

LUMILEDS

Angers 15 October



Lumileds Q4 2013
Oriol Soteras. Regional Sales Mang

LUMILEDS



Introduction
Product Roadmap

LUMILEDS

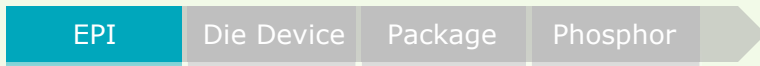


Introduction

Product Roadmap

Lumileds has a Strong Manufacturing Footprint in Asia

Manufacturing Headcount (>3,500)



San Jose, US

- EPI Manufacturing +Mgmt
- Total FTE ~ 300

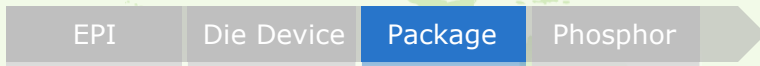
Co-located with R&D and advanced labs



Maarheeze, Netherlands

- Lumiramic frontend

Critical proximity to Philips phosphor know-how



Penang, Malaysia

- Manufacturing
- Total FTE ~ 2,250

Proven Backend LED operation for over 30 years



Yishun, Singapore

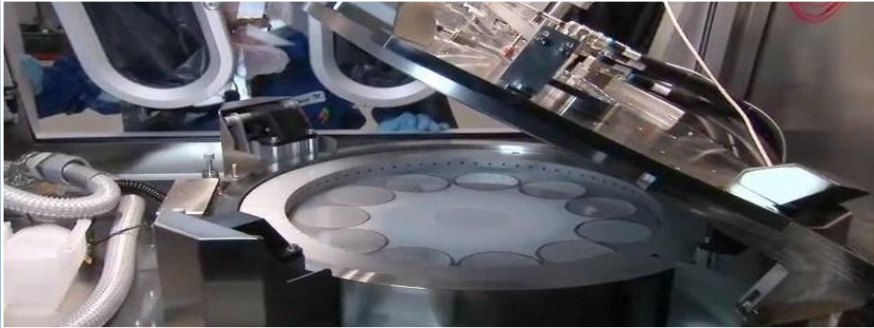
- Front-end (wafer, die)
- Total FTE ~ 1,500

First “Western LED company” wafer fab in Asia; Experienced talent pool; EDB support

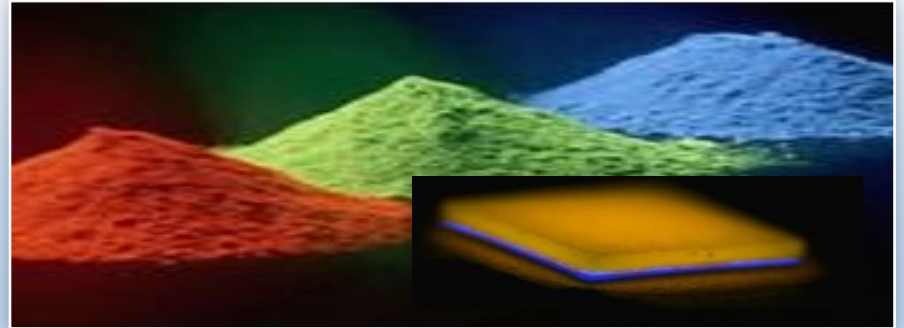


Technology Leadership

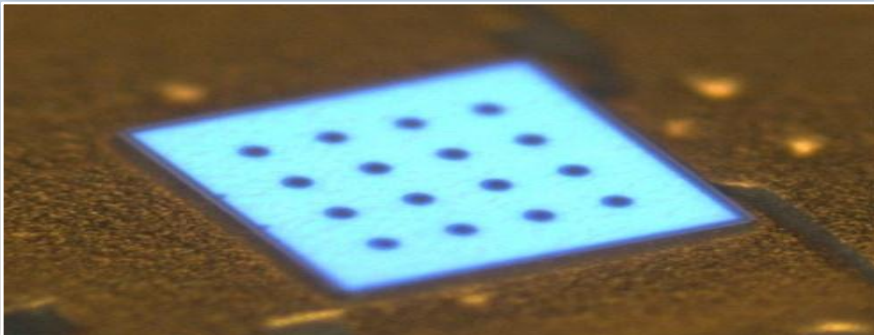
Epitaxy Enables Breakthrough in
lm/w Efficacy



