

## Hyper Mini TOPLED® Hyper-Bright LED

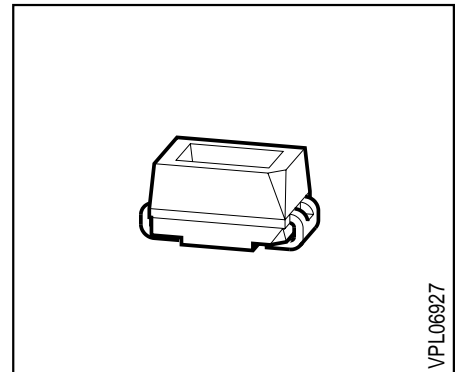
LS M676, LA M676, LO M676  
LY M676

### Besondere Merkmale

- Gehäusefarbe: weiß
- als optischer Indikator einsetzbar
- zur Hinterleuchtung, Lichtleiter- und Linseneinkopplung
- für alle SMT-Bestück- und Löttechniken geeignet
- gegurtet (8-mm-Filmgurt)

### Features

- color of package: white
- for use as optical indicator
- for backlighting, optical coupling into light pipes and lenses
- suitable for all SMT assembly and soldering methods
- available taped on reel (8 mm tape)



Typ Type	Emissions- farbe Color of Emission	Farbe der Licht- austrittsfläche Color of the Light Emitting Area	Lichtstärke Luminous Intensity $I_F = 20 \text{ mA}$ $I_V \text{ (mcd)}$	Lichtstrom Luminous Flux $I_F = 20 \text{ mA}$ $\Phi_V \text{ (lm)}$	Bestellnummer Ordering Code
LS M676-MQ	super-red	colorless clear	16 ... 125	-	Q62703-Q3285
LS M676-N			25 ... 50	100 (typ.)	Q62703-Q3288
LS M676-P			40 ... 80	180 (typ.)	Q62703-Q3286
LS M676-Q			63 ... 125	300 (typ.)	Q62703-Q3287
LS M676-NR			25 ... 200	-	Q62703-Q3289
LA M676-NR	amber	colorless clear	25 ... 200	-	Q62703-Q3536
LA M676-P			40 ... 80	180 (typ.)	Q62703-Q3537
LA M676-Q			63 ... 125	300 (typ.)	Q62703-Q3538
LA M676-R			100 ... 200	450 (typ.)	Q62703-Q3539
LA M676-PS			40 ... 320	-	Q62703-Q3540
LO M676-NR	orange	colorless clear	25 ... 200	-	Q62703-Q3290
LO M676-P			40 ... 80	180 (typ.)	Q62703-Q3291
LO M676-Q			63 ... 125	300 (typ.)	Q62703-Q3292
LO M676-R			100 ... 200	450 (typ.)	Q62703-Q3293
LO M676-PS			40 ... 320	-	Q62703-Q3294
LY M676-NR	yellow	colorless clear	25 ... 200	-	Q62703-Q3295
LY M676-P			40 ... 80	180 (typ.)	Q62703-Q3296
LY M676-Q			63 ... 125	300 (typ.)	Q62703-Q3297
LY M676-R			100 ... 200	450 (typ.)	Q62703-Q3298
LY M676-PS			40 ... 320	-	Q62703-Q3299

Streuung der Lichtstärke in einer Verpackungseinheit  $I_{V \max} / I_{V \min} \leq 2.0$ .

Luminous intensity ratio in one packaging unit  $I_{V \max} / I_{V \min} \leq 2.0$ .

### Grenzwerte Maximum Ratings

Bezeichnung Parameter	Symbol Symbol	Werte Values		Einheit Unit
		LS, LA, LO	LY	
Betriebstemperatur Operating temperature range	$T_{op}$	– 55 ... + 100		°C
Lagertemperatur Storage temperature range	$T_{stg}$	– 55 ... + 100		°C
Sperrschichttemperatur Junction temperature	$T_j$	+ 100		°C
Durchlaßstrom Forward current	$I_F$	30	20	mA
Stoßstrom Surge current $t \leq 10 \mu s, D = 0.005$	$I_{FM}$	to be defined		A
Sperrspannung <sup>1)</sup> Reverse voltage <sup>1)</sup>	$V_R$	3		V
Verlustleistung Power dissipation	$P_{tot}$	80 <sup>2)</sup>	55 <sup>2)</sup>	mW
Wärmewiderstand Thermal resistance Sperrschicht / Umgebung Junction / air Montage auf PC-board*) (Padgröße $\geq 16 \text{ mm}^2$ ) mounted on PC board*) (pad size $\geq 16 \text{ mm}^2$ )	$R_{th JA}$	580 <sup>2)</sup>	500	K/W

1) Belastung in Sperrichtung sollte vermieden werden.

