

PLW2835AIB Series

Product Datasheet



Down
Lighting



Commercial
Lighting



General
Lighting

Introduction

The PLW2835AIB series offer ultra-high luminous efficacy combined with the flexibility in design due to its slim and miniature size. This PLCC LED Series is optimized to be used as lighting for building and other general lighting applications. These high performance LEDs are available in a wide range of colour temperatures.

Description

- Best luminous and colour uniformity.
- Enables halogen and CDM replacement.
- The article itself presents the actual colour.

Features and Benefits

- Pass LM-80 verification.
- Suitable for all SMT assembly methods.
- IR reflow process compatible.
- Environmental friendly; RoHS compliance.

Contents

Order Codes	3
Absolute Maximum Ratings.....	3
General Characteristics.....	4
Luminous Flux Characteristic	5
Forward Voltage Bins.....	6
Characteristic Curves.....	7
Forward Current vs. Forward Voltage	7
Forward Current vs. Junction Temperature	7
Relative Luminous Intensity vs. Forward Current.....	8
Relative Luminous Intensity vs. Junction Temperature	8
Δx , Δy vs. Forward Current.....	9
Δx , Δy vs. Junction Temperature	9
Current Derating vs. Ambient Temperature	10
Beam Pattern	10
Spectrum, CRI 80 and CRI 90	11
Chromaticity Groups	12
Cool White; 5000, 5700 and 6500K.....	12
Neutral White; 4000K	13
Warm White; 2700, 3000 and 3500K.....	14
Mechanical Dimensions	15
Soldering Temperature Profile	16
Reliability	17
Reliability – Environmental/Mechanical Evaluation	17
Reliability - Lumen Maintenance.....	17
Product Packaging Information	18
Cautions.....	19
Legal Notice.....	20
Contact	20

Order Codes

CCT /K	CRI 80		CRI 90	
	3 Step	5 Step	3 Step	5 Step
6500	PLW2835AIB65B3	PLW2835AIB65B5	PLW2835AIB65C3	PLW2835AIB65C5
5700	PLW2835AIB57B3	PLW2835AIB57B5	PLW2835AIB57C3	PLW2835AIB57C5
5000	-	PLW2835AIB50B5	-	PLW2835AIB50C5
4000	PLW2835AIB40B3	PLW2835AIB40B5	PLW2835AIB40C3	PLW2835AIB40C5
3500	-	PLW2835AIB35B5	-	PLW2835AIB35C5
3000	PLW2835AIB30B3	PLW2835AIB30B5	PLW2835AIB30C3	PLW2835AIB30C5
2700	-	PLW2835AIB27B5	-	PLW2835AIB27C5

Absolute Maximum Ratings

$T_{amb} = +25^{\circ}\text{C}$ unless otherwise stated.

Parameter		Value	Units
DC Forward Current	I_F	200	mA
Pulse Forward Current ($t_p \leq 100\mu\text{s}$, Duty cycle=0.25)	I_{pulse}	350	mA
Reverse Current [1]	I_R	10	μA
Reverse Voltage [1]	V_R	5	V
LED Junction Temperature [2]	T_J	125	$^{\circ}\text{C}$
Operating Temperature	T_{opr}	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-40 ~ +125	$^{\circ}\text{C}$
Power Dissipation	P_D	200	mW
ESD Sensitivity (HBM)	V_B	2,000	V
Soldering Temperature	Reflow Soldering	T_S	255~260 $^{\circ}\text{C}$ /10~30sec
	Manual Soldering		350 $^{\circ}\text{C}$ /3sec

Notes [1] : LEDs are not designed to operate in reverse bias mode.

[2] : Current derating must be applied to ensure that the maximum junction temperature is not exceeded.

General Characteristics

$T_{amb} = +25^{\circ}\text{C}$ unless otherwise stated.

Parameter		Value	Units
Viewing angle ^[1]	$2\theta_{1/2}$	120	mA
Thermal resistance	R_{thj-sp}	20	$^{\circ}\text{C/W}$
Correlated Colour Temperature ^[2]	Cool White	6500	K
		5700	
		5000	
	Neutral White	4000	
	Warm White	3500	
		3000	
		2700	
Colour Rendering Index ^[3]	CRI	80/90	V
JEDEC Moisture Sensitivity ^[4]	-	2a (4 weeks)	-

Notes [1] : Viewing angle, $2\theta_{1/2}$, is the off-axis angle where the luminous intensity is 50% of the axial luminous intensity.

[2] : The CIE x/y tolerance is ± 0.005

[3] : The CRI tolerance is ± 2

[4] : MSL 2a Floor life conditions: $\leq 30^{\circ}\text{C}/60\%RH$.

Soak Requirement (Standard): $120 \pm 1/-0$ hr, $60^{\circ}\text{C}/5\%RH$.

Luminous Flux Characteristics

Luminous flux at $I_f=65\text{mA}$, $T_j=25^\circ\text{C}$.

CCT /K	CRI	Group	Luminous Flux /lm [1]		
			min	max	
Cool White: 6500 5700 5000	80	3F	30	32	
		4F	32	34	
		5F	34	36	
Neutral White: 4000		3F	30	32	
		4F	32	34	
		5F	34	36	
Warm White: 3500 3000 2700		2F	28	30	
		3F	30	32	
		4F	32	34	
Cool White: 6500 5700 5000		90	1F	26	28
			2F	28	30
			3F	30	32
	4F		32	34	
Neutral White: 4000	1F		26	28	
	2F		28	30	
	3F		30	32	
	4F		32	34	
Warm White: 3500 3000 2700	9E		24	26	
	1F		26	28	
	2F		28	30	
	3F		30	32	

Notes [1] : The luminous flux tolerance is $\pm 10\%$

Forward Voltage Bins

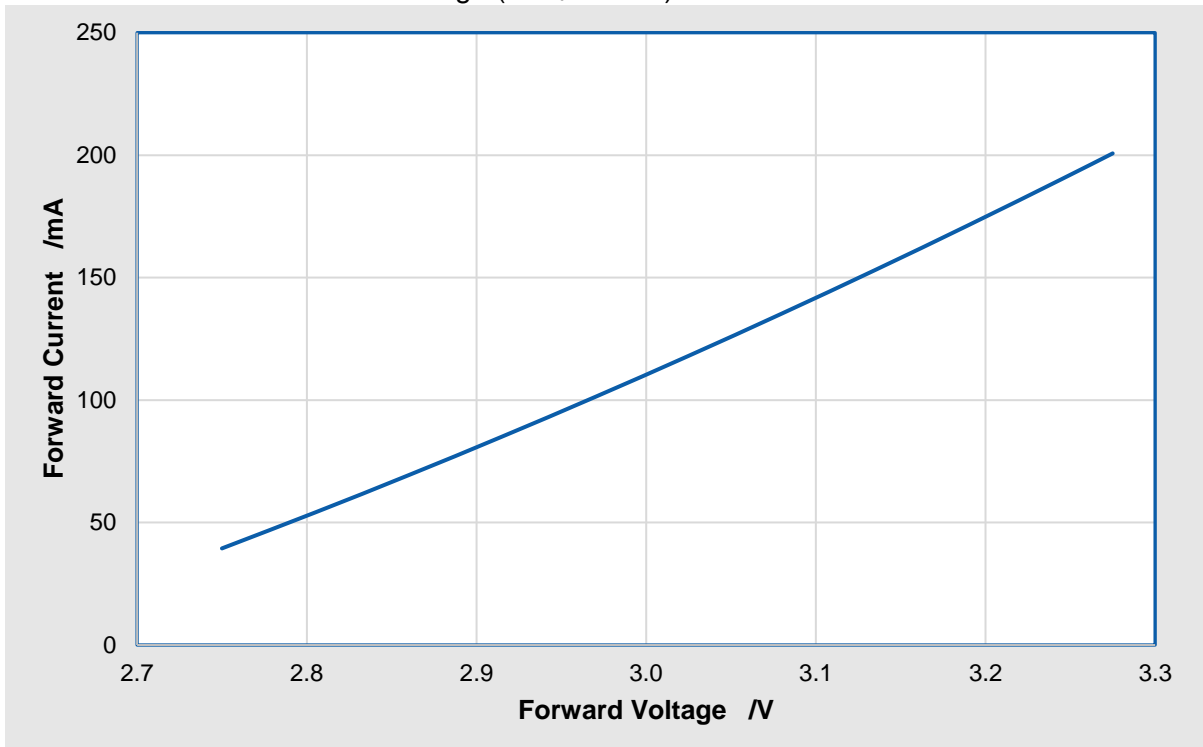
Forward Voltage at $I_f=65\text{mA}$, $T_j=25^\circ\text{C}$.

