

# PRODUCT DATASHEET FP16562\_LISA3-WWW-PIN

## LISA3-WWW-PIN

~60° wide beam with location pin installation

#### **SPECIFICATION:**

Dimensions	Ø 9.9 mm
Height	7 mm
Fastening	pin
ROHS compliant	yes 🛈



#### **MATERIALS**:

Component LISA3-WWW LISA3-HLD-PIN

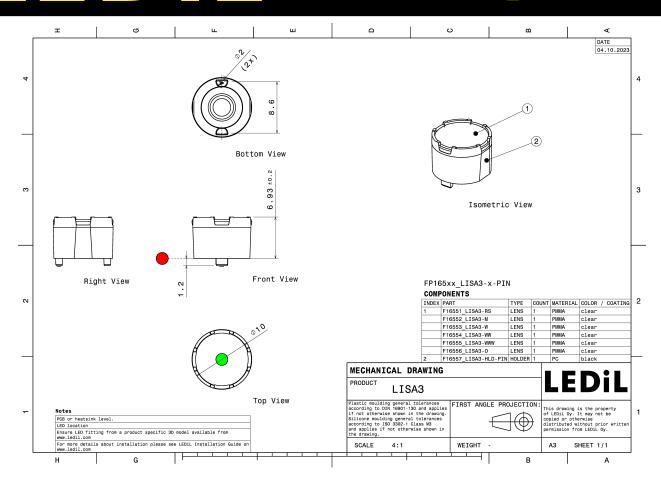
### **Type** Single lens Holder

Material	Colour	Finish
PMMA	clear	
PC	black	

#### **ORDERING INFORMATION:**

Component		Qty in box	MOQ	MPQ	Box weight (kg)
FP16562_LISA3-WWW-PIN	Single lens	2000	300	100	1.4
» Box size: 310 x 230 x 60 mm					

## PRODUCT DATASHEET FP16562\_LISA3-WWW-PIN



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See also our general installation guide: www.ledil.com/installation\_guide



### **OPTICAL RESULTS (MEASURED):**

			50 <sup>4</sup>
LED	XD16		
FWHM / FWTM	55.0° / 85.0°		77
Efficiency	74 %		
Peak intensity	0.9 cd/lm		
LEDs/each optic	1		
Light colour	White		g
Required compone	nts:		
			304 200
			125 <sup>1</sup> 0 <sup>1</sup> 125 <sup>2</sup>
			90 <sup>4</sup> 90 <sup>4</sup>
LED	XP-E2		75"
FWHM / FWTM	63.0° / 91.0°	and the second se	
Efficiency	85 %		60° 60°
Peak intensity	0.8 cd/lm	and the second se	
LEDs/each optic	1		
Light colour	White		a. a.
Required compone	nts:		
			- 500
			30* <u>000</u> 30*
			59*
	VD OD		
LED FWHM / FWTM	XP-G3 60.0° / 92.0°		73'
Efficiency	80 %		
Peak intensity	0.8 cd/lm		60°
LEDs/each optic	1		
Light colour	White		5°
Required compone			
			30* 800 30*
			25° 0° 35°
			90* 90*
LED	XP-G3	Contraction of the Institute of the Inst	75
FWHM / FWTM	61.0° / 95.0°		
Efficiency	80 %		63 <sup>1</sup> 66 <sup>2</sup>
Peak intensity	0.8 cd/lm		
LEDs/each optic	1	and the second se	
Light colour	White	and the second se	5°
Required compone	nts:		
			30. 30.
			15° 0° 15°



### **OPTICAL RESULTS (MEASURED):**

	FDS	20 <sup>4</sup>
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	LUXEON CZ 57.0° / 85.0° 85 % 0.9 cd/lm 1 White	
ED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	NF2x757G 50.0° / 82.0° 76 % 1.1 cd/lm 1 White	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	NVSW219F 64.0° / 96.0° 84 % 0.7 cd/lm 1 White	
Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	OSCONIQ C 2424 53.0° / 81.0° 84 % 1 cd/lm 1 White nts:	



