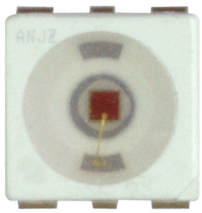
DOMINANT™
Opto Technologies
Innovating Illumination

DATA SHEET:

Extreme Power DomiLED

AlInGaP : D6x-SKG

Extreme Power DomiLED



With its significant power in terms brightness, viewing angle and variety of application possibilities, Extreme Power DomiLED truly is a standout performer! Ideal for automotive interior lighting as well as home, office and industrial applications, it is also a proven performer in electronic signs and signals.

Features:

> High brightness surface mount LED using thin film technology.
> 115° viewing angle.
> Low thermal resistance.
> Qualified according to JEDEC moisture sensitivity Level 2.
> Compatible to IR reflow soldering.
> Environmental friendly; RoHS compliance.
> Compliance to automotive standard; AEC-Q102.
> Superior Corrosion Resistance.

Applications:

> Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.
> Automotive: exterior applications, eg: signal lighting, Center High Mounted Stop Light (CHMSL), Rear Combination Light (RCL).

Optical Characteristics at Tj=25˚C

Part Number	Color	Viewing Angle˚	Luminous Flux @ IF = 140mA(lm) Appx. 1.2		
			Min.	Typ.	Max.
D6S-SKG-K3N2-1	Super Red, 632nm	115	9.35	13.9	20.6
D6A-SKG-NP3-4	Amber, 624nm	115	18.1	23.5	30.6
D6A-SKG-N3Q2-2	Amber, 615nm	115	20.6	26.8	34.8
● D6A-SKG-M3Q2-1	Amber, 617nm	115	15.8	23.5	34.8
D6Y-SKG-NP3-1	Yellow, 589nm	115	18.1	23.5	30.6
● D6Y-SKG-L3P2-1	Yellow, 589nm	115	12.2	18.1	26.8
D6G-SKG-L3N2-1	Green, 583nm	115	12.2	15.8	20.6

● Not for new design

Electrical Characteristics at Tj=25˚C

Part Number	Vf @ If = 140mA Appx. 3.1			V_r @ I_r = 10uA Appx. 6.1
	Min. (V)	Typ. (V)	Max. (V)	Min. (V)
D6x-SKG (except Green)	1.90	2.30	2.50	12
D6G-SKG	1.90	2.40	2.65	12

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	200	mA
Peak pulse current; (Ts=55 ˚C, tp ≤ 100µs, Duty cycle = 0.03)	300	mA
Reverse voltage *Appx. 6.1*	12	V
ESD threshold (HBM)	2	kV
LED junction temperature	125	˚C
Operating temperature	-40 … +115	˚C
Storage temperature	-40 … +125	˚C
Thermal resistance		
- Real Thermal Resistance		
Junction / solder point, $R_{th\ JS\ real}$		
Super Red & Amber (typ = 35)	45	K/W
Yellow & Green (typ = 38)	45	K/W
- Electrical Thermal Resistance		
Junction / solder point, $R_{th\ JS\ el}$		
Super Red & Amber (typ = 23)	30	K/W
Yellow & Green (typ = 33)	38	K/W

Wavelength Grouping at Tj= 25˚C

Color	Group	Wavelength distribution (nm) *Appx. 2.2*
D6S, Super Red	Full	627 - 639
D6A; Amber	Full	612 - 627
	W	612 - 616
	X	616 - 620
	Y	620 - 624
	Z	624 - 627
D6Y; Yellow	Full	586 - 595
	X	586 - 589
	Y	589 - 592
	Z	592 - 595
D6G; Green	Full	580 - 586
	X	580 - 583
	Y	583 - 586

Luminous Flux Group

Brightness Group	Luminous Flux *Appx. 1.2* (lm)
K3	9.35 ... 10.7
L2	10.7 ... 12.2
L3	12.2 ... 13.9
M2	13.9 ... 15.8
M3	15.8 ... 18.1
N2	18.1 ... 20.6
N3	20.6 ... 23.5
P2	23.5 ... 26.8
P3	26.8 ... 30.6
Q2	30.6 ... 34.8

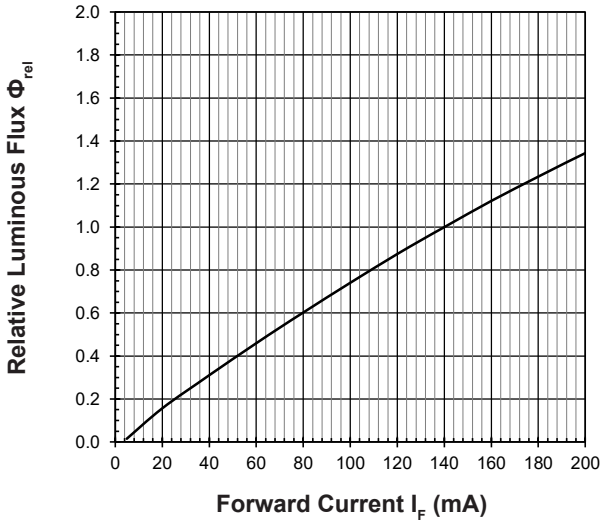
Vf Bining (Optional)

Vf @ If = 140mA	Forward Voltage (V) *Appx. 3.1*
V1	1.90 ... 2.05
V2	2.05 ... 2.20
V3	2.20 ... 2.35
V4	2.35 ... 2.50
V5	2.50 ... 2.65

Please consult sales and marketing for special part number to incorporate Vf binning.