1) Reverse biasing should be avoided.

2) vorläufig/preliminary

\*) PC-board: FR4

**Kennwerte** ( $T_A = 25\text{ °C}$ )

### Characteristics

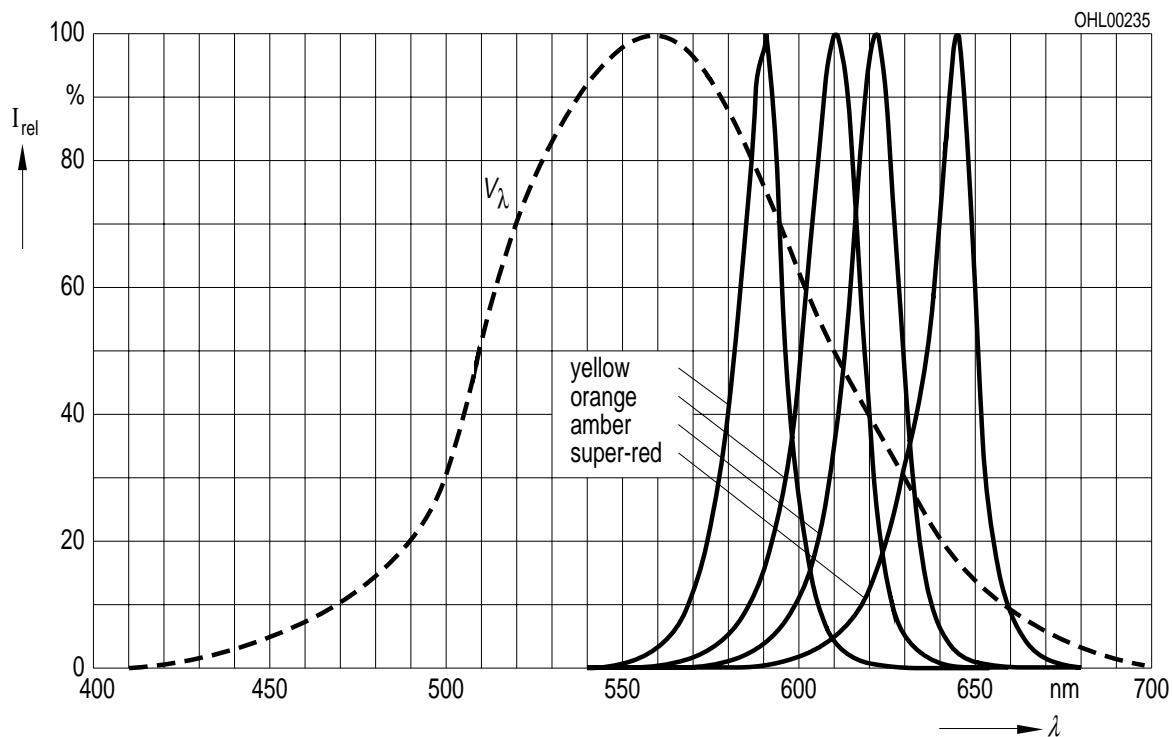
Bezeichnung Parameter	Symbol Symbol	Werte Values				Einheit Unit
		LS	LA	LO	LY	
Wellenlänge des emittierten Lichtes (typ.) Wavelength at peak emission (typ.) $I_F = 20\text{ mA}$	$\lambda_{\text{peak}}$	645	622	610	591	nm
Dominantwellenlänge (typ.) Dominant wavelength (typ.) $I_F = 20\text{ mA}$	$\lambda_{\text{dom}}$	632	615	605	587	nm
Spektrale Bandbreite bei 50% $I_{\text{rel max}}$ (typ.) Spectral bandwidth at 50% $I_{\text{rel max}}$ (typ.) $I_F = 20\text{ mA}$	$\Delta\lambda$	16	16	16	15	nm
Abstrahlwinkel bei 50% $I_v$ (Vollwinkel) Viewing angle at 50% $I_v$	$2\phi$	120	120	120	120	Grad deg.
Durchlaßspannung (typ.) Forward voltage (max.) $I_F = 20\text{ mA}$	$V_F$ $V_F$	2.0 2.6	2.0 2.6	2.0 2.6	2.0 2.6	V V
Sperrstrom (typ.) Reverse current (max.) $V_R = 3\text{ V}$	$I_R$ $I_R$	0.01 10	0.01 10	0.01 10	0.01 10	$\mu\text{A}$ $\mu\text{A}$
Temperaturkoeffizient von $\lambda_{\text{dom}}$ ( $I_F = 20\text{ mA}$ ) Temperature coefficient of $\lambda_{\text{dom}}$ ( $I_F = 20\text{ mA}$ )	$TC_\lambda$	0.014	0.062	0.067	0.096	nm/K
Temperaturkoeffizient von $\lambda_{\text{peak}}$ , $I_F = 20\text{ mA}$ (typ.) Temperature coefficient of $\lambda_{\text{peak}}$ , $I_F = 20\text{ mA}$ (typ.)	$TC_\lambda$	0.14	0.13	0.13	0.13	nm/K
Temperaturkoeffizient von $V_F$ , $I_F = 20\text{ mA}$ (typ.) Temperature coefficient of $V_F$ , $I_F = 20\text{ mA}$ (typ.)	$TC_V$	- 1.95	- 1.78	- 1.67	- 2.51	mV/K

