Hyper 5 mm (T1 ¾) LED, Non Diffused
Hyper-Bright LED

KS 5470 , KS 5505 , KS 5525

InGaN•SiC Series

The Leader in Silicon Carbide Solid State Technology

G·SiC® Technology

Super Bright LEDs

CXXX-CB290-E1200

Preliminary Data

Features

- **package:** colorless, clear 5 mm (T1 ¾) package
- **feature of the device:** narrow viewing angle for more brightness
- **wavelength:** 470 nm (blue), 505 nm (verde), 528 nm (true green)
- **viewing angle:** narrow (15°)
- **technology:** InGaN
- **optical efficiency:** 2 lm/W (blue), 6 lm/W (verde), 8 lm/W (true green)
- **grouping parameter:** luminous intensity
- **soldering methods:** TTW soldering
- **packing:** bulk, available taped on reel
- **ESD-withstand voltage:** up to 2 kV acc. to MIL STD 883 D, Method 3015.7

Applications

- traffic lights
- backlighting (LCD, switches, keys, displays, illuminated advertising, general lighting)
- interior automotive lighting (e.g. key backlighting, etc.)
- substitution of micro incandescent lamps

Type	Color of Emission	Color of Package	Luminous Intensity I_F = 20 mA I_V (mcd)	Luminous Flux I_F = 20 mA Φ_V (mlm)	Ordering Code
KS 5470 - L	blue	colorless clear	280 ... 1120	120 (typ.)	K62703-Q5930
KS 5470 - M			710 ... 2800	300 (typ.)	K62703-Q5931
KS 5470 - N			280 ... 450	60 (typ.)	
KS 5470 - O			450 ... 710	100 (typ.)	
KS 5470 - P			710 ... 1120	150 (typ.)	
KS 5470 - Q			1120 ... 1800	240 (typ.)	
KS 5470 - U			1800 ... 2800	380 (typ.)	
KS 5505 - B	verde	colorless clear	710 ... 2800	470 (typ.)	K62703-Q5932
KS 5505 - UB			1800 ... 7100	1200 (typ.)	K62703-Q5933
KS 5505 - M			710 ... 1120	230 (typ.)	
KS 5505 - N			1120 ... 1800	370 (typ.)	
KS 5505 - O			1800 ... 2800	590 (typ.)	
KS 5505 - P			2800 ... 4500	900 (typ.)	
KS 5505 - Q			4500 ... 7100	1400 (typ.)	
KS 5525 - B	true green	colorless clear	710 ... 2800	470 (typ.)	K62703-Q5934
KS 5525 - UB			1800 ... 7100	1200 (typ.)	K62703-Q5935
KS 5525 - M			710 ... 1120	230 (typ.)	
KS 5525 - N			1120 ... 1800	370 (typ.)	
KS 5525 - O			1800 ... 2800	590 (typ.)	
KS 5525 - P			2800 ... 4500	900 (typ.)	
KS 5525 - Q			4500 ... 7100	1400 (typ.)	

Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of ±11 %.

Maximum Ratings

Parameter	Symbol	Value		Unit
		470	505, 525	
Operating temperature range	T_{op}	– 55 … + 100		°C
Storage temperature range	T_{stg}	– 55 … + 100		°C
Junction temperature	T_j	+ 100		°C
Forward current	I_F	20		mA
Surge current $t \leq 10$ µs, $D = 0.005$	I_{FM}	200	250	mA
Reverse voltage	V_R	5		V
Power dissipation $T_A \leq 25$ °C	P_{tot}	85		mW
Thermal resistance Junction/ambient mounted on PC board FR 4 (pad size ≥ 16 mm ^{2}) Minimum lead length	$R_{th\ JA}$	400		K/W
Junction/solder point	$R_{th\ JS}$	180		K/W

Characteristics (T_A = 25 °C)

