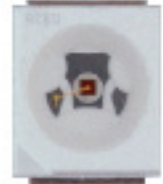


## Domiled

Synonymous with function and performance, the Domiled series is perfectly suited for a variety of cross-industrial applications due to its small package outline, durability and superior brightness.



## Features:

- > High brightness surface mount LED using thin film technology.
- > 120° viewing angle.
- > Small package outline (LxWxH) of 3.2 x 2.8 x 1.8mm.
- > Qualified according to JEDEC moisture sensitivity Level 2.
- > Compatible to both IR reflow soldering.
- > Environmental friendly; RoHS compliance.
- > Compliance to automotive standard; AEC-Q102.
- > Superior Corrosion Resistant.



## Applications:

- > Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.
- > Automotive : exterior applications, eg: Turn Signal, Center Mount Stop Light (CHMSL), Rear Combination Lamp (RCL)
- > Signage: full colour display video notice board, signage, special effect lighting.



**Optical Characteristics at Tj=25°C**

Part Ordering Number	Color	Viewing Angle°	Luminous Intensity <i>Appx. 1.1</i> @ IF = 30mA IV (mcd)			Luminous Flux <i>Appx. 1.2</i> @ IF = 30mA IV (mlm)
			Min.	Typ.	Max.	Typ.
DRA-HKS-WX1-4	Amber, 624nm	120	1125.0	1400.0	2240.0	4200.00
DRA-HKS-W2X-2	Amber, 615nm	120	1400.0	2240.0	2850.0	6720.00
● DRA-HKS-W2X-1	Amber, 615nm	120	1400.0	2240.0	2850.0	6589.00

● Not for new design

**Electrical Characteristics at Tj=25°C**

Part Number	Min. (V)	Vf @ If = 30mA <i>Appx. 3.1</i>			Vr @ Ir = 10uA <i>Appx. 6.1</i>
		Typ. (V)	Max. (V)	Min. (V)	
DRx-HKS	1.9	2.1	2.5	12	

**Absolute Maximum Ratings**

	Maximum Value	Unit
DC forward current	50	mA
Peak pulse current; (Ts=55 °C, tp ≤ 100µs, Duty cycle = 0.03)	100	mA
Reverse voltage <i>Appx. 6.1</i>	12	V
ESD threshold (HBM)	2	kV
LED junction temperature	125	°C
Operating temperature	-40 ... +115	°C
Storage temperature	-40 ... +125	°C
Power dissipation (at room temperature)	140	mW
Thermal resistance (Rated current = 30mA, Ts = 25 °C)		
- Real Thermal Resistance		
Junction / ambient, R <sub>th JA real</sub>	360	K/W
Junction / solder point, R <sub>th JS real</sub>	150	K/W
- Electrical Thermal Resistance		
Junction / ambient, R <sub>th JA el</sub>	250	K/W
Junction / solder point, R <sub>th JS el</sub>	110	K/W
(Mounting on FR4 PCB, pad size ≥ 16 mm <sup>2</sup> per pad)		

### Wavelength Grouping at Tj=25°C

Color	Group	Wavelength distribution (nm) <i>Appx. 3.1</i>
DRA; Amber	Full	612 - 627
	W	612 - 616
	X	616 - 620
	Y	620 - 624
	Z	624 - 627

### Luminous Intensity Group at Tj=25°C

Brightness Group	Luminous Intensity <i>Appx. 1.1</i> IV (mcd)
W1	1125.0 ... 1400.0
W2	1400.0 ... 1800.0
X1	1800.0 ... 2240.0
X2	2240.0 ... 2850.0

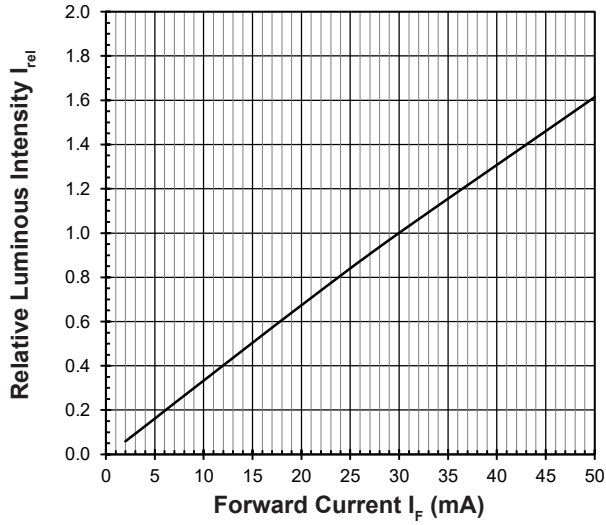
### Vf Binning (Optional)

Vf @ If = 30mA	Forward Voltage (V) <i>Appx. 3.1</i>
V1	1.90 ... 2.05
V2	2.05 ... 2.20
V3	2.20 ... 2.35
V4	2.35 ... 2.50

