

PLWY2017A ProBrite™ Series

High Power, 4000lm, Light Module

Product Datasheet



Description

Plessey's PLWY2017A Series light modules are designed for high power indoor and outdoor lighting. These high performance light module are populated with four Plessey PLW7070GA High Power LEDs. The modules are fully tested and then packaged in single intensity and colour bins. The modules are designed to be compatible with Ledil 2x2MX family lenses.

Features

- Using SinkPAD™ – II MCPCB Technology for high thermal performance.
- Module embodies Plessey PLW7070GA High Power LEDs.
- Excellent thermal resistance.
- Wide range of colour temperature: CCT (3000K-5700K).
- Compatible with LEDIL 2x2MX Strada lenses.
- Enables simple fixture design upgrades.
- Modular approach.
- Drive current of 700mA (typical).
- Up to 50,000 hour Life.

Applications

- Street Lighting
- Area Lighting
- High Bay& Low Bay
- Parking Lighting
- Architectural Lighting
- Downlight
- Specialty Lighting
- Wall Pack Lighting

Variant	Colour	CCT	
		Min.	Max.
PLWY2017A-3000	Warm White 3000K	2870K	3220K
PLWY2017A-4000	Neutral White 4000K	3710K	4260K
PLWY2017A-5000	Cool White 5000K	4745K	5311K
PLWY2017A-5700	Cool White 5700K	5310K	6020K

Ordering Information

Name	Order Code	CRI	Min. Flux	Forward Voltage Range
PLWY2017A-3000	PLWY2017AW30000	80	1P	V0 – V3
PLWY2017A-4000	PLWY2017AN40000	70	3P	
PLWY2017A-5000	PLWY2017AC50000	70		
PLWY2017A-5700	PLWY2017AC57000	70		

Absolute Maximum Ratings

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

Parameter	Symbol	Min.	Max.	Unit
DC Forward Current	I_F	-	1250	mA
Power Dissipation	P_d	-	40	W
Storage Temperature	T_{stg}	-40	+105	$^{\circ}\text{C}$
Junction Temperature	T_j	-40	+135	$^{\circ}\text{C}$
ESD Voltage (JEDEC JS-001-2011)	V_{ESD}	5	-	kV

[1] Pulse width $\leq 10\text{ms}$, duty cycle $\leq 10\%$

Electro-optical Characteristics

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage ^[1] ($T_J = 85^{\circ}\text{C}$)	V_F	$I_F = 700\text{mA}$	43.2	-	49.6	V
Reverse Current	I_R	$V_R = 5\text{V}$	-	-	10	μA
Colour Rendering Index ^[2]	R_a	$I_F = 700\text{mA}$		70/80		
Luminous Flux ($T_J = 85^{\circ}\text{C}$)	I_m	$I_F = 700\text{mA}$ CCT = 4000K CRI = 70	3800	4000		lm
Thermal Resistance ^[3]	R_{THJ-MF}	$I_F = 700\text{mA}$	-	0.8	-	$^{\circ}\text{C}/\text{W}$
Half-Intensity Angle	$2\Theta_{1/2}$	$I_F = 700\text{mA}$	-	120	-	deg

[1] Forward Voltage, V_F , tolerance is $\pm 0.1\text{V}$

[2] Colour Rendering Index, R_a , tolerance is ± 2

[3] The thermal resistance is an electrical thermal resistance value for junction to board mounting face.

Recommended Operating Conditions

In typical applications, for optimum LED performance

Parameter	Symbol	Min.	Max.	Unit
Operating Mounting Face Temperature	T_{opr}	-40	+85	$^{\circ}\text{C}$

Luminous Flux Bin Groups

$I_F = 700\text{mA}$, $T_J = +85^\circ\text{C}$

CCT	CRI	Luminous Flux Bin ^[1] ^[2]				
		1P	2P	3P	4P	5P
		3120 -3360 lm	3360 -3600 lm	3600 -3880 lm	3880 -4160 lm	4160 -4480 lm
5700	70			✓	✓	✓
5000	70			✓	✓	✓
4000	70			✓	✓	✓
3000	80	✓	✓	✓	✓	

