3.5*2.8 Multi TOP LED
Ultra Bright LED
Lead (Pb) Free Product - RoHS Compliant
3528单色光

Features

- **package:** white PLCC-4 package, colored clear resin
- **feature of the device:** extremely wide viewing angle; long life time due to enhanced resin material
- **color coordinates:** 625nm (super-red), 587nm (yellow)
  530nm (true green), 470nm (blue),
- **viewing angle:** Lambertian Emitter (120°)
- **technology:** AlInGaP (super red yellow), InGaN (true green, blue)
- **grouping parameter:** luminous intensity, wavelength
- **assembly methods:** suitable for all SMT assembly methods
- **soldering methods:** IR reflow soldering and TTW soldering
- **preconditioning:** acc. to JEDEC Level 2
- **taping:** 8 mm tape with 2000/reel, ø180mm
- **ESD-withstand voltage:** ESD sensitive device

Applications

- indoor and outdoor displays(e.g. displays for traffic; light writing displays)
- LED chips can be controlled separately
- full color display, RGBY Displays
- backlighting(LCD, displays, illuminated advertising general lighting)
- coupling into light guides

Ordering Information

Type	Wavelength(IF=20mA)								Luminous Intensity(IF=20mA)							
	Super red		yellow		True green		Blue		Super red		Yellow		True green		Blue	
	min	max	min	max	min	Max	min	max	min	Typ	min	Typ	min	Typ	min	Typ
3528单色光	620	635	588	596	515	530	460	475	220	300	260	300	560	600	150	200

Note: *The above Type Numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each reel (there will be no mixing of two groups on each reel). E.g.* **3528单色光-E2H2-R1R3+K2A3 –G1G3+C2F2-B2B4+L2J3-Y2Y4** *means that 3 group E2, F2, G2, H2,K2 will be shippable for any one reel.*

In order to ensure availability, single brightness groups will not be orderable.

In a similar manner for colors where chromaticity coordinate groups are measured and binned, single chromaticity coordinate groups will be shipped on any one reel. E.g. **3528单色光-E2H2-R1R3+K2A3–G1G3+C2F2-B2B4+L2J3-Y2Y4** *means that only 1 chromaticity coordinate group R1, R2, R3,R4 will be shippable.*

In order to ensure availability, single chromaticity coordinate groups will not be orderable .

Maximum Ratings

Parameter	Symbol	Values				Unit
		super red	yellow	true green	blue	
Operating temperature range	T_{op}		– 40 … + 100			°C
Storage temperature range	T_{stg}		– 40 … + 100			°C
Junction temperature	T_j	115			125	°C
Forward current *(TA=25°C)*	I_F		30			mA
Surge current *t ≤ 10 µs, D = 0.005, TA=25°C*	I_F		150			mA
Reverse voltage *(TA=25°C)*	V_R		5			V
Power consumption *(TA=25°C)*	P_{tot}	80	80	100	100	mW
Thermal resistance solder point	R_{th-js}		130			°C /W

Characteristics *(T_A = 25 °C)*

Parameter		Symbol	Values				Unit
			super red	yellow	true green	blue	
Wavelength at peak emission: *(I_F = 20mA)*	(typ.)	λ_{peak}	620	588	515	464	nm
Dominant wavelength *(I_F = 20mA)*	(typ.)	λ_{dom}	630	596	535	474	nm
Spectral bandwidth at 50% $I_{rel\ max}$ *(I_F = 20mA)*	(typ.)	△λ	21	19	30	23	nm
Viewing angle at 50 % Φ_V	(typ.)	2φ	120	120	120	120	deg.
Forward voltage *(I_F = 20mA)*	(min.)	V_F	1.8	1.8	2.8	2.8	V
	(typ.)	V_F	1.95	2.0	3.3	3.4	V
	(max.)	V_F	2.6	2.4	3.6	3.6	V
Reverse current *(V_R=5V)*	(max.)	I_R	10	10	10	10	uA

