

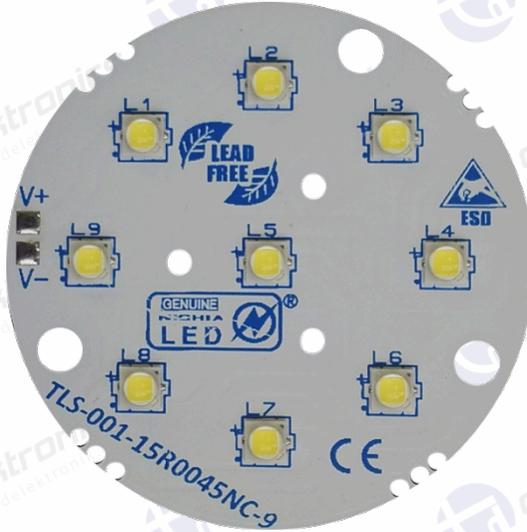


Product Datasheet

X-MR0045NC-219xx-9

Revision: June 2015

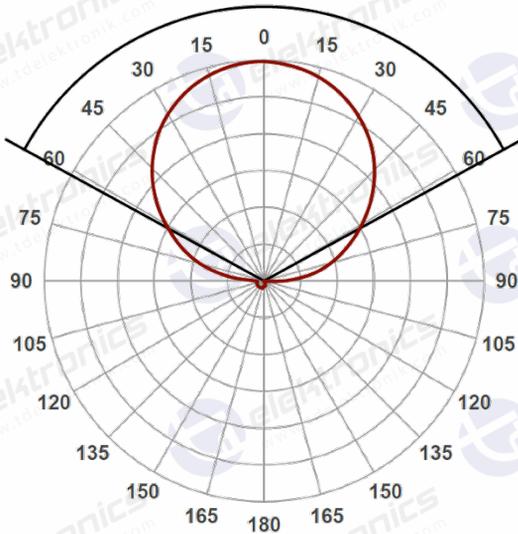
Picture of Module



Photometry

Beam angle

122,8°



Applications



Down light



Panel light



Tube light



Decorative



Cove light



Spotlight



Street light



Outdoor



PAR lamp



High bay



Bulb

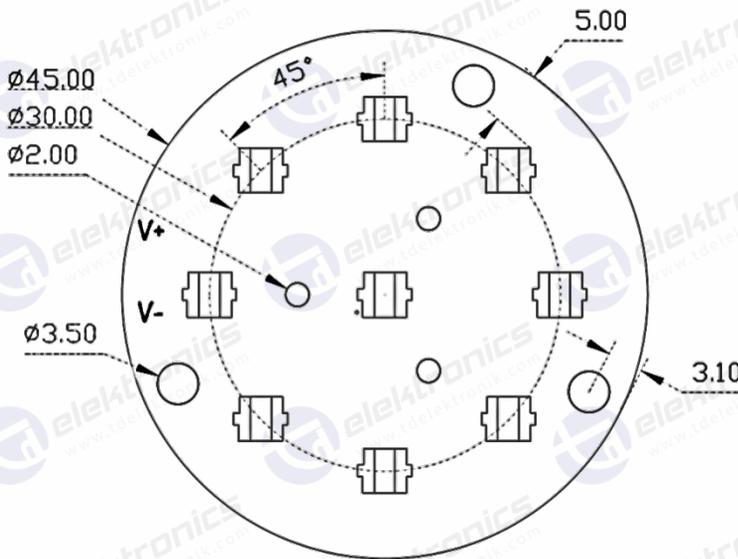
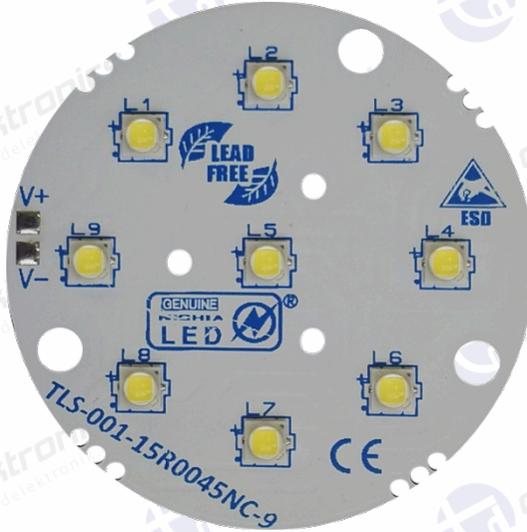