^[1] Pulse test, $t_p=10\text{ms}$

^[2] Tolerance $\pm 7\%$

Forward Voltage Bin Groups

$I_F = 700\text{mA}$, $T_J = +85^\circ\text{C}$

Group	V_F ^[1] (V)	
	Min.	Max.
V0	43.2	44.8
V1	44.8	46.4
V2	46.4	48.0
V3	48.0	50.4

^[1] Tolerance $\pm 0.4\text{V}$

Colour Rendering Index

$I_F = 700\text{mA}$, $T_{\text{amb}} = +25^\circ\text{C}$, unless otherwise stated

CRI 1	CRI 2	Colour Rendering Index CRI (Ra) ^[1]	
		Min	Max
BA	B0	65	68
	B1	68	70
CA	C0	70	75
	C1	75	80
CB	C2	80	85
	C3	85	90
CC	C4	90	95
	C5	>95	-

Note: CRI bins controlled to +/-2.

Hot Chromaticity Binning - 85°C

Warm White 3000K

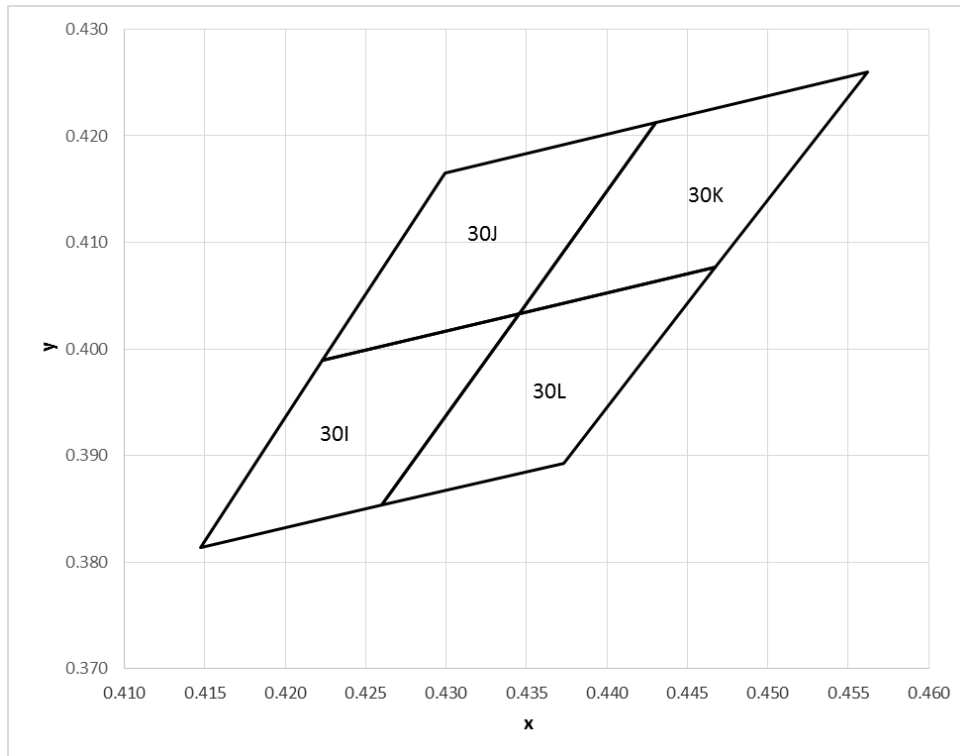


Figure 1(a) : Detail of 3000K chromaticity

30I		30J		30K		30L	
x	y	x	y	x	y	x	y
0.4345	0.4033	0.4431	0.4213	0.4562	0.4260	0.4468	0.4077
0.4223	0.3990	0.4299	0.4165	0.4431	0.4213	0.4345	0.4033
0.4147	0.3814	0.4223	0.3990	0.4345	0.4033	0.4260	0.3854
0.4260	0.3854	0.4345	0.4033	0.4468	0.4077	0.4373	0.3893