Group	Forward Voltage /V [1]	
	min	max
V01	2.7	2.8
V02	2.8	2.9
V03	2.9	3.0
V04	3.0	3.1
V05	3.1	3.2

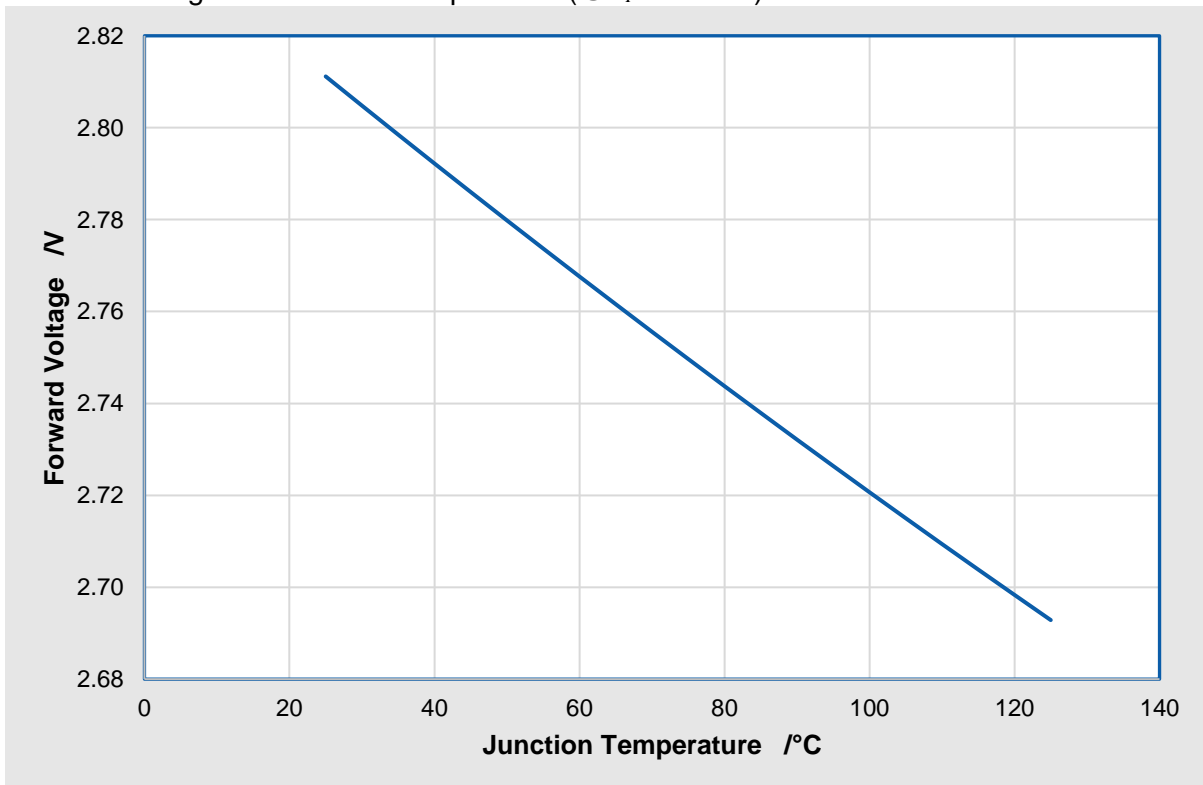
Notes [1] : The forward voltage tolerance is $\pm 0.06\text{V}$

Characteristic Curves

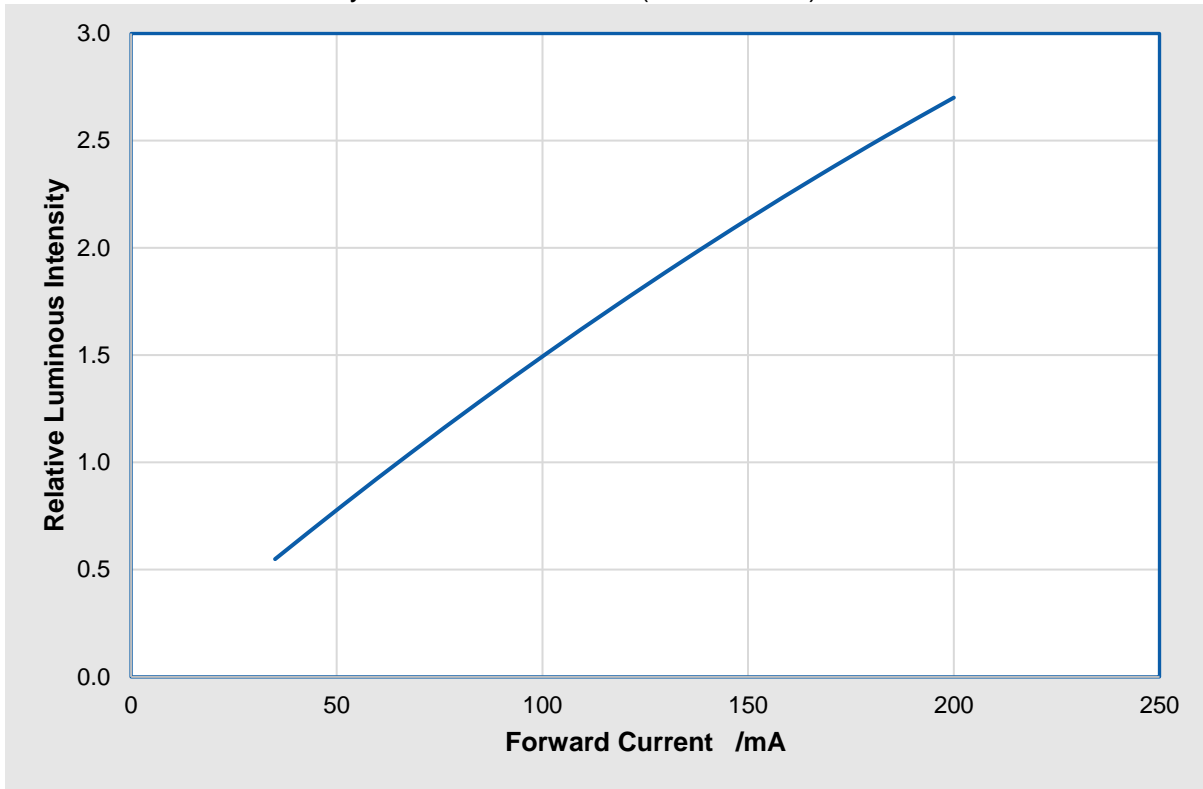
Forward Current vs. Forward Voltage (@ $T_J = 25^\circ\text{C}$)