Sign board

Product Features

- Default driving method is constant current input. Ask for alternatives depending on your project.
- IES and LDT files provided upon request.

Mechanical Details



Order Code Formation

Product Code	CCT options	CRI options
X-MR0045NC-219xx-9	2700	65
	3000	70
	4000	80
	5000	90
	6500	M3

Order code consists of product code, combined with CCT and CRI values.

Example Order Code: X-MR0045NC-219xx-9 + 4000 + 90

(Given values are just examples, you may choose whichever you want from the list.)

Absolute Maximum Ratings & Specs for NCS219B_V1

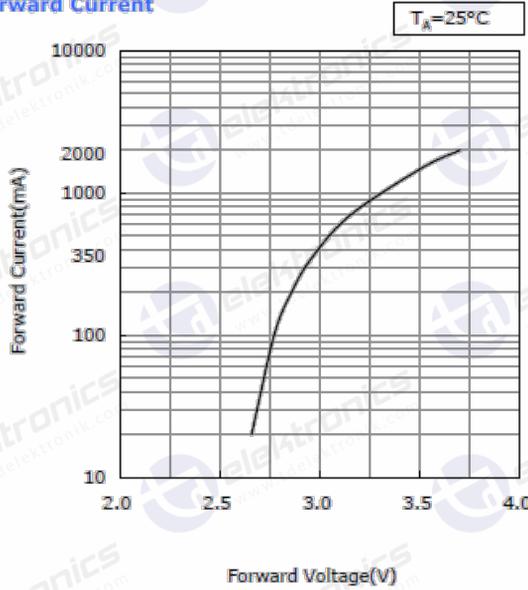
Common Characteristics [@ T _j : 65°C & T _{ambient} : 25°C]						
LED Brand & Type	NCSLx19B_V1			Electrical Connection		
PCB Material	Aluminium					
Operation Temperature (°C)	-40 ~ 100			Parallel	1	
Storage Temperature (°C)	-40 ~ 100			Series	9	
Thermal Conductivity (W/m-K)	1,6			Total LED Quantity	9	
Specs for Warm White Outputs						
Part Number	X-MR0045NC-C219VWW-9			X-MR0045NC-C219WW-9		
Correlated Color Temperature (CCT)	2700 K			3000 K		
Color Rendering Index (CRI)	80 +			80 +		
Module Operating Current (mA)	350	500	700	350	500	700
Branch Operating Current (mA)	350	500	700	350	500	700
Module Operating Voltage (V)	26,1	26,9	27,7	26,1	26,9	27,7
Module Power (W)	9,1	13,4	19,4	9,1	13,4	19,4
Module Light Output @ T _j 65 (lm)	1030	1391	1829	1081	1461	1920
Module Efficiency (lm/W)	113	104	94	118	109	99
Specs for Neutral White Output						
Part Number	X-MR0045NC-C219NW-9					
Correlated Color Temperature (CCT)	4000 K					
Color Rendering Index (CRI)	80 +					
Module Operating Current (mA)	350		500		700	
Branch Operating Current (mA)	350		500		700	
Module Operating Voltage (V)	26,1		26,9		27,7	
Module Power (W)	9,1		13,4		19,4	
Module Light Output @ T _j 65 (lm)	1141		1542		2027	
Module Efficiency (lm/W)	125		115		104	
Specs for Cool White Outputs						
Part Number	X-MR0045NC-C219CW-9			X-MR0045NC-C219VCW-9		
Correlated Color Temperature (CCT)	5000 K			6500 K		
Color Rendering Index (CRI)	70 +			70 +		
Module Operating Current (mA)	350	500	700	350	500	700
Branch Operating Current (mA)	350	500	700	350	500	700
Module Operating Voltage (V)	26,1	26,9	27,7	26,1	26,9	27,7
Module Power (W)	9,1	13,4	19,4	9,1	13,4	19,4
Module Light Output @ T _j 65 (lm)	1280	1726	2268	1184	1596	2097
Module Efficiency (lm/W)	140	128	117	130	119	108