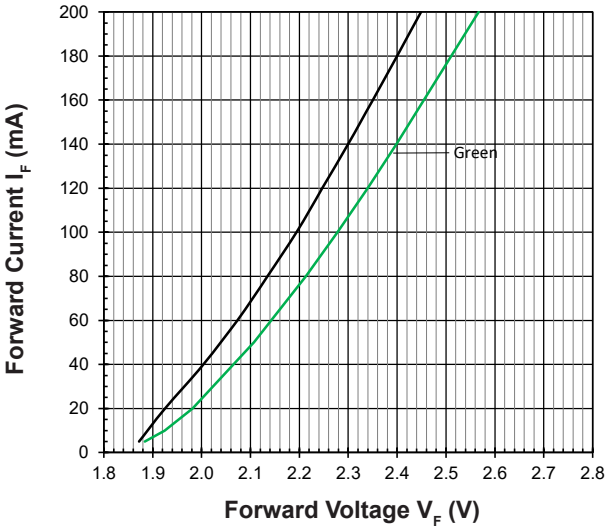
Relative Luminous Flux Vs Forward Current

$\Phi_V/\Phi_V(140mA) = f(I_F)$; $T_j = 25°C$



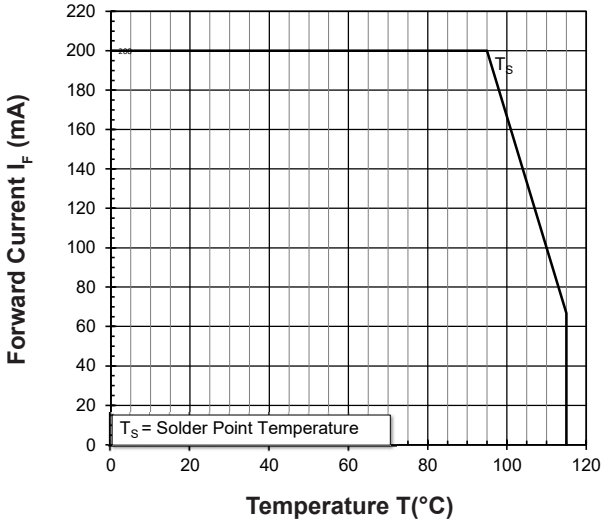
Forward Current Vs Forward Voltage

$I_F = f(V_F)$; $T_j = 25°C$



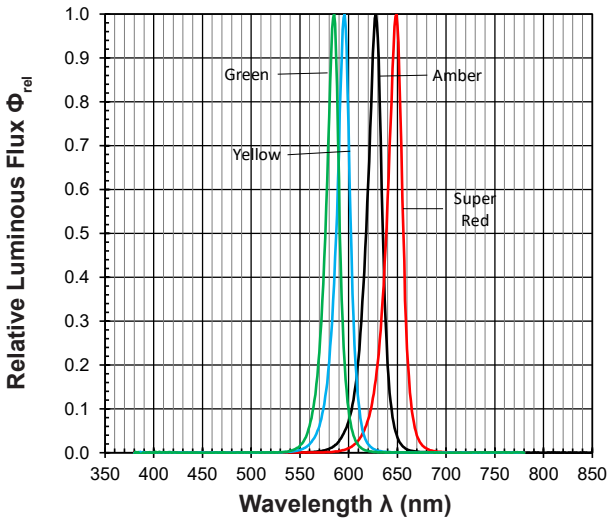
Maximum Current Vs Temperature

$I_F = f(T)$



Relative Spectral Emission

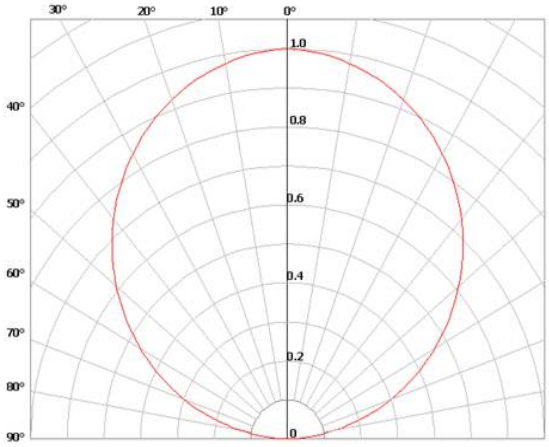
$\Phi_{rel} = f(\lambda)$; $T_j = 25°C$; $I_F = 140mA$



