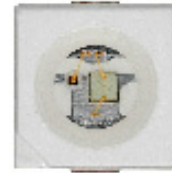


Primax

Synonymous with function and performance, enter the Primax, the new era of high intensity illumination in LED. With its high flux output and high luminous intensity, Primax transcends today LED lightings technology and how we perceive it. The small package outline (3.5 x 3.5 x 1.2 mm) and high intensity make it an ideal choice for backlighting, signage, exterior automotive lighting and decorative lighting.



Features:

- > Super high brightness surface mount LED
- > 120° viewing angle.
- > Compact package outline (LxW) of 3.5 x 3.5 mm.
- > Ultra low height profile - 1.2mm.
- > Low thermal resistance.
- > Compatible to IR reflow soldering.
- > Environmental friendly; RoHS compliance.



Applications:

- > Lighting: garden light, architecture lighting, general lighting. etc
- > Backlighting (TFT LCD display), flash light, architectural lighting.
- > Automotive: interior applications, eg: switches, telematics, climate control system, dashboard, etc.



Optical Characteristics at Tj=25°C

Part Ordering Number	Color	Viewing Angle°	Luminous Flux @ IF = 150mA (lm) <i>Appx. 1.1</i>			Intensity @ IF = 150mA (cd) <i>Appx. 1.2</i>
			Min.	Typ.	Max.	Typ.
● NAB-FSG-HJ-1	Blue	120	4.9	6.0	8.2	2.2
● NAB-FSG-JK-1	Blue	120	6.3	8.2	10.7	3.0
● NAT-FSG-NP-1	True Green	120	18.1	22.0	30.6	8.1

● Not for new design

Electrical Characteristics at Tj=25°C

Part Number	Vf @ If = 150 mA <i>Appx. 3.1</i>		
	Min. (V)	Typ. (V)	Max. (V)
NAB-FSG	3.0	3.4	3.9
NAT-FSG	3.0	3.4	3.9

Absolute Maximum Ratings

	Maximum Value	Unit
DC forward current	180	mA
Peak pulse current (tp<=10ms, Duty cycle=0.10)	350	mA
Reverse voltage	Not designed for reverse bias	V
ESD threshold (HBM)	2000	V
LED junction temperature	125	°C
Operating temperature	-40 ... +100	°C
Storage temperature	-40 ... +100	°C
Thermal resistance		
- Junction / ambient, R _{th JA}	125	K/W
- Junction / solder point, R _{th JS}	45	K/W
(Mounted on dual-sided FR4 in-house PCB; total Cu area >900mm ²)		

Characteristics

	Symbol	Part Number	Value	Unit
Temperature coefficient of λ_{dom} (typ) $I_F = 150\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	$TC_{\lambda_{\text{dom}}}$ (typ)	NAB-FSG	0.04	nm / K
		NAT-FSG	0.03	
Temperature coefficient of V_F (typ) $I_F = 150\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	TC_V	NAB-FSG	-2.3	mV / K
		NAT-FSG	-1.6	
Temperature coefficient of I_V (typ) $I_F = 150\text{mA}; 0\text{ }^\circ\text{C} \leq T \leq 100\text{ }^\circ\text{C}$	TC_{I_V}	NAB-FSG	0.02	% / K
		NAT-FSG	-0.08	

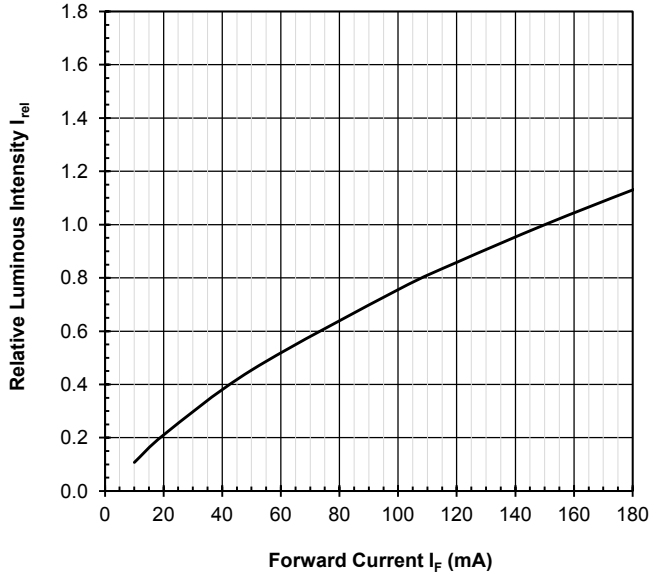
Wavelength Grouping at $T_j=25^\circ\text{C}$

Color	Group	Wavelength distribution (nm) <i>Appx. 2.2</i>
NAT; True Green	Full	520 - 535
	A	520 - 525
	B	525 - 530
	C	530 - 535
NAB; Blue	Full	460 - 470
	A	460 - 465
	B	465 - 470