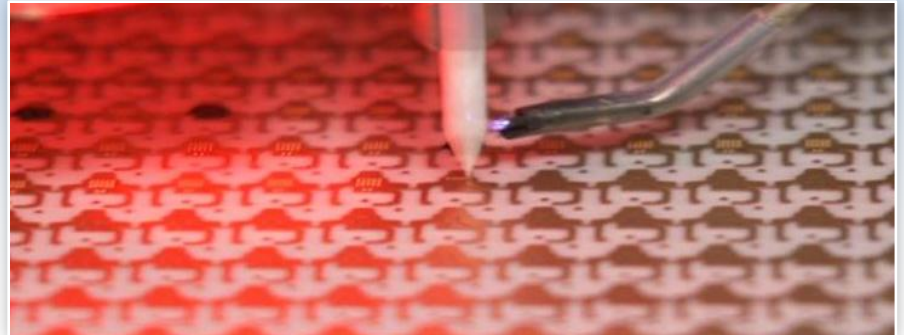
Core Competency in
Conversion Efficiency



Device Architecture Leadership



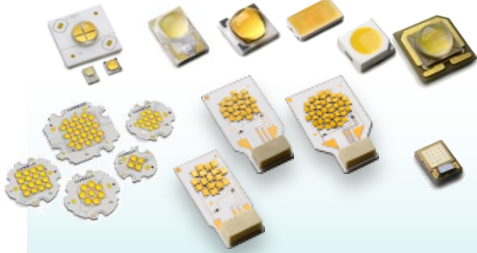
Optimized Package Solutions



Serving 4 Major LED End Markets

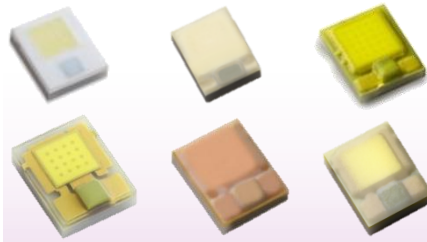
Leveraging technology and scale across businesses

Illumination



- Fastest growing
- Multiple segments
- HP and MP offering
- Level 1 and Level 2
- R&D Investment

Flash



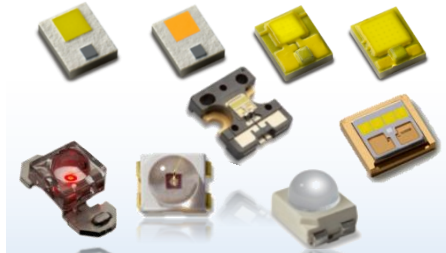
- Market leader
- Patent portfolio
- IP innovation
- Level 1 and level 2

Display



- HP direct backlight
- Leading lm/\$
- Volume segment
- Level 1 and level 2

Automotive



- Backlight, DRL, headlamps, turn signals
- HP and MP offering
- IP innovation
- Level 1 and level 2