Allowable Forward Current Vs Duty Ratio

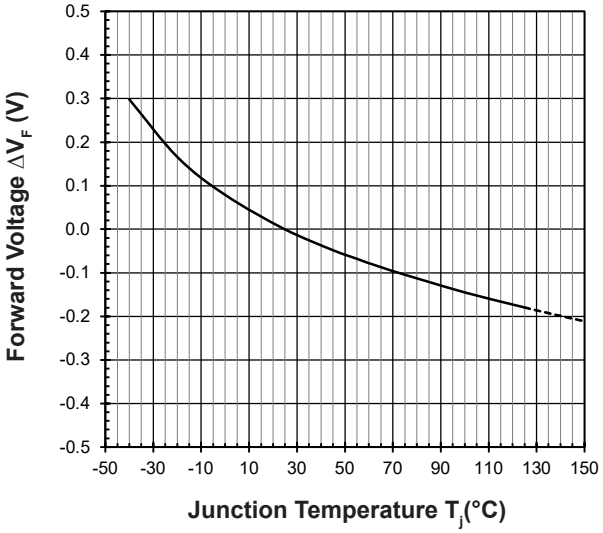
($T_s = 55°C$; $t_p \leq 100\mu s$)

Radiation Pattern



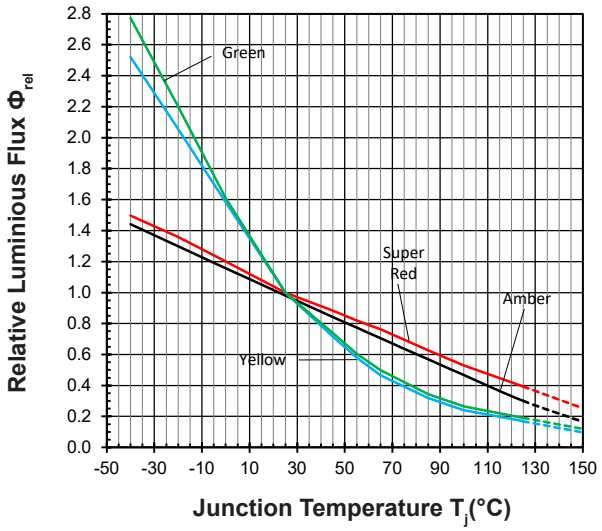
Forward Voltage Vs Junction Temperature

$\Delta V_F = V_F - V_F(25°C) = f(T_j)$; I_F =140mA



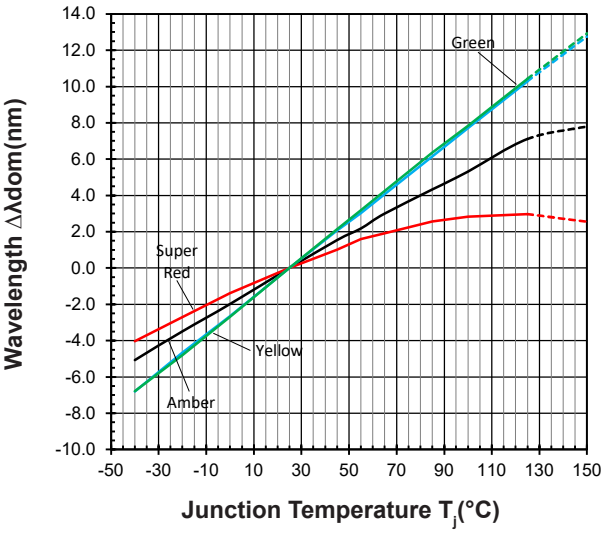
Relative Luminious Flux Vs Junction Temperature