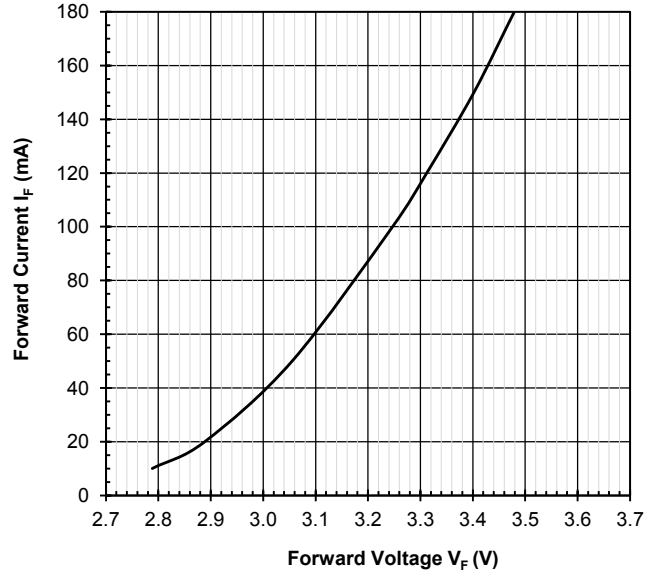
Luminous Flux at $T_j=25^\circ\text{C}$

Brightness Group	Luminous Flux <i>Appx. 1.1</i> (lm)
H2	4.90...5.50
H3	5.50...6.30
J2	6.30...7.15
J3	7.15...8.20
K2	8.20...9.35
K3	9.35...10.70
N2	18.10...20.60
N3	20.60...23.50
P2	23.50...26.80
P3	26.80...30.60

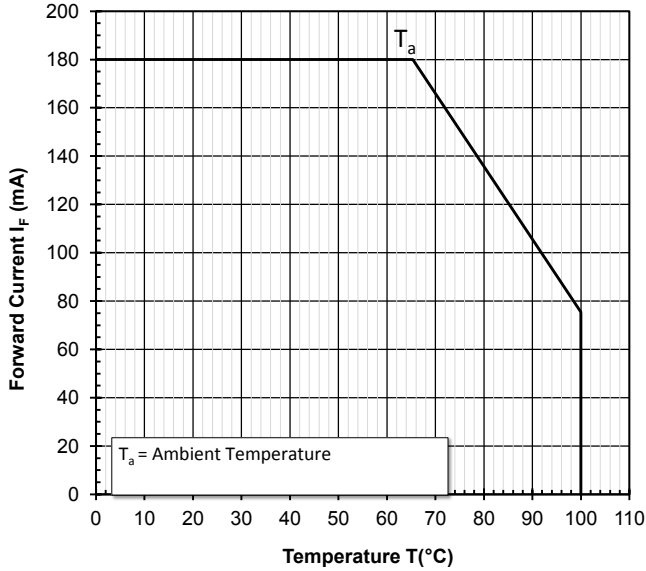
Relative Luminous Intensity Vs Forward Current
 $I_v/I_v(150\text{mA}) = f(I_F); T_j = 25^\circ\text{C}$



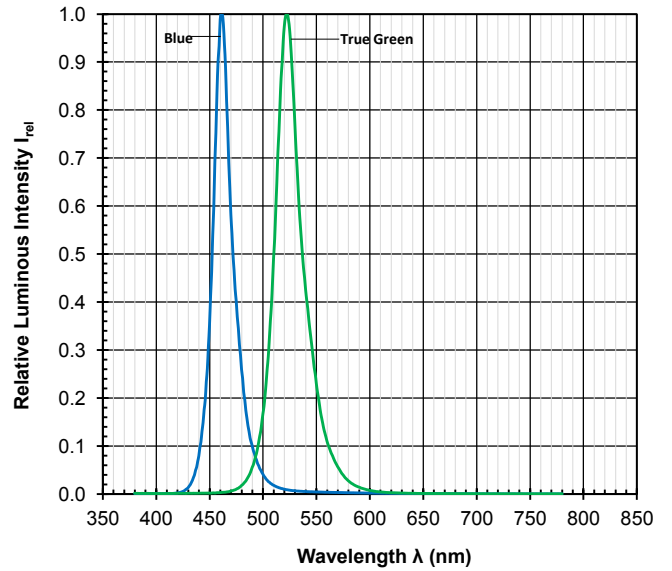
Forward Current Vs Forward Voltage
 $I_F = f(V_F); T_j = 25^\circ\text{C}$