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

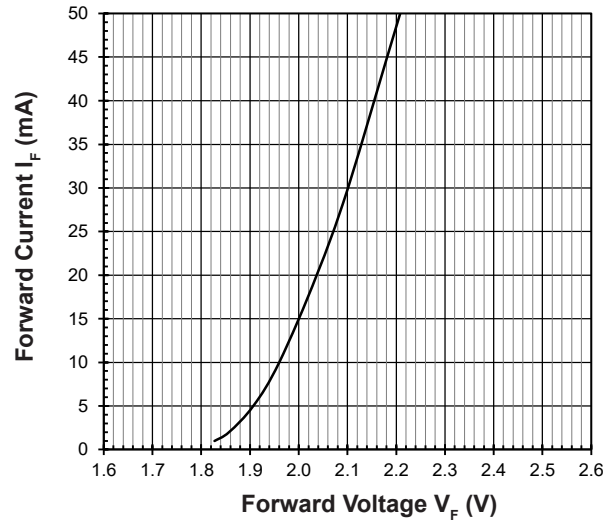
**Relative Luminous Intensity Vs Forward Current**

$I_v/I_v(30\text{mA}) = f(I_F); T_j = 25^\circ\text{C}$



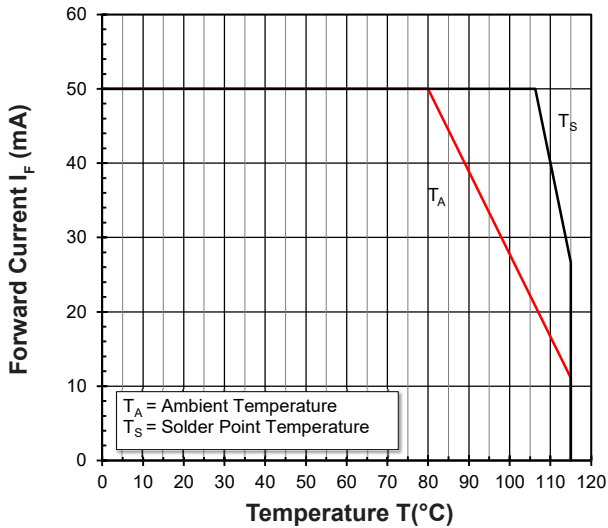
**Forward Current Vs Forward Voltage**

$I_F = f(V_F); T_j = 25^\circ\text{C}$



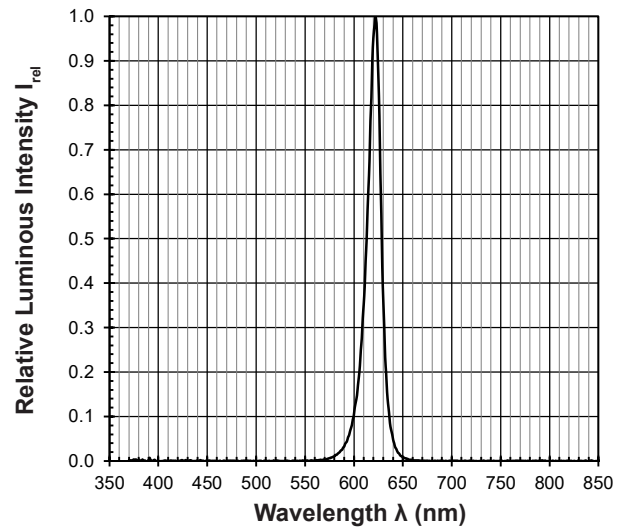
**Maximum Current Vs Temperature**

$I_F = f(T)$



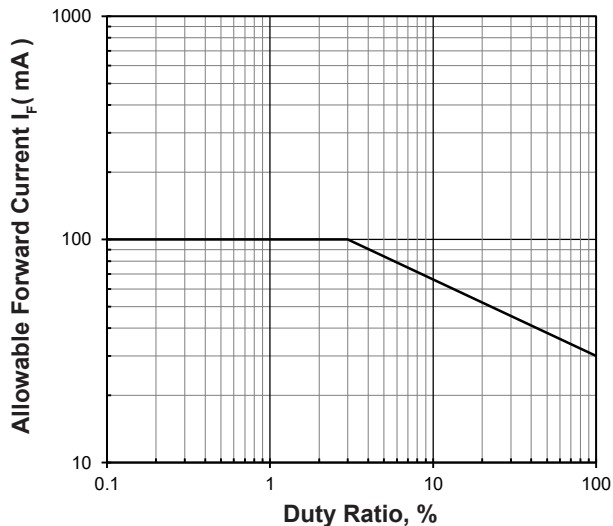
**Relative Spectral Emission**

$I_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 30\text{mA}$