Parameter	Symbol	Values			Unit
		470	505	525	
Wavelength at peak emission I_F = 20 mA	λ_{peak}	465	503	523	nm
Dominant wavelength[1)] I_F = 20 mA	λ_{dom}	470 ± 6	505 ± 7	528 ± 9	nm
Spectral bandwidth at 50 % $I_{rel\ max}$ I_F = 20 mA	$\Delta\lambda$	25	30	33	nm
Viewing angle at 50 % I_V	2φ	15	15	15	Grad deg.
Forward voltage (max.) I_F = 20 mA	V_F V_F	3.5 4.2	3.3 4.2	3.3 4.2	V V
Reverse current (max.) V_R = 5 V	I_R I_R	0.01 10	0.01 10	0.01 10	µA µA
Temperature coefficient of λ_{peak} I_F = 20 mA	$TC_{\lambda peak}$	0.04	0.03	0.04	nm/K
Temperature coefficient of λ_{dom} I_F = 20 mA	$TC_{\lambda dom}$	0.02	0.02	0.03	nm/K
Temperature coefficient of V_F I_F = 20 mA	TC_V	– 2.9	– 3.2	– 3.6	mV/K
Optical efficiency I_F = 20 mA	η_{opt}	2	6	8	lm/W

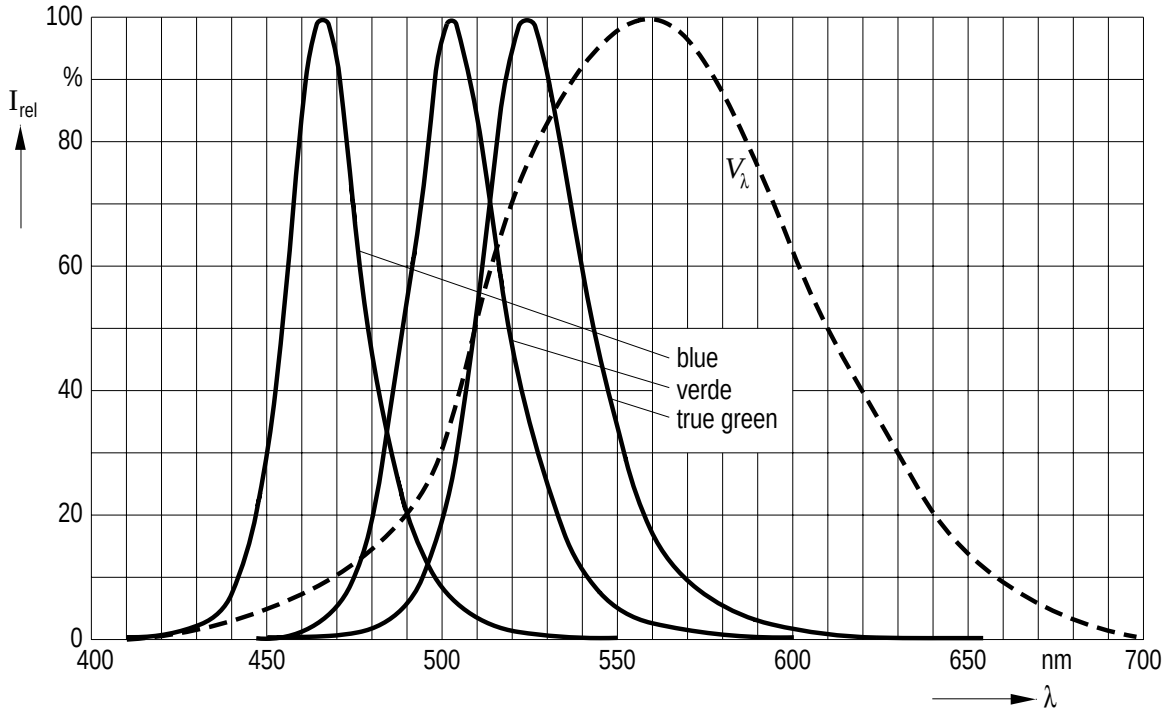
[1] **Wavelength groups**

Group	blue		verde		true green	
	min.	max.	min.	max.	min.	max.
3	464	468	498	503	519	525
4	468	472	503	507	525	531
5	472	476	507	512	531	537