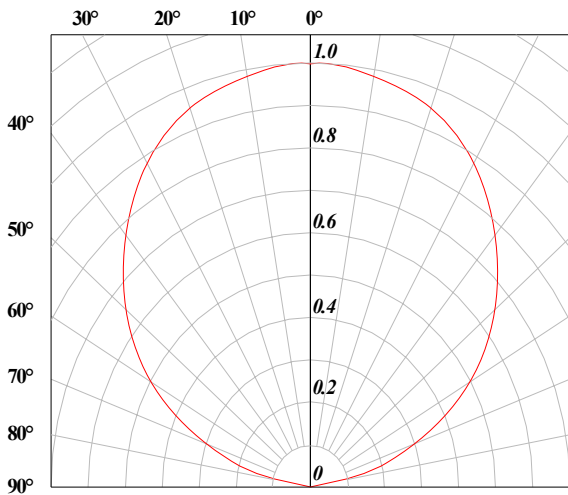
Maximum Current Vs Temperature
 $I_F = f(T)$



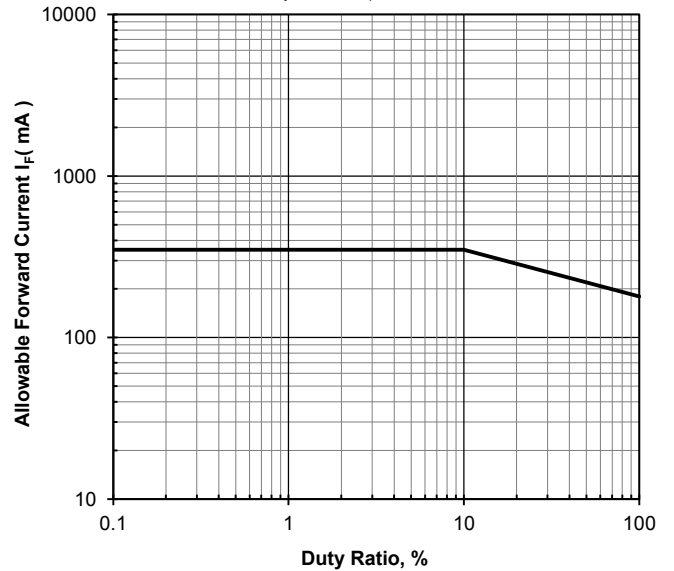
Relative Spectral Emission
 $I_{rel} = f(\lambda); T_j = 25^\circ\text{C}; I_F = 150\text{mA}$



Radiation Pattern

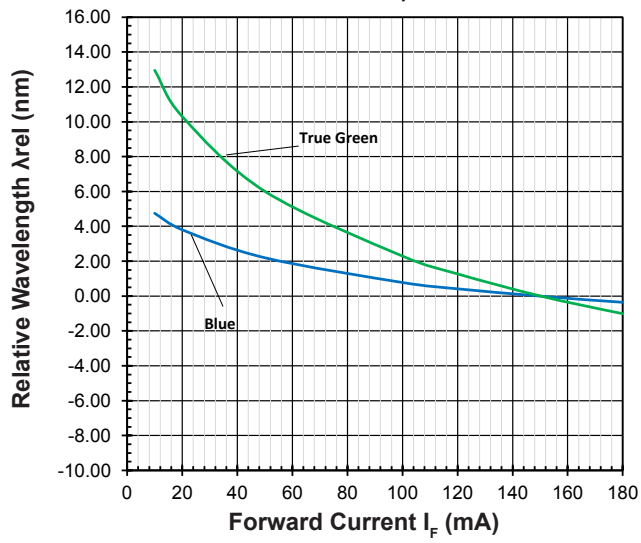


Allowable Forward Current Vs Duty Ratio
 $(T_j = 25^\circ\text{C}; t_p \leq 10\mu\text{s})$