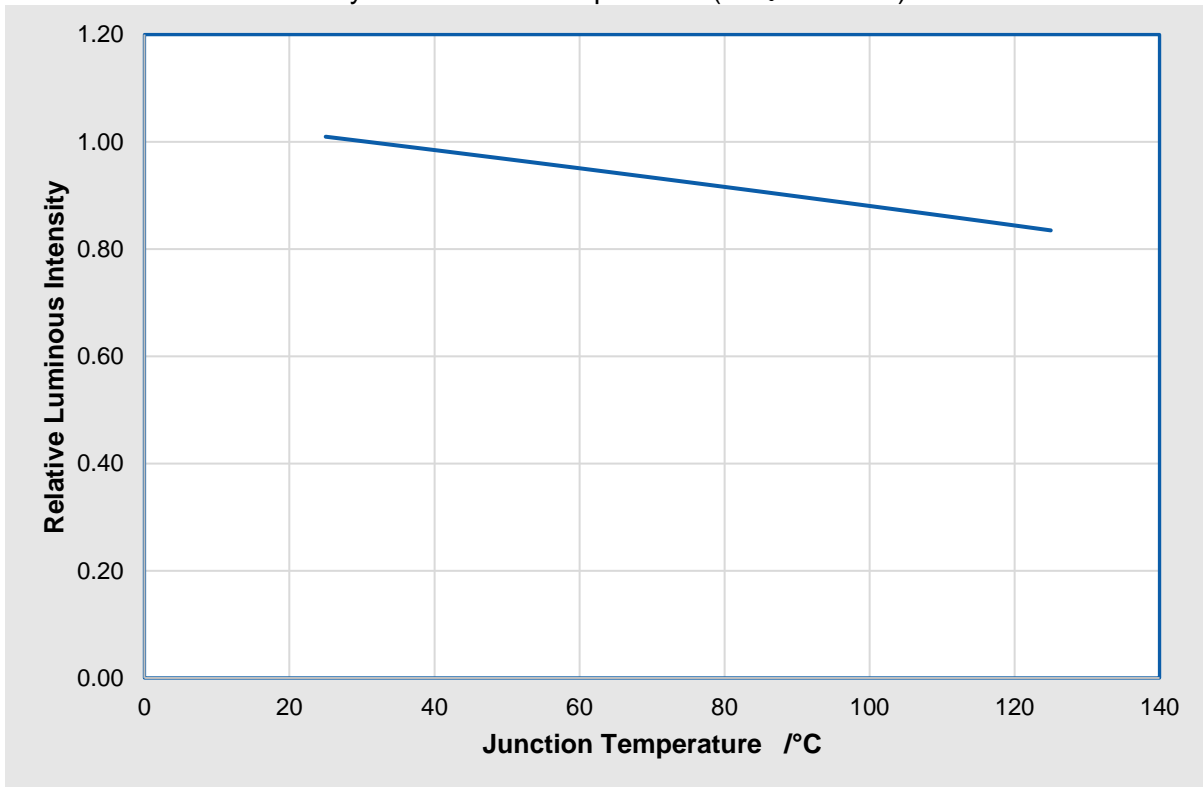
Forward Voltage vs. Junction Temperature (@ $I_F = 65\text{ mA}$)



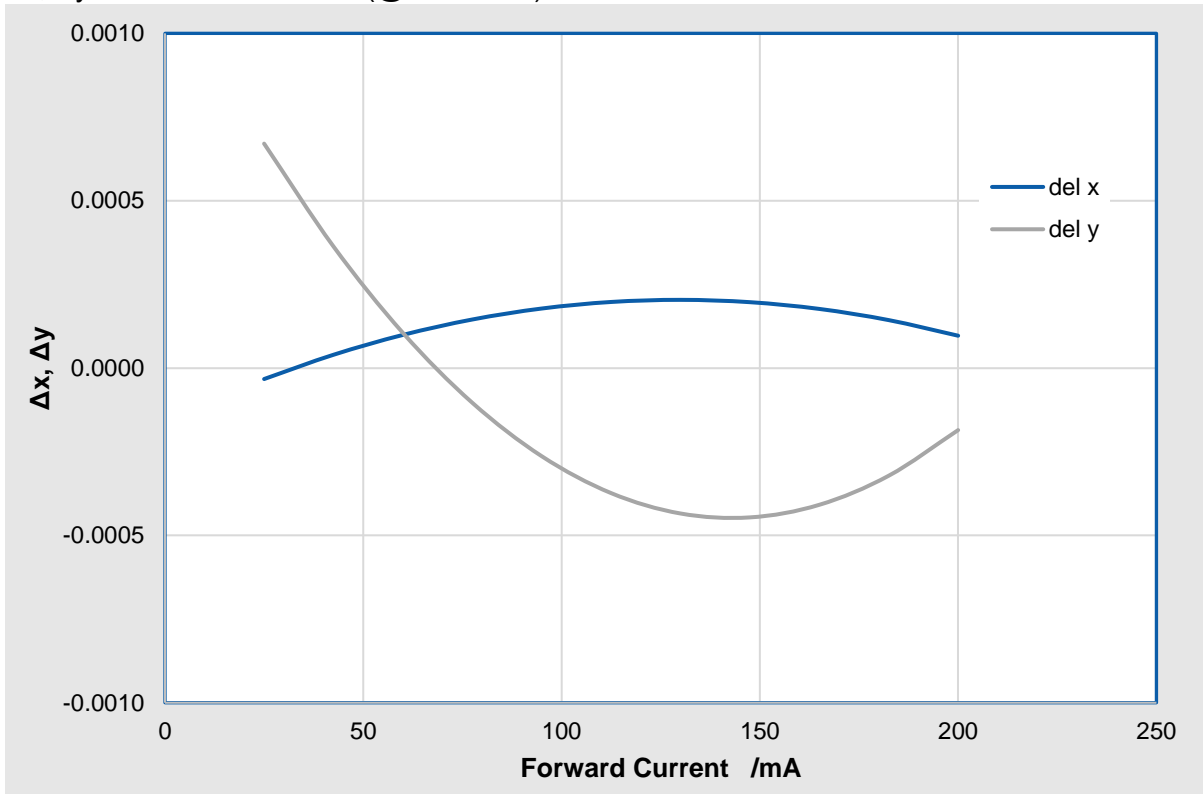
Relative Luminous Intensity vs. Forward Current (@ $T_J = 25^\circ\text{C}$)