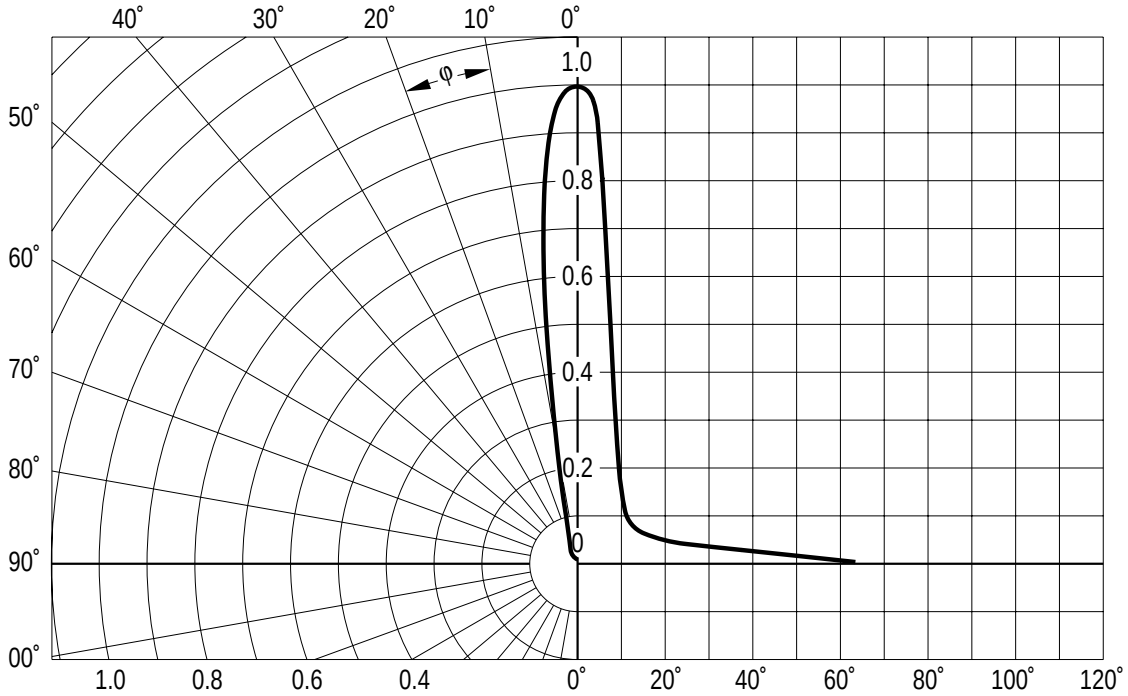
Wavelength groups are tested at a current pulse duration of 25 ms and an accuracy of ±1 nm.