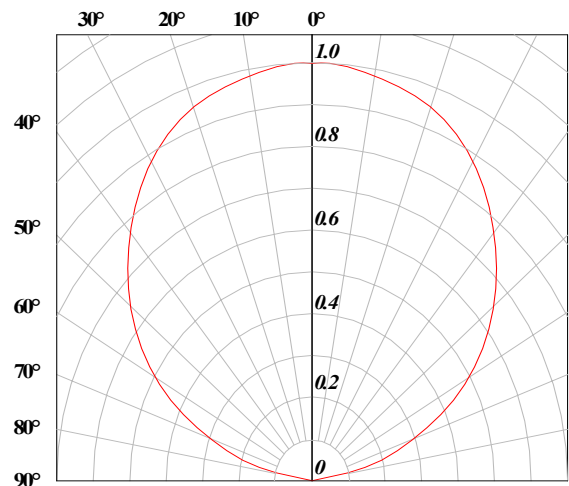


**Allowable Forward Current Vs Duty Ratio**

$(T_s = 55^\circ\text{C}; t_p \leq 100\mu\text{s})$

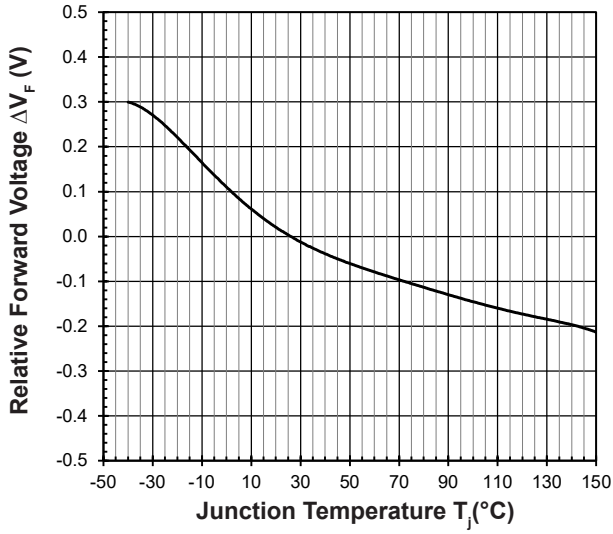


**Radiation Pattern**



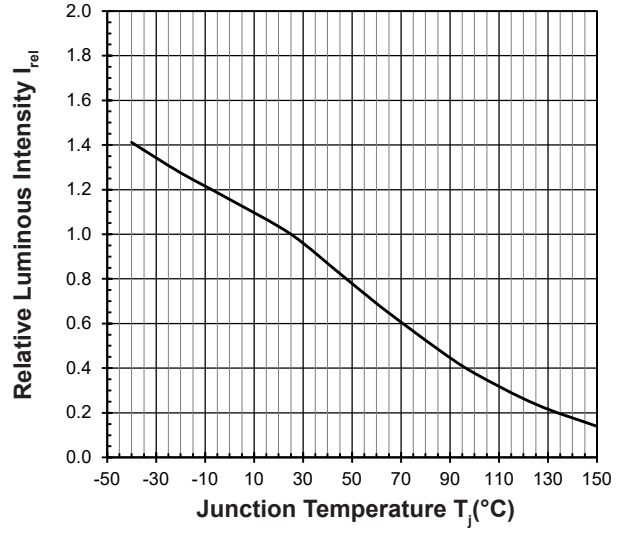
**Relative Forward Voltage Vs Junction Temperature**

$\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j); I_F = 30\text{mA}$



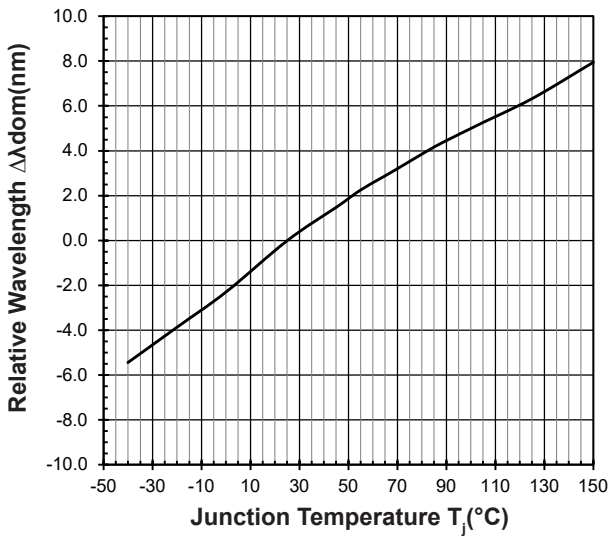
**Relative Luminous Intensity Vs Junction Temperature**