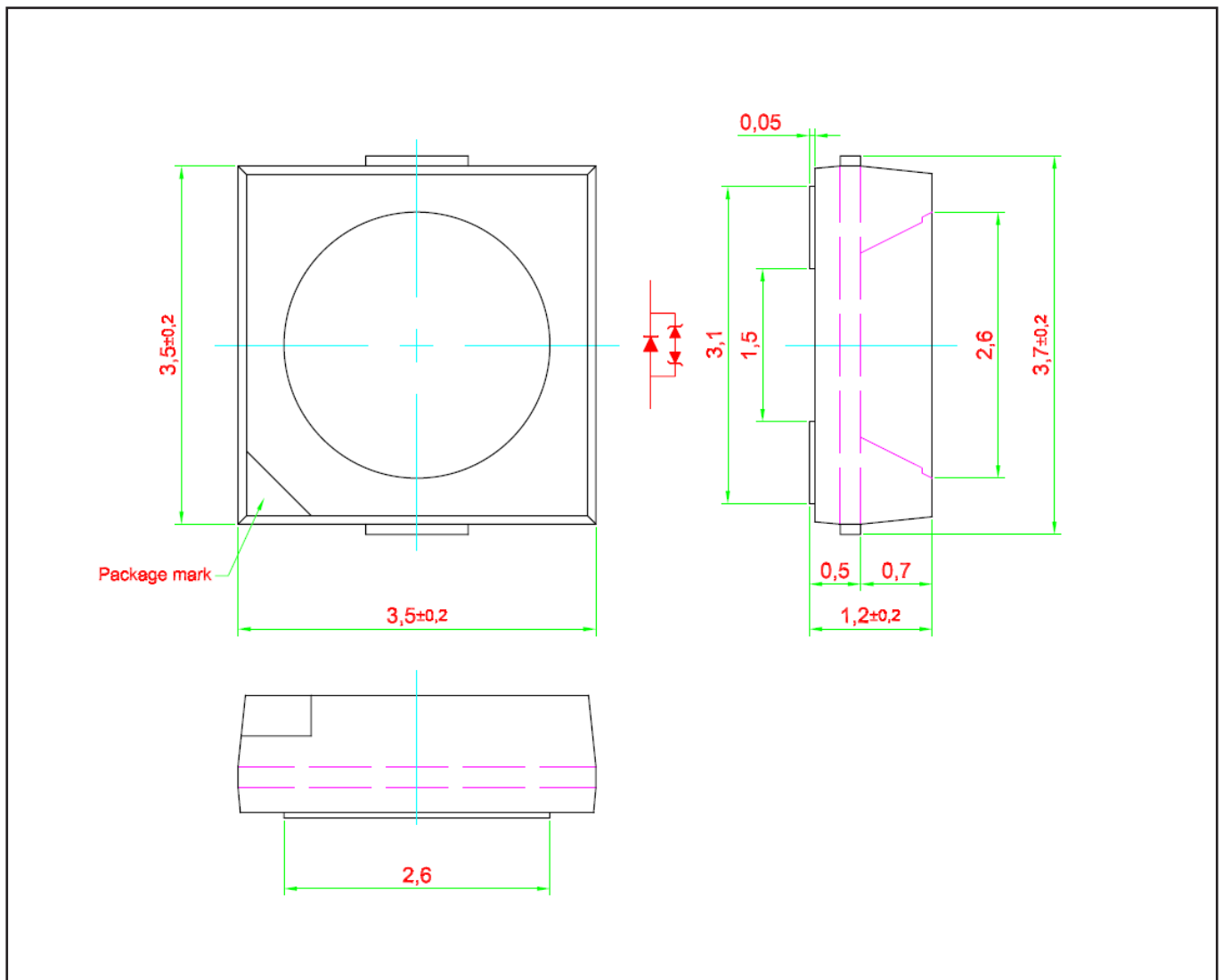


Relative Wavelength Shift Vs Forward Current

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



Primax • 150 InGaN : NAX-FSG Package Outlines