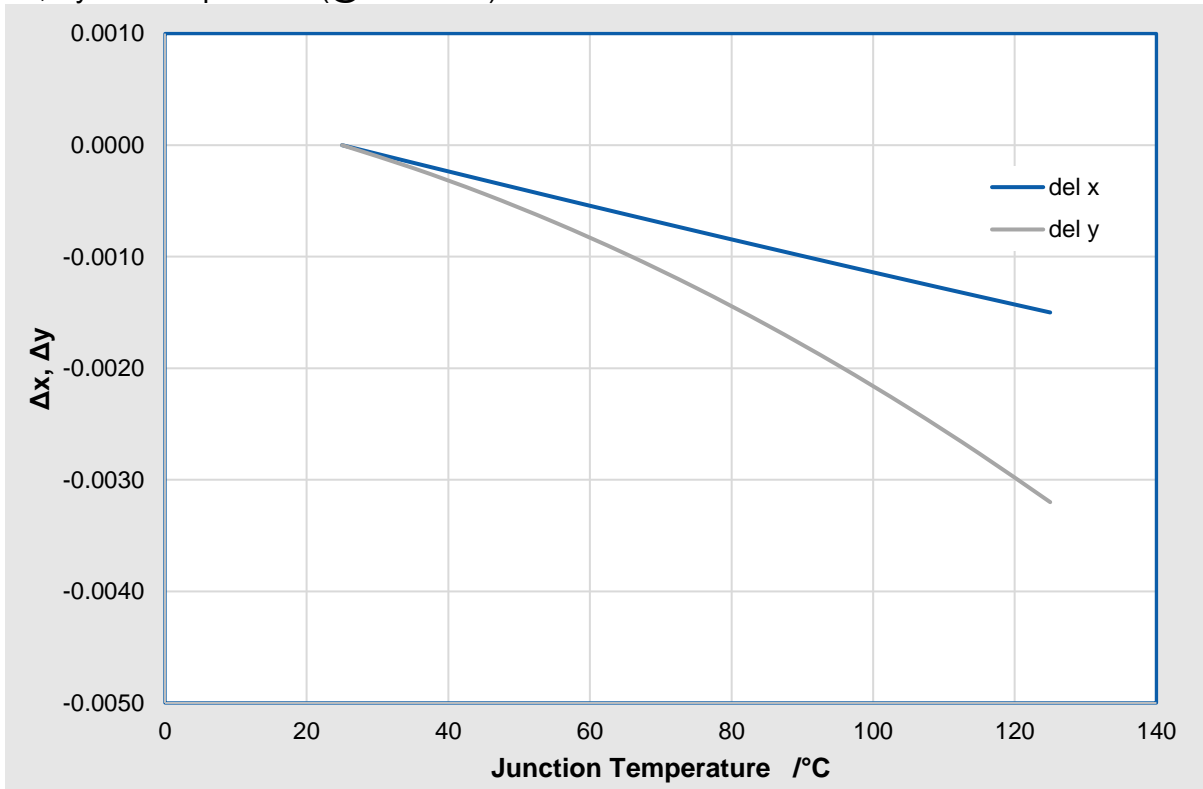
Relative Luminous Intensity vs. Junction Temperature (@ $I_F = 65\text{ mA}$)



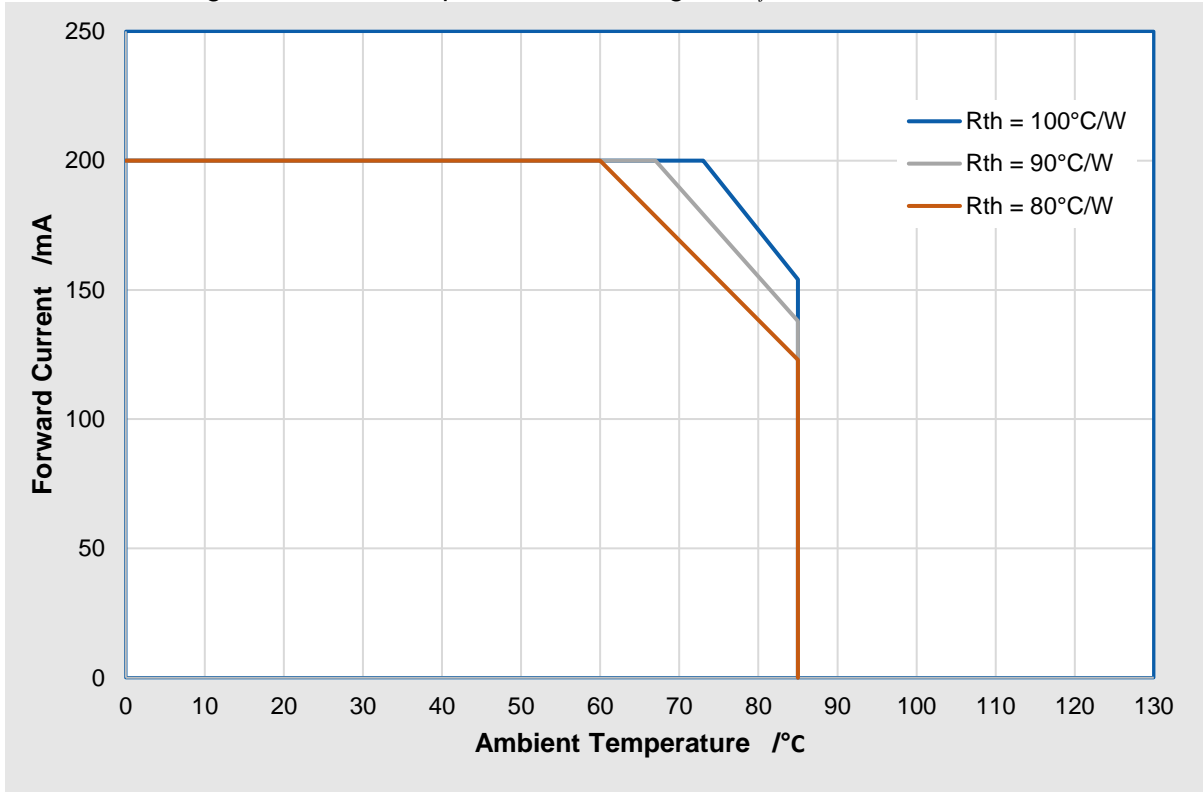
$\Delta x, \Delta y$ vs. Forward Current (@ $T_J = 25^\circ\text{C}$)



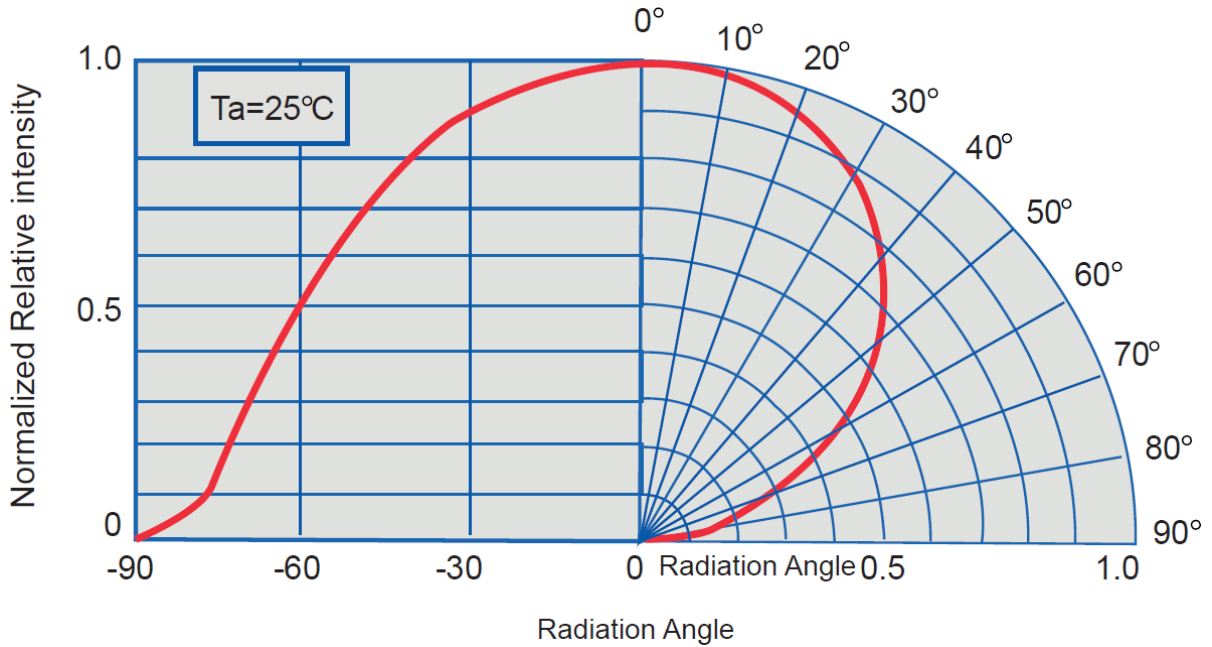
$\Delta x, \Delta y$ vs. Temperature (@ $T_J = 25^\circ\text{C}$)