$\Phi V/\Phi V(25°C) = f(T_j)$; I_F = 140mA

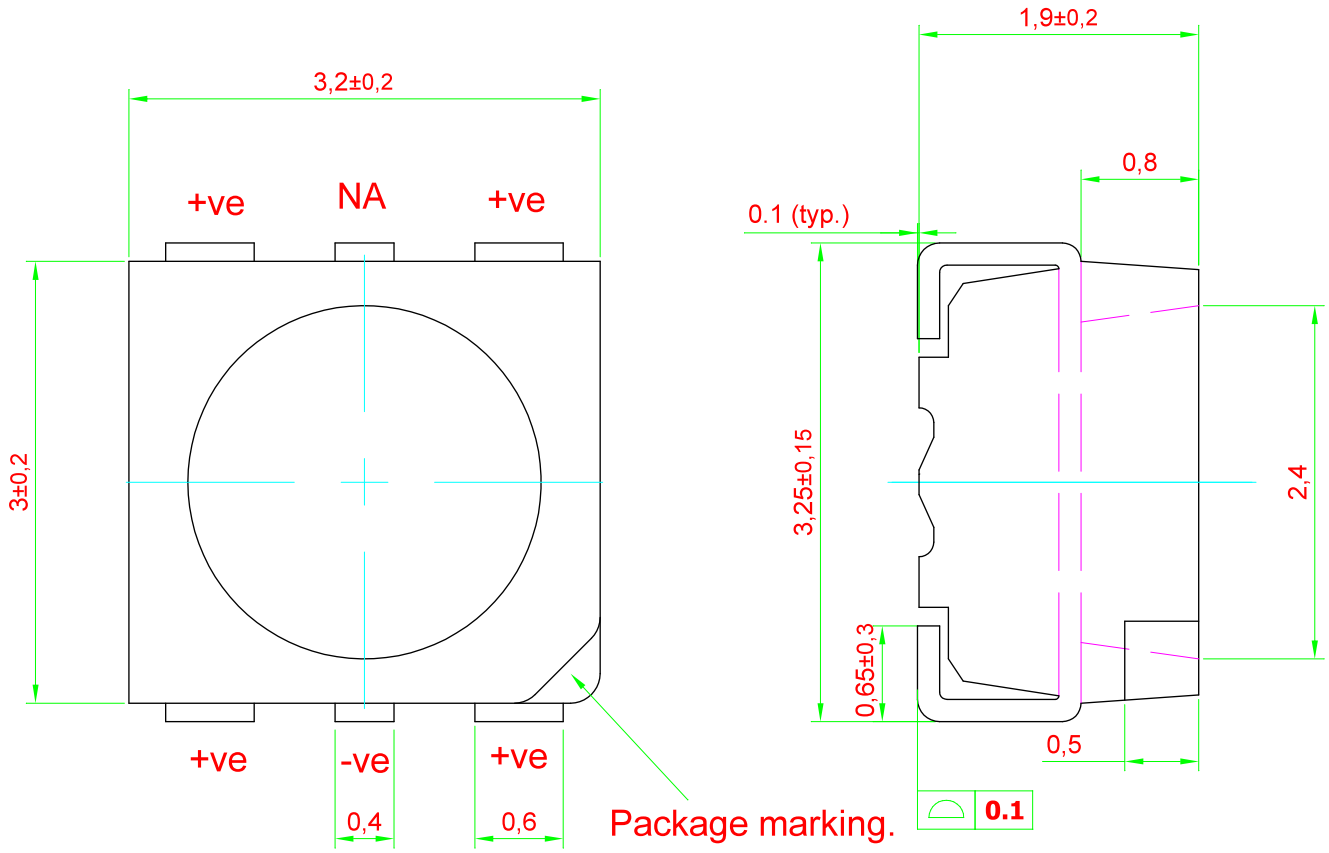


Wavelength Vs Junction Temperature

$\Delta\lambda dom = \lambda dom - \lambda dom\ (25°C) = f(T_j)$; I_F = 140mA



Extreme Power DomiLED • AlInGaP : D6x-SKG Package Outlines

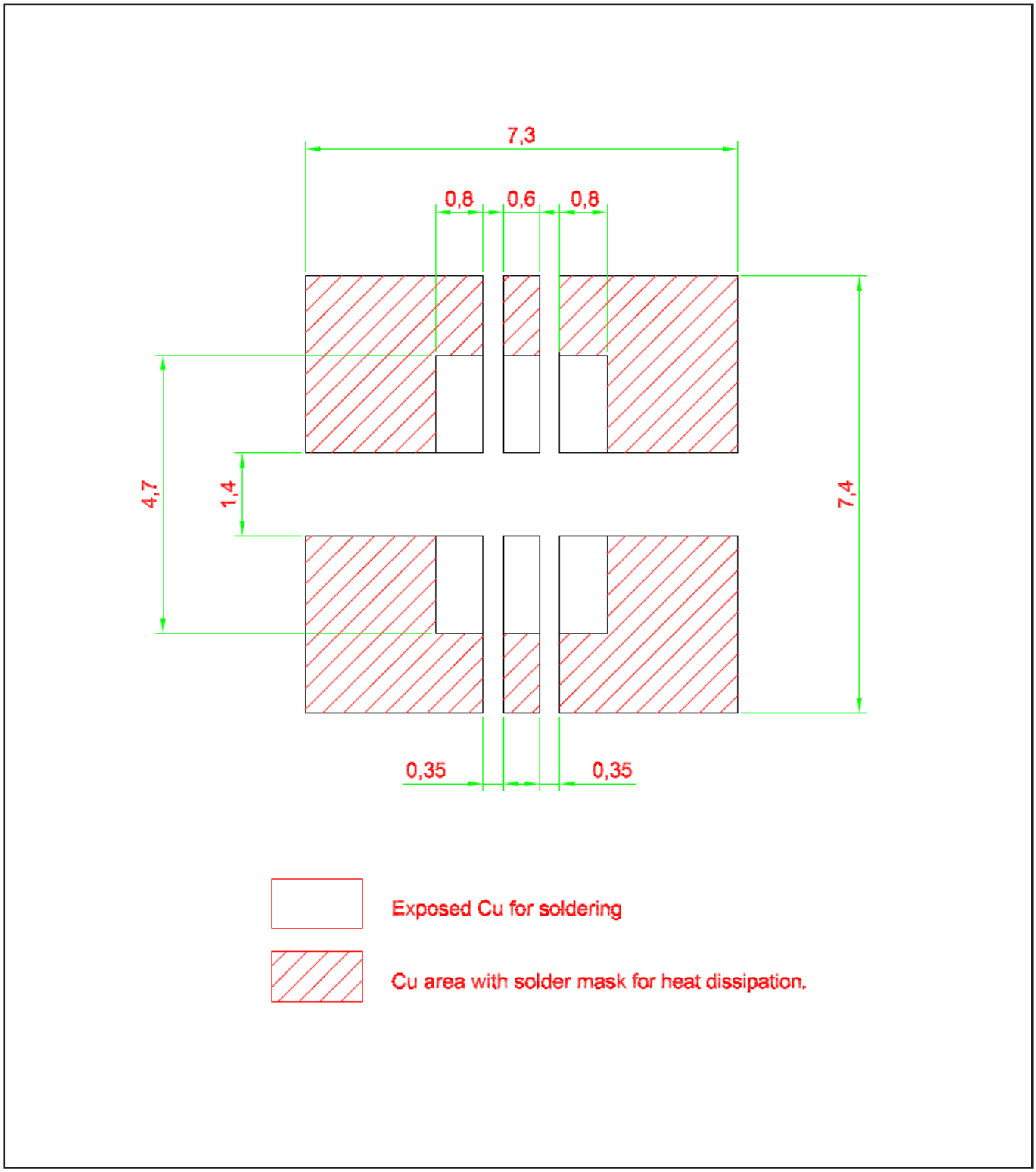


Note : Primary thermal path is through Anode lead of LED package
General Tolerance ± 0.1