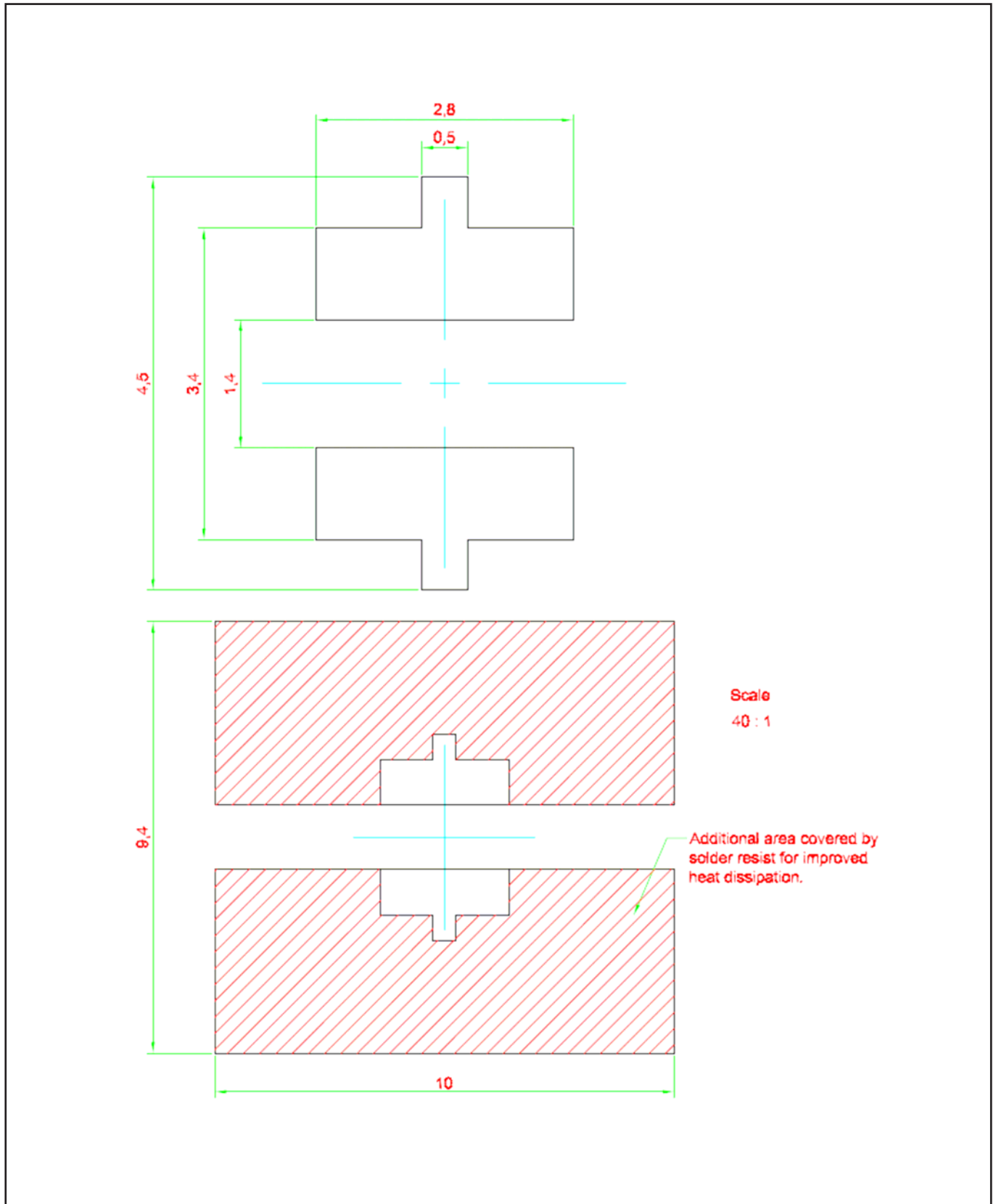


Material

Material	
Lead-frame	Cu Alloy With Ag Plating
Package	High Temperature Resistant Plastic, PPA
Encapsulant	Silicone Resin
Soldering Leads	Sn-Sn Plating

