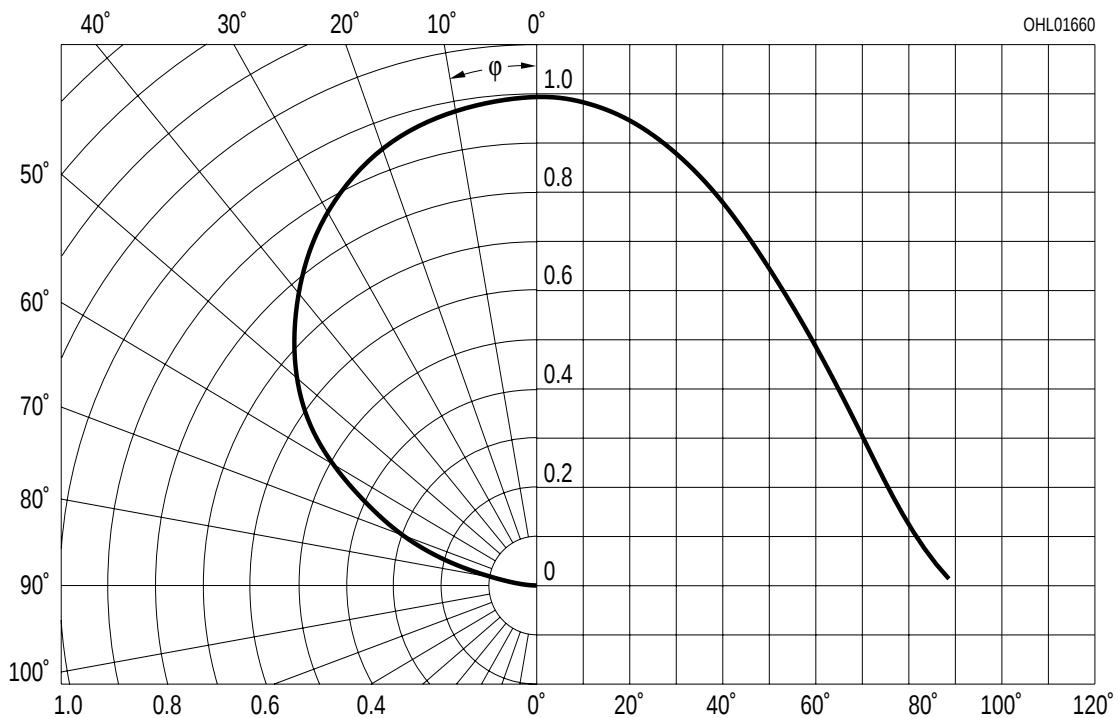
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