Table 1(a) 3000K chromaticity coordinates - tolerance for each bin is ± 0.01

Hot Chromaticity Binning - 85°C

Neutral White 4000K

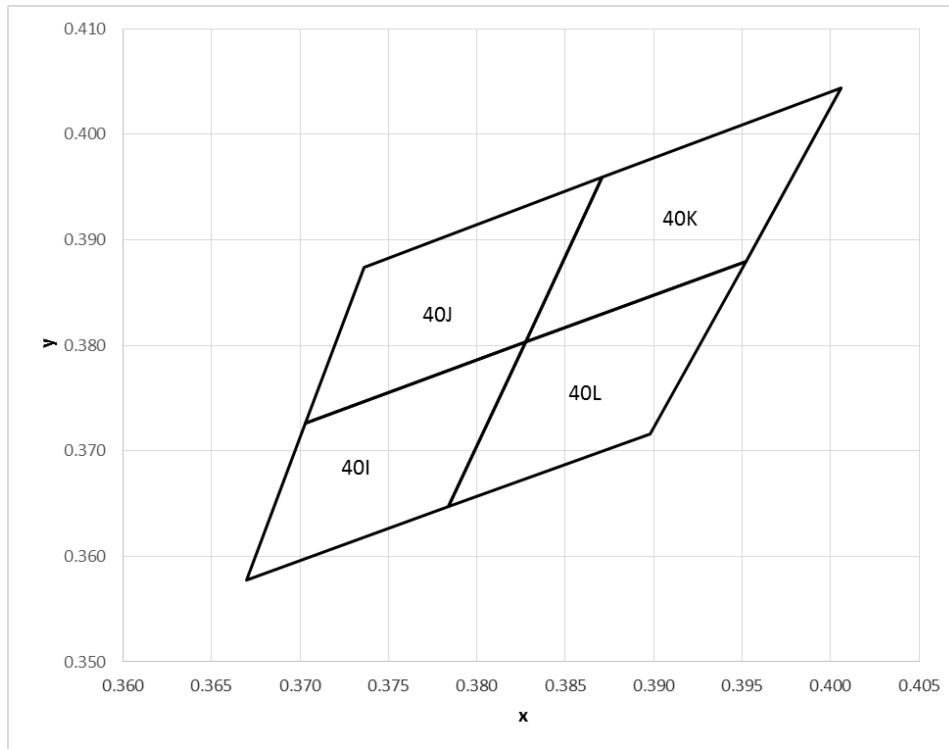


Figure 1(b) : 4000K chromaticity

40I		40J		40K		40L	
x	y	x	y	x	y	x	y
0.3828	0.3803	0.3871	0.3959	0.4006	0.4044	0.3952	0.3880
0.3703	0.3726	0.3736	0.3874	0.3871	0.3959	0.3828	0.3803
0.3670	0.3578	0.3703	0.3726	0.3828	0.3803	0.3784	0.3647
0.3784	0.3647	0.3828	0.3803	0.3952	0.3880	0.3898	0.3716