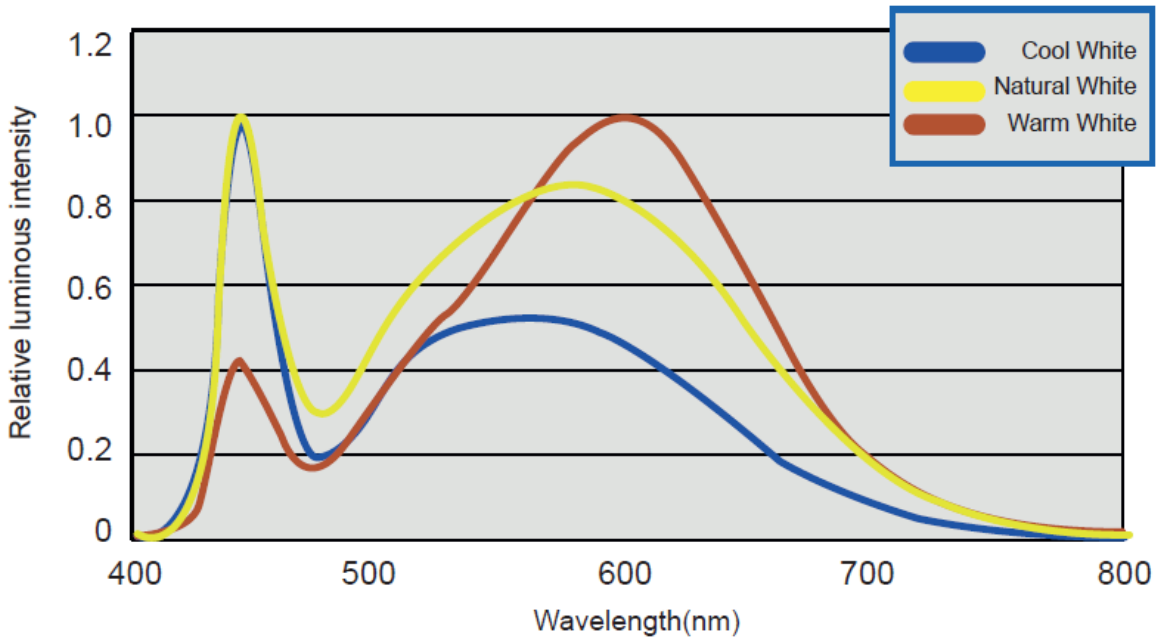
Current Derating vs Ambient Temperature for a range of $R_{j\text{-}amb}$



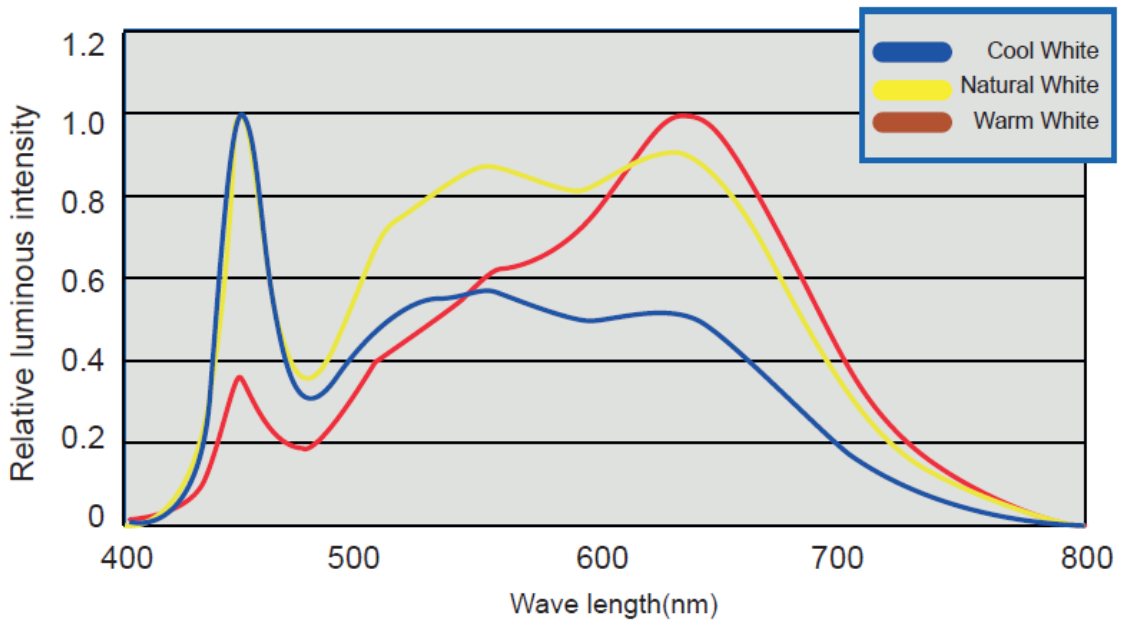
Beam Pattern



Colour Spectrum (CRI 80)

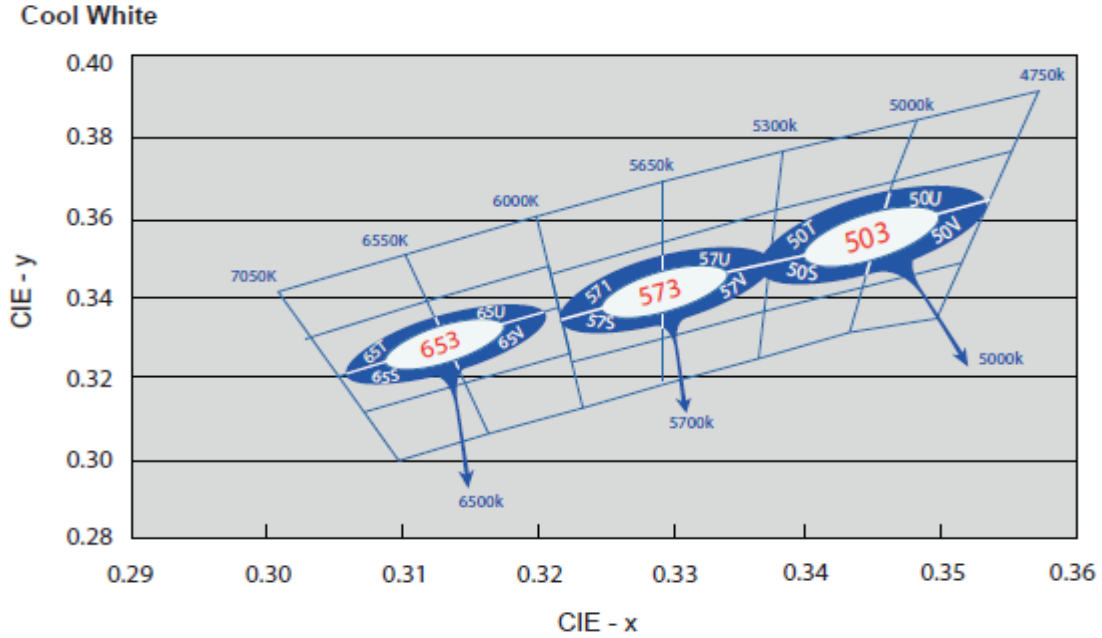


Colour Spectrum (CRI 90)