$I_v/I_v(25^\circ\text{C}) = f(T_j); I_F = 30\text{mA}$

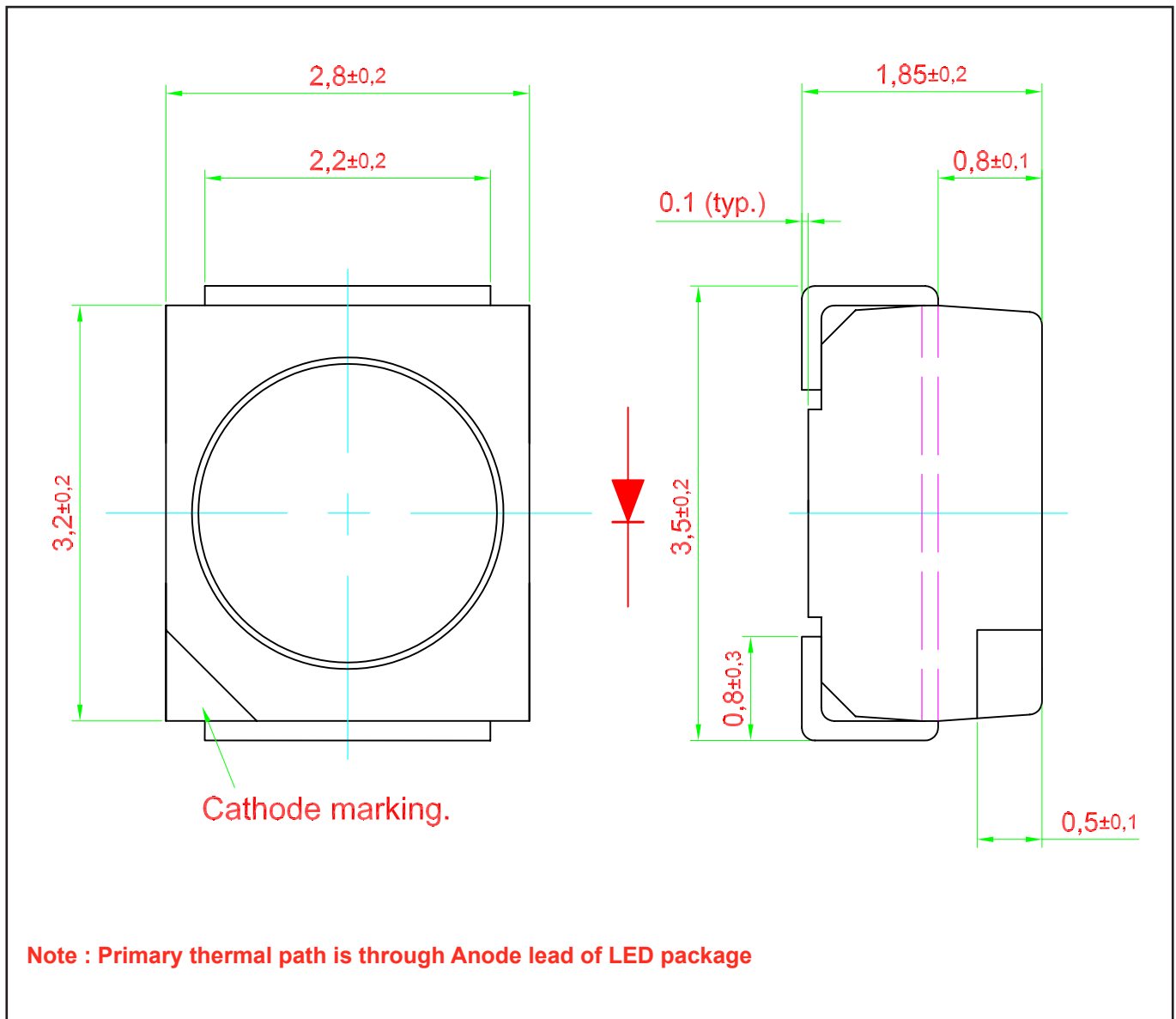


**Relative Wavelength Vs Junction Temperature**

$\Delta \lambda_{dom} = \lambda_{dom} - \lambda_{dom}(25^\circ\text{C}) = f(T_j); I_F = 30\text{mA}$



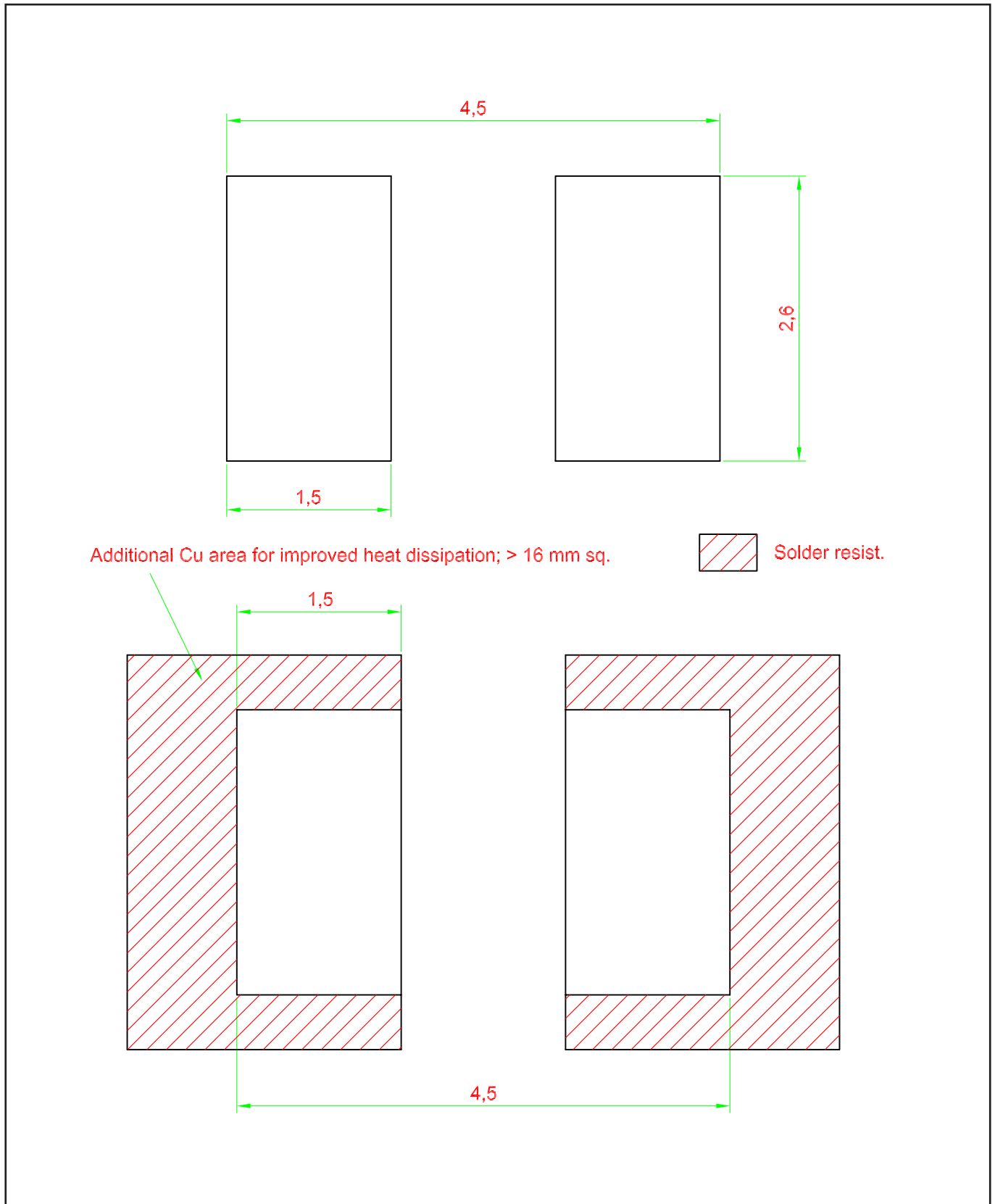
**DomiLED • AllnGaP : DRx-HKS Package Outlines**