Table 1(b) 4000K chromaticity coordinates - tolerance for each bin is ± 0.01

Hot Chromaticity Binning - 85°C

Cool White 5000K

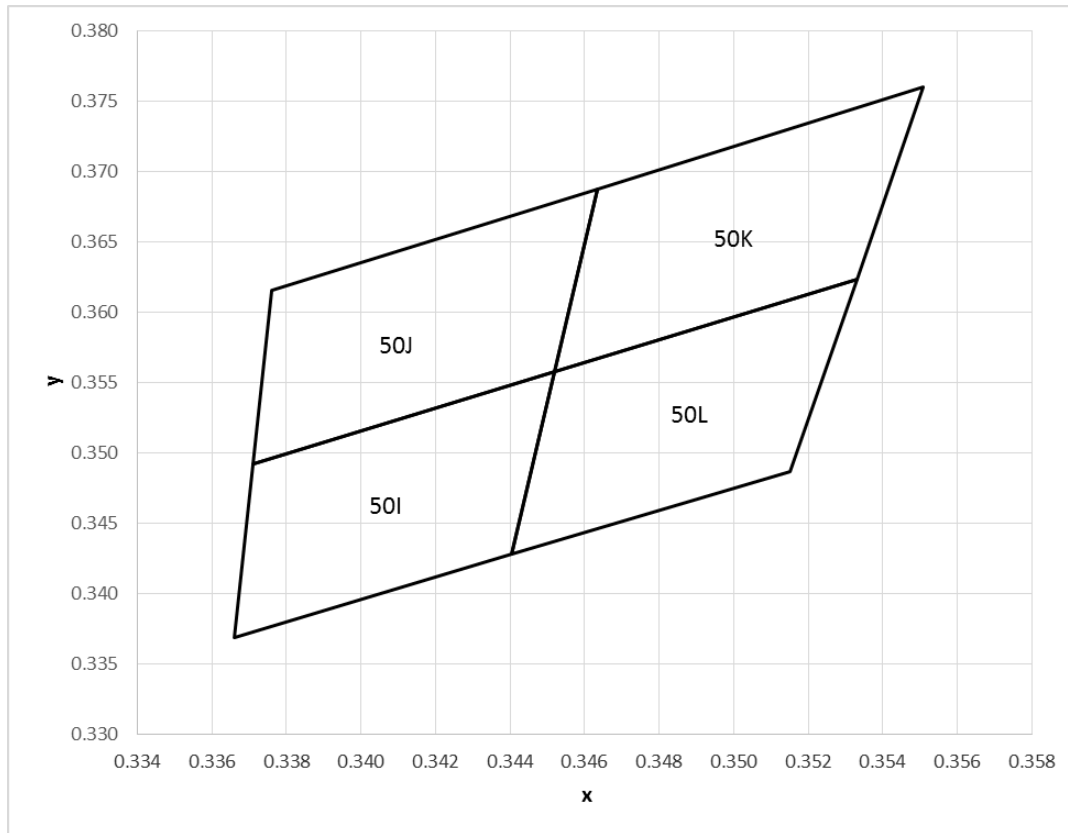


Figure 1(c) : 5000K chromaticity

50I		50J		50K		50L	
x	y	x	y	x	y	x	y
0.3452	0.3558	0.3464	0.3688	0.3551	0.3760	0.3533	0.3624
0.3371	0.3493	0.3376	0.3616	0.3464	0.3688	0.3452	0.3558
0.3366	0.3369	0.3371	0.3493	0.3452	0.3558	0.3441	0.3428
0.3441	0.3428	0.3452	0.3558	0.3533	0.3624	0.3515	0.3487