Abstrahlcharakteristik  $I_{\text{rel}} = f(\varphi)$

Radiation characteristic

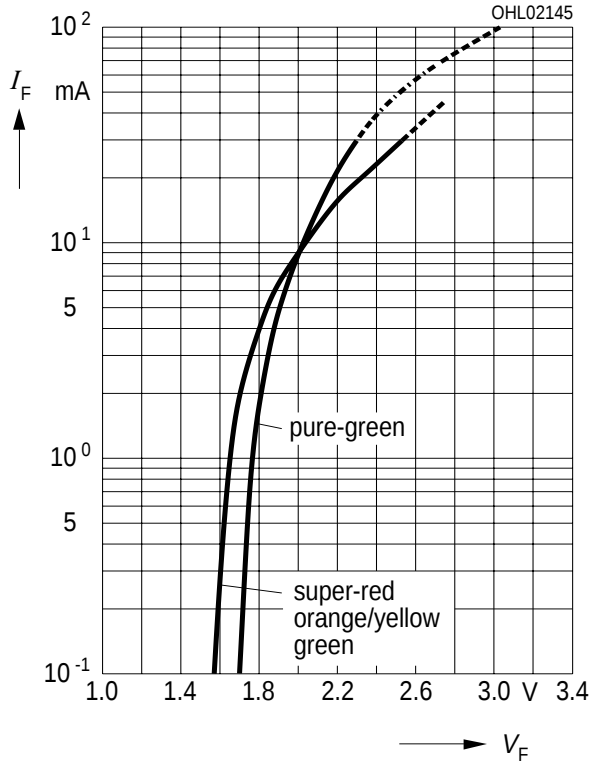


LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670

Durchlaßstrom  $I_F = f(V_F)$

Forward current

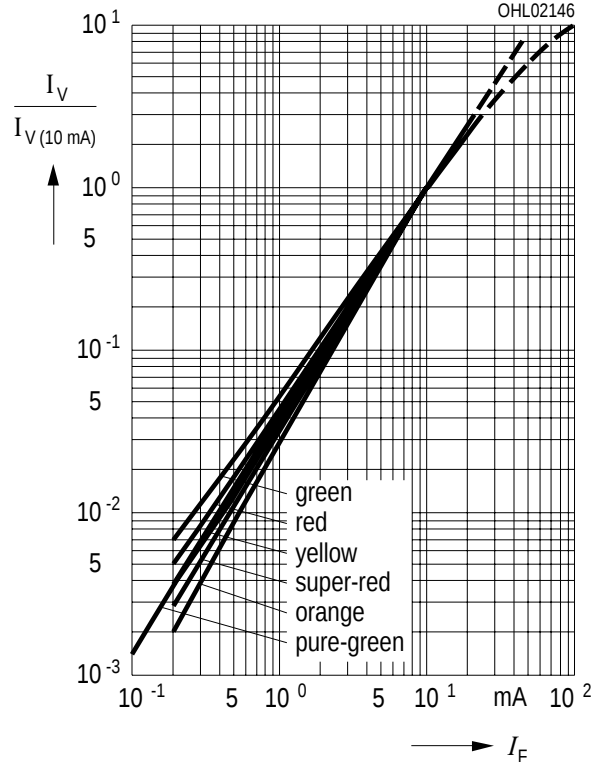
$T_A = 25^\circ\text{C}$



Relative Lichtstärke  $I_V / I_{V(10\text{ mA})} = f(I_F)$

Relative luminous intensity

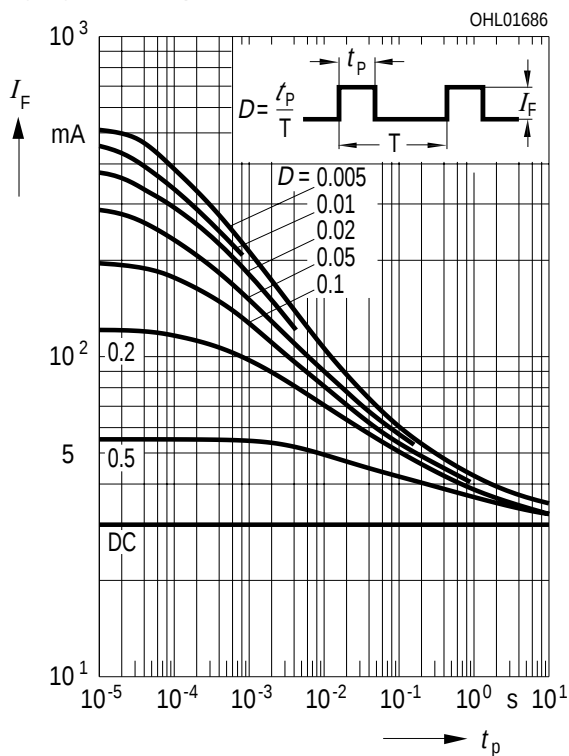
$T_A = 25^\circ\text{C}$



Zulässige Impulsbelastbarkeit  $I_F = f(t_p)$