Serving 4 Major LED End Markets

Leveraging technology and scale across businesses

Device

Illumination



1. LED Retrofit bulbs



LUXEON Z ES LUXEON K
LUXEON T LUXEON H
LUXEON MP Gen 2 LUXEON Mid-Power

2. Outdoor



LUXEON T
LUXEON Z ES LUXEON M
LUXEON M Gen 2 LUXEON R

3. Industry



LUXEON T LUXEON M
LUXEON Z ES LUXEON R
LUXEON M Gen 2

4. Retail & Hosp.



LUXEON S Gen 2 LUXEON S
LUXEON K Gen 2 LUXEON K
COB

5. Homes



LUXEON K Gen 2 LUXEON K
LUXEON H Gen 2 LUXEON H

6. Office

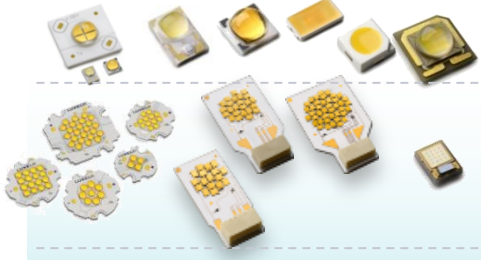


LUXEON MP Expan
COB LUXEON Mid-Power
Low Power

7. Architecture/
Entertainment



LUXEON Z Red LUXEON Z
LUXEON Z family



- Fastest growing
- Multiple segments
- HP and MP offering
- Level 1 and Level 2
- R&D Investment

Serving 4 Major LED End Markets

Leveraging technology and scale across businesses

Illumination



1. LED Retrofit bulbs



2. Outdoor



3. Industry



4. Retail & Hosp.



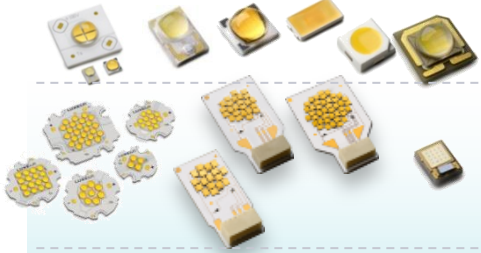
5. Homes



6. Office



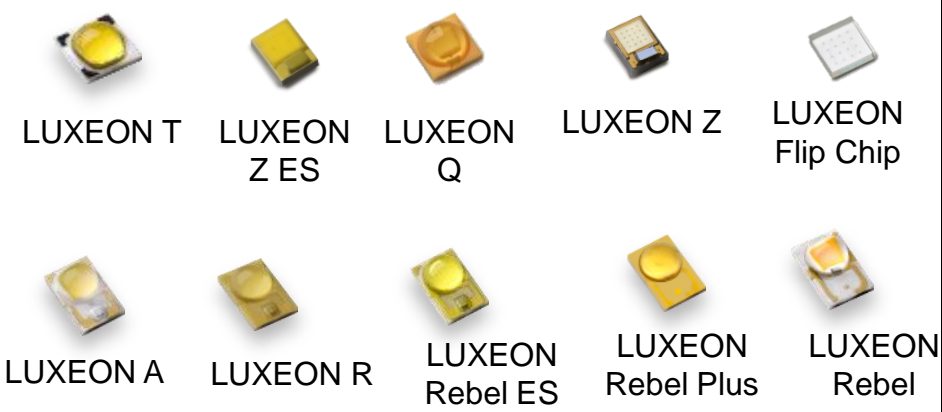
7. Architecture/
Entertainment



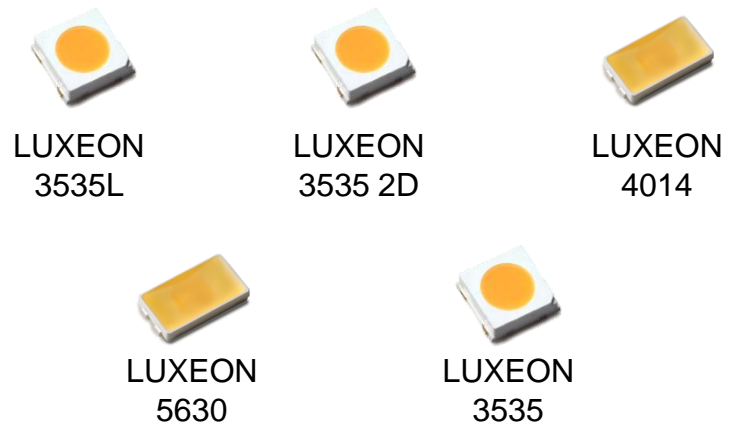
- Fastest growing
- Multiple segments
- HP and MP offering
- Level 1 and Level 2
- R&D Investment