Relative Spectral Emission $I_{rel} = f(\lambda)$, T_A = 25 °C, I_F = 20 mA

V(λ) = Standard eye response curve

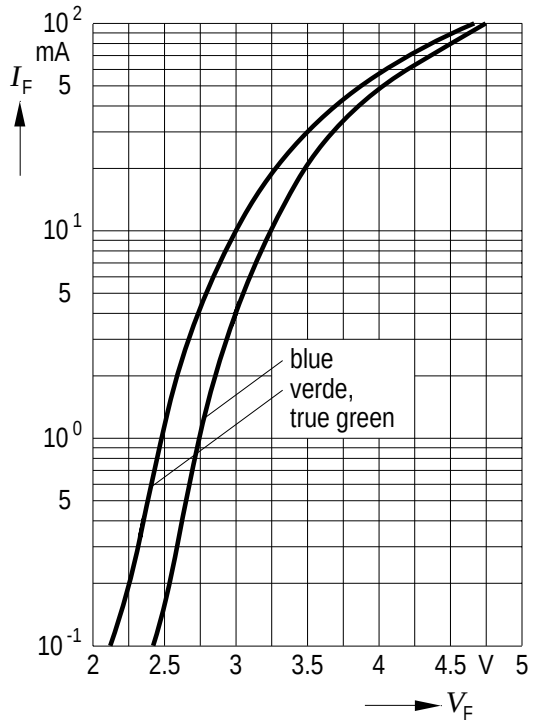


Radiation Characteristic $I_{rel} = f(\varphi)$



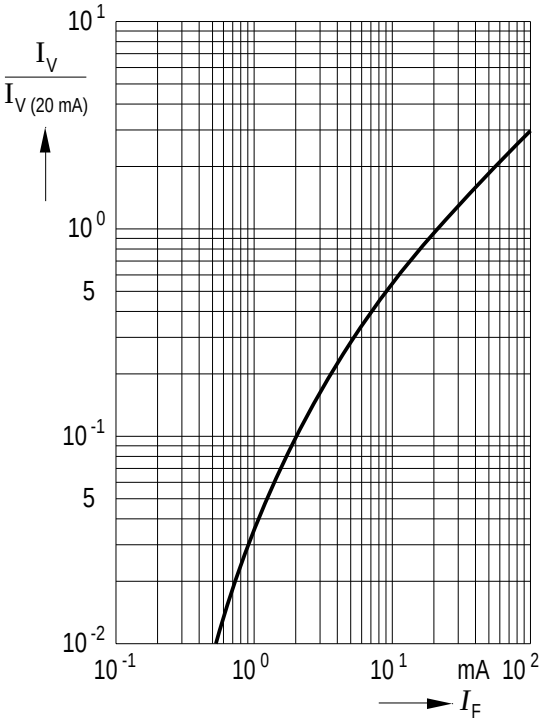
Forward Current $I_F = f(V_F)$

T_A = 25 °C

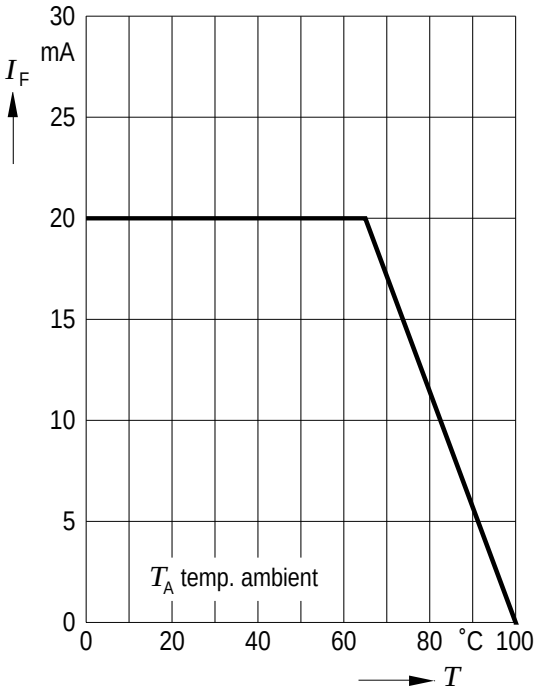


Relative Luminous Intensity $I_V/I_{V(20\ mA)} = f(I_F)$

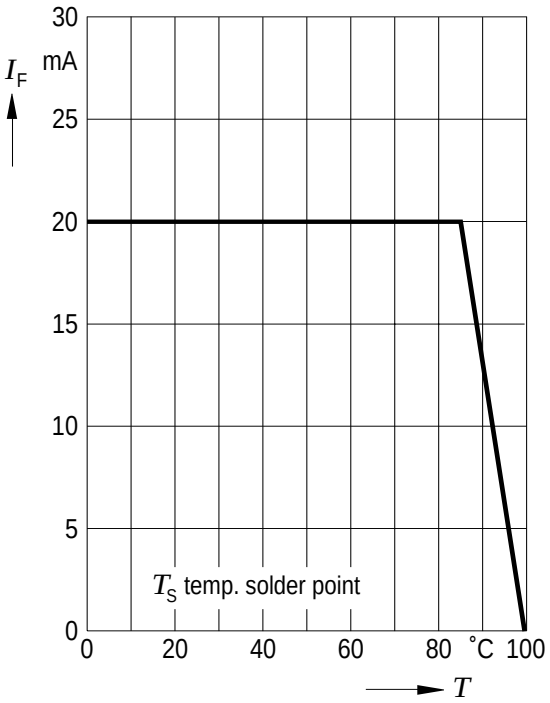
T_A = 25 °C



Max. Permissible Forward Current $I_F = f(T)$

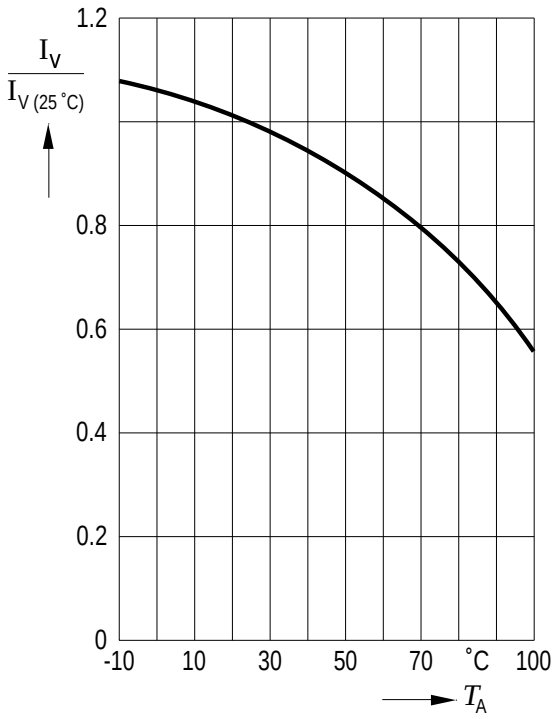