Absolute Maximum Ratings & Specs for NVS219B_V1

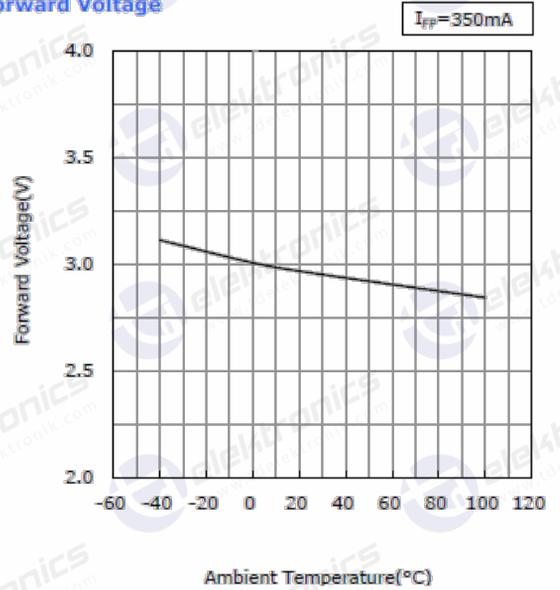
Common Characteristics [@ T _j : 65°C & T _{ambient} : 25°C]						
LED Brand & Type	NVSLx19B_V1			Electrical Connection		
PCB Material	Aluminium					
Operation Temperature (°C)	-40 ~ 100			Parallel	1	
Storage Temperature (°C)	-40 ~ 100			Series	9	
Thermal Conductivity (W/m-K)	1,6			Total LED Quantity	9	
Specs for Warm White Outputs						
Part Number	X-MR0045NC-C219VWW-9			X-MR0045NC-C219WW-9		
Correlated Color Temperature (CCT)	2700 K			3000 K		
Color Rendering Index (CRI)	80 +			80 +		
Module Operating Current (mA)	350	500	700	350	500	700
Branch Operating Current (mA)	350	500	700	350	500	700
Module Operating Voltage (V)	24,9	25,5	26,2	24,9	25,5	26,2
Module Power (W)	8,7	12,7	18,3	8,7	12,7	18,3
Module Light Output @ T _j 65 (lm)	1098	1514	2025	1163	1604	2145
Module Efficiency (lm/W)	126	119	111	134	126	117
Specs for Neutral White Output						
Part Number	X-MR0045NC-C219NW-9					
Correlated Color Temperature (CCT)	4000 K					
Color Rendering Index (CRI)	80 +					
Module Operating Current (mA)	350	500	700			
Branch Operating Current (mA)	350	500	700			
Module Operating Voltage (V)	24,9	25,5	26,2			
Module Power (W)	8,7	12,7	18,3			
Module Light Output @ T _j 65 (lm)	1228	1693	2265			
Module Efficiency (lm/W)	141	133	124			
Specs for Cool White Outputs						
Part Number	X-MR0045NC-C219CW-9			X-MR0045NC-C219VCW-9		
Correlated Color Temperature (CCT)	5000 K			6500 K		
Color Rendering Index (CRI)	70 +			70 +		
Module Operating Current (mA)	350	500	700	350	500	700
Branch Operating Current (mA)	350	500	700	350	500	700
Module Operating Voltage (V)	24,9	25,5	26,2	24,9	25,5	26,2
Module Power (W)	8,7	12,7	18,3	8,7	12,7	18,3
Module Light Output @ T _j 65 (lm)	1382	1911	2560	1269	1754	2350
Module Efficiency (lm/W)	159	150	140	146	138	128