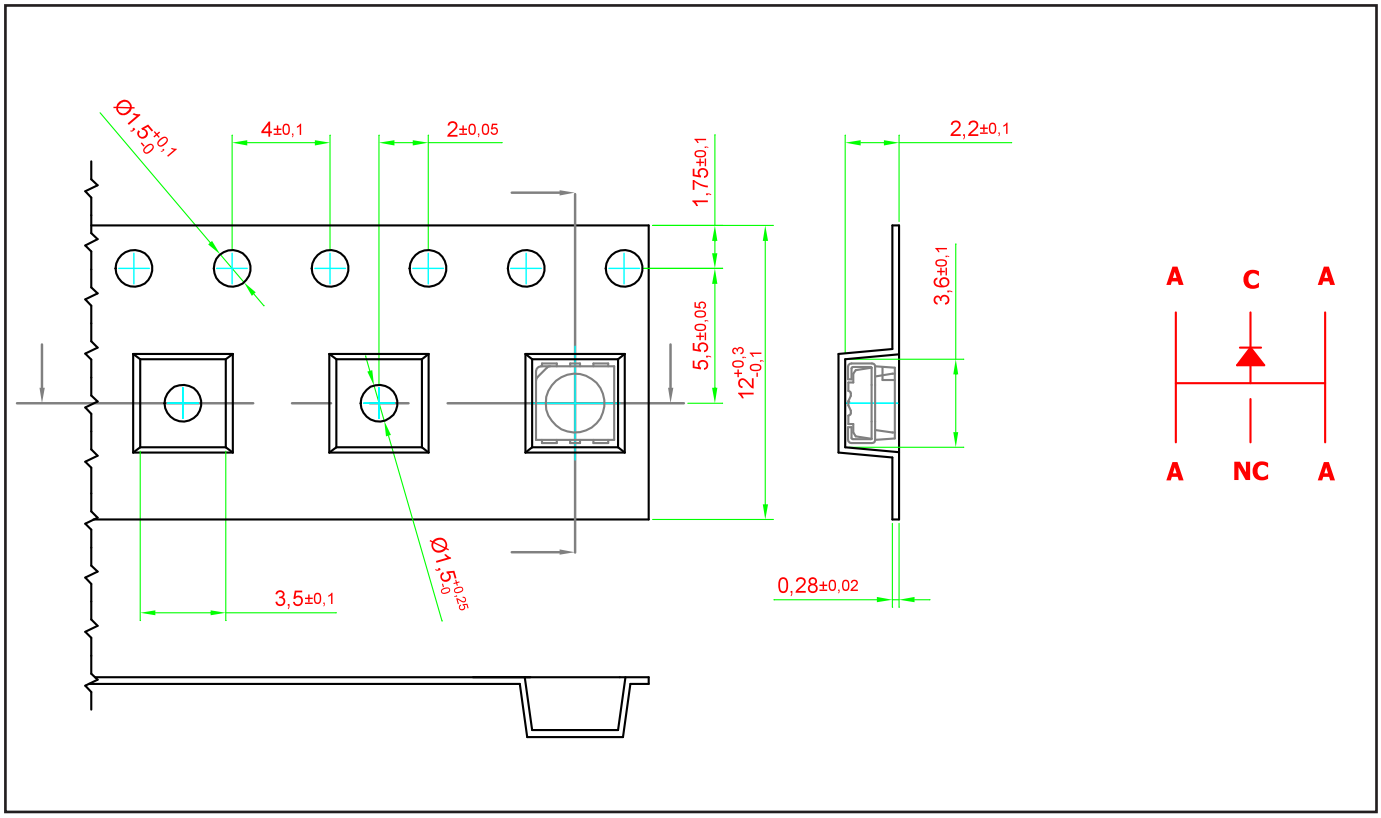
Material

	Material
Lead-frame	Cu Alloy With Au Plating
Package	High Temperature Resistant Plastic
Encapsulant	Silicone Resin
Soldering Leads	Au Plating