Individual groups on page 3

Wavelength Groups *(Dominant Wavelength I_F=20mA)*

Wavelength Groups	Min	Max	Wavelength Groups	Min	Max	Wavelength Groups	Min	Max	Wavelength Groups	Min	Max
R1	620	625	Y1	585	590	G1	515	520	B2	460	465
R2	625	630	Y2	590	595	G2	520	525	B3	465	470
R3	630	635	Y3	595	600	G3	525	530	B4	470	475

Brightness Groups*(I_F=20mA)*

RED

Brightness Groups	MIN	MAX
E2	220	260
F2	260	320
G2	320	380
H2	380	460

Ture Green

Brightness Groups	MIN	MAX
K2	560	680
L2	680	820
M2	820	1000

Blue

Brightness Groups	MIN	MAX
C2	150	180
D2	180	220
E2	220	260
F2	260	320

Yellow

Brightness Groups	MIN	MAX
F2	260	320
G2	320	380
H2	380	460

Note: The standard shipping format for serial types includes either a lower family group, an upper family group or a grouping of all individual brightness groups of 3 or 4 or 6 individual brightness groups. Individual brightness groups cannot be ordered.

Group Name on Label

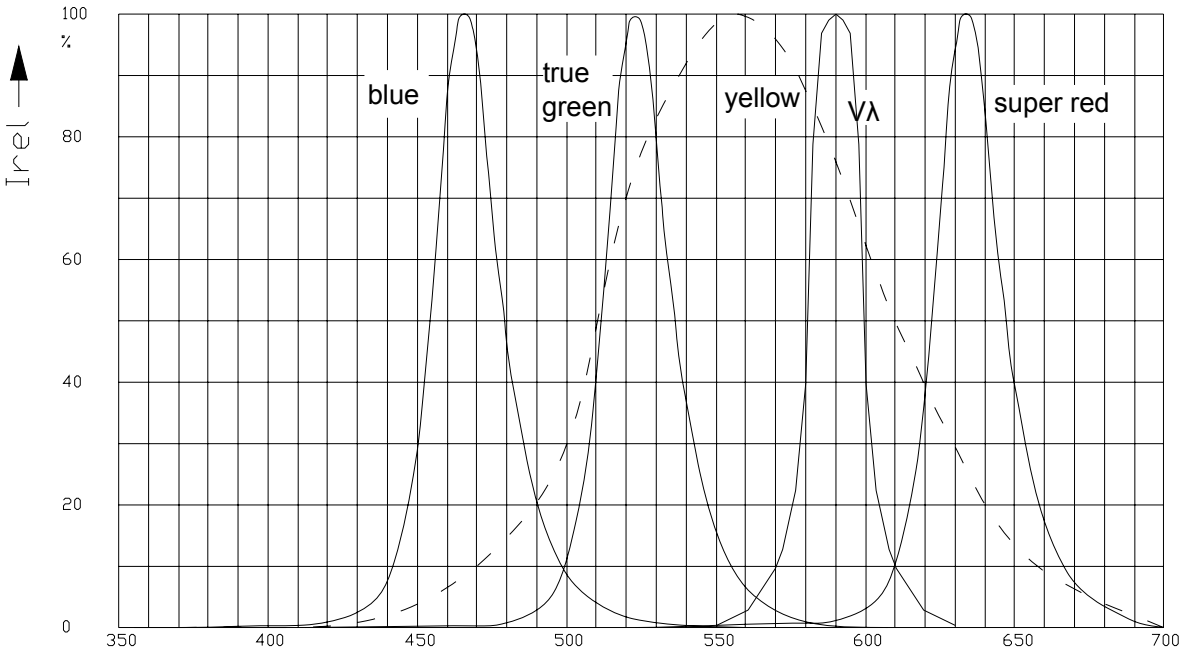
Example: F2-R1+K2-G1+E2-B3+L2-Y3

Brightness Group (super red)	Wavelength (super red)	Brightness Group (yellow)	Wavelength (yellow)	Brightness Group (ture green)	Wavelength (ture green)	Brightness Group (blue)	Wavelength (blue)
F2	R1	L2	Y3	K2	G1	E2	B3

Note: No packing unit / tape ever contains more than one group for each selection.