Thermal & Luminous Flux - NCS219B_V1

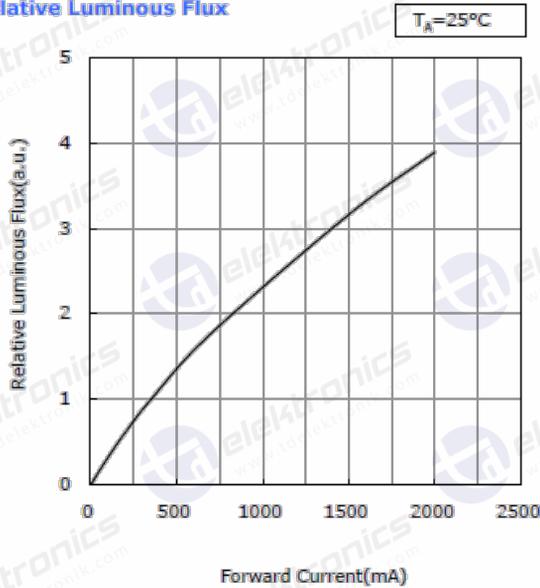
Forward Voltage vs Forward Current



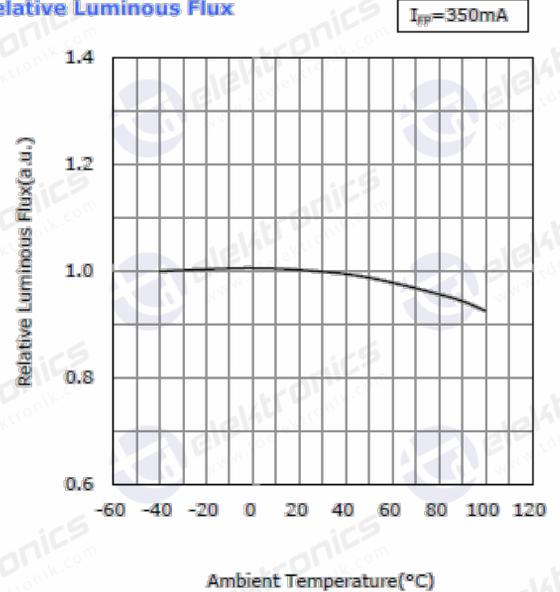
Ambient Temperature vs Forward Voltage



Forward Current vs Relative Luminous Flux



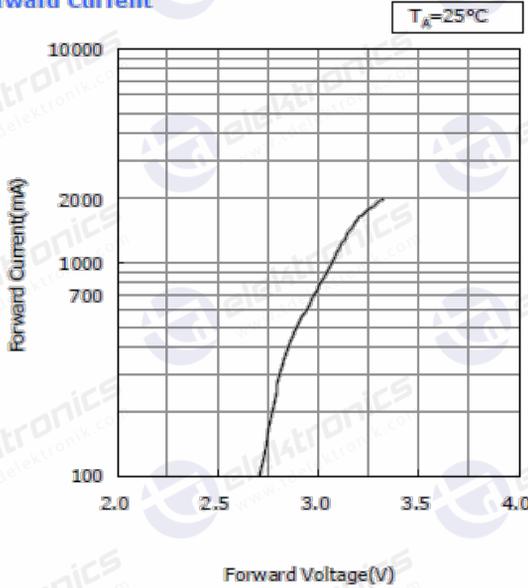
Ambient Temperature vs Relative Luminous Flux