### **OPTICAL RESULTS (MEASURED):**

OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone		
SAMS LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	LH351C 64.0° / 96.0° 84 % 0.8 cd/lm 1 White	
SEQUE SEMICONDUCTOR LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required compone	Z5M4 62.0° / 95.0° 84 % 0.8 cd/lm 1 White ents:	



bridgelux. LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	CSP 2323 (BXCP) 50.0° / 74.0° 80 % 1.2 cd/lm 1 White	59° 597 59° 597 60° 400 60° 57° 60° 60° 60° 59° 60° 50° 60°
CREE LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	J Series 2835 53.0° / 82.0° 87 % 1.1 cd/lm 1 White	51 <sup>4</sup> 51
CREE LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	J Series 2835 53.0° / 82.0° 87 % 1.1 cd/lm 1 White	20. 20. 21. 22. 24. 24. 25. 26. 26. 26. 26. 26. 26. 26. 26
CREE LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	XP-E 64.0° / 93.0° 89 % 0.8 cd/lm 1 White	20 20 20 60 60 60 60 72 20 60 60 60 72 72 72 72 72 72 72 72 72 72



		50° 50°
LED	XP-G2	
FWHM / FWTM	66.0° / 93.0°	73*
Efficiency	87 %	
Peak intensity	0.8 cd/lm	60°
		400
LEDs/each optic	1 White	
Light colour Required components:	white	
Required components:		
		30-
		90° 90°
LED	XP-G2 HE	
FWHM / FWTM	68.0° / 100.0°	
Efficiency	82 %	50* 200 80*
Peak intensity	0.7 cd/lm	$\times$ / / $\wedge$ $\times$
LEDs/each optic	1	
Light colour	White	40 - 40
Required components:		
		640
		30. 34.
	5	15 <sup>7</sup> 0 <sup>6</sup> 15 <sup>7</sup>
LED	LUXEON 2835 Line	73*
FWHM / FWTM	54.0° / 82.0°	
Efficiency	88 %	60° 60°
Peak intensity	1 cd/lm	
LEDs/each optic	1	
Light colour	White	
Required components:		810
		30° 113 00 113° 30°
	)5	90° 90°
LED	LUXEON 3030 2D (Round LES)	
FWHM / FWTM		75
	54.0° / 70.0°	$\square$ $\square$ $\square$ $\square$ $\square$
	54.0° / 79.0°	
Efficiency	85 %	60°
Efficiency Peak intensity	85 % 1.2 cd/lm	gr
Efficiency Peak intensity LEDs/each optic	85 % 1.2 cd/lm 1	
Efficiency Peak intensity LEDs/each optic Light colour	85 % 1.2 cd/lm	da. 000 da.
Efficiency Peak intensity LEDs/each optic	85 % 1.2 cd/lm 1	g* 60 67
Efficiency Peak intensity LEDs/each optic Light colour	85 % 1.2 cd/lm 1	g
Efficiency Peak intensity LEDs/each optic Light colour	85 % 1.2 cd/lm 1	6. 6. 6.
Efficiency Peak intensity LEDs/each optic Light colour	85 % 1.2 cd/lm 1	34. 64. 60. 60. 60.