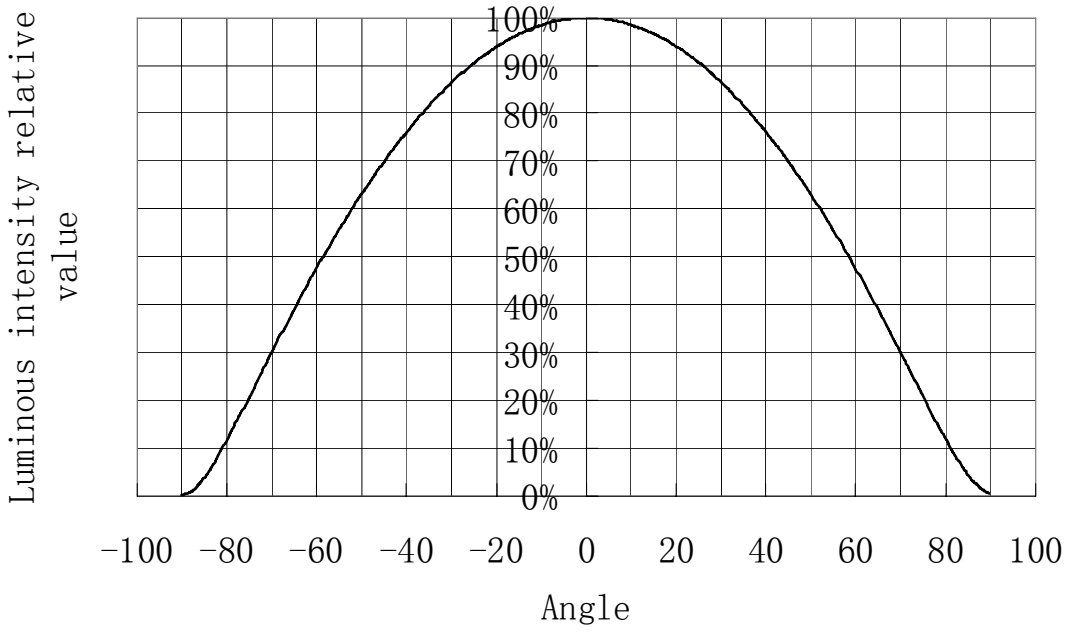
Relative Spectral Emission

V(λ) = Standard eye response curve
$\Phi_{rel} = f(\lambda)$; $T_A = 25\ °C$; $I_F = 20mA$