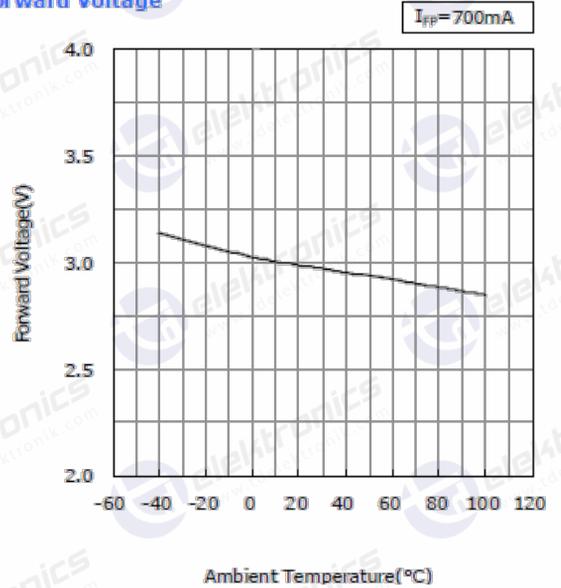
- All these data are related to Nichia LED's used in our LED Light Engines.
- Please find Parallel Connection information of the Module and define your Driving Current. Then, divide your driving current with the number of parallel Connection to find LED itself driving current to check from the graph. Additionally, you can find out total Voltage Output of the Module by multiplying the Calculated single LED Vf and Series Connection. For Example; Parallel Connection: 4, Driving Current: 350mA Then: $350/4 = 87,5\text{mA}$ Then check the Data from the graph to find Vf and Relative Luminous Flux by using this method.