	DS Contraction of the second se	90° 90°
LED	LUXEON C	75
FWHM / FWTM	64.0° / 92.0°	
Efficiency	79 %	601 60
Peak intensity	0.7 cd/lm	
LEDs/each optic	1	
Light colour	White	$\wedge$ / / $\wedge$ /
Required components:		
		30°
	DS S	50* 50 <sup>3</sup>
LED	LUXEON HL2X	
FWHM / FWTM	66.0° / 98.0°	
Efficiency	85 %	50° 500
Peak intensity	0.7 cd/lm	
LEDs/each optic	1	
Light colour	White	450 450
Required components:		
		30.
	DS	50° 90°
LED	LUXEON TX	
FWHM / FWTM		75* 75*
	62.0° / 87.0°	_200
Efficiency	62.0° / 87.0° 85 %	200
	85 %	200 (g)* 60
Peak intensity		90 <sup>4</sup>
Peak intensity LEDs/each optic	85 % 0.8 cd/lm	90° 440 97° 600
Peak intensity LEDs/each optic Light colour	85 % 0.8 cd/lm 1	91 <sup>4</sup> 69 97 69 60 67
Efficiency Peak intensity LEDs/each optic Light colour Required components:	85 % 0.8 cd/lm 1	20. 20. 40. 7 <sup>4</sup> 60. 60.
Peak intensity LEDs/each optic Light colour	85 % 0.8 cd/lm 1	50 90 <sup>4</sup> 40 97 60 60
Peak intensity LEDs/each optic Light colour	85 % 0.8 cd/lm 1	
Peak intensity LEDs/each optic Light colour Required components:	85 % 0.8 cd/lm 1 White	94 60 97 60 00
Peak intensity LEDs/each optic Light colour Required components:	85 % 0.8 cd/lm 1 White	
Peak intensity LEDs/each optic Light colour Required components:	85 % 0.8 cd/lm 1 White	
Peak intensity LEDs/each optic Light colour Required components:	85 % 0.8 cd/lm 1 White S LUXEON V2 60.0° / 92.0°	
Peak intensity LEDs/each optic Light colour Required components:	85 % 0.8 cd/lm 1 White	
Peak intensity LEDs/each optic Light colour Required components:	85 % 0.8 cd/lm 1 White VLUXEON V2 60.0° / 92.0° 88 % 0.9 cd/lm	
Peak intensity LEDs/each optic Light colour Required components: <b>ED</b> FWHM / FWTM Efficiency Peak intensity LEDs/each optic	85 % 0.8 cd/lm 1 White VEN V2 60.0° / 92.0° 88 % 0.9 cd/lm 1	
Peak intensity LEDs/each optic Light colour Required components: <b>ED</b> FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	85 % 0.8 cd/lm 1 White VLUXEON V2 60.0° / 92.0° 88 % 0.9 cd/lm	
Peak intensity LEDs/each optic Light colour Required components: <b>CONTINUE</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	85 % 0.8 cd/lm 1 White VEN V2 60.0° / 92.0° 88 % 0.9 cd/lm 1	
Peak intensity LEDs/each optic Light colour Required components: <b>ED</b> FWHM / FWTM Efficiency Peak intensity LEDs/each optic	85 % 0.8 cd/lm 1 White VEN V2 60.0° / 92.0° 88 % 0.9 cd/lm 1	
Peak intensity LEDs/each optic Light colour Required components: <b>CONTINUATION</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	85 % 0.8 cd/lm 1 White VEN V2 60.0° / 92.0° 88 % 0.9 cd/lm 1	