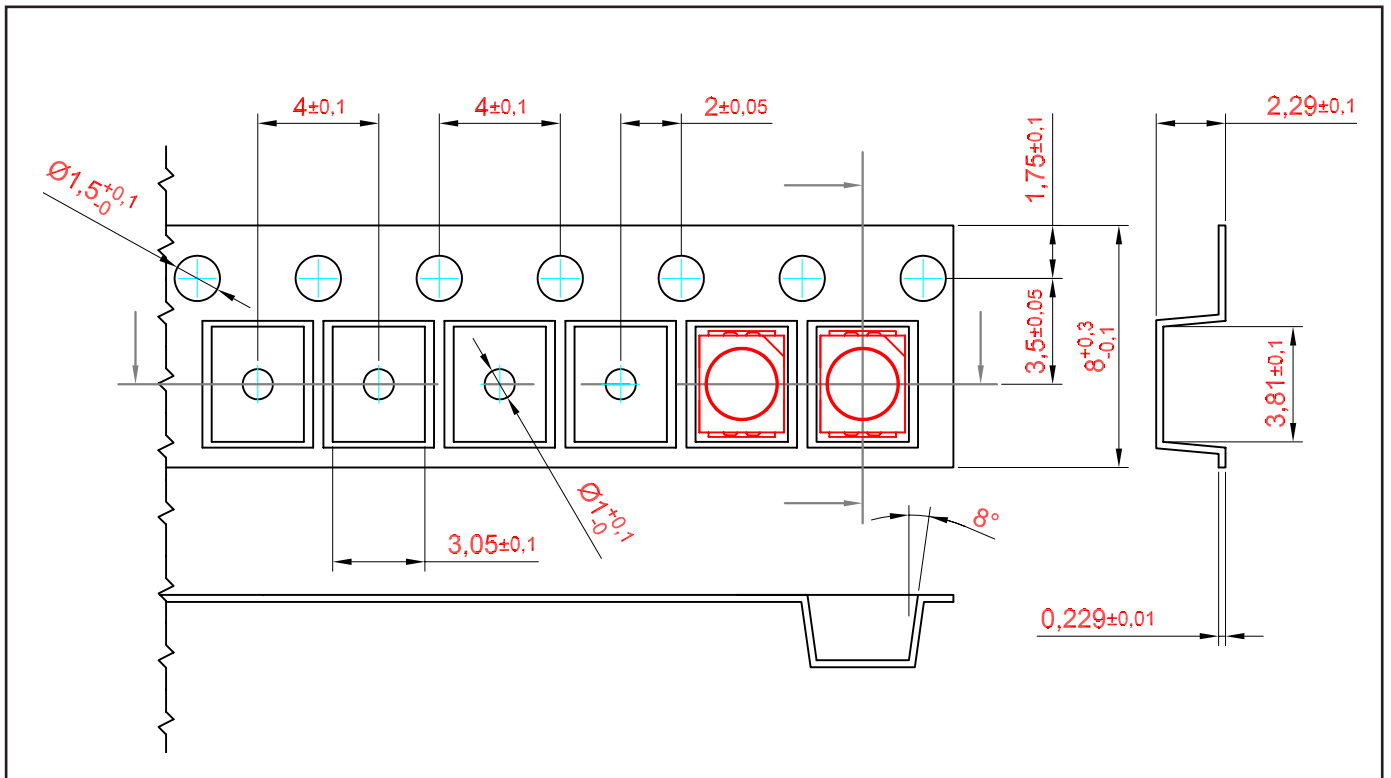
**Material**

	Material
Lead-frame	Cu Alloy With Au Plating
Package	High Temperature Resistant Plastic, PPA
Encapsulant	Epoxy
Soldering Leads	Au Plating