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

**Relative spectral emission**

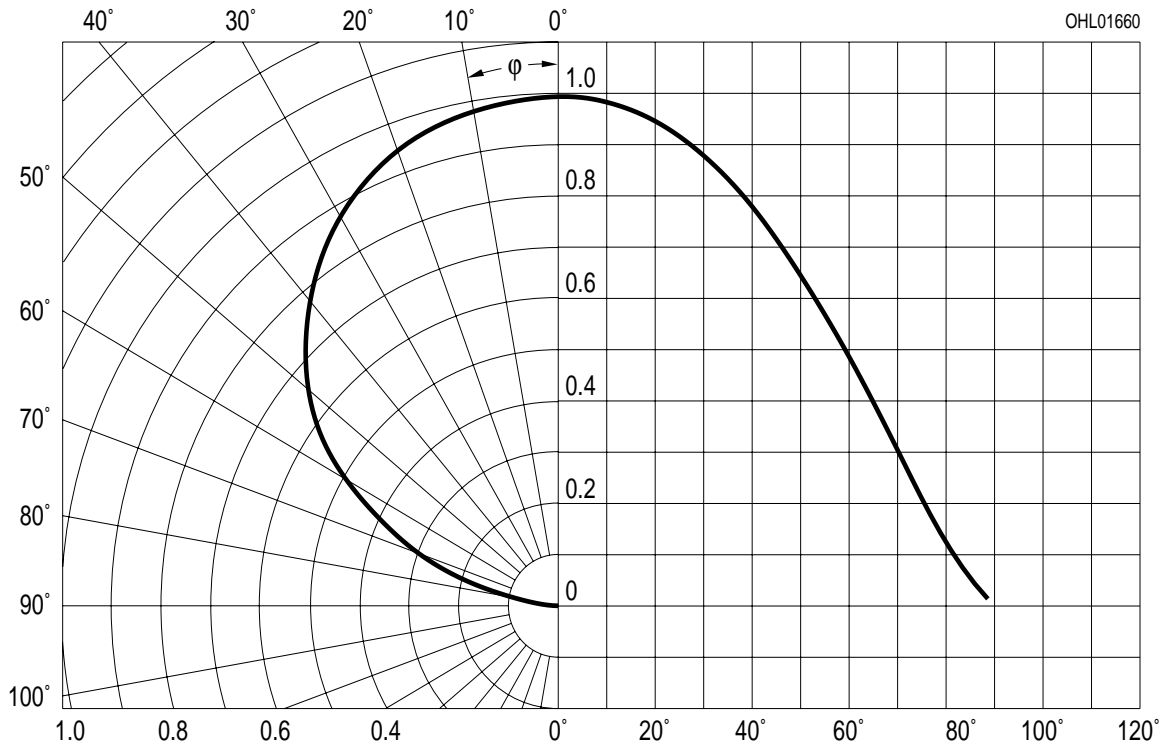
$V(\lambda)$  = spektrale Augenempfindlichkeit