Lumileds Product Portfolio

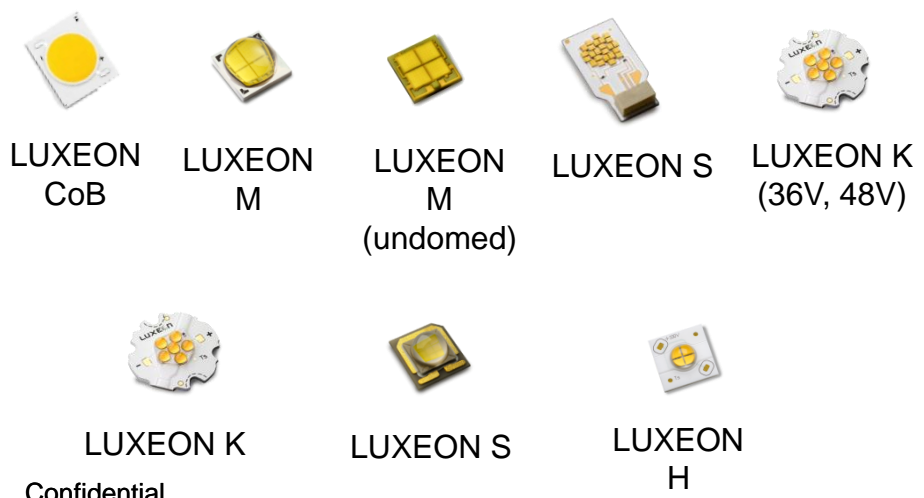
High-Power



Mid-Power



Arrays



Color



LUMILEDS



Introduction

Product Roadmap

Mid-Power Roadmap

COB Roadmap

High-Power Roadmap

Mid-Power Family

A rapidly expanding product portfolio

Product specs and timing to be finalized

Launched in 2012

Launched in 1H 2013

Target for launch in 2H 2013



LUXEON 3535 (80 CRI, 70 CRI in CW)



LUXEON 3535L (80 CRI, 90 CRI in 2700K)



LUXEON 5630 (80 CRI)



LUXEON 3535 2D (80 CRI)




LUXEON 4014 (80 CRI)




LUXEON 3535L (90 CRI in WW, 70 CRI in CW)



LUXEON 3535 2D (90 CRI in WW, 70 CRI in CW)



LUXEON 4014 (70 and 90 CRI in selected CCTs)



LUXEON 3014 (70, 80 and 90 CRI in selected CCTs)



LUXEON 3030



4 and 5 SDCM MP offerings



LUXEON 6030/7030 (high efficacy)