Thermal & Luminous Flux - NVS219B_V1

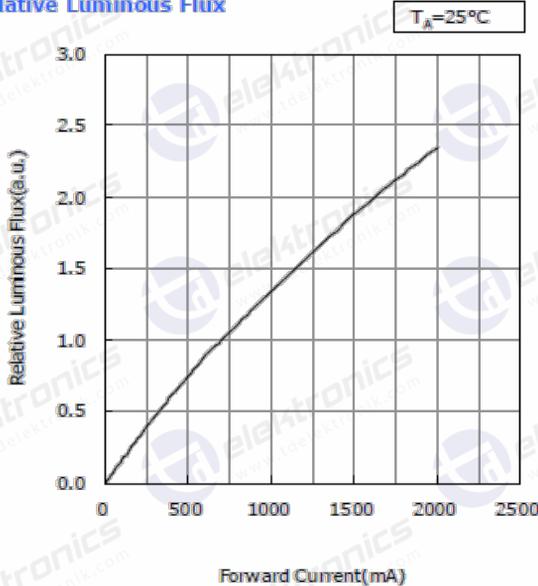
Forward Voltage vs Forward Current



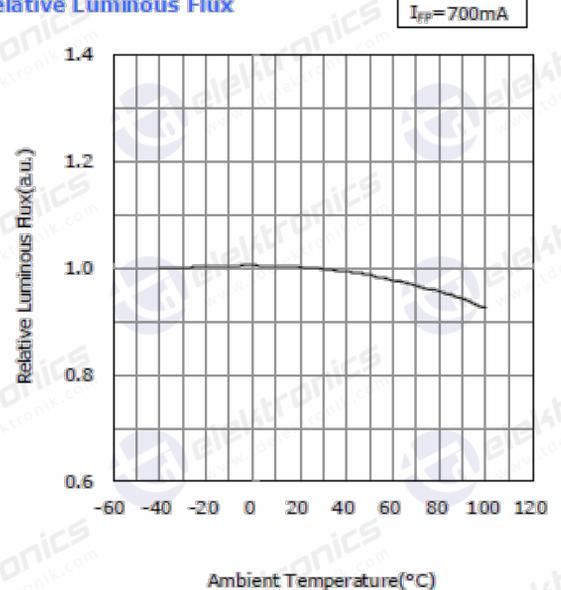
Ambient Temperature vs Forward Voltage



Forward Current vs Relative Luminous Flux

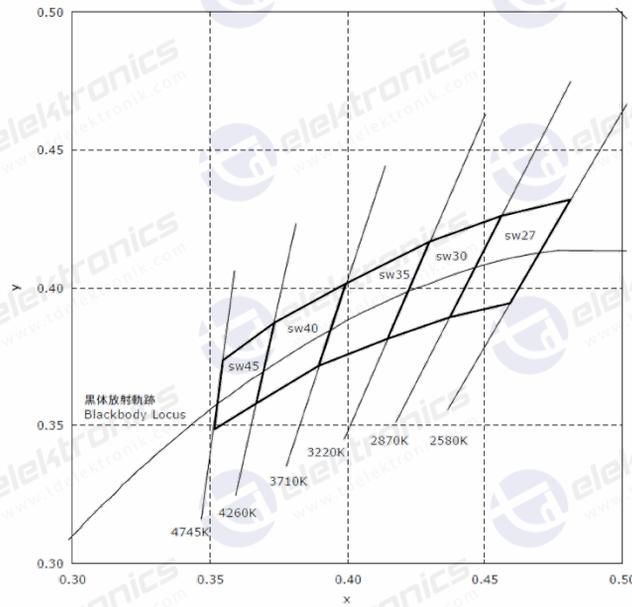


Ambient Temperature vs Relative Luminous Flux

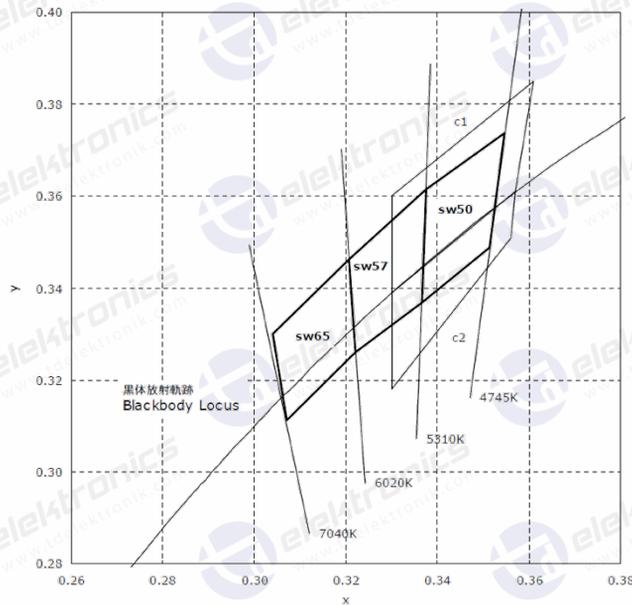


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- Please find Parallel Connection information of the Module and define your Driving Current. Then, divide your driving current with the number of parallel Connection to find LED itself driving current to check from the graph. Additionally, you can find out total Voltage Output of the Module by multiplying the Calculated single LED Vf and Series Connection. For Example; Parallel Connection: 4, Driving Current: 350mA Then: $350/4 = 87,5\text{mA}$ Then check the Data from the graph to find Vf and Relative Luminous Flux by using this method.

Chromacity Diagram – NxSL219B_V1



Chromacity Diagram - NxSW157B



- All Modules are generally put in 3 Step MC Adam Ellipse.

Lifetime Projection & Worst Condition Performance – NCS219B_V1

Description of Test Samples:

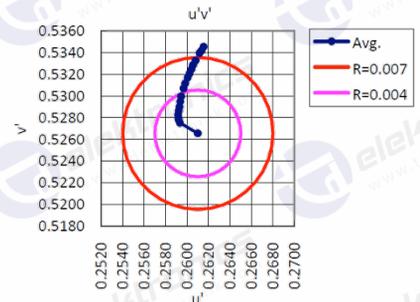
Classification: LED Package
Model Name: Warm White LED
Model Number: NCSL219B (Nominal CCT: 2700 K)

Test Summary:

Data Set	Case Temperature [T _s]	Ambient Temperature [T _A]	Drive Current [I _F]	Lumen Maintenance at 10,000 hours	Chromaticity Shift (Δu'v') at 10,000 hours	TM-21 Projection L ₇₀ (10K)
1	55 °C	> 50 °C	700 mA	97.6 %	0.0025	> 60200 hours
2	55 °C	> 50 °C	1000 mA	96.0 %	0.0029	> 60200 hours
3	85 °C	> 80 °C	700 mA	96.0 %	0.0029	> 60200 hours
4	85 °C	> 80 °C	1000 mA	92.7 %	0.0049	> 60200 hours
5	105 °C	> 100 °C	550 mA	95.1 %	0.0032	> 60200 hours
6	105 °C	> 100 °C	700 mA	93.8 %	0.0044	> 60200 hours
7	105 °C	> 100 °C	1000 mA	89.3 %	0.0080	45700 hours

Data Set 7 : 105 °C, 1000 mA

Actual Case Temperature [T _s]	110.5 °C
Actual Ambient Temperature [T _A]	108.4 °C
Drive Current [I _F]	1000 mA
Measurement Current	1000 mA



Test duration used	4510 h	to	10035 h
B	0.9581		
α	6.8722E-06		
R ²	0.9978		
Calculated L ₇₀ (10K)	45700	hours	
Reported L ₇₀ (10K)	45700	hours	

Curve-fit equation:

$$\Phi(t) = B \exp(-\alpha t)$$

Lumen maintenance life equation:

$$L_{70} = \ln(B/0.7) / \alpha$$

IMPORTANT NOTE: All data are provided from Nichia Corporation's LM-80 Test Report. This information shall not mean any warranty neither for Nichia nor for TD Electronics. This data is just for reference about lifetime projection of the LEDs used in TLS Light Engine.

Lifetime Projection & Worst Condition Performance – NVS219B_V1

Description of Test Samples:

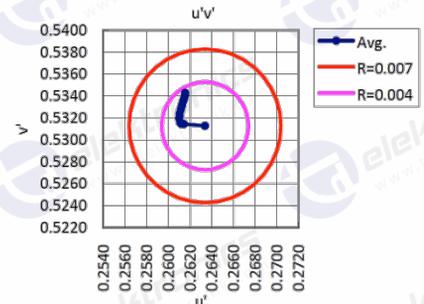
Classification:	LED Package
Model Name:	Warm White LED
Model Number:	NVSL219B (Nominal CCT: 2700K)

Test Summary:

Data Set	Case Temperature [T _S]	Ambient Temperature [T _A]	Drive Current [I _F]	Lumen Maintenance at 10,000 hours	Chromaticity Shift (Δu'v')	TM-21 Projection L ₇₀ (10K)
1	55°C	> 50°C	700 mA	99.3%	0.0022	> 60100 hours
2	55°C	> 50°C	1200 mA	97.9%	0.0025	> 60100 hours
3	85°C	> 80°C	700 mA	97.5%	0.0025	> 60000 hours
4	85°C	> 80°C	1200 mA	94.8%	0.0031	> 60000 hours
5	105°C	> 100°C	700 mA	95.5%	0.0027	> 60100 hours
6	105°C	> 100°C	1000 mA	93.7%	0.0035	> 60100 hours

Data Set 6 : 105°C, 1000 mA

Actual Case Temperature [T _S]	110.1 °C
Actual Ambient Temperature [T _A]	108.0 °C
Drive Current [I _F]	1000 mA
Measurement Current	1000 mA



Test duration used	4512 h	to	10011 h
B	0.9585		
α	2.2880E-06		
R ²	0.9742		
Calculated L ₇₀ (10K)	137000	hours	
Reported L ₇₀ (10K)	> 60100	hours	

Curve-fit equation:
 $\Phi(t) = B \exp(-\alpha t)$

Lumen maintenance life equation:
 $L_{70} = \ln(B/0.7) / \alpha$

IMPORTANT NOTE: All data are provided from Nichia Corporation's LM-80 Test Report. This information shall not mean any warranty neither for Nichia nor for TD Electronics. This data is just for reference about lifetime projection of the LEDs used in TLS Light Engine.