LED       LUKCN/Z         PVHM / PVTM       56.0° / 80.0°         Efficancy       88 %         Peak intensity       1 cd/m         LEDweath optic       1         Light colour       White         Required components:       S6.0° / 82.0°         Efficancy       88 %         Poak intensity       1 cd/m         ED       LUXEON Z ES         FWHM / FVTM       56.0° / 82.0°         EED       LUXEON Z ES         FWHM / FVTM       56.0° / 82.0°         ED       LUXEON Z ES         FWHM / FVTM       56.0° / 82.0°         ED/extractore       1         Light colour       White         Required components:       Filterance		)S		90° 90
Elifosnoy 88 % Pesk intensity 1 cd/m LEDSreach optic LED UNILLEDS- Required components:				75:
Peak intensity 1 cultra LED search optic 1 LED culture VMHe Required components:				
LED2reach optic 1 Light colour White Required components: LED LUXEON Z ES FWHM / FWTM 56.0° / 82.0° Efficiency 88 % Peak intensity 1 cd/m LED2reach optic 1 Light colour White Required components: LED SST-10-IR-880 FWHM / FWTM 54.0° 00° Efficiency 86 % LED2reach optic 1 LED2reach optic 1 LED3reach opti				60° 60
Light colour White Required components:				
Required components: ED LUXEON Z ES FWHM / FWTM 56.0° / 82.0° Efficiency 88% Peak intensity 1 cd/m LED2/each optic 1 LED2/each optic 1 LED2				
ED       LVEON Z ES         EVMIN / FWTM       56.0° / 82.0°         Efficiency       88 %         Peak intensity       1 cd/m         LED/each optic       1         Light colour       White         Required components:       Image: Component State		Winte		
LED LUXEON Z ES FWHM / FWTM 56.0° / 82.0° Efficiency 88 % Peak intensity 1 cd/m LEDs/each optic 1 Light colour White Required components: LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: Efficiency 86 % LEDS/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: ELED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LED SST-20 FWHM / FWTM 50.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LEDS/eac	required components.			
LED LUXEON Z ES FWHM / FWTM 56.0° / 82.0° Efficiency 88 % Peak intensity 1 cd/m LEDs/each optic 1 Light colour White Required components: LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: Efficiency 86 % LEDS/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: ELED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LED SST-20 FWHM / FWTM 50.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LEDS/eac				
LED LUXEON Z ES FWHM / FWTM 56.0° / 82.0° Efficiency 88 % Peak intensity 1 cd/m LEDs/each optic 1 Light colour White Required components: LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: Efficiency 86 % LEDS/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: ELED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LED SST-20 FWHM / FWTM 50.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LEDS/eac				310 32
LED LUXEON Z ES FWHM / FWTM 56.0° / 82.0° Efficiency 88 % Peak intensity 1 cd/m LEDs/each optic 1 Light colour White Required components: LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: Efficiency 86 % LEDS/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: ELED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LED SST-20 FWHM / FWTM 50.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDS/each optic 1 LEDS/eac		)S		20° 0 10
FWHM / FWTM       56.0° / 82.0°         Efficiency       88 %         Peak intensity       1 cd/m         LEDs/each optic       1         Light colour       White         Required components:       Image: Colour of the second of the s				
Efficiency88 % Peak intensity1 cd/mLEDs/each optic1Lght colourWhiteRequired components:Image: Construction of the second				78*
LEDs/each optic 1 Light colour White Required components: LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDs/each optic 1 LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/m LEDs/each optic 1 LEDs/each optic 1 LEDs/ea	Efficiency	88 %		60*
Light colour White Required components: White EDS/each optic 1 Light colour IR Required components: EDS/each optic 1 Light colour IR EDS/each optic 1 EDS/each opti		1 cd/lm		400
Required components:	LEDs/each optic	1		
ED       SST-10-IR-B90         FWHM / FWTM       54.0° / 80.0°         Efficiency       86 %         LEDs/each optic       1         Light colour       IR         Required components:       SST-20         FWHM / FWTM       56.0° / 84.0°         Efficiency       86 %         LED       SST-20         FWHM / FWTM       56.0° / 84.0°         Efficiency       86 %         Peak intensity       1 cd/m         LEDs/each optic       1         LISDs/each optic       1<		White		
LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/lm LEDs/each optic 1 Light colour White	Required components:			
LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/lm LEDs/each optic 1 Light colour White				000
LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/lm LEDs/each optic 1 Light colour White				
LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/lm LEDs/each optic 1 Light colour White				30 <sup>4</sup> 15 <sup>5</sup> 0 <sup>6</sup> 15 <sup>4</sup> 36
LED SST-10-IR-B90 FWHM / FWTM 54.0° / 80.0° Efficiency 86 % LEDs/each optic 1 Light colour IR Required components: LED SST-20 FWHM / FWTM 56.0° / 84.0° Efficiency 86 % Peak intensity 1 cd/lm LEDs/each optic 1 Light colour White		JS	Polar intensity graph	90° 90
FWHM / FWTM       54.0° / 80.0°         Efficiency       86 %         LEDs/each optic       1         Light colour       IR         Required components:			73.0 76.0	
Efficiency 86 % LEDs/each optic 1 Light colour IR Required components:	LED	SST-10-IR-B90	16.70 16.70	73*
LEDs/each optic 1 Light colour IR Required components:	FWHM / FWTM	54.0° / 80.0°	40,0	605
Light colour R Required components:	Efficiency	86 %	200	
Required components:				
Image: Constraint of the second se		IR		
LEDSST-20FWHM / FWTM56.0° / 84.0°Efficiency86 %Peak intensity1 cd/lmLEDs/each optic1Light colourWhite	Required components:			
LEDSST-20FWHM / FWTM56.0° / 84.0°Efficiency86 %Peak intensity1 cd/lmLEDs/each optic1Light colourWhite				
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LEDSST-20FWHM / FWTM56.0° / 84.0°Efficiency86 %Peak intensity1 cd/lmLEDs/each optic1Light colourWhite				30 <sup>6</sup> 15 <sup>9</sup> 0 <sup>6</sup> 15 <sup>9</sup> 30
LEDSST-20FWHM / FWTM56.0° / 84.0°Efficiency86 %Peak intensity1 cd/lmLEDs/each optic1Light colourWhite		JS		50° 30
FWHM / FWTM     56.0° / 84.0°       Efficiency     86 %       Peak intensity     1 cd/lm       LEDs/each optic     1       Light colour     White		SST-20		79.
Peak intensity     1 cd/lm       LEDs/each optic     1       Light colour     White				
LEDs/each optic 1 Light colour White				600 000
Light colour White				
Required components:		White		······································
	Required components:			