Mid Power Flip Chip



LUXEON 5630 upgraded



LUXEON MP Multi-junction



LUXEON MP Colors

- Green/ Lime
- Cyan
- Blue
- Red
- Red-Orange
- Amber
- PC Amber

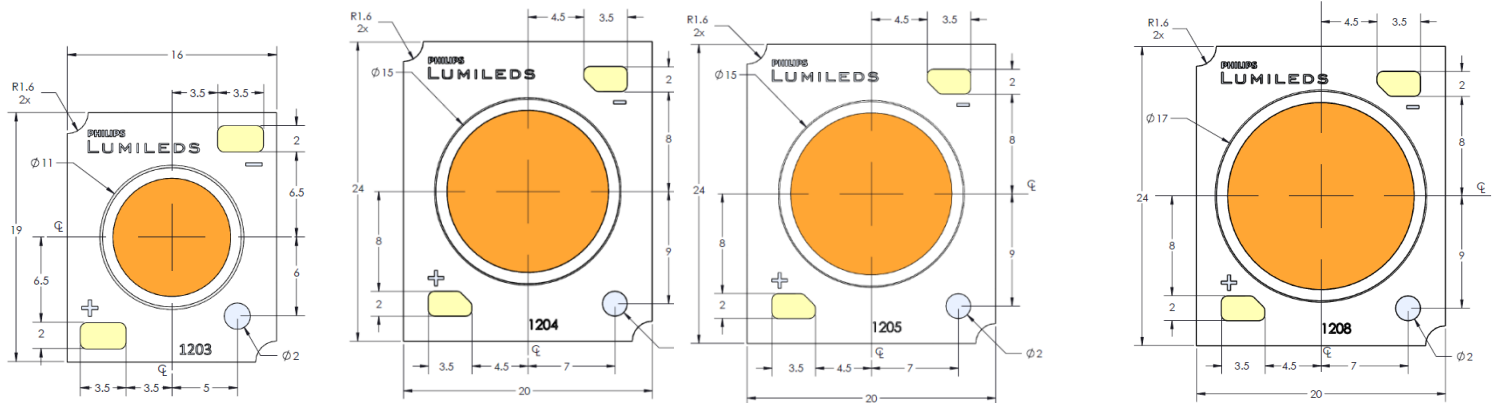
Mid-Power Roadmap

COB Roadmap

High-Power Roadmap

LUXEON CoB

Current portfolio: Design variations



	A	B		C
Outline	16x19mm	20x24mm		20x24mm
LES	9 mm	13mm		15mm
Configuration	1203	1204	1205	1208
Typ Lumen	1150	1725	2300	3450
Nominal If	300mA	450mA	600mA	900mA
Efficacy typ	105lm/W	105lm/W	105lm/W	105lm/W

LUXEON CoB compared to competition

CoB Market specifically - conclusion

- **Highest flux density in CoB solutions**
- **Highest Efficacy, given a the smallest LES**
- **Best source uniformity**
- **Best Thermal Resistance**
- **Robust MCPCB solution**
- **Tested and guaranteed at application conditions**
- **Better maximum Vf solution**
- **Philips Lumileds solution**

Up to 1.5x better

Market leadership up to 120lm/W

Zhaga Uniformity > 95%

Up to 4x better

Better handling in production

85° Tj tested

39V Max

More cross-licenses vs competition

LUXEON CoB Roadmap

LUXEON CoB delivers the best uniformity for high efficacy cost-effective solutions