Chromaticity Groups

Cool White; 5000, 5700 and 6500K



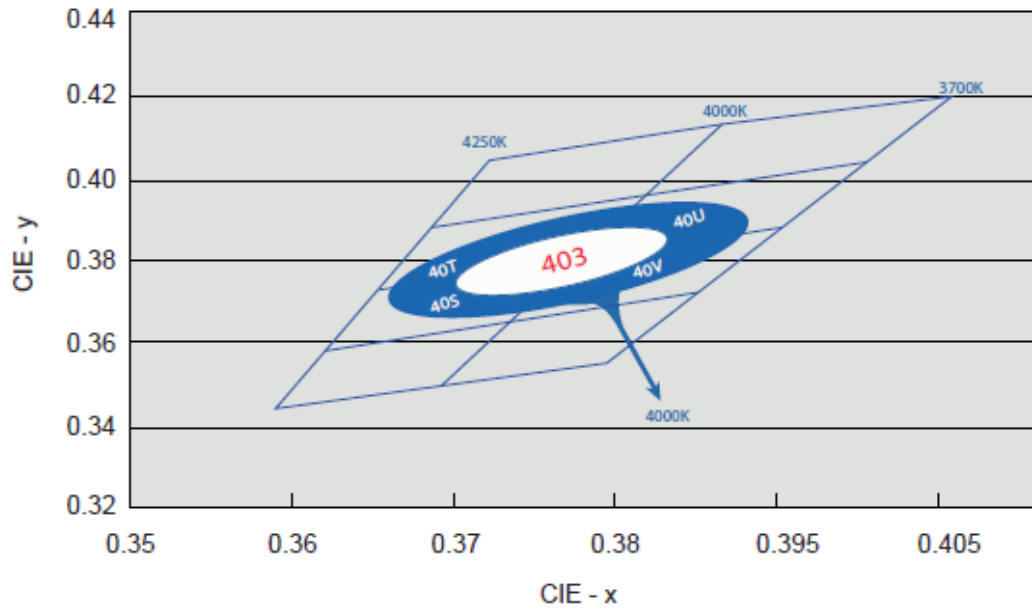
CCT	MacAdam Steps	Cx	Cy	a	b	theta °
5000	5	0.3447	0.3553	0.01370	0.00590	59.62
5700	5	0.3287	0.3417	0.01243	0.00533	59.09
	3			0.00746	0.00320	
6500	5	0.3123	0.3282	0.01115	0.00475	58.57
	3			0.00669	0.00285	

Chromaticity Bins

CCT	MacAdam Steps	
	5	3
5000	503, 50S, 50T, 50U, 50V	-
5700	573, 57S, 57T, 57U, 57V	573
6500	653, 65S, 65T, 65U, 65V	653

Neutral White; 4000K

Neutral White



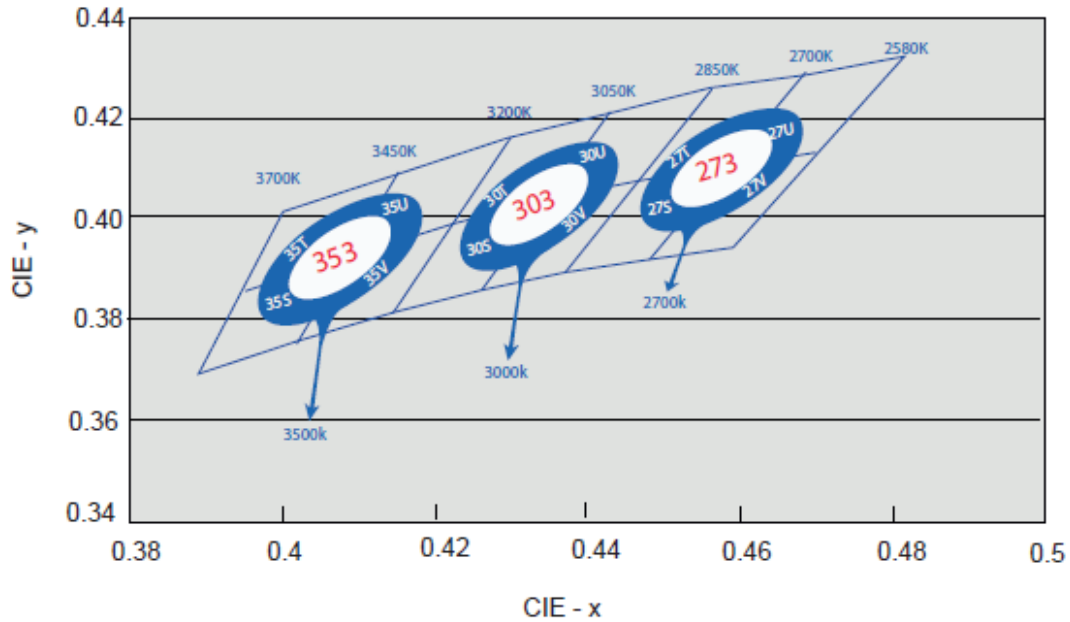
CCT	MacAdam Steps	Cx	Cy	a	b	theta °
4000	5	0.3818	0.3797	0.01565	0.00670	53.72
	3			0.00939	0.00402	

Chromaticity Bins

CCT	MacAdam Steps	
	5	3
4000	403, 40S, 40T, 40U, 40V	403

Warm White; 2700, 3000 and 3500K

Warm White

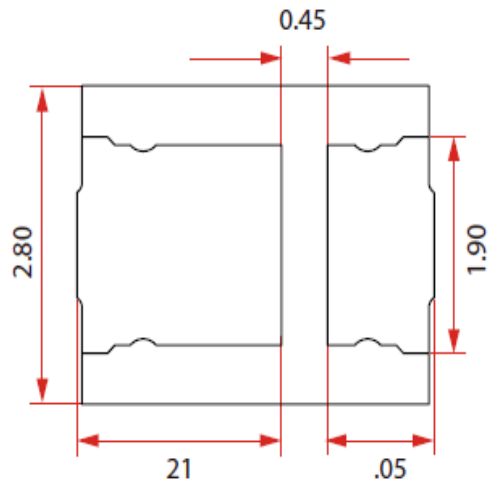
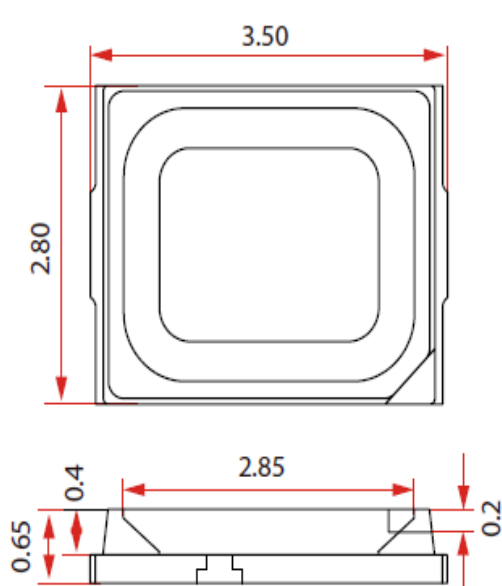


CCT	MacAdam Steps	Cx	Cy	a	b	theta °
2700	5	0.4578	0.4101	0.01350	0.00700	53.70
3000	5	0.4338	0.4030	0.01390	0.00680	53.22
	3			0.00834	0.00408	
3500	5	0.4073	0.3917	0.01545	0.00690	54.00

Chromaticity Bins

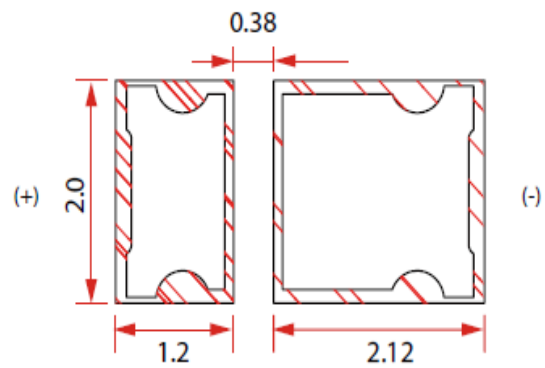
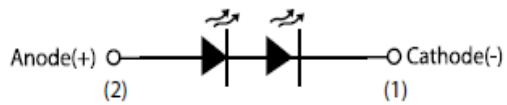
CCT	MacAdam Steps	
	5	3
2700	273, 27S, 27T, 27U, 27V	-
3000	303, 30S, 30T, 30U, 30V	303
3500	353, 35S, 35T, 35U, 35V	-