ED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	NCSxx19B 60.0° / 88.0° 82 % 0.8 cd/lm 1 White	90° 90° 75° 200 60° 60° 40° 60° 60°
~~~~~		110° de 110°
ED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	NVSW219D 67.0° / 88.0° 84 % 0.7 cd/lm 1 White	5° 5° 5° 66° 5° 66° 5° 66° 5° 60° 5° 60° 5° 60° 5° 60° 5° 60° 5° 60° 5° 60° 5° 60° 5° 60° 5° 6° 6° 5° 6° 5° 6° 5° 6° 5° 6° 5° 6° 5° 5° 6° 5° 5° 5° 5° 5° 5° 5° 5° 5° 5
<b>Μ</b> ΝΙCΗΙΛ		
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	NVSxx19B/NVSxx19C 61.0° / 92.0° 83 % 0.8 cd/lm 1 White	
OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	Duris S5 (2 chip) 49.0° / 77.0° 87 % 1.2 cd/lm 1 White	



r		
OSRAM Opto Semiconductors		90° 50°
LED	Duris S5 (Single chip)	
FWHM / FWTM	48.0° / 76.0°	75*
Efficiency	86 %	400
Peak intensity	1.3 cd/lm	60* B0*
LEDs/each optic	1	
Light colour	White	g- 000
Required components:		
		30° 30°
		30° 30° 30°
OSRAM Opto Semiconductors		50* 50*
LED	OSCONIQ P 3030	
FWHM / FWTM	56.0° / 82.0°	73.
Efficiency	85 %	
Peak intensity	1 cd/lm	60* 60*
LEDs/each optic	1	
Light colour	White	97°
Required components:		
		15° 0° 15°
OSRAM Onto Semiconductors		80.4 90, 132, 0, 132,
Opto Semiconductors	OSCONIQ P 3737 (3W version)	30*         30*
Opto Semiconductors	OSCONIQ P 3737 (3W version) 58.0° / 90.0°	20 20 20 20 20 20 20 20 20 20
opto Semiconductors LED FWHM / FWTM	OSCONIQ P 3737 (3W version) 58.0° / 90.0° 86 %	
Opto Semiconductors LED FWHM / FWTM Efficiency	58.0° / 90.0° 86 %	
<sup>opto Semiconductors</sup> LED FWHM / FWTM Efficiency Peak intensity	58.0° / 90.0°	
<sup>opto Semiconductors</sup> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	58.0° / 90.0° 86 % 0.9 cd/lm	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 90.0° 86 % 0.9 cd/lm 1	200 - 52 601 - 602
<sup>opto Semiconductors</sup> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	58.0° / 90.0° 86 % 0.9 cd/lm 1	200 - 52 601 - 602
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 90.0° 86 % 0.9 cd/lm 1	200 - 52 601 - 602
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 90.0° 86 % 0.9 cd/lm 1	200 - 52 601 - 602
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 90.0° 86 % 0.9 cd/lm 1	200 - 52 601 - 602
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 90.0° 86 % 0.9 cd/lm 1	200 - 52 601 - 602
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 90.0° 86 % 0.9 cd/lm 1 White	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 90.0° 86 % 0.9 cd/lm 1	73°
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Peak intensity LEDS/each optic Light colour Required components:	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black 46.0° / 71.0°	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: OSRAM Opto Semiconductors LED FWHM / FWTM	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black 46.0° / 71.0° 88 %	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black 46.0° / 71.0° 88 % 1.4 cd/lm	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:  OSSRAM Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black 46.0° / 71.0° 88 % 1.4 cd/lm 1	
opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:  COSRAM Opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black 46.0° / 71.0° 88 % 1.4 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black 46.0° / 71.0° 88 % 1.4 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:  COSRAM Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	58.0° / 90.0° 86 % 0.9 cd/lm 1 White OSLON Black 46.0° / 71.0° 88 % 1.4 cd/lm 1	



OSRAM		
Opto Semiconductors		90° 90°
LED	OSLON Black Flat (LUW HWQP)	73*
FWHM / FWTM	54.0° / 80.0°	
Efficiency	88 %	60° 60°
Peak intensity	1.1 cd/lm	
LEDs/each optic	1	$ \times ///  \wedge \times$
Light colour	Red	42. 42.
Required components:		
		36* 15° 1200 15° 36*
OSRAM		90° 99°
Opto Semiconductors		
	OSLON Square EC	75' 75'
FWHM / FWTM	61.0° / 86.0°	200
Efficiency	86 %	60°
Peak intensity	0.9 cd/lm	400
LEDs/each optic	1	
Light colour	White	er
Required components:		
		X X AN
		30" 30" 30"
OSRAM		90* 90*
Opto Semiconductors	OSI ON Square Flat	90°
Opto Semiconductors LED	OSLON Square Flat	75 99*
Opto Semiconductors LED FWHM / FWTM	56.0° / 84.0°	