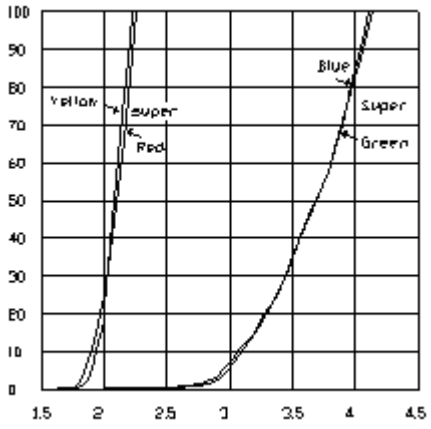
Radiation Characteristic

$\Phi_{rel} = f(\varphi)$; $T_A = 25\ °C$



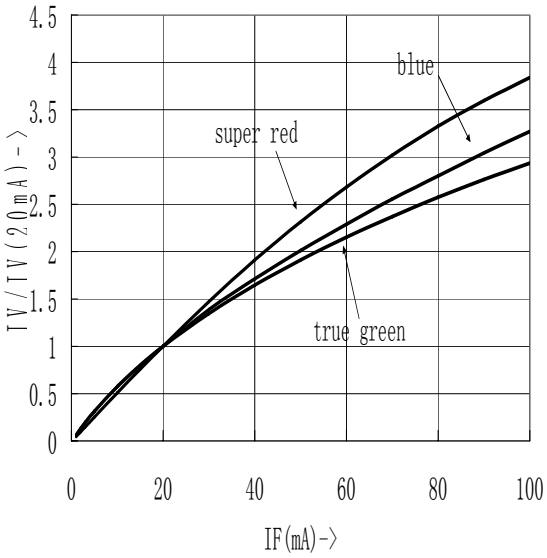
Forward Current

$I_F = f(V_F)$; $T_A = 25$ °C



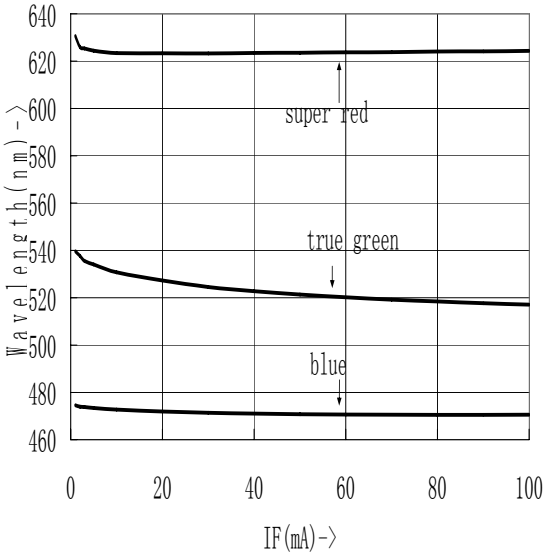
Relative Luminous Intensity

$I_V/I_{V(20mA)} = f(I_F)$; $T_A = 25°C$



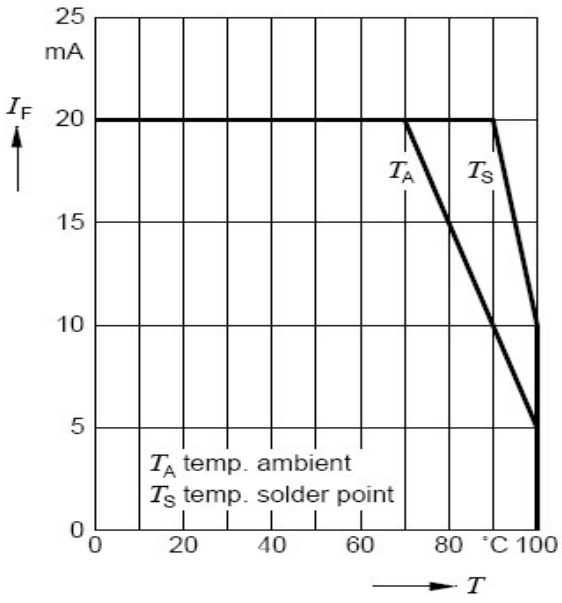
Chromaticity Coordinate Shift

x, y = f (I_F); $T_A = 25$ °C

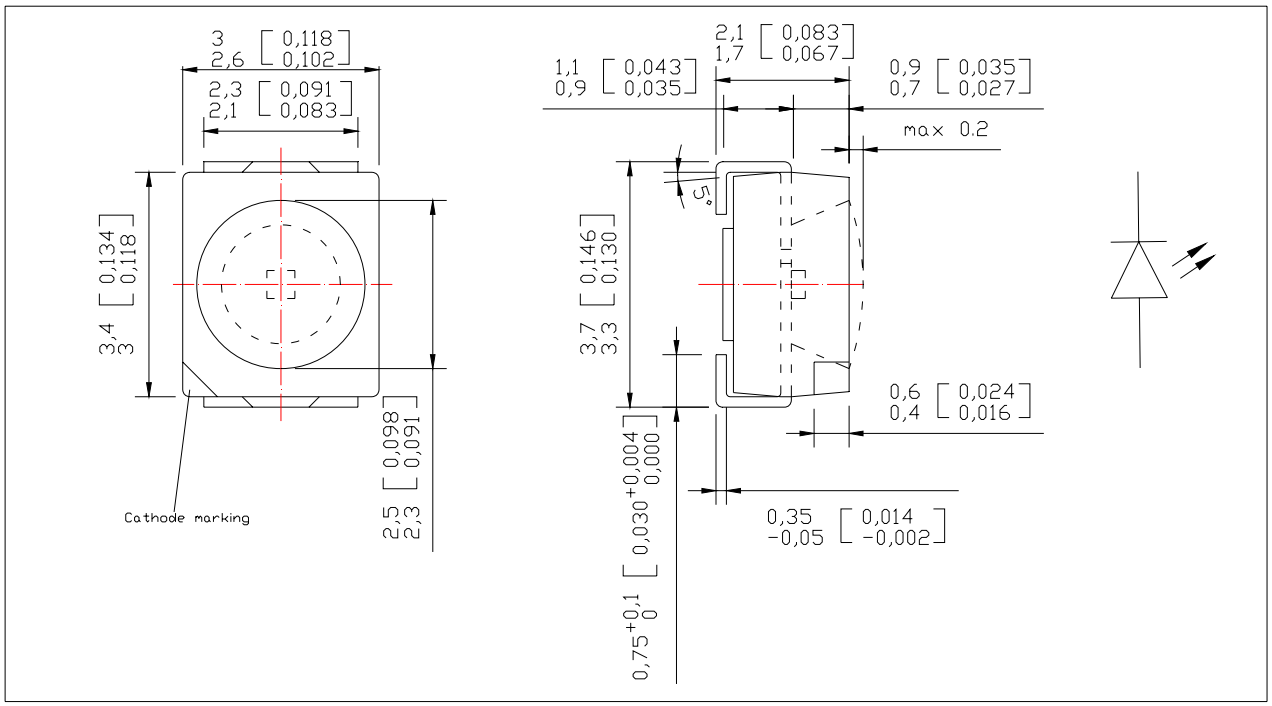