Max. Permissible Forward Current $I_F = f(T)$



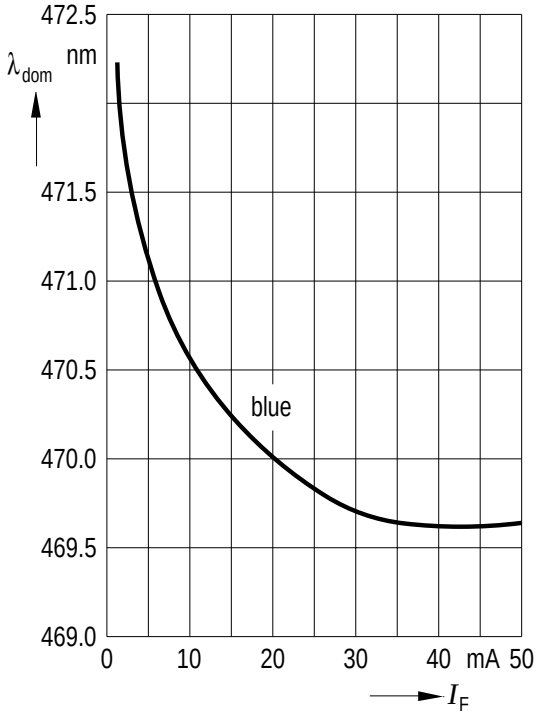
Relative Luminous Intensity $I_V/I_{V(25\,°C)} = f(T_A)$

I_F = 20 mA



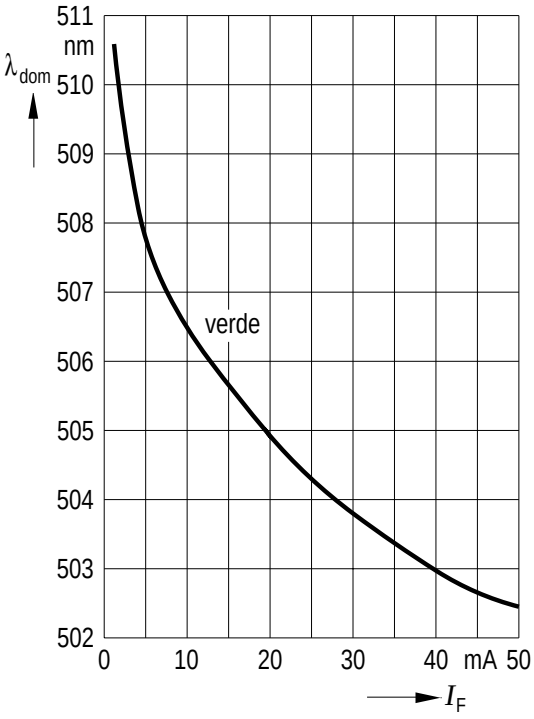
Dominant Wavelength $\lambda_{dom} = f(I_F)$

KS55470, T_A = 25 °C



Dominant Wavelength $\lambda_{dom} = f(I_F)$

KS5505, T_A = 25 °C



Dominant Wavelength $\lambda_{dom} = f(I_F)$

KS5525, T_A = 25 °C

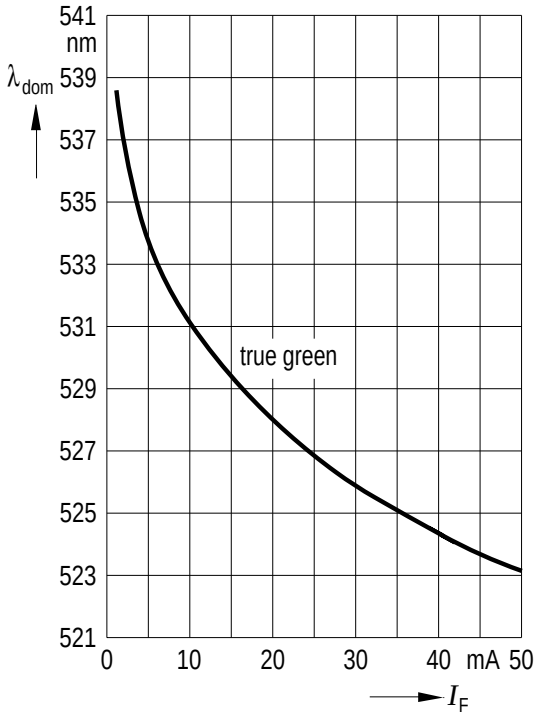


Fig.1 The Blue (470nm) $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
KS5470