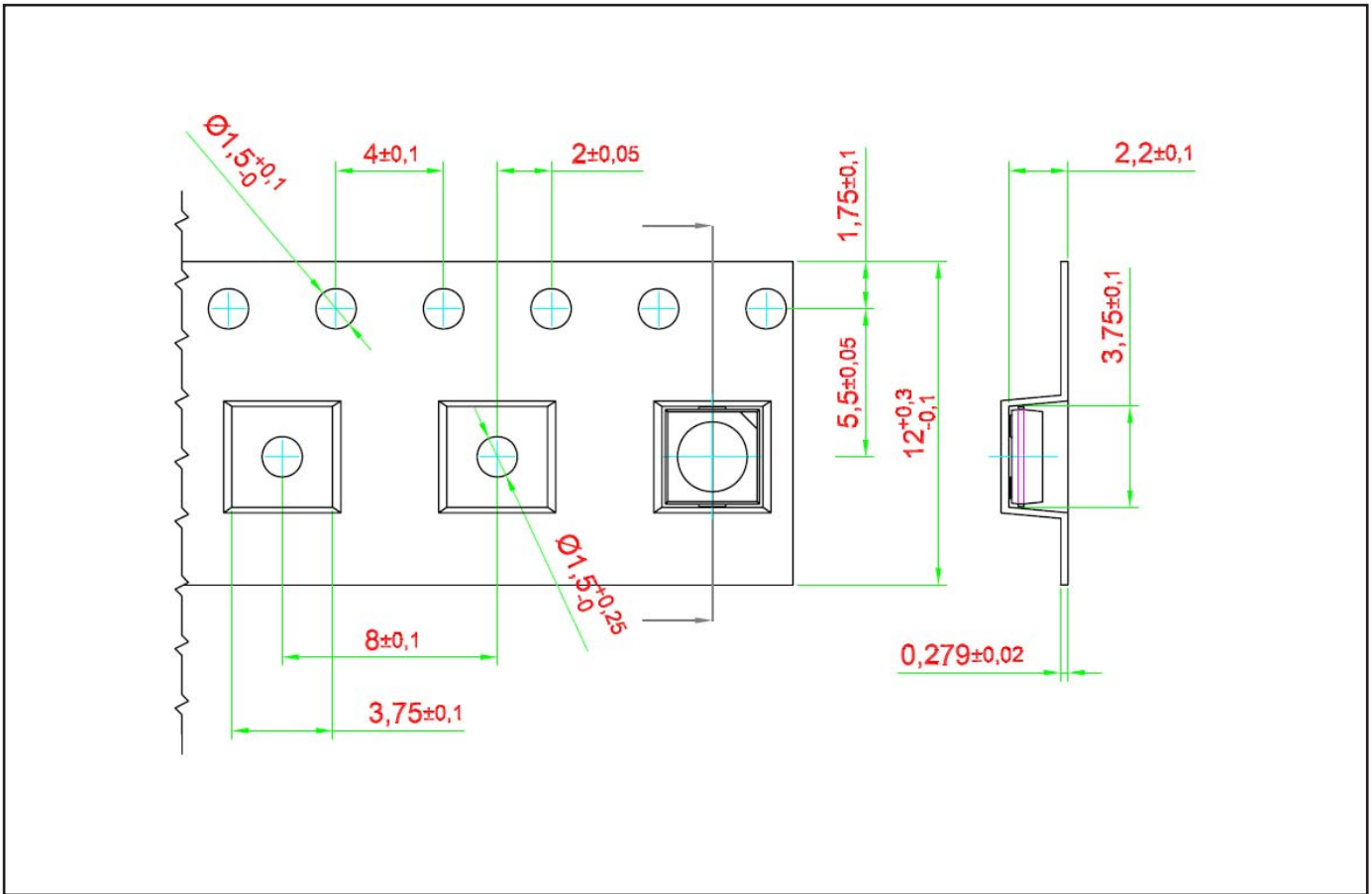
Note: This product is Pb free

Recommended Solder Pad

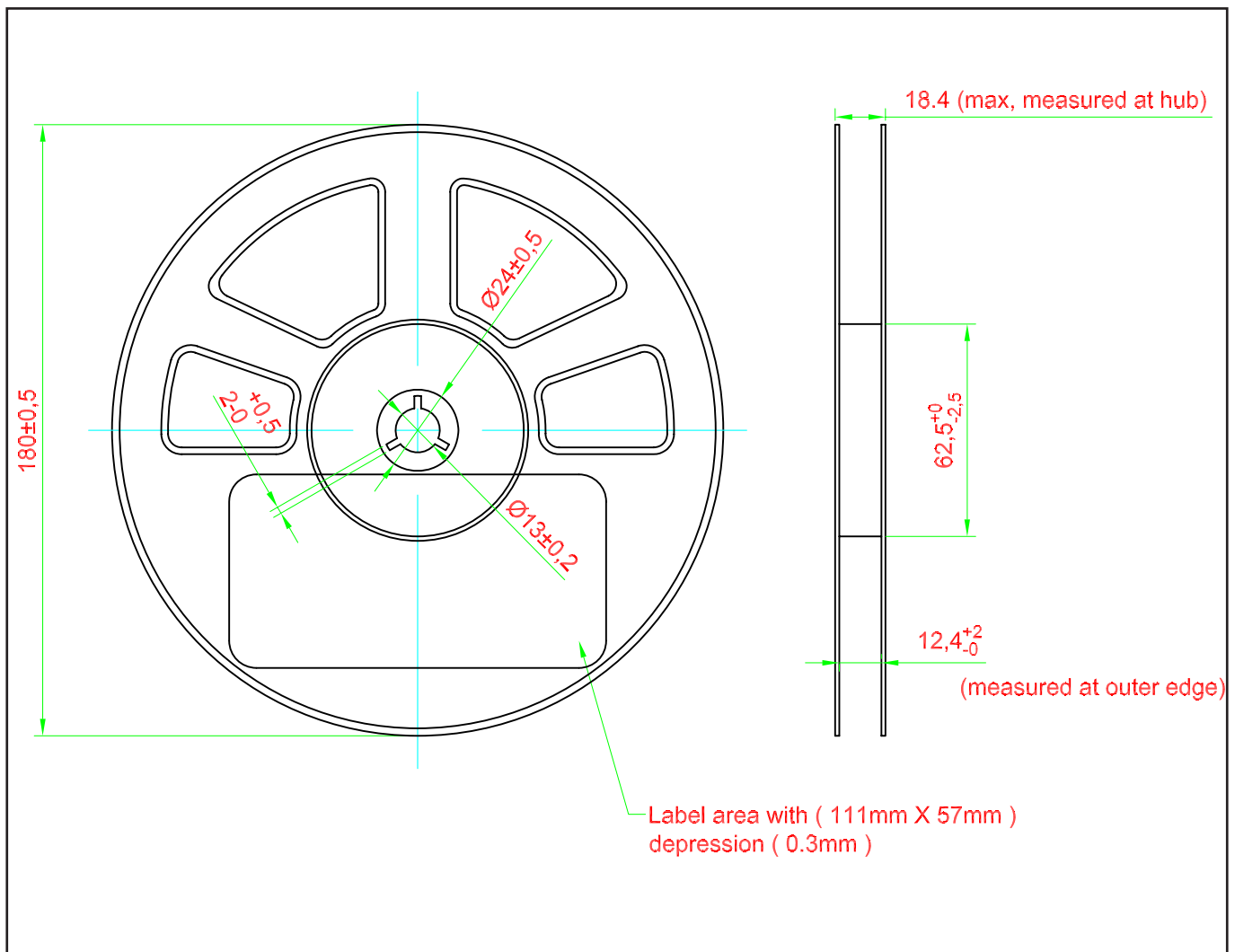