Mechanical Dimensions



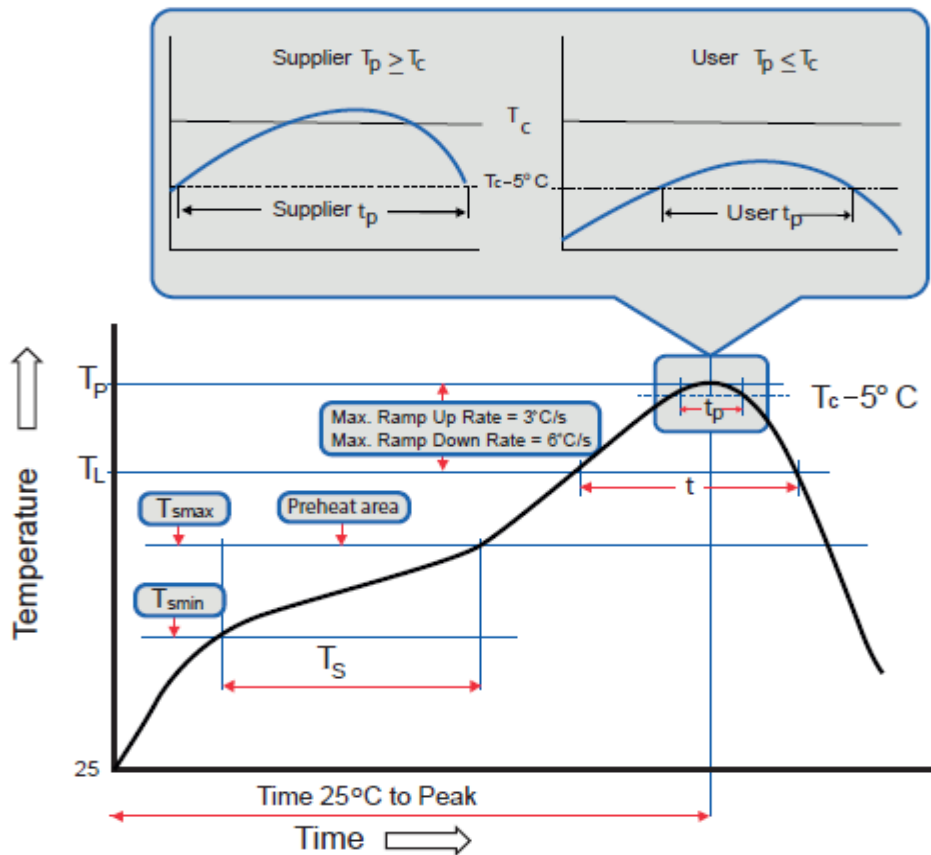
Solder Pad

Circuit



- Notes:
1. All dimensions are measured in mm.
2. Tolerance : ± 0.20 mm

Soldering Temperature Profile



Profile Feature	Pb-Free Assembly
Preheat & Soak	150 °C
Temperature min (T _{smin}) Temperature max (T _{smax}) Time (T _{smin} to T _{smax}) (t _s)	200 °C 60 – 120 seconds
Average ramp-up rate (T _{smax} to T _p)	3 °C/second max.
Liquid temperature (T _L)	217 °C
Time at liquid (t _L)	60 – 150 seconds
Peak package body temperature (T _p) ^[1]	255 °C ~260 °C ^[1]
Classification temperature (T _c)	260 °C
Time (t _p) ^[2] within 5 °C of the specified classification temperature (T _c)	30 seconds ^[2]
Average ramp-down rate (T _p to T _{smax})	6 °C/second max.
Time 25 °C to peak temperature	8 minutes max.

Notes [1] : Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

[2] : Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

Reliability - Environmental Evaluation

#	Test		
1	Temperature Cycling.	-40°C~100°C, 30, 30, mins	100 Cycles
2	Thermal Shock.	-40°C~100°C, 15, 15 mins \leq 10 sec	100 Cycles
3	Resistance to Soldering Heat.	TSOL=260°C, 30 sec	3 times
4	Moisture Resistance.	25°C~65°C 90% RH, 24 hrs / 1 cycle	10 Cycles
5	High-Temperature Storage.	$T_A=100^\circ\text{C}$	1000 hrs
6	Humidity Heat Storage.	$T_A =85^\circ\text{C}$ RH=85%	1000 hrs
7	Low-Temperature Storage.	$T_A=-40^\circ\text{C}$	1000 hrs
8	Operating Life.	$T_A=25^\circ\text{C}$	1000 hrs
9	High Temperature Operation Life.	$T_A=85^\circ\text{C}$	1000 hrs
10	High Humidity Heat Life Test.	$T_A =85^\circ\text{C}$ RH=85%	1000 hrs
11	Power Cycling.	30 sec ON, 30 sec OFF	1.5W times

Failure Criteria

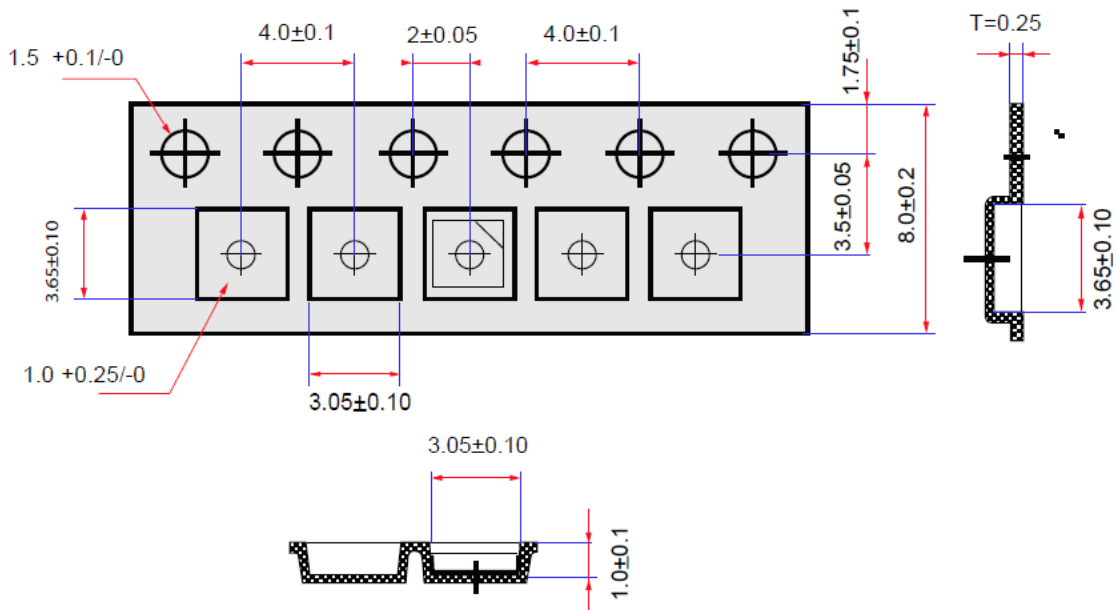
Mode	Failure Criteria	
	Min.	Max
Lumen Maintenance.	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage.	-	Initial data x 1.1
Reverse Current.	-	10 μ A
Resistance to soldering heat.	No dead lamps or visual damage	