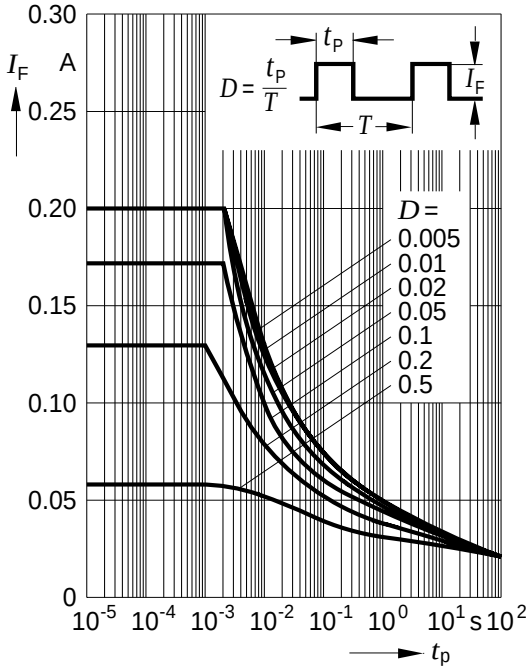


Fig.2 The Blue (470nm) $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
KS5470

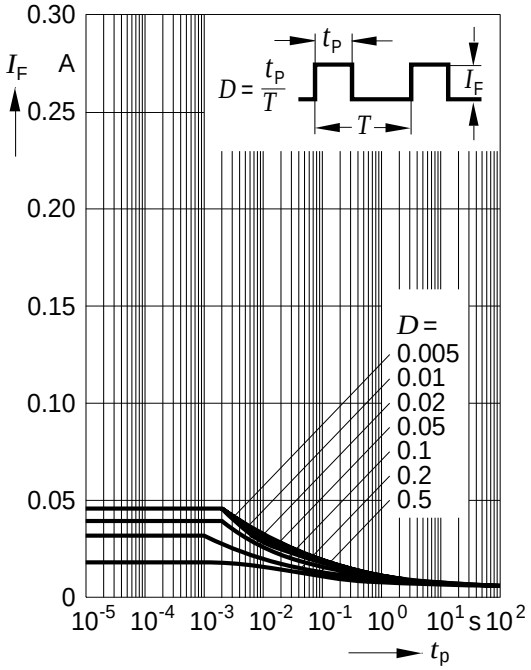


Fig.3 The Blue (470nm) $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 25 °C
KS5505, KS5525