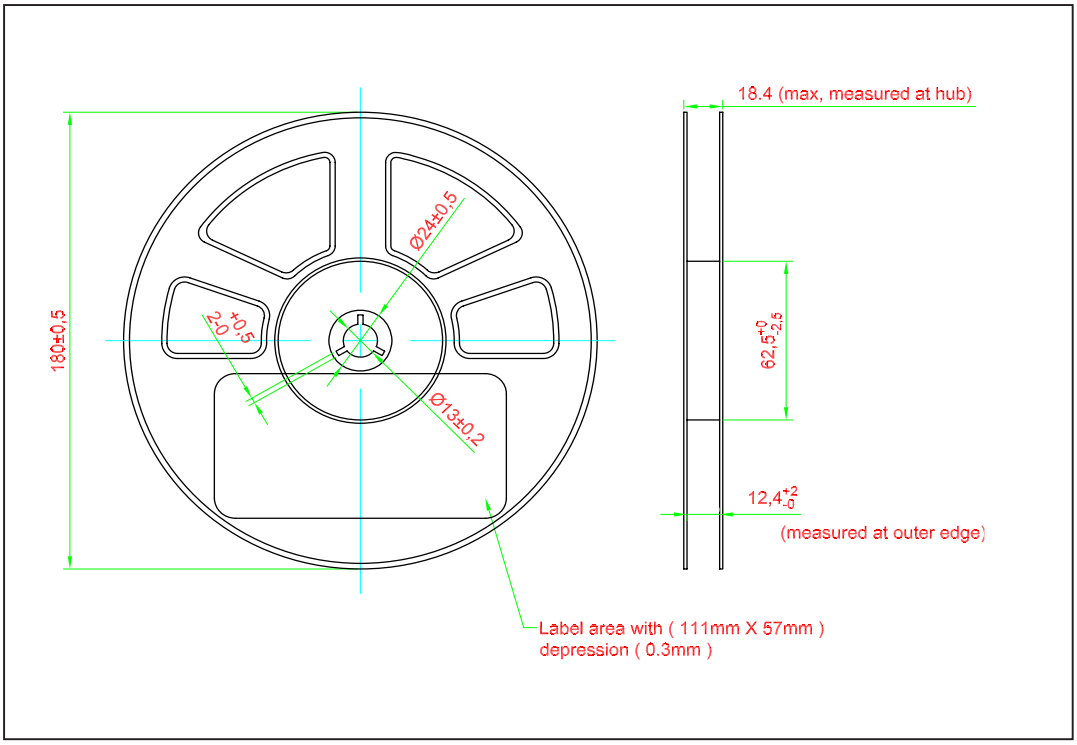
Recommended Solder Pad

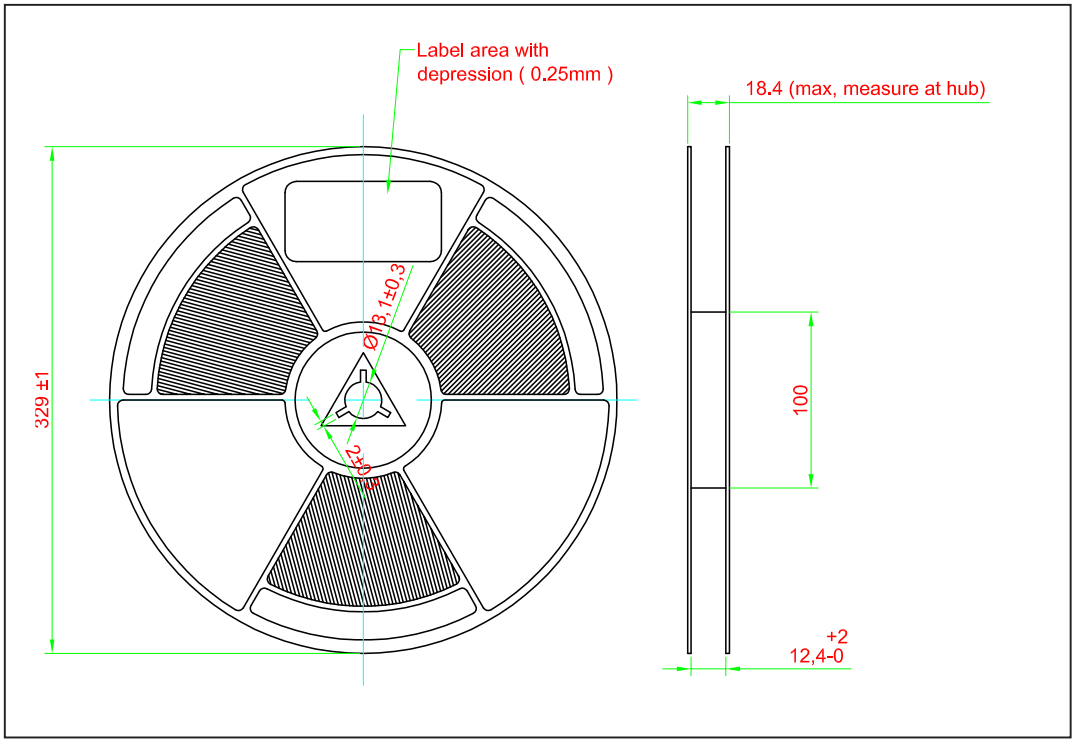


Taping and orientation



Packaging Specification



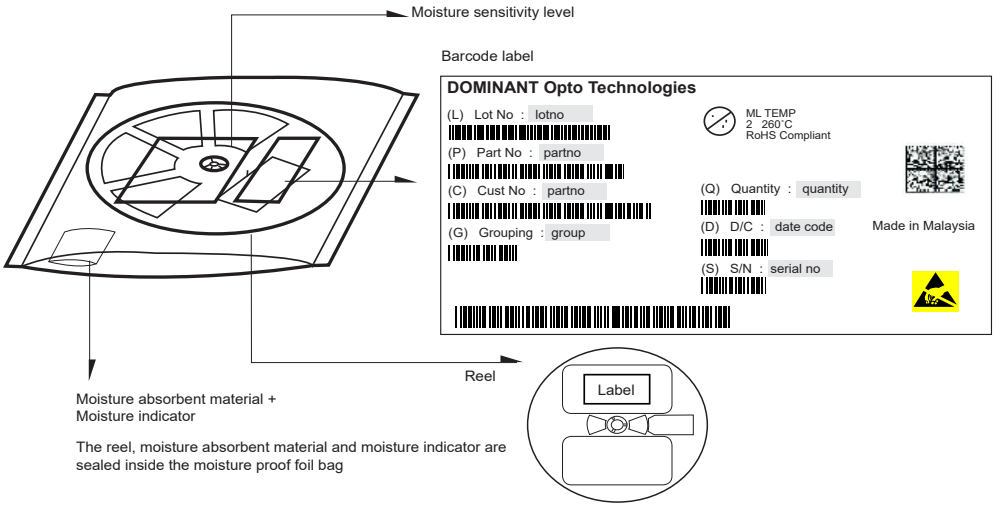


	Reel Diameter (mm)	Quantity (pcs)	*Ordering Number
Standard Packing	180	1000	D6x-SKG-xxx-x
Optional Packing	329	4000	D6x-SKG-xxx-x-4