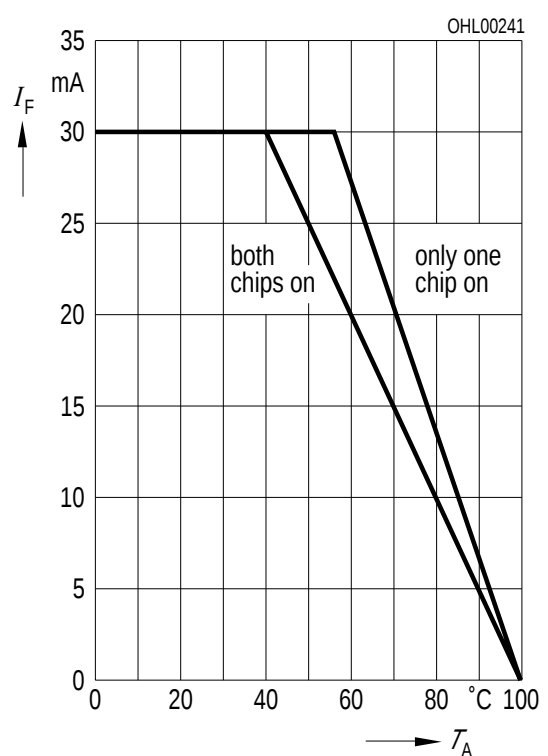
Permissible pulse handling capability

Duty cycle  $D = \text{parameter}$ ,  $T_A = 25^\circ\text{C}$



Maximal zulässiger Durchlaßstrom  $I_F = f(T_A)$

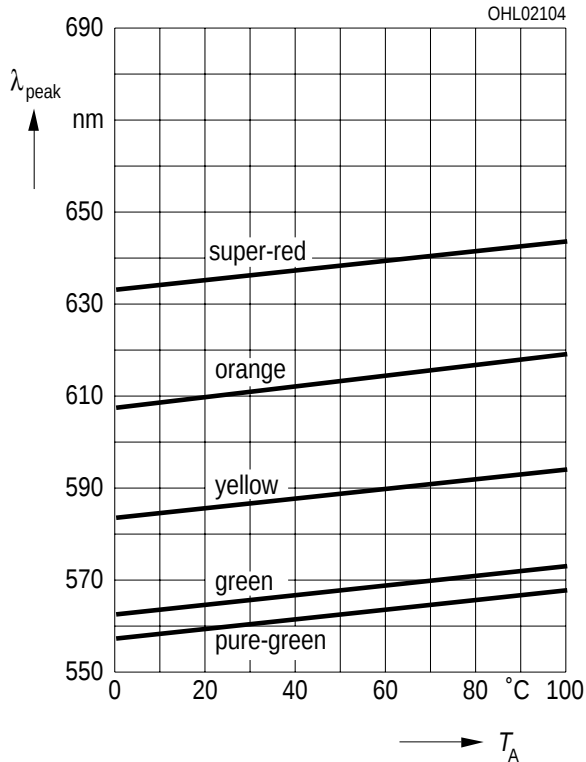
Max. permissible forward current



LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670

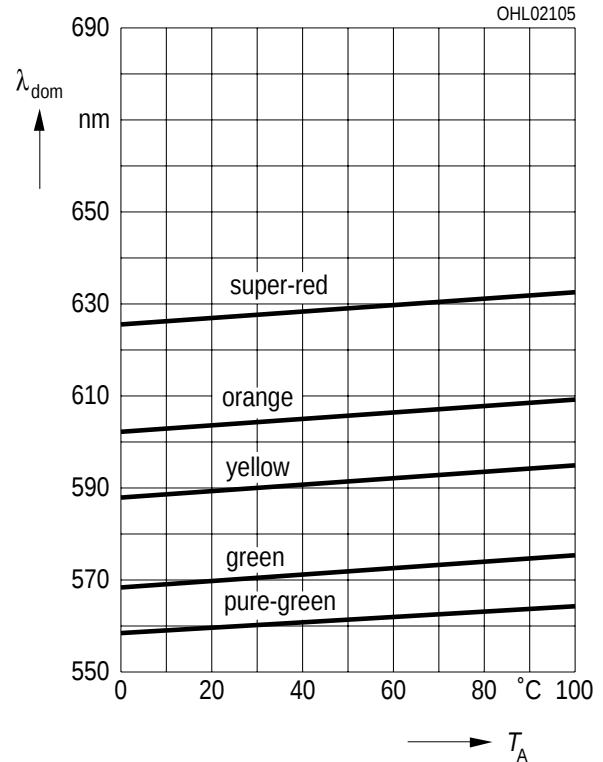
Wellenlänge der Strahlung  $\lambda_{\text{peak}} = f(T_A)$   
Wavelength at peak emission