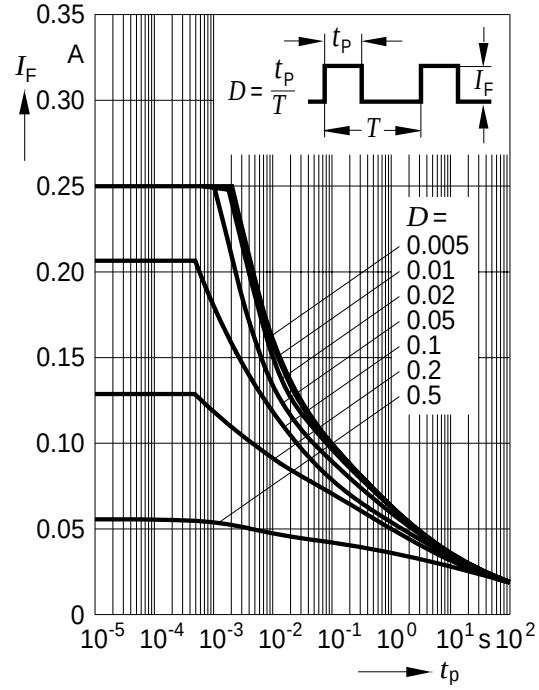
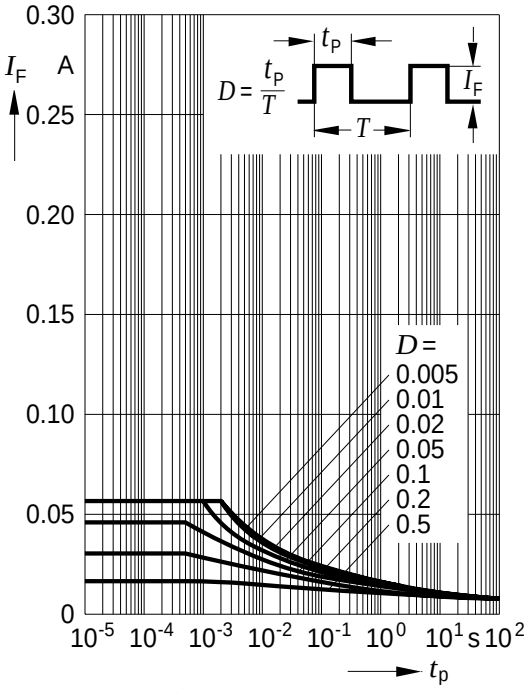
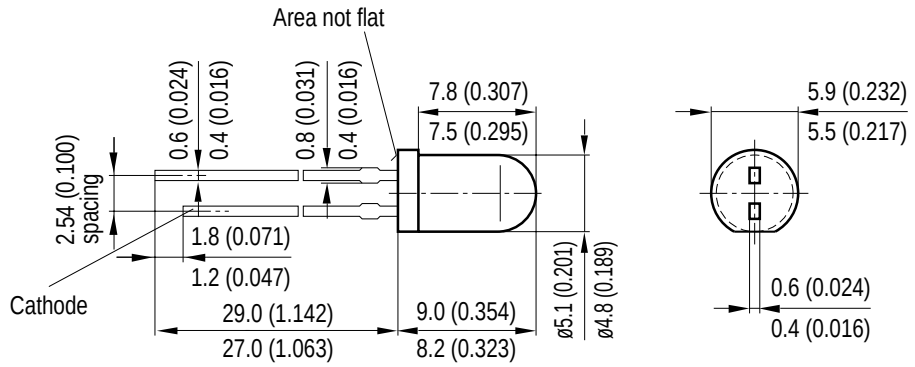


Fig.4 The Blue (470nm) $I_F = f(t_p)$
Permissible Pulse Handling Capability
Duty cycle D = parameter, T_A= 85 °C
KS5505, KS5525