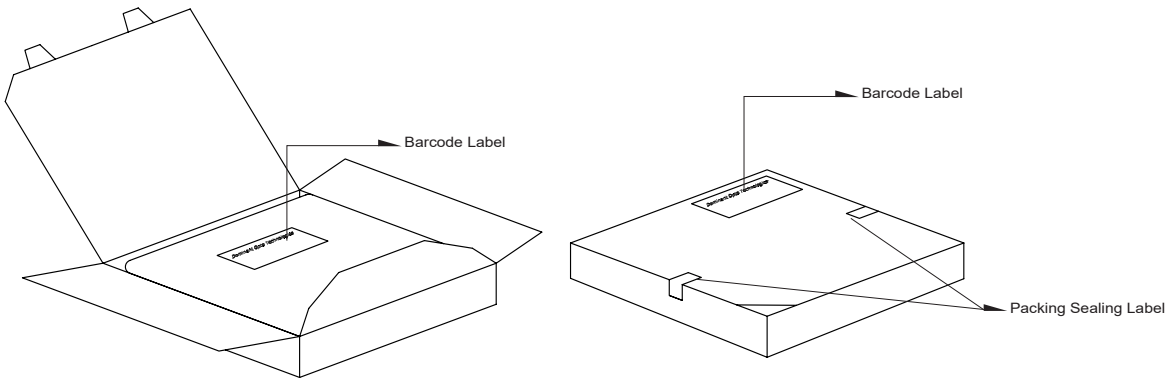
Notes:

* For ordering purpose only. Please consult sales and marketing for details.

Packaging Specification



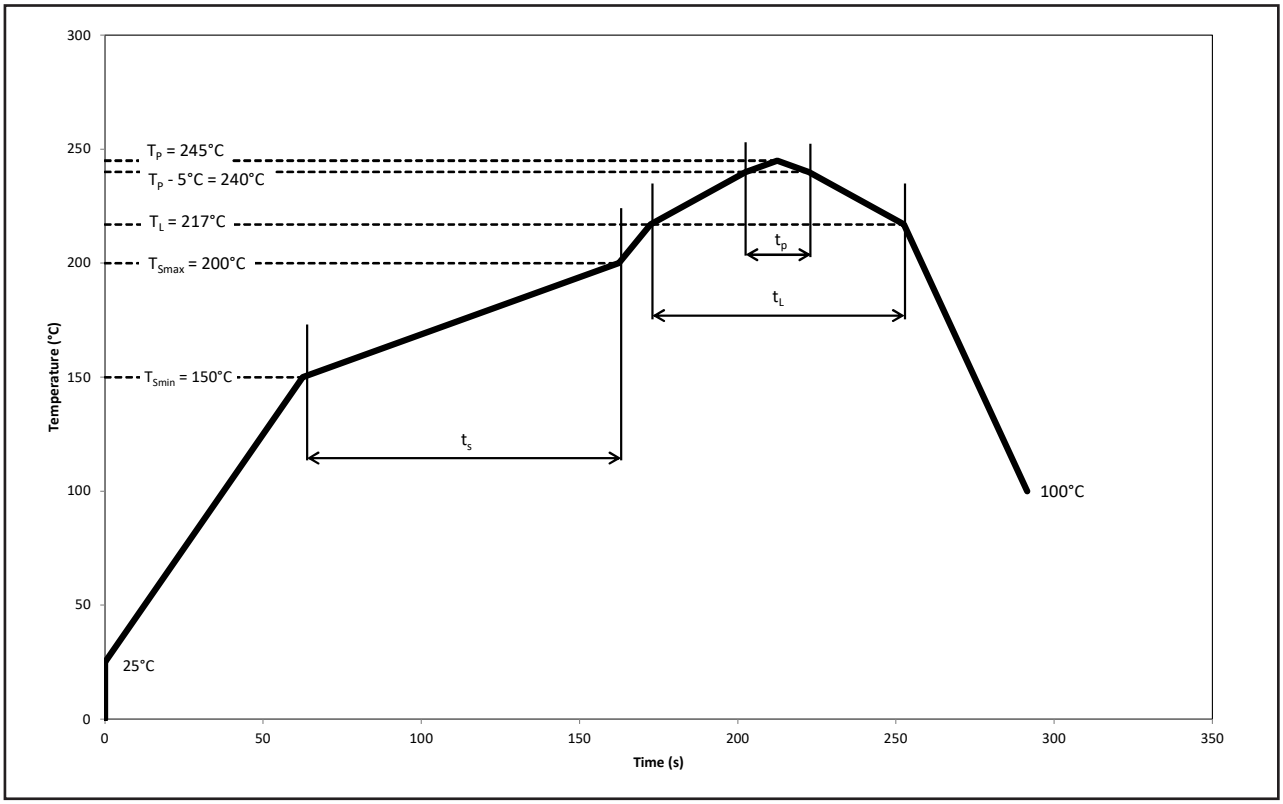
Quantity per bag (pcs)	Average 1pc Extreme Power DomiLED	1 completed bag (gram)
1000	0.036	240 ± 10
4000	0.036	750 ± 10



Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 20
329	345 x 345 x 20

Recommended Pb-free Soldering Profile

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



Profile Feature	Symbol	Pb-Free Assembly			Unit
		Min.	Recommended	Max.	
Ramp-up rate to preheat 25°C to T_{smin}	-	-	2	3	°C/s
Time t_S T_{smin} to T_{smax}	t_S	60	100	120	s
Ramp-up rate to peak T_L to T_P	-	-	2	3	°C/s
Liquidous temperature	T_L	-	217	-	°C
Time above liquidous temperature	t_L	60	80	150	s
Peak temperature	T_p	-	245	260	°C
Time within 5°C of the specified peak temperature T_P - 5°C	t_p	10	20	30	s
Ramp-down rate T_P to 100°C	-	-	3	6	°C/s
Time 25°C to T_P	-	-	-	480	s

Appendix

1) Brightness:

1.1 Luminous intensity is measured at current pulse 25 ms(typ) with an internal reproducibility of ± 8 % and an expanded uncertainty of ± 11 % (according to GUM with a coverage factor of k=3).

1.2 Luminous flux is measured at current pulse 25 ms(typ) with an internal reproducibility of ± 8 % and an expanded uncertainty of ± 11 % (according to GUM with a coverage factor of k=3).

1.3 Radiant intensity is measured at current pulse 25 ms(typ) with an internal reproducibility of ± 8 % and an expanded uncertainty of ± 11 % (according to GUM with a coverage factor of k=3).

1.4 Radiant flux is measured at current pulse 25 ms(typ) with an internal reproducibility of ± 8 % and an expanded uncertainty of ± 11 % (according to GUM with a coverage factor of k=3).

2) Color:

2.1 Chromaticity coordinate groups are measured at current pulse 25 ms(typ) with an internal reproducibility of ± 0.005 and an expanded uncertainty of ± 0.01 (accordingly to GUM with a coverage factor of k=3).

2.2 Dominant wavelength is measured at current pulse 25 ms(typ) with an internal reproducibility of ± 0.5nm and an expanded uncertainty of ± 1nm (accordingly to GUM with a coverage factor of k=3).

3) Voltage:

3.1 Forward Voltage, Vf is measured when a current pulse of 8 ms(typ) with an internal reproducibility of ± 0.05V and an expanded uncertainty of ± 0.1V (accordingly to GUM with a coverage factor of k=3).

4) Typical Values:

4.1 At special conditions of LED manufacturing processes, typical data or calculated correlations of technical parameters only reflect the statistical figures. But not necessarily correspond to the actual parameters of each single product, which could differ from the typical data or calculated correlations or the typical characteristic line. These typical data may change whenever technical improvements happen.

5) Tolerance of Measure

5.1 Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimension are specifiec in mm.

6) Reverse Voltage:

6.1 Not designed for reverse operation. Continuous reverse voltage can cause migration and LED damage.

Revision History

Page	Subjects	Date of Modification
2, 10, 11	Not for New Design: D6Y-SKG-L3P2-1 Add New Partno: D6Y-SKG-NP3-1 Typo Error: D6A-SKG-N2P-4 to D6A-SKG-NP3-4 Typo Error on Reels Update Package Specification	28 Jun 2018
2	Add New Partno: D6G-SKG-L3N2-1	11 Jan 2019
7, 9	Typo Error on Package Outline & Taping and Orientation	21 Oct 2019
1, 2, 5, 6	Update Features Update Peak Pulse Current Update Graph	05 Feb 2020
10, 11, 12, 13	Add in Bigger Reel Size Option Update Recommended Pb-free Soldering Profile	18 Mar 2021
7, 9	Update Package Outline Update Taping and Orientation	15 Oct 2021
3, 5, 6	Update Thermal resistance Update Graph	13 Oct 2022

NOTE

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Dispose of product is in accordance with local, regional, national and international regulations.

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DOMINANT Opto Technologies is a dynamic company that is amongst the world's leading automotive LED manufacturers. With an extensive industry experience and relentless pursuit of innovation, DOMINANT's state-of-art manufacturing and development capabilities have become a trusted and reliable brand across the globe. More information about DOMINANT Opto Technologies, an IATF 16949 and ISO 14001 certified company, can be found under http://www.dominant-semi.com.

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