$I_F = 10 \text{ mA}$



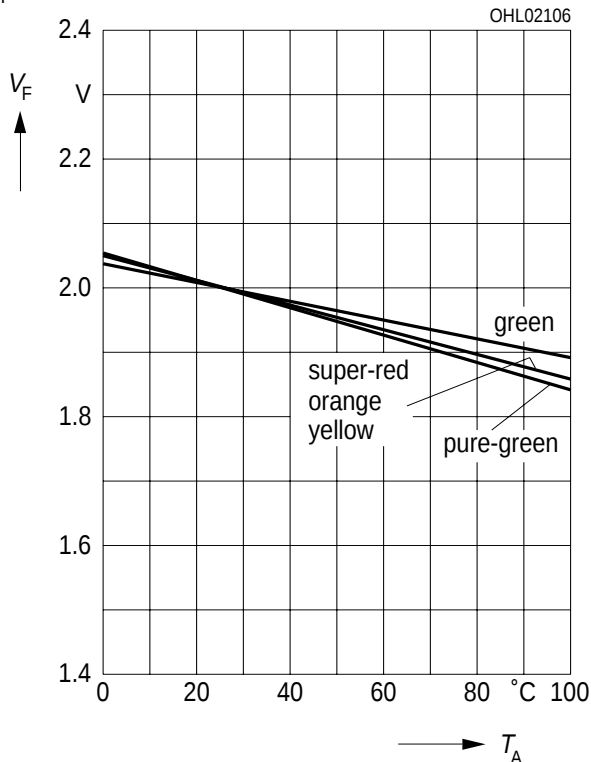
Dominantwellenlänge  $\lambda_{\text{dom}} = f(T_A)$   
Dominant wavelength

$I_F = 10 \text{ mA}$



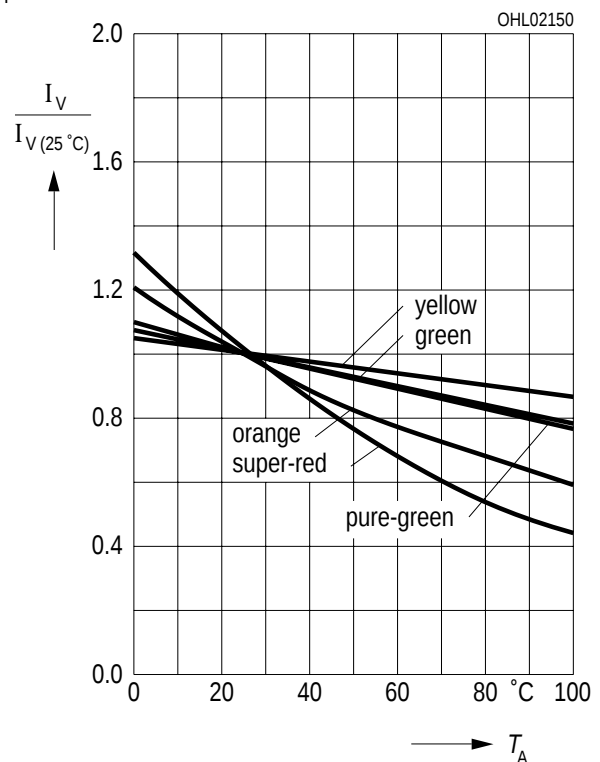
Durchlaßspannung  $V_F = f(T_A)$   
Forward voltage

$I_F = 10 \text{ mA}$



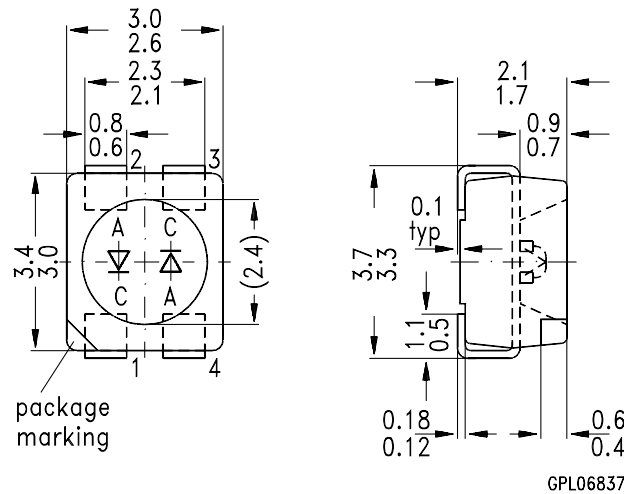
Relative Lichtstärke  $I_V / I_{V(25^\circ\text{C})} = f(T_A)$   
Relative luminous intensity

$I_F = 10 \text{ mA}$



LSG T670, LSP T670, LSY T670, LOP T670, LYG T670, LYP T670

**Maßzeichnung** (Maße in mm, wenn nicht anders angegeben)  
**Package Outlines** (Dimensions in mm, unless otherwise specified)



| L   | S                | G                | T670    |
|-----|------------------|------------------|---------|
| LED | Emission color 1 | Emission color 2 | Package |
|     | cathode: pin 1   | cathode: pin 3   |         |