Package Outlines

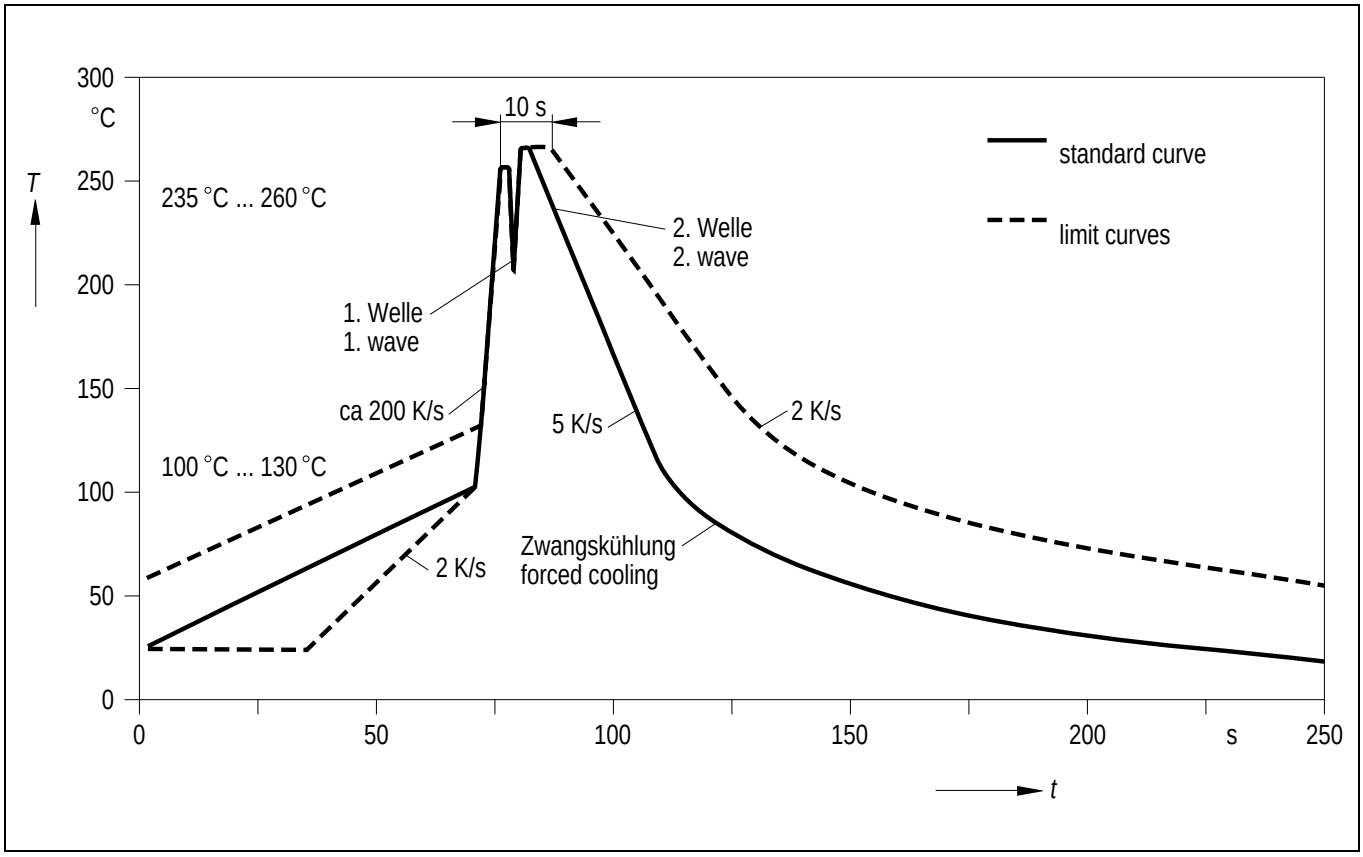


Dimensions are specified as follows: mm (inch).

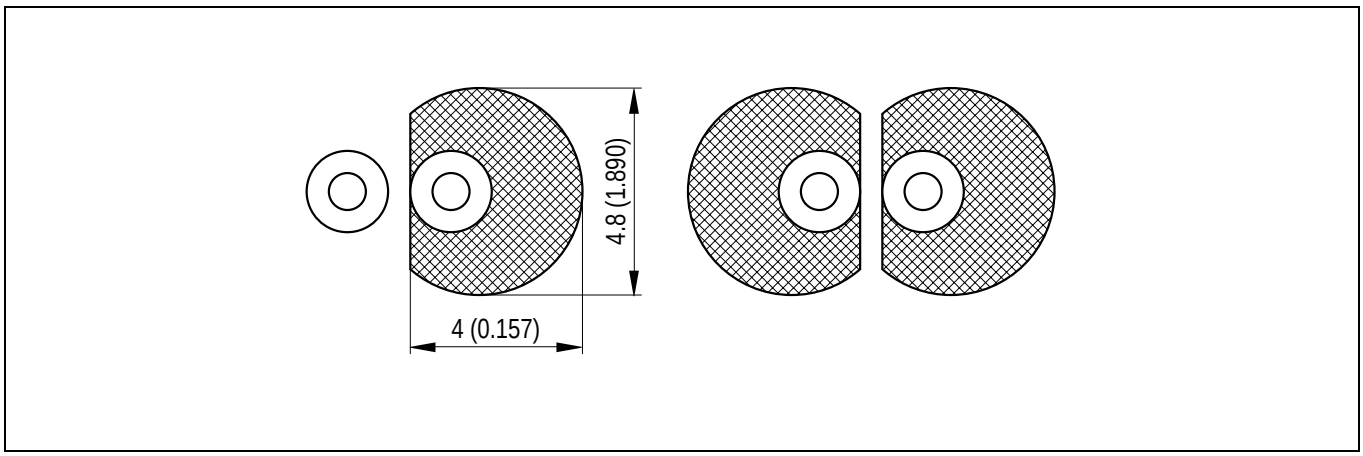
Cathode mark: short solder lead
Approx. weight: 0.35 g

Soldering Conditions

TTW Soldering(acc. to CECC 00802)



Recommended Solder Pad TTW Soldering



Dimensions are specified as follows: mm (inch).