Table 1(c) 5000K chromaticity coordinates - tolerance for each bin is ± 0.01

Hot Chromaticity Binning - 85°C

Cool White 5700K

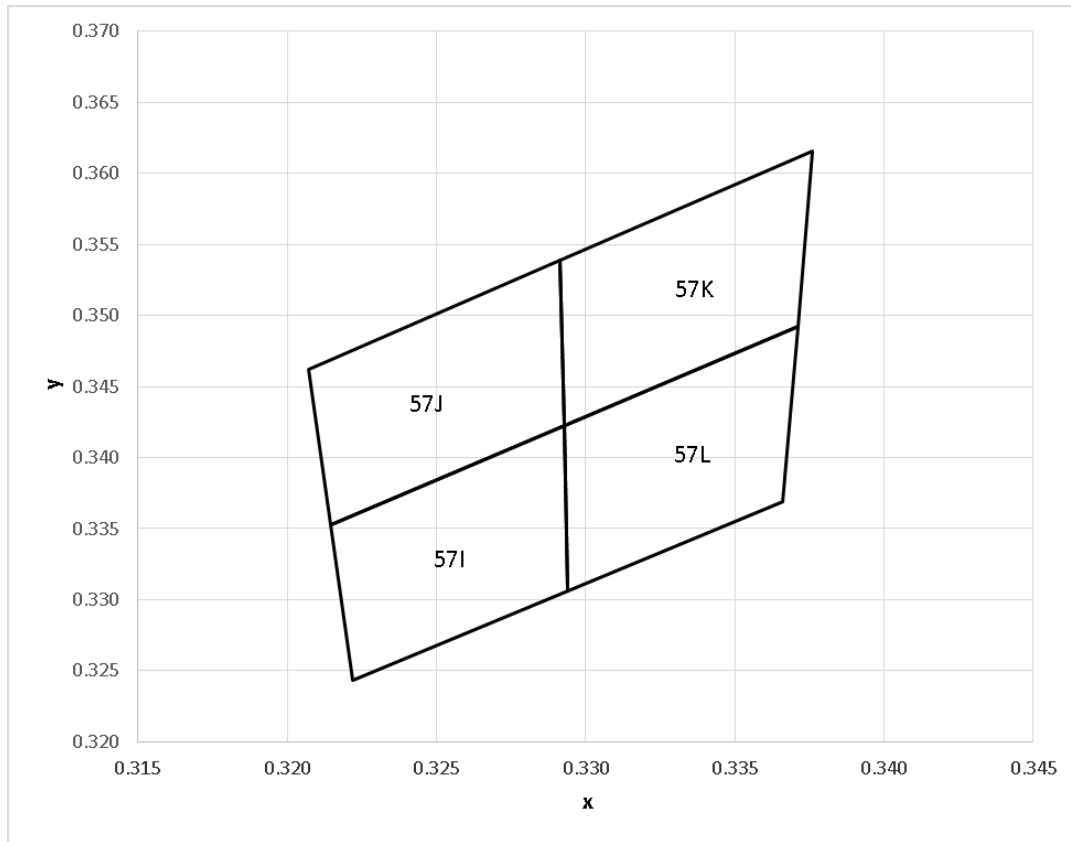


Figure 1(d) : 5700K chromaticity

57I		57J		57K		57L	
x	y	x	y	x	y	x	y
0.3293	0.3422	0.3292	0.3539	0.3376	0.3616	0.3371	0.3493
0.3215	0.3353	0.3207	0.3462	0.3292	0.3539	0.3293	0.3422
0.3222	0.3243	0.3215	0.3353	0.3293	0.3422	0.3294	0.3306
0.3294	0.3306	0.3293	0.3422	0.3371	0.3493	0.3366	0.3369