Reliability - Lumen Maintenance

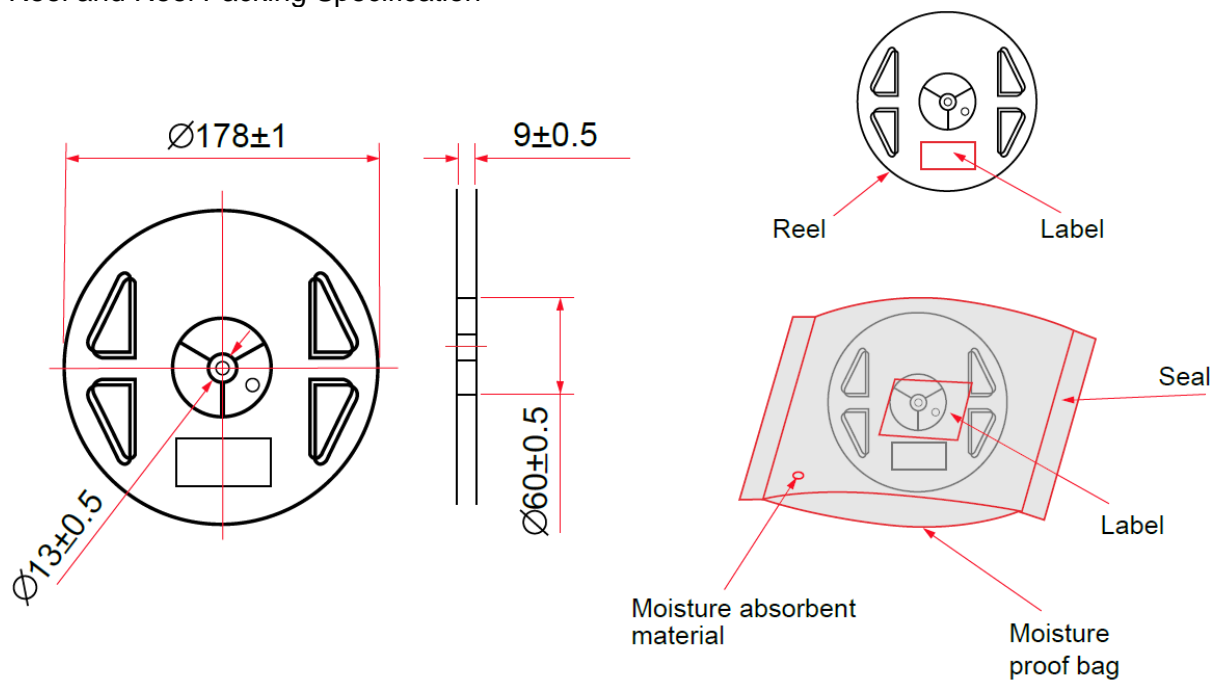
LM-80 verification is conducted according to standardized IES LM-80-08 and TM-21-11 methods. Based on the different testing intervals data, we can extrapolate LED lumen maintenance. For more details on lumen maintenance testing, chromaticity and LED case temperatures please refer to our LM-80 reports.

Product Packing Information


Tape specification



Reel and Reel Packing Specification



Cautions

Sulphur	Avoid storing or operation the LEDs in a sulphur containing environment. Some materials, such as seals, printing ink, enclosure and adhesives, may contain sulphur. Avoiding the exposure in acid or halogen environment.
Reverse Bias	These LEDs are not designed to operate in reverse bias. Precautions are required to prevent reverse bias in applications and during handling.
ESD	<div data-bbox="496 506 898 696" style="border: 1px solid black; padding: 5px; text-align: center;"><p>ATTENTION OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES</p></div> <p>These LEDs are ESD sensitive. Safe ESD handling precautions are required.</p>

Legal Notice

Product information provided by Plessey Semiconductors Limited (“Plessey”) in this document is believed to be correct and accurate. Plessey reserves the right to change/correct the specifications and other data or information relating to products without notice but Plessey accepts no liability for errors that may appear in this document, howsoever occurring, or liability arising from the use or application of any information or data provided herein. Neither the supply of such information, nor the purchase or use of products conveys any licence or permission under patent, copyright, trademark or other intellectual property right of Plessey or third parties.

Products sold by Plessey are subject to its standard Terms and Conditions of Sale that are available on request. No warranty is given that products do not infringe the intellectual property rights of third parties, and furthermore, the use of products in certain ways or in combination with Plessey, or non-Plessey furnished equipments/components may infringe intellectual property rights of Plessey.

The purpose of this document is to provide information only and it may not be used, applied or reproduced (in whole or in part) for any purpose nor be taken as a representation relating to the products in question. No warranty or guarantee express or implied is made concerning the capability, performance or suitability of any product, and information concerning possible applications or methods of use is provided for guidance only and not as a recommendation.

The user is solely responsible for determining the performance and suitability of the product in any application and checking that any specification or data it seeks to rely on has not been superseded.

Products are intended for normal commercial applications. For applications requiring unusual environmental requirements, extended temperature range, or high reliability capability (e.g. military, or medical applications), special processing/testing/conditions of sale may be available on application to Plessey.

Contact

Customer Enquiries/Sales
+44 1752 693000 | sales@plesseysemi.com
www.plesseysemi.com

Plessey Semiconductors Ltd | Plymouth
Tamerton Road, Roborough
Plymouth, Devon
PL6 7BQ United Kingdom

P: +44 1752 693000
F: +44 1752 693700

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [High Power LEDs - White category:](#)

Click to view products by [Plessey manufacturer:](#)

Other Similar products are found below :

[G42180-08](#) [B42180-08](#) [STW8Q2PA-R5-HA](#) [SZ5-M1-W0-00-V3/W2-AA](#) [LTPL-P00DWS57](#) [LZP-D0WW00-0000](#) [CLM-9-30-90-36-AC32-F4-3](#) [SZ5-M1-WW-C8-V1/V3-FA](#) [BXRC-27E2000-D-73](#) [BXRC-27G2000-D-73](#) [BXRC-30E1000-D-73](#) [BXRC-30G2000-D-73](#) [BXRC-40E1000-D-73](#) [BXRE-30G2000-B-73](#) [BXRE-30G2000-C-73](#) [BXRE-50C2001-C-74](#) [CXM-22-27-80-54-AC30-F4-3](#) [XHP50B-00-0000-0D0UH245G](#) [XHP50B-00-0000-0D0HJ245G](#) [MP-5050-8100-27-80](#) [MP-5050-6100-65-80](#) [MP-5050-6100-50-80](#) [MP-5050-6100-40-80](#) [MP-5050-6100-30-80](#) [CXM-22-30-80-54-AC30-F4-3](#) [LTW-2835SZK57](#) [BXEM-50C0000-0-000](#) [WW-WNA30TS-U1\(M1\)](#) [KW CSLPM2.CC-8L8M-4L8N](#) [KW CSLPM2.CC-8L8M-4O9Q](#) [KW DPLS32.SB-6H6J-E5P7-EG-Z264](#) [L1V1-507003V500000](#) [CXM-22-35-80-36-AC10-F3-3](#) [KW3 CGLNM1.TG-Z6QF6-EBVFFCBB46-DFGA](#) [XHP50B-00-0000-0D0UG430H](#) [CXM-22-35-90-54-AC40-F5-3](#) [CXM-22-35-80-54-AC40-F5-3](#) [OSM51206E1N-0.8T](#) [OSW43020C1C](#) [MP161611032290](#) [MP-1616-2103-50-90](#) [KW CULPM1.TG-Z6RF7-ebvFfcbB46-65G5](#) [KW DMLS33.SG-Z6M7-EBVFFCBB46-8E8G-700-S](#) [XPGDWT-B1-0000-00EEA](#) [XHP70B-00-0000-0D0BP450E](#) [KW DMLN33.SG-7J7K-EBVFFCBB46-8E8G-200-S](#) [ASMT-MW05-NMNS1](#) [ASMT-MW06-NMNZ1](#) [KW DPLS33.KD-HIJG-D30D144-HN-22C2-120-S](#) [JR5050AWT-Q-B40EB0000-N0000001](#)