Max. Permissible Forward Current

$I_F = f(T)$

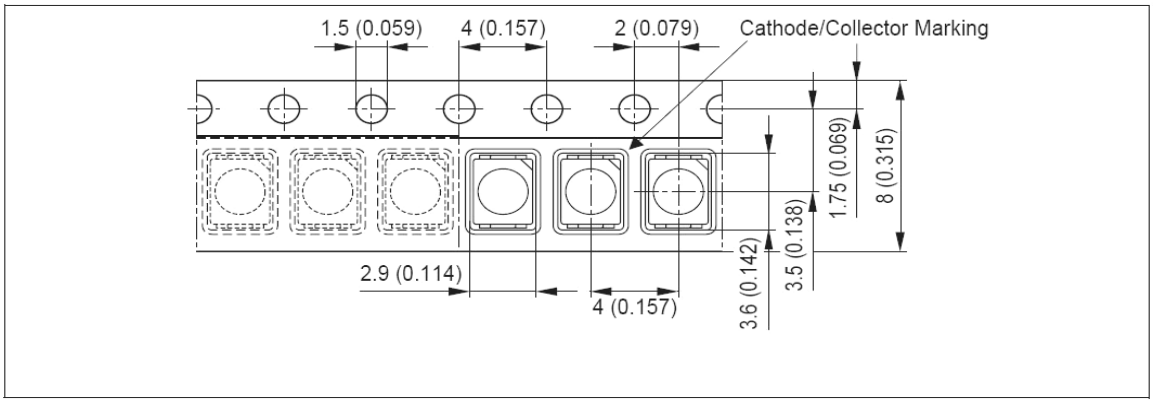


Package Outlines（±0.1mm）



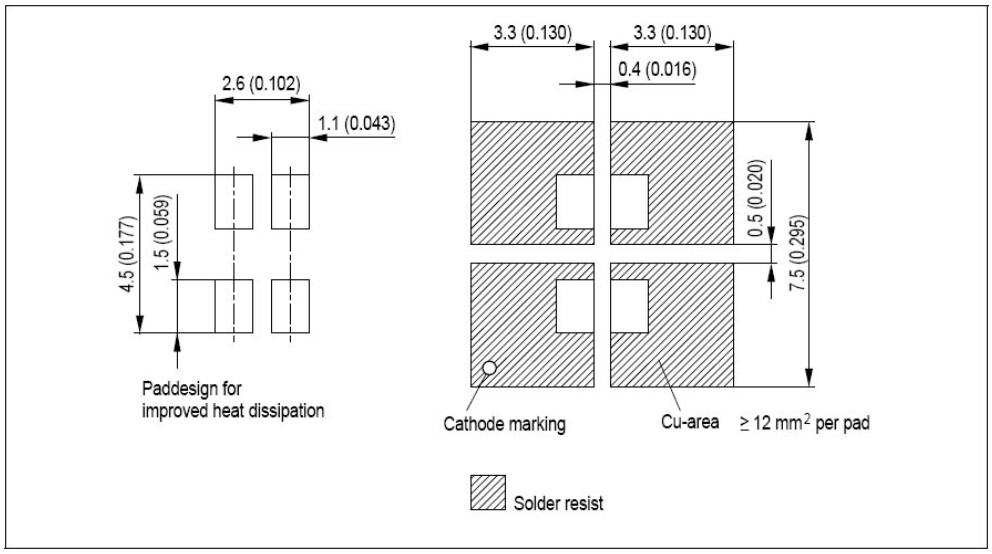
Method of Taping / Polarity and Orientation

Packing unit 2000/reel, ø180 mm



Recommended Solder Pad

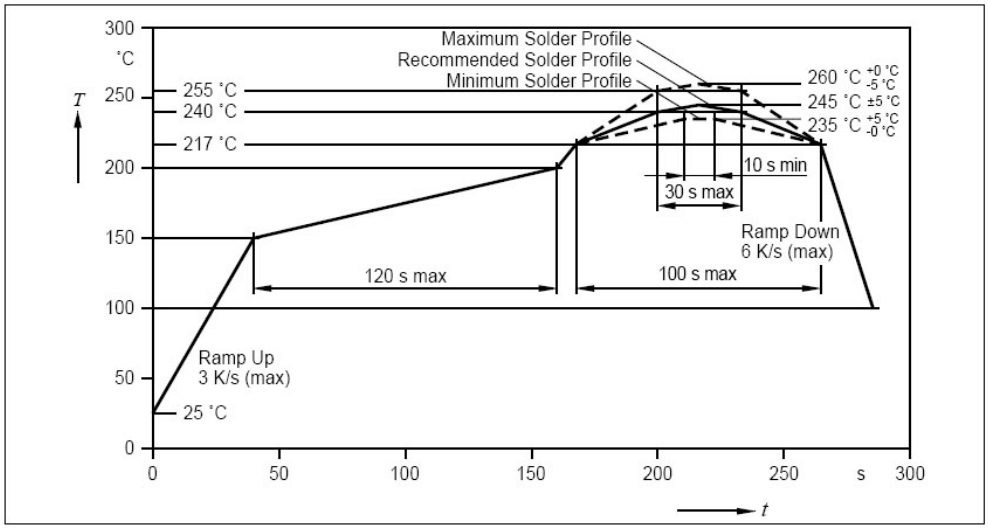
IR Reflow Soldering



Soldering Conditions

Preconditioning acc. to JEDEC Level 2

IR Reflow Soldering Profile for lead free soldering (acc. to J-STD-020B)



Caution

1. Recommended storage condition: At 20℃~30℃ and relative humidity 70% RH max.
2. After this bag is opened, devices that will be applied to infrared reflow, vapor-phase reflow, or equivalent soldering process must be:
   a. Completed within 24hours.
   b. Stored at less than 30% RH.
3. Devices require baking before mounting, if: 2a or 2b is not met.
4. If baking is required, devices must be baked under blow conditions: 12hours at 75℃±3℃.