Table 1(d) 5700K chromaticity coordinates - tolerance for each bin is ± 0.01

Relative Spectral Emission

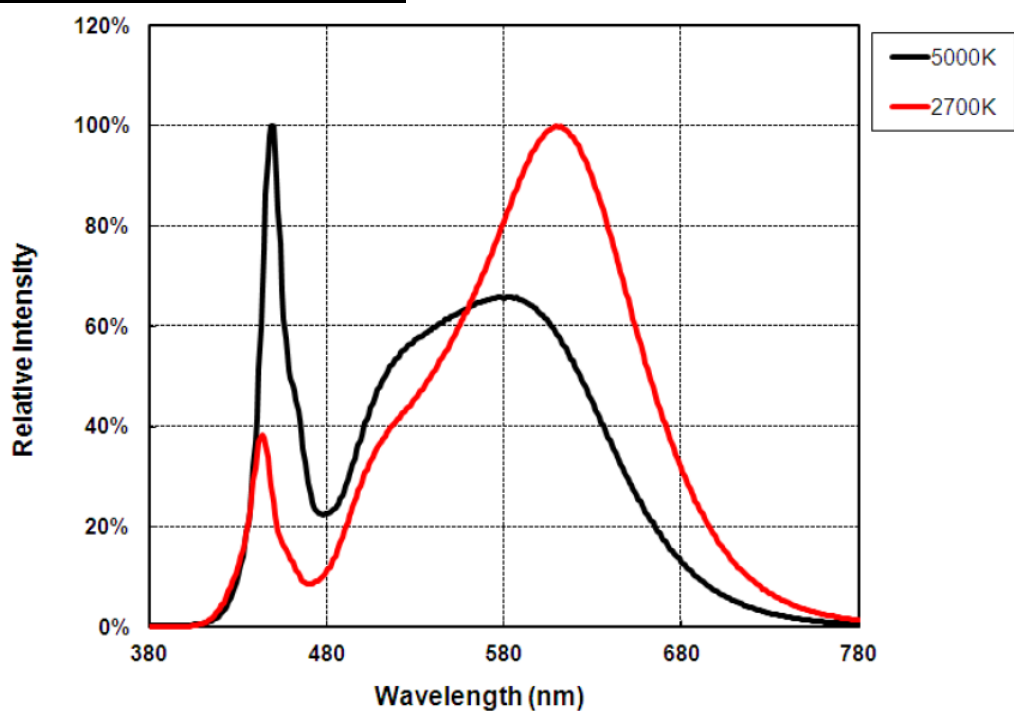


Figure 2: Relative Emission Intensity versus Wavelength

Angular Light Distribution

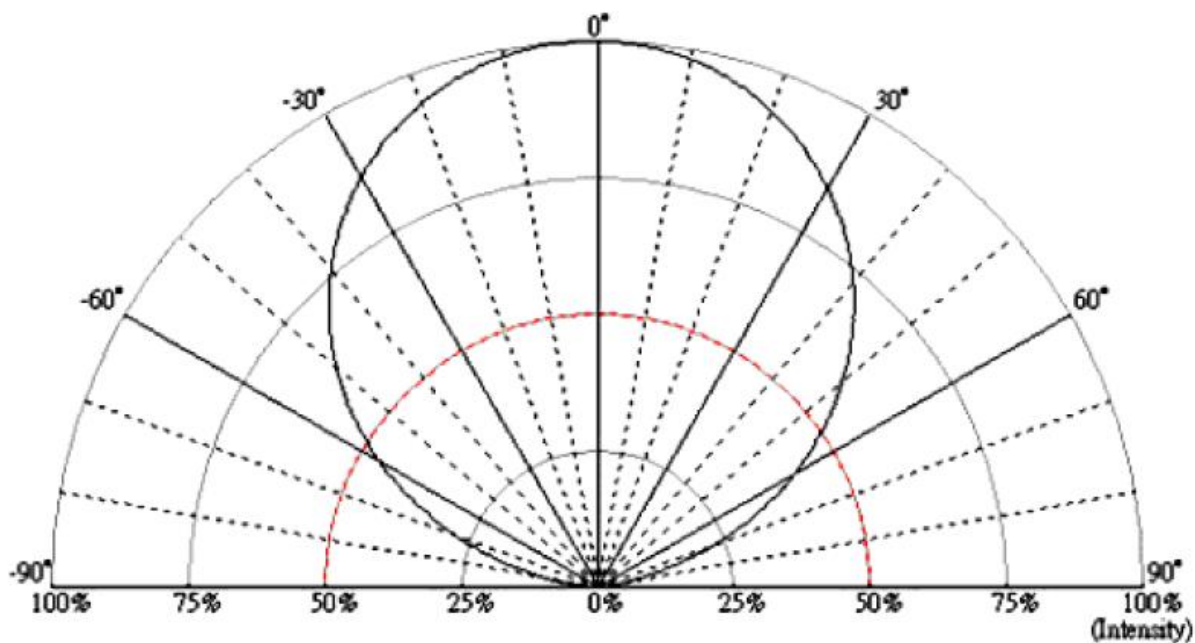