opto Semiconductors LED FWHM / FWTM Efficiency	56.0° / 84.0° 87 %	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity	56.0° / 84.0° 87 % 1 cd/lm	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	56.0° / 84.0° 87 % 1 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	56.0° / 84.0° 87 % 1 cd/lm	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	56.0° / 84.0° 87 % 1 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	56.0° / 84.0° 87 % 1 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	56.0° / 84.0° 87 % 1 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	56.0° / 84.0° 87 % 1 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	56.0° / 84.0° 87 % 1 cd/lm 1	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	56.0° / 84.0° 87 % 1 cd/lm 1 White	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120	
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: OSRAM Opto Semiconductors LED FWHM / FWTM	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0°	30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0° 89 %	30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,
opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Peak intensity LED FWHM / FWTM Efficiency Peak intensity	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0° 89 % 1 cd/lm	30,         22,         0,         30,           60,         00,         0,         0,           22,         0,         0,         0,           12,         0,         0,         0,           22,         0,         0,         0,           12,         0,         0,         0,
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0° 89 % 1 cd/lm 1	30,         22,         0,         23,         0,           60,         00,         0,         0,         0,           12,2,         0,         0,         0,         0,           2,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           2,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           2,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,<
opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:  COSRAM Opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0° 89 % 1 cd/lm	30,         22,         0,         23,         0,           60,         00,         0,         0,         0,           12,2,         0,         0,         0,         0,           2,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           2,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           2,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,           1,2,         0,         0,         0,         0,<
opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:  OSSRAM Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0° 89 % 1 cd/lm 1	30,         22,         0,         30,           60,         00,         0,         0,           22,         0,         0,         0,           12,         0,         0,         0,           22,         0,         0,         0,           12,         0,         0,         0,
opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0° 89 % 1 cd/lm 1	30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,
opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:  COSRAM Opte Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	56.0° / 84.0° 87 % 1 cd/lm 1 White OSLON SSL 120 58.0° / 85.0° 89 % 1 cd/lm 1	30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         30,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,         40,



OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	OSLON SSL 150 63.0° / 84.0° 87 % 0.9 cd/lm 1 White		91 <sup>3</sup> 71 91 91 92 92 92 92 92 92 92 92 92 92 92 92 92
			30 <sup>4</sup> 00 <sup>4</sup> 35 <sup>5</sup> 36 <sup>6</sup>
Opto Semiconductors LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	OSLON SSL 80 53.0° / 79.0° 87 % 1.1 cd/lm 1 White		
OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency LEDs/each optic Light colour Required components:	SFH 4715S 47.0° / 70.0° 88 % 1 IR	Polar intensity graph	97
OSRAM Opto Semiconductors LED FWHM / FWTM Efficiency LEDs/each optic Light colour Required components:	SFH 4716S 57.0° / 83.0° 85 % 1 IR	Polor intensity graph	20°



OSRAM Opto Semiconductors		90° 90°
LED	Synios P2720 1 mm	
FWHM / FWTM	54.0° / 80.0°	75*
Efficiency	88 %	
Peak intensity	1.1 cd/lm	60* 60*
LEDs/each optic	1	
Light colour	Red	g*
Required components:		
		300 300
		30° 15° 0° 15°
OSRAM Opto Semiconductors		90° 90°
LED	SYNIOS S2222	
FWHM / FWTM	55.0° / 82.0°	73.
Efficiency	96 %	