Standard eye response curve



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

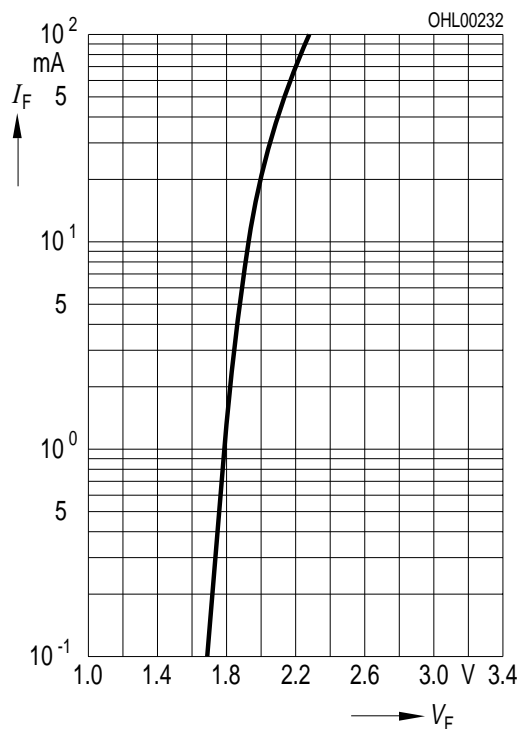
**Radiation characteristic**



**Durchlaßstrom  $I_F = f(V_F)$**

**Forward current**

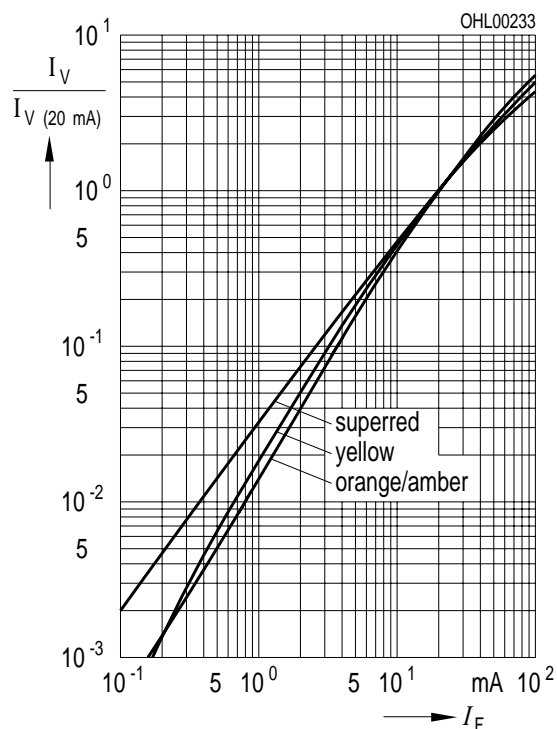
$T_A = 25^\circ\text{C}$



**Relative Lichtstärke  $I_V / I_{V(20\text{ mA})} = f(I_F)$**

**Relative luminous intensity**

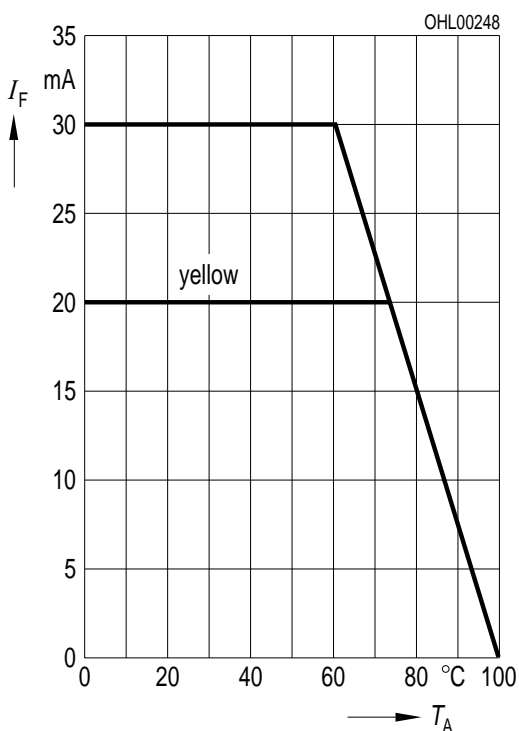
$T_A = 25^\circ\text{C}$



**Maximal zulässiger Durchlaßstrom**

**Max. permissible forward current**

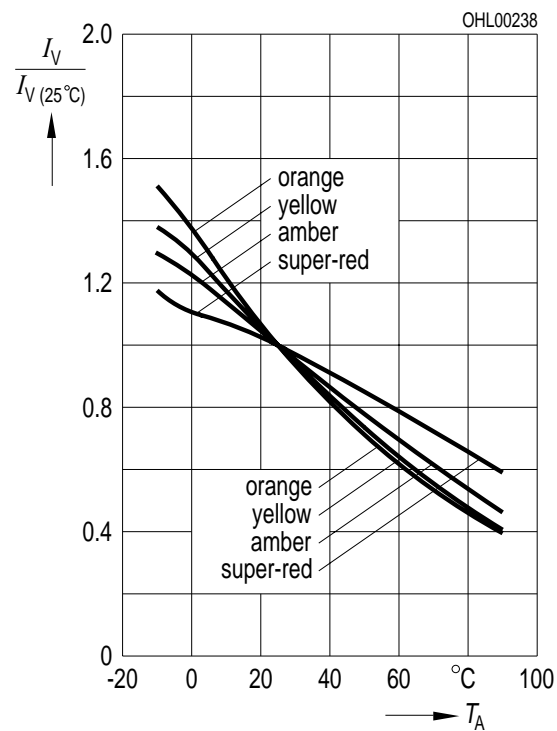
$I_F = f(T_A)$



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

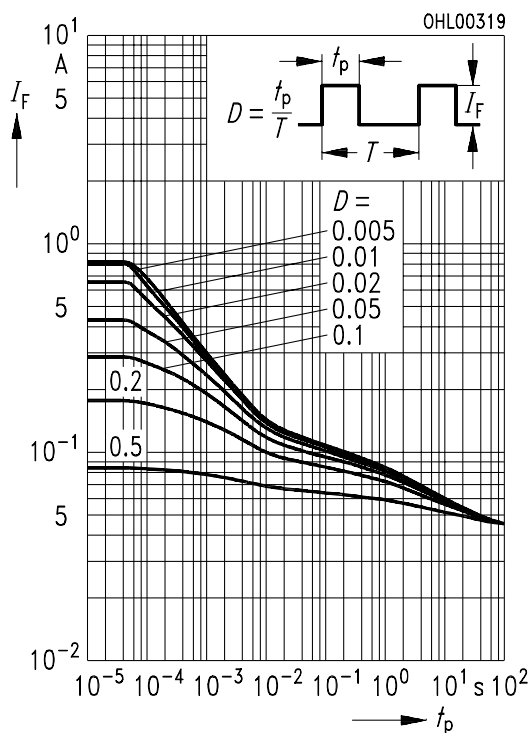