Figure 3: Angular distribution pattern of emitted light

Forward Current Characteristics

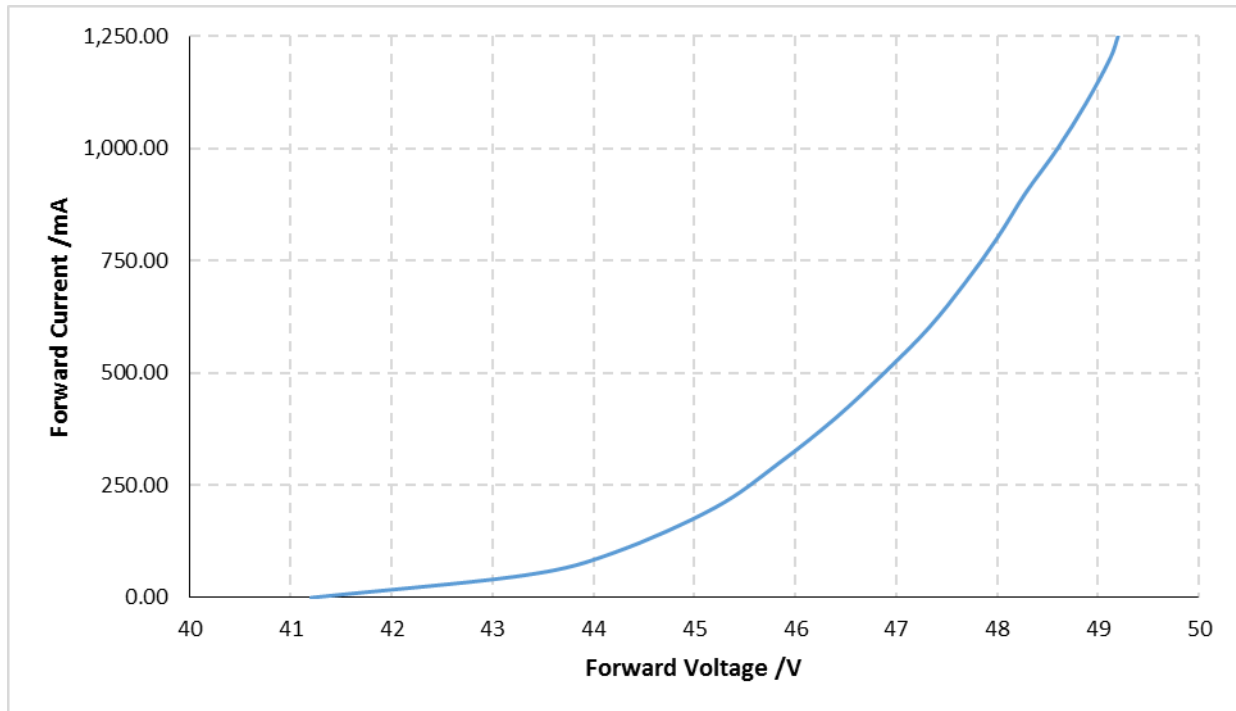


Figure 4: Typical forward current versus forward voltage (Ta=+25C)

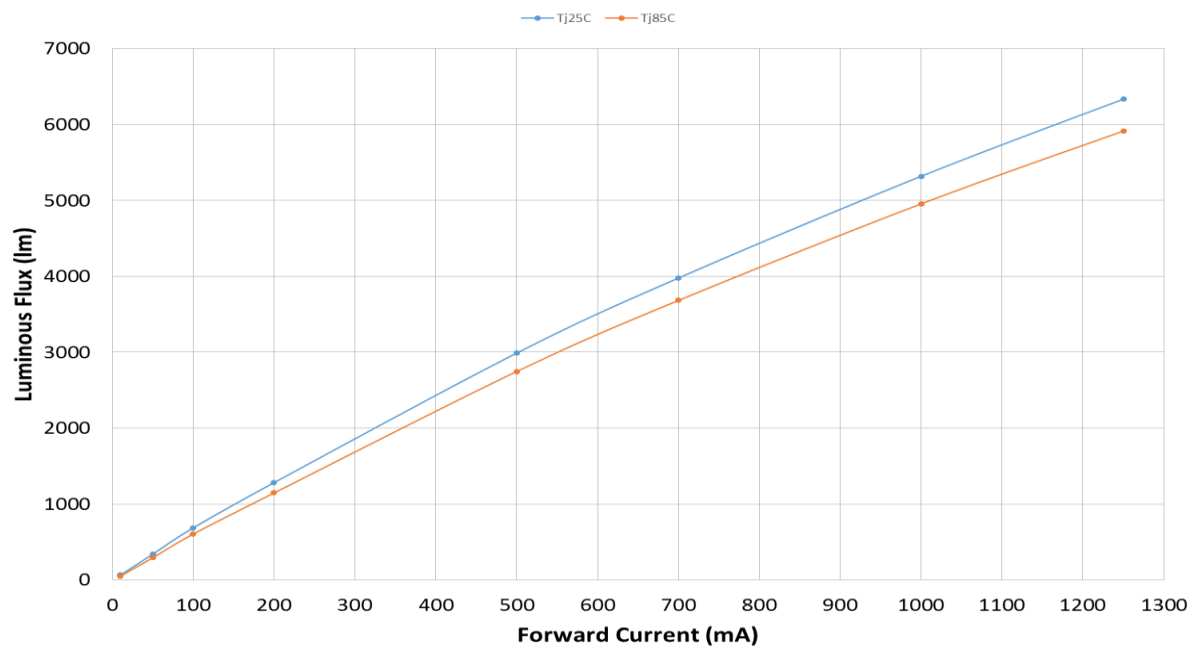


Figure 5: Luminous flux versus forward current (TJ=+25 and 85°C)