Peak intensity	1.1 cd/lm	400
LEDs/each optic	1	
Light colour	White	g
Required components:		
		30. 34.
		15° 0° 15°
SAMSUN	IG	90° 90°
	LH351B	
		34. 22.
LED	LH351B	
LED FWHM / FWTM	LH351B 62.0° / 95.0°	
LED FWHM / FWTM Efficiency	LH351B 62.0° / 95.0° 85 %	
LED FWHM / FWTM Efficiency Peak intensity	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1	
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1	30. 60. 52. 60. 50. 50. 50. 50. 50. 50. 50. 50. 50. 5
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White	52 50 60 50 50 50 50
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White	30. 60. 52. 60. 50. 50. 50. 50. 50. 50. 50. 50. 50. 5
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White	30, 00 30, 22, 00 64, 00 33, 200 50 200 200 200 200 200 20, 200 20, 200 20, 20,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White	30, 00 30, 22, 00 64, 00 33, 200 50 200 200 200 200 200 20, 200 20, 200 20, 20,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White	30, 00 30, 22, 00 64, 00 33, 200 50 200 200 200 200 200 20, 200 20, 200 20, 20,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: <b>SAMSUN</b> LED FWHM / FWTM	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White I H351D 65.0° / 100.0°	30, 00 30, 22, 00 64, 00 33, 200 50 200 200 200 200 200 20, 200 20, 200 20, 20,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: <b>SAMSUN</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White LH351D 65.0° / 100.0° 81 %	30, 000 30, 42, 000 64, 00, 520 500 200 200 200 200
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: <b>SAMSUN</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White LH351D 65.0° / 100.0° 81 % 0.7 cd/lm	30, 000 30, 42, 000 64, 00, 520 500 200 200 200 200
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: <b>SAMSUN</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White LH351D 65.0° / 100.0° 81 % 0.7 cd/lm 1	30, 00 30, 22, 00 64, 00 33, 200 50 200 200 200 200 200 20, 200 20, 200 20, 20,
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: <b>SAMSUN</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White LH351D 65.0° / 100.0° 81 % 0.7 cd/lm 1	30. 60. 52. 60. 50. 50. 50. 50. 50. 50. 50. 50. 50. 5
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: <b>SAMSUN</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White LH351D 65.0° / 100.0° 81 % 0.7 cd/lm 1	3), 00 9, 2, 6), 5), 5), 5), 5), 5), 5), 5), 5), 5), 5
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components: <b>SAMSUN</b> LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour	LH351B 62.0° / 95.0° 85 % 0.8 cd/lm 1 White LH351D 65.0° / 100.0° 81 % 0.7 cd/lm 1	3), 00 9, 2, 6), 5), 5), 5), 5), 5), 5), 5), 5), 5), 5



SAMSUN	IG	30* 30*
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	LM301A 53.0° / 75.0° 87 % 1.2 cd/lm 1 White	2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
	<b>IG</b> LM301B	90 <sup>4</sup> 90 <sup>9</sup>
FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	55.0° / 82.0° 87 % 1.1 cd/lm 1 White	gr 60
SAMSUN LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	C LM302A 53.0° / 80.0° 87 % 1.2 cd/lm 1 White	6,
CTTOM EX		10° 10° 10° 10°
LED FWHM / FWTM Efficiency LEDs/each optic Light colour Required components:	FWR1107MS 44.0° / 68.0° 85 % 1 IR	91 77 60 61 67 67 60 67 67 67 67 67 67 67 67 67 67 67 67 67



LED FWHM / FWTM Efficiency LEDs/each optic Light colour Required components:	FWR1108MS 60.0° / 87.0° 88 % 1 IR	5° 60 60 60 60 60 60 60 60 60 60
LED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	MFN1107MS 35.0° / 60.0° 91 % 2.2 cd/lm 1 IR	5° 5° 6° 6° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7° 7°
ED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	MFN1108MS 52.0° / 76.0° 90 % 1.2 cd/lm 1 IR	5° 5° 5° 5° 5° 5° 5° 5° 5° 5°
ED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	MGN1107MS 35.0° / 60.0° 91 % 2.2 cd/m 1 IR	



ED FWHM / FWTM Efficiency Peak intensity LEDs/each optic Light colour Required components:	MGN1108MS 52.0° / 76.0° 90 % 1.2 cd/lm 1 IR	54 <sup>4</sup> 75 66 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
ED FWHM / FWTM Efficiency LEDs/each optic Light colour Required components:	MJN1107MS 50.0° / 77.0° 89 % 1 IR	
LED FWHM / FWTM Efficiency LEDs/each optic Light colour Required components:	MJN1108MS 61.0° / 88.0° 88 % 1 IR	