**Recommended Solder Pad**

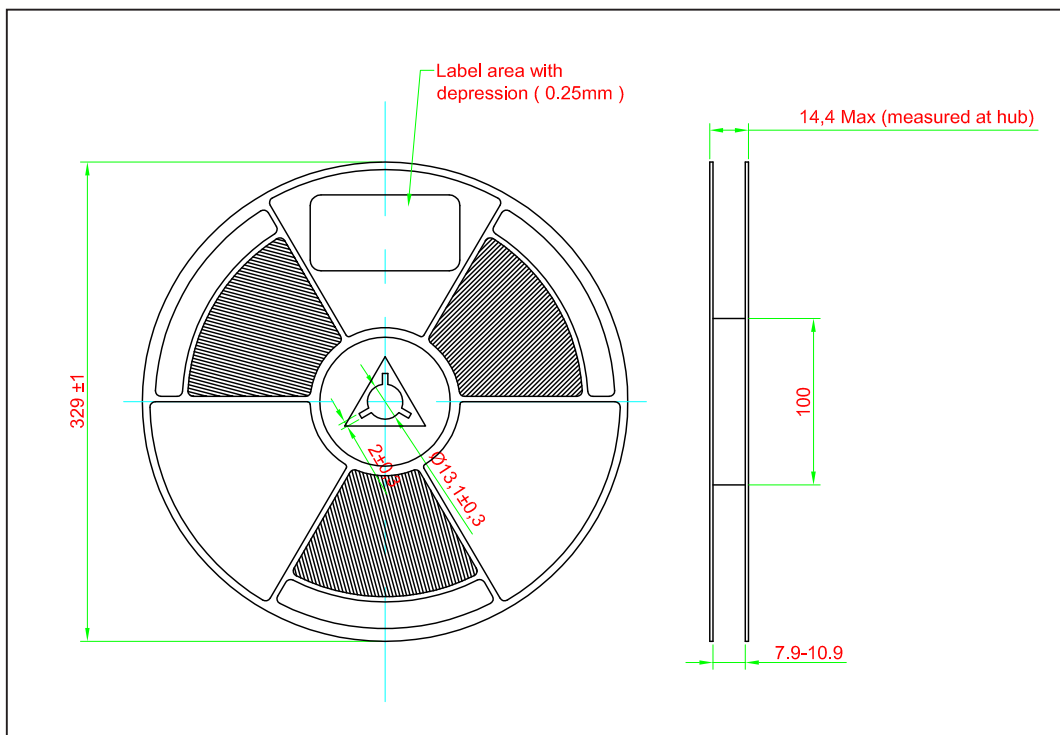
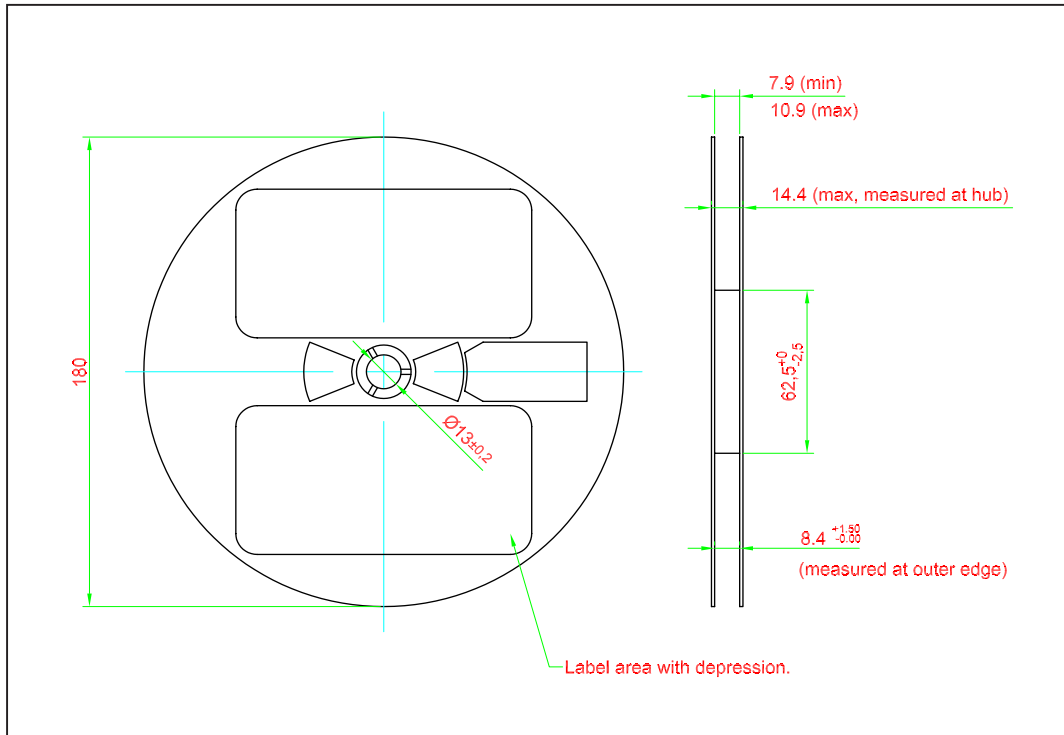