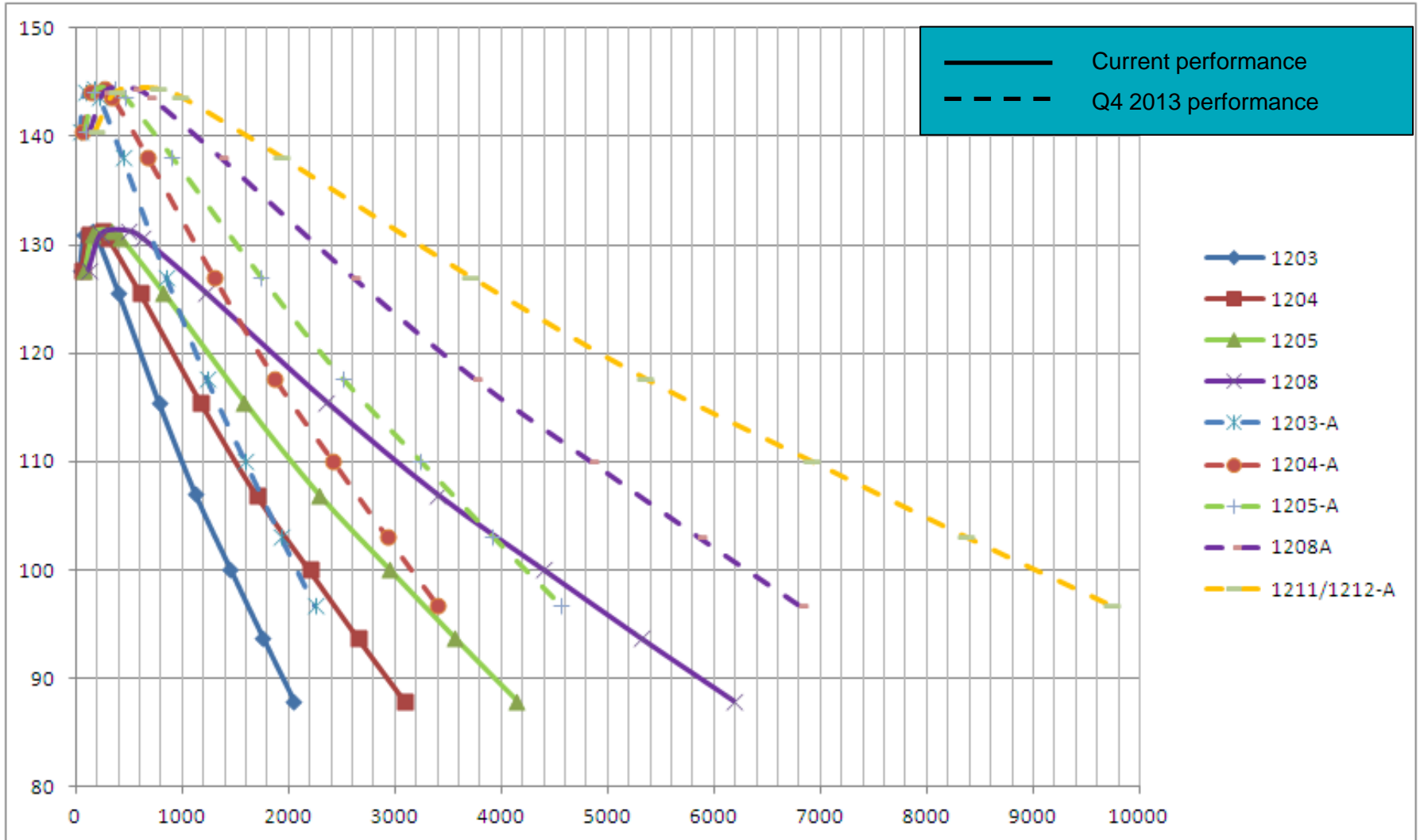


	2700	3000	3500	4000	5000	5700
70				Oct	Oct	Oct
80	May	May	Oct	May	May	
90	Oct	May		Oct		

/830 Q2 13		1203	1204	1205	1208	
Lumens (typ.)		1150	1725	2300	3450	
Efficacy (Typ) 85°C		105 lm/W	105 lm/W	105 lm/W	105 lm/W	
If nominal (mA)		300mA	450mA	600mA	900mA	
LES (mm)		9	13	13	15	
V		36	36	36	36	

/830 Q4 13 / Q1 2014	"0803"	1203	1204	1205	1208	"1212"
Lumens (typ.)	850	1200	1800	2400	3600	5000
Efficacy (Typ) 85°C	115 lm/W	115 lm/W	115 lm/W	115 lm/W	115 lm/W	115 lm/W
If nominal (mA)	300mA	300mA	450mA	600mA	900mA	1300mA
LES (mm)	7/9	9	13	13	15	19
Voltage	24/36	35	35	35	35	35/54

Expected typical performance Q4 2013*



*Graph is excluding the planned lower lumen solutions, separate discussion for lower lumens needed