Taping and orientation

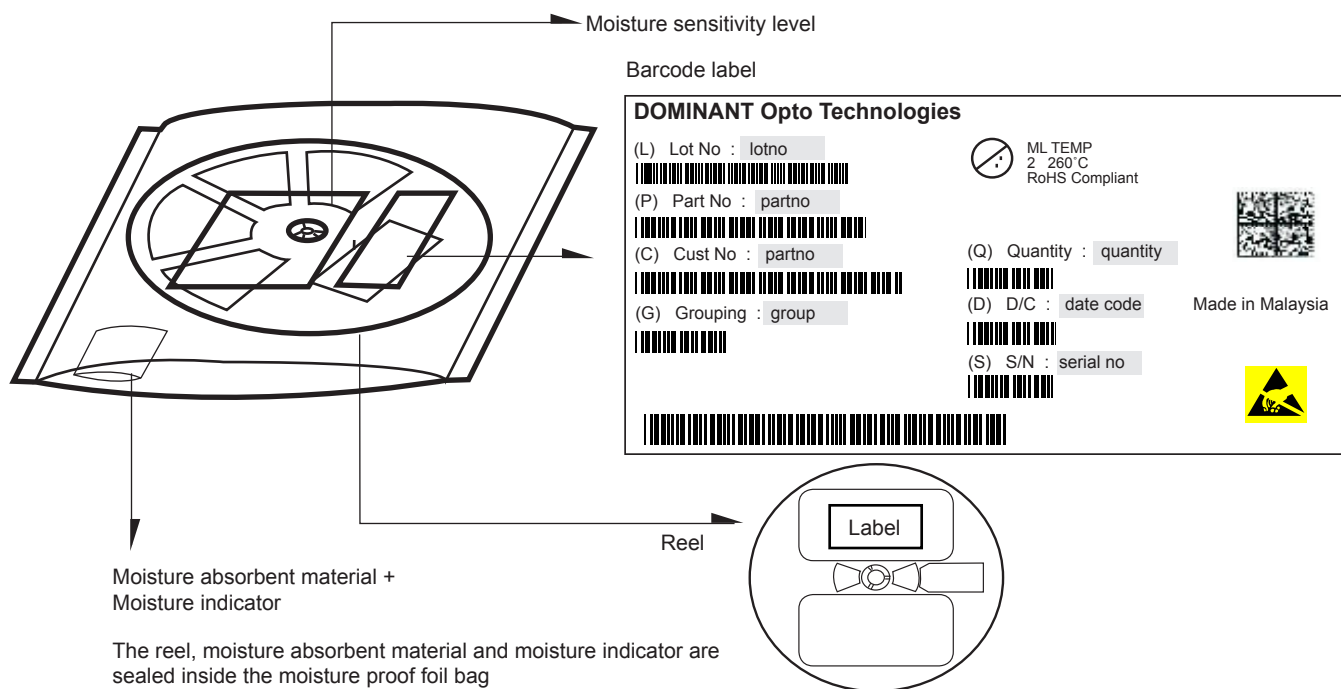
- Reels come in quantity of 1000 units.
- Reel diameter is 180 mm.