### Taping and orientation



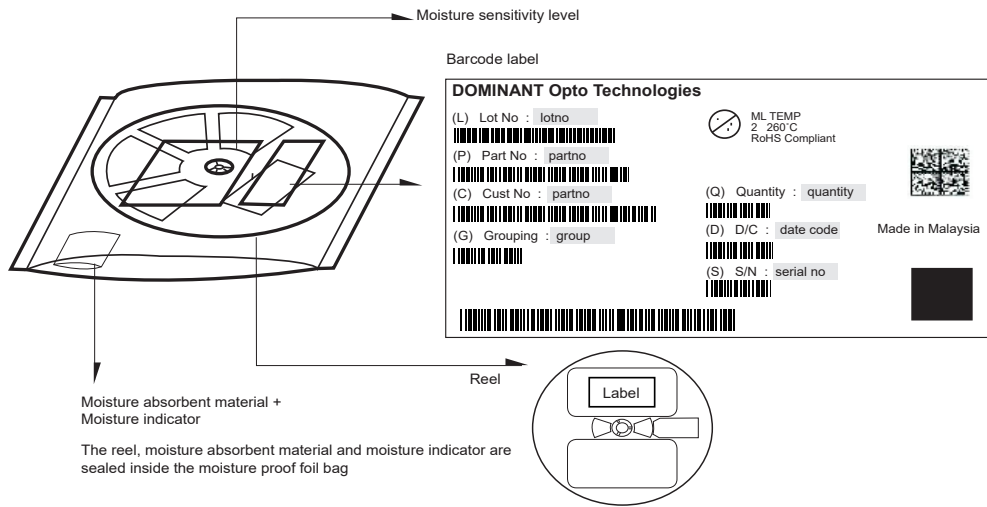


**Packaging Specification**

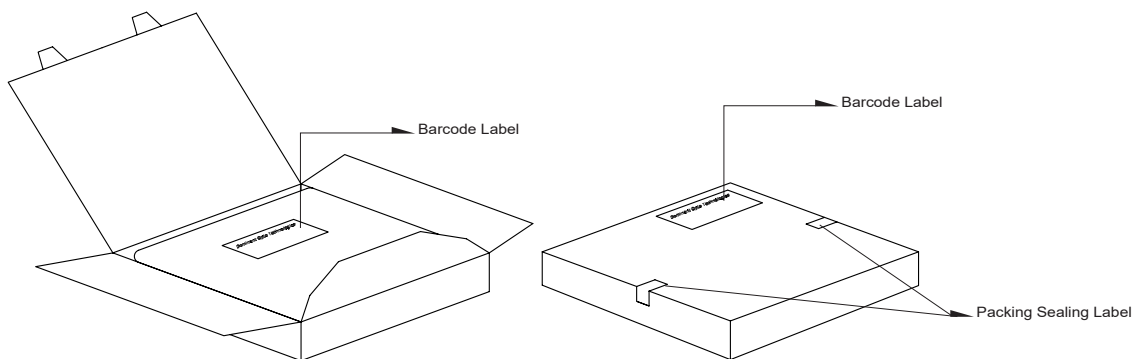


	Reel Diameter (mm)	Quantity (pcs)	Partno
Standard Packing	180	2000	DRx-HKS-xxx-x
Optional Packing	329	8000	DRx-HKS-xxx-x-8