Mid-Power Roadmap

COB Roadmap

High-Power Roadmap



Emitter Portfolio

Expanding the Range through 2013



LUXEON A



LUXEON R



LUXEON Rebel ES



LUXEON Rebel Plus



LUXEON Rebel

New for 2013

LUXEON T



LUXEON Z ES



LUXEON Q



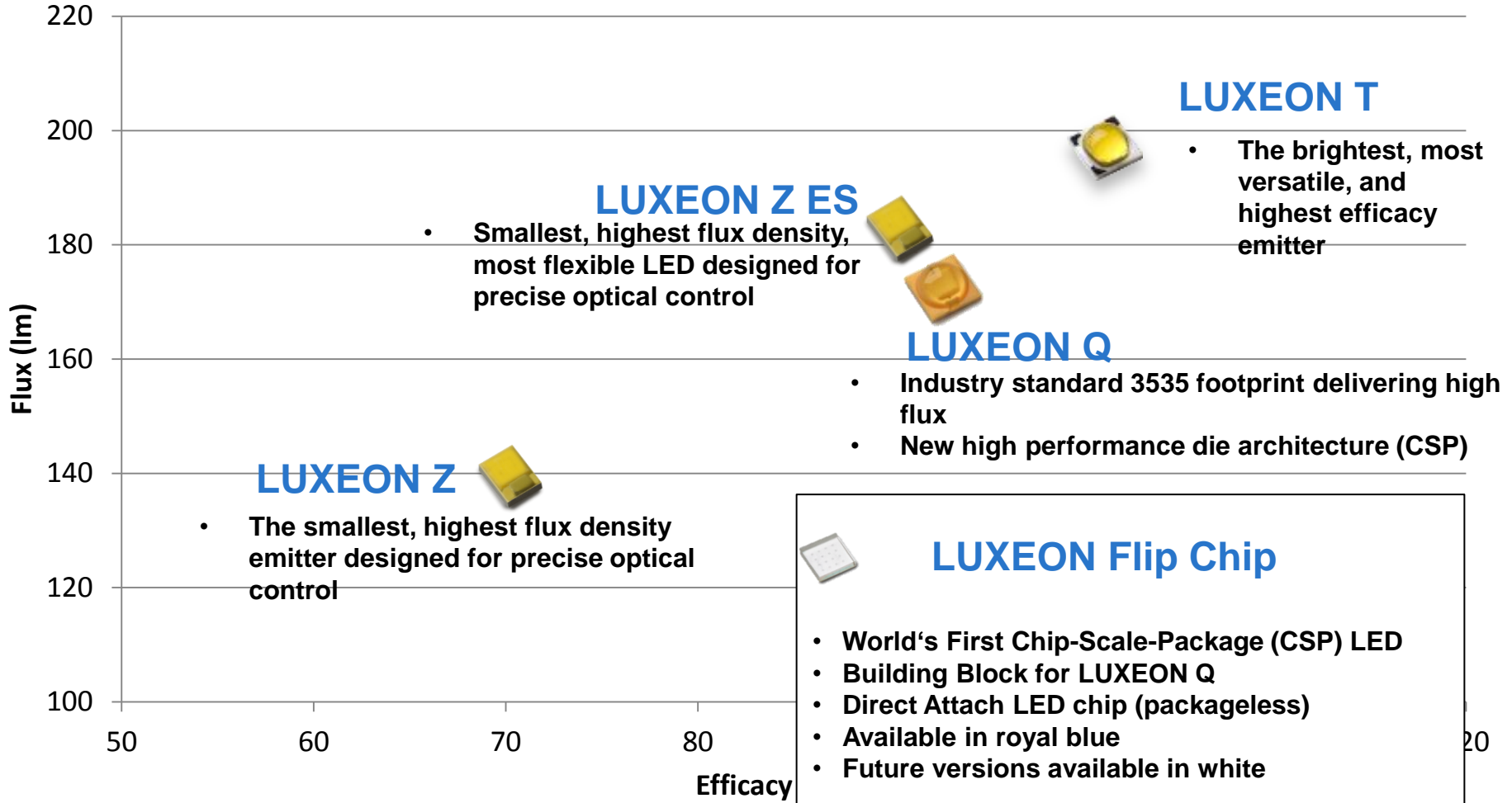
LUXEON Z



LUXEON Flip-
Chip



Lumileds High Power Portfolio



Data Listed: 3000K/80, 700mA, 85degC, typical values

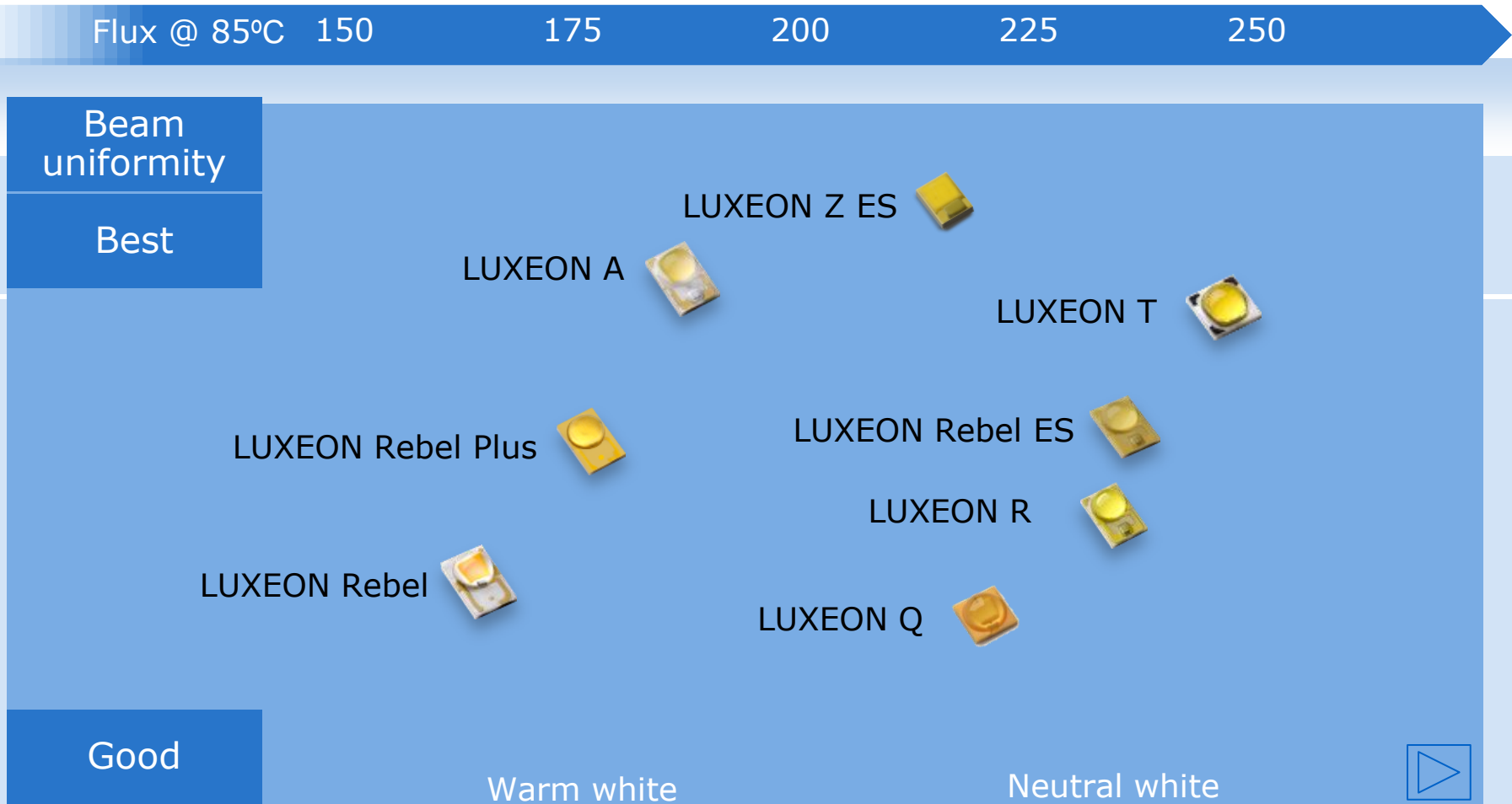
LUXEON Flip Chip

- World's First Chip-Scale-Package (CSP) LED
- Building Block for LUXEON Q
- Direct Attach LED chip (packageless)
- Available in royal blue
- Future versions available in white



Emitter Portfolio

Expanding the Range through 2013





Array Portfolio

Expanding high flux offerings in 2013

LUXEON K



LUXEON S



LUXEON H



New for 2013

LUXEON CoB



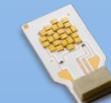
LUXEON M (6V)



LUXEON M
(undomed)



LUXEON S



LUXEON K (36, 48V)