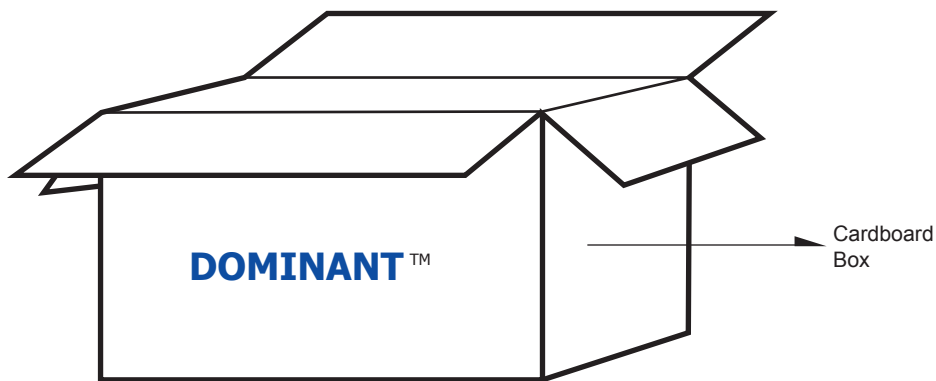
Packaging Specification



Packaging Specification



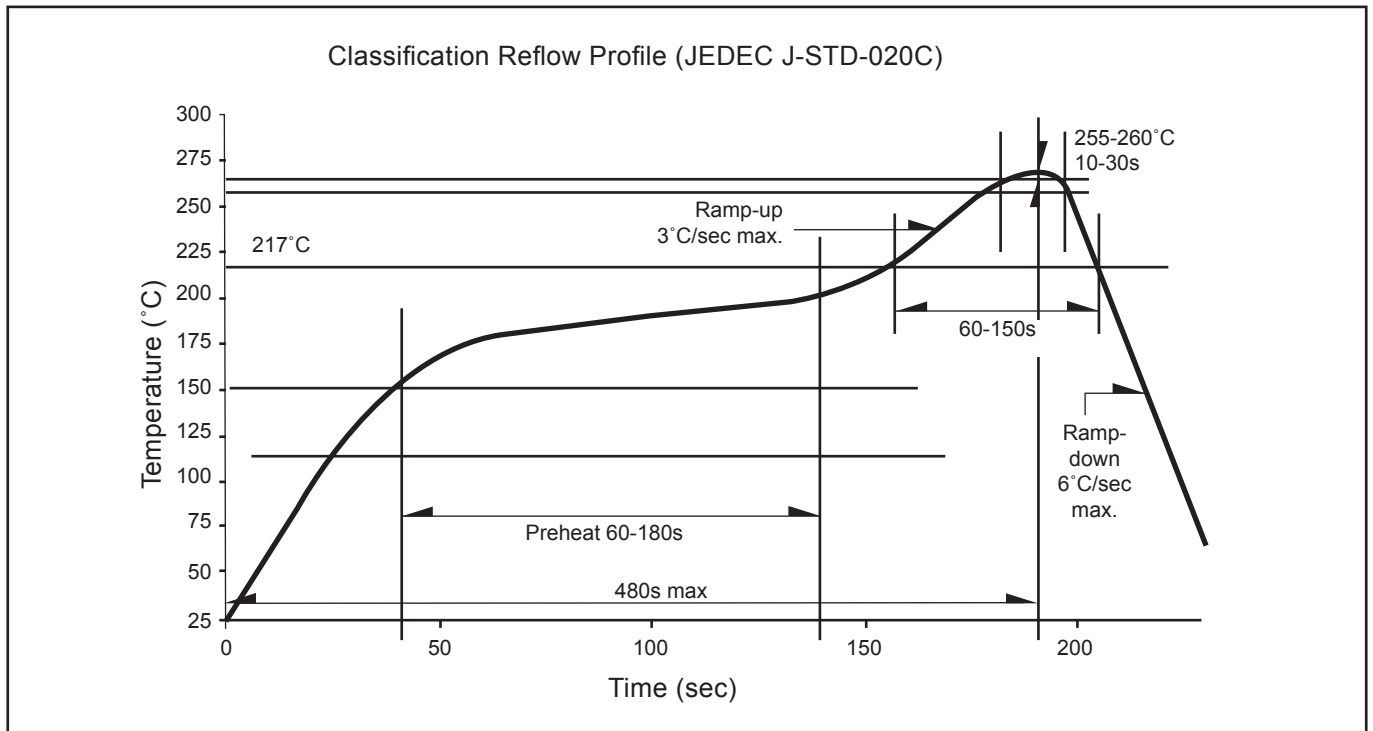
	Average 1pc Primax	1 completed bag (1000pcs)
Weight (gram)	0.041	160 ± 10



For Primax

Cardboard Box Size	Dimensions (mm)	Empty Box Weight (kg)	Reel / Box
Super Small	325 x 225 x 190	0.38	7 reels MAX
Small	325 x 225 x 280	0.54	11 reels MAX
Medium	570 x 440 x 230	1.46	48 reels MAX
Large	570 x 440 x 460	1.92	96 reels MAX

Recommended Pb-free Soldering Profile



Appendix

1) **Brightness:**

- 1.1 Luminous intensity is measured 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 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 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 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 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 $k=3$).

Revision History

Page	Subjects	Date of Modification
-	Initial Release	24 Jun 2011
2	Not for new design: NAB-FSG-HJ-1 Add new partno: NAB-FSG-JK-1	16 Jul 2012
3	Add Characteristics	30 Aug 2012
2	Add Thermal Resistance	23 Sep 2013
1	Update Application	25 Nov 2013
2, 4, 5, 10, 12	Add Appendix Update Graph Update Package Specification Not for new design: NAB-FSG-JK-1 Not for new design: NAT-FSG-NP-1	27 Dec 2017

NOTE

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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, a ISO/TS 16949 and ISO 14001 certified company, can be found under <http://www.dominant-semi.com>.

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