**Packaging Specification**



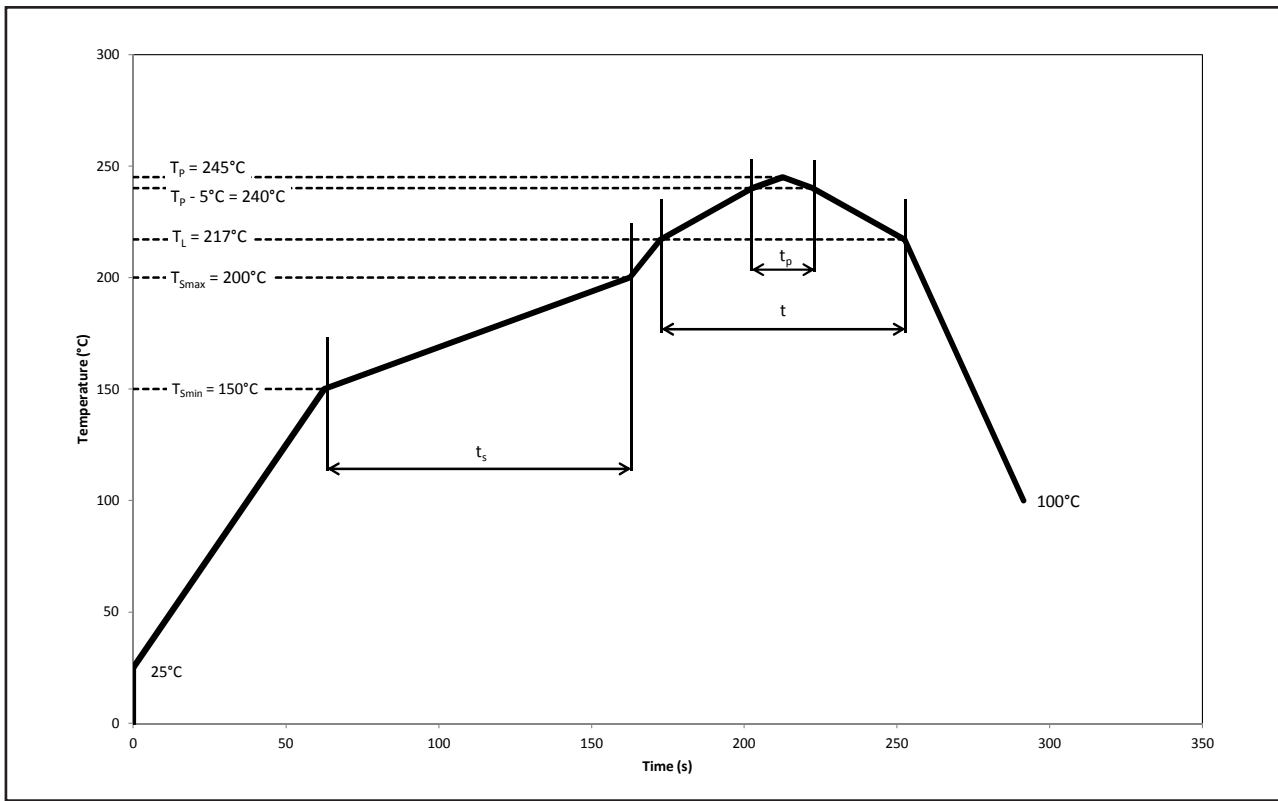
Quantity per bag (pcs)	Average 1pc DomiLED (gram)	1 completed bag (gram)
2000	0.034	240 ± 10
8000	0.034	750 ± 10



Reel Diameter (mm)	Packing Box Dimensions (mm)
180	210 x 210 x 16
329	345 x 345 x 16

## 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	60	80	150	s
Peak temperature	$T_p$	-	245	260	°C
Time within 5°C of the specified peak temperature $T_p - 5^\circ\text{C}$	$T_p$	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  $\pm 8 \%$  and an expanded uncertainty of  $\pm 11 \%$  (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  $\pm 8 \%$  and an expanded uncertainty of  $\pm 11 \%$  (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  $\pm 8 \%$  and an expanded uncertainty of  $\pm 11 \%$  (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  $\pm 8 \%$  and an expanded uncertainty of  $\pm 11 \%$  (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  $\pm 0.005$  and an expanded uncertainty of  $\pm 0.01$  (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  $\pm 0.5\text{nm}$  and an expanded uncertainty of  $\pm 1\text{nm}$  (accordingly to GUM with a coverage factor of  $k=3$ ).

### 3) **Voltage:**

- 3.1 Forward Voltage,  $V_f$  is measured when a current pulse of 8 ms(typ) with an internal reproducibility of  $\pm 0.05\text{V}$  and an expanded uncertainty of  $\pm 0.1\text{V}$  (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  $\pm 0.1$  and dimension are specific in mm.

### 6) **Reverse Voltage:**

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

**Revision History**

<b>Page</b>	<b>Subjects</b>	<b>Date of Modification</b>
-	Initial Release	31 Oct 2016
5	Update Graph: - Relative Forward Voltage Vs Junction Temperature - Relative Luminous Intensity Vs Junction Temperature - Relative Wavelength Vs Junction Temperature	14 Sep 2017
2, 3, 12	Not For New Design: DRA-HKS-W2X-1 Add New Part No: DRA-HKS-WX1-4 & DRA-HKS-W2X-2 Update Wavelength Grouping Update Luminous Intensity Group Update Appendix	12 Apr 2018
2	Add Luminous Flux: Typical Value	25 Apr 2018
10	Update Packaging Specification	25 May 2018
2, 9, 10, 11	Add Test Condition for Thermal Resistance Update Packaging Specification	30 Aug 2019
1, 2, 4, 11	Update AEC-Q101 to AEC-Q102 Update Peak Pulse Current Test Condition Update Graph: Allowable Forward Current Vs Duty Ratio Update Recommended Pb-free Soldering Profile	04 Mar 2022

**NOTE**

All the information contained in this document is considered to be reliable at the time of publishing. However, DOMINANT Opto Technologies does not assume any liability arising out of the application or use of any product described herein.

DOMINANT Opto Technologies reserves the right to make changes to any products in order to improve reliability, function or design.

DOMINANT Opto Technologies products are not authorized for use as critical components in life support devices or systems without the express written approval from the Managing Director of DOMINANT Opto Technologies.

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

## About Us

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>.

**Please contact us for more information:**

DOMINANT Opto Technologies Sdn. Bhd  
Lot 6, Batu Berendam, FTZ Phase III, 75350 Melaka, Malaysia.  
Tel: +606 283 3566 Fax: +606 283 0566  
E-mail: [sales@dominant-semi.com](mailto:sales@dominant-semi.com)

---