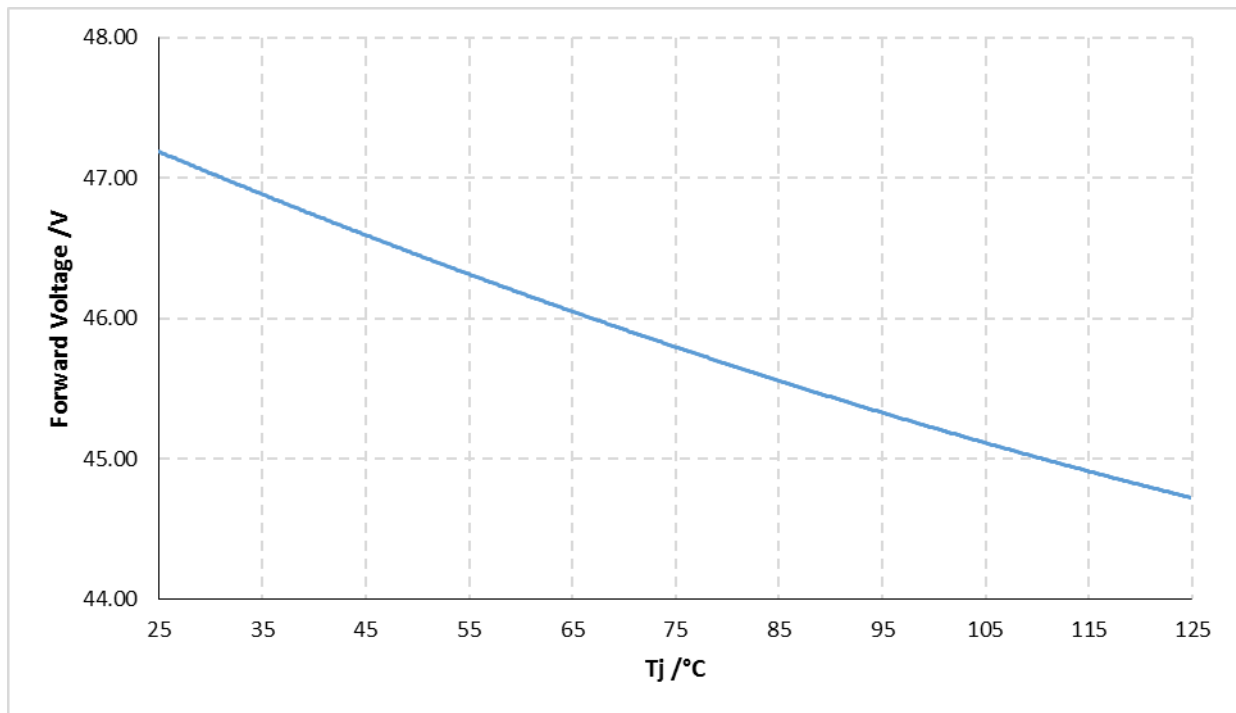
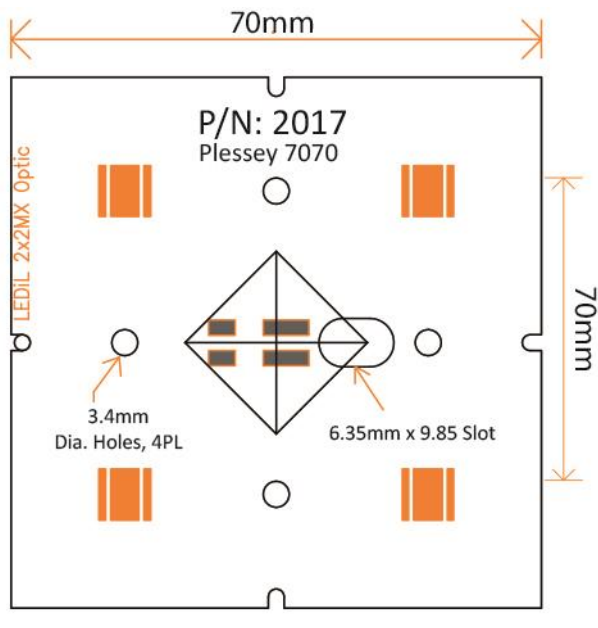


Figure 6: Forward voltage versus junction temperature ($I_F=700\text{mA}$)

Mechanical



Handling Instructions

Plessey LEDs are not designed to operate with reverse bias.

Precautions are required to prevent reverse bias in applications and during handling.



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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

Mouser Electronics

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