**Relative luminous intensity**

$I_F = 20\text{ mA}$



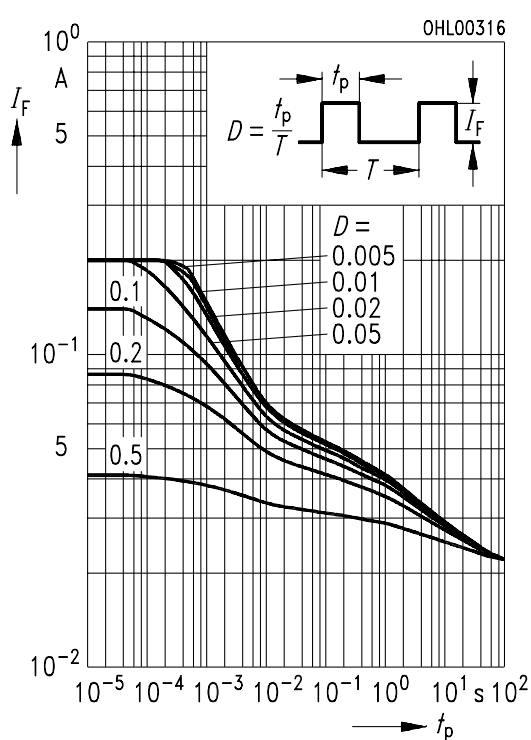
## Zulässige Impulsbelastbarkeit $I_F = f(t_p)$ Permissible pulse handling capability LS, LA, LO

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



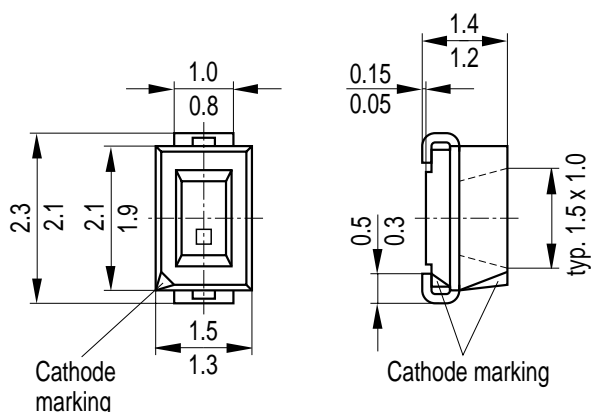
## Zulässige Impulsbelastbarkeit $I_F = f(t_p)$ Permissible pulse handling capability LY

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



## Maßzeichnung Package Outlines

(Maße in mm, wenn nicht anders angegeben)  
(Dimensions in mm, unless otherwise specified)



GPL06928

**Kathodenkennung:** abgeschrägte Ecke  
**Cathode mark:** bevelled edge