SEOUL SEMICONDUCTOR

2014 Catalog

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A-14-03

Quick guide to the New Products

Contents

History

2014
- **Oct.** Launched Acrich MJT 3030
  Prof. Shuji Nakamura, a consultant of Seoul Semiconductor won the Nobel prize in physics
- **Jun.** Launched Acrich 3
- **Feb.** Introduced 3rd-generation technology of Acrich at Strategies in Light (US)
  Held 10th Annual Luminaire Design Competition with Acrich Kit in cooperation with CLTC (California Lighting Technology Center) at UC Davis

2013
- **Dec.** Broke the '1 Trillion Korean Won' Mark in 2013 Sales Revenue
  Seoul Semiconductor selected by IEEE as the World's Top Patent Power Company for Two Years in a Row
- **Nov.** Introduced New Generation of High Power LEDs-the Z5M1 Series, with Industry Leading Performance and Reliability
- **Sep.** Acrich2 modules reached 140 lumen/Watt
- **Jul.** New Mid-Power LED, 5630 achieved 180 lm/W
- **Apr.** Achieved qualification for the UL Witness Test Data Program for Testing LEDs and modules
  Launched Acrich Global Campaign for Environmental Preservation
- **Mar.** Announced the World's Best Performing Side View LED

2012
- **Dec.** Ranked in Top 10 semiconductor manufacturing patent powers by IEEE
- **Oct.** Won INNOVATION AWARD 2012 with Acrich2
- **Jul.** Announced "nPola", the world's first GaN-GaN structure LED
- **Feb.** Received UL recognition for Acrich2 Modules

2011
- **Oct.** Launched Acrich2
- **Oct.** Won INNOVATION AWARD 2011 with 5630
- **Jul.** Joined the list of U.S. Environment Protection Agency [EPA] of recognized laboratories for conducting LM-80 testing of LED

2010
- **Sep.** Acrich, selected for Zero Energy Building Research by U.S. Department of Energy
- **Mar.** Initiated scientific consultation for Seoul Semiconductor by Prof. Shuji Nakamura, a developer of high-brightness blue LED

2009 Mass production of Top View LED for TVs

2008 Acrich, awarded and named as Korea's 10 Best New Technologies
Acrich gained RU recognition by the U.S., the first LED industry in the LED industry

2007 Won Industrial Award for its exports by Korean Government
Acrich is the world's first LED package which received the TUV certification

2006 Seoul Optodevice Co., Ltd. (present Seoul Viosys Co., Ltd.) launched the World's first mass production of DUV LED with SETi, USA
Named to the list of Asia's Top 200 Best under a Billion by Forbes

2005 Development of Power LED for lighting

2004 The world's first LED chip development for AC
R&D center was awarded for its contribution by the president of Korea

2002 Produced Side View LEDs for cellular phones
Established Seoul Optodevice Co.,Ltd.

2001 Established Kwang Myung Semiconductor Co.,Ltd.

1993 Opened R&D Center

1992 Chung Hoon Lee inaugurated as CEO

Our Values - Patents

With our range of LED packages and modules, we are not just innovative, but we are also responsible for our customers as well.
More than 10,000 patents and cross license agreements provide security for our products to be installed in your applications worldwide.

Seoul Semiconductor invests 10% of its annual revenue in Research and Development. The company holds a patent portfolio across a broad range of technologies and processes including material, design, manufacturing and methodology. Notably, Seoul Semiconductor holds patent rights for Acrich, the semiconductor light source using a multi-cell architecture, as well as patent rights for deep UV LED technology.

We protect what we are proud of.
So we protect you too!

IEEE Selects Seoul Semiconductor as the World's Leading Top Patent Power Company for Two Years in a Row (2012-2013)

One and Only LED Component Supplier among Semiconductor Manufacturing Patent Power Ranking

Seoul Semiconductor has been recognized for its intellectual clout in semiconductor manufacturing. According to the Institute of Electrical and Electronics Engineers (IEEE), among the companies which manufacture LED components only, Seoul Semiconductor was the only one to be selected in the 2013 Semiconductor Manufacturing Patent Power Ranking. Seoul Semiconductor was also selected in the same category in 2012.

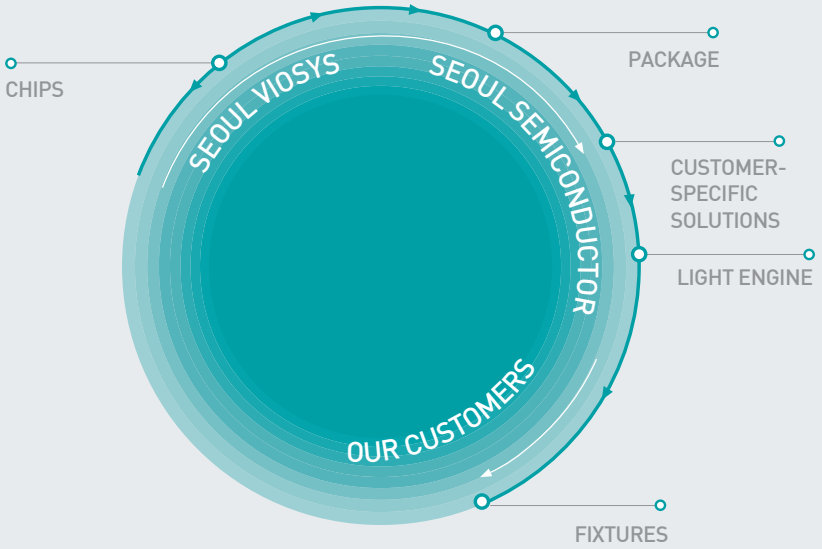
Seoul Semiconductor has more than 20 years of experience in semiconductor manufacturing and invests 10% of its annual revenue to LED research and development. On average, Seoul Semiconductor applies for more than 600 patents every year.

Currently, the company holds more than 10,000 LED patents, including patents in core LED technologies such as Acrich, Acrich MJT, nPola, TV Direct Backlight Technology, UV, and many more.

Seoul Semiconductor's extensive patent portfolio in LED technology includes epitaxial growth, fabrication, packaging, and system application of LED technology.

We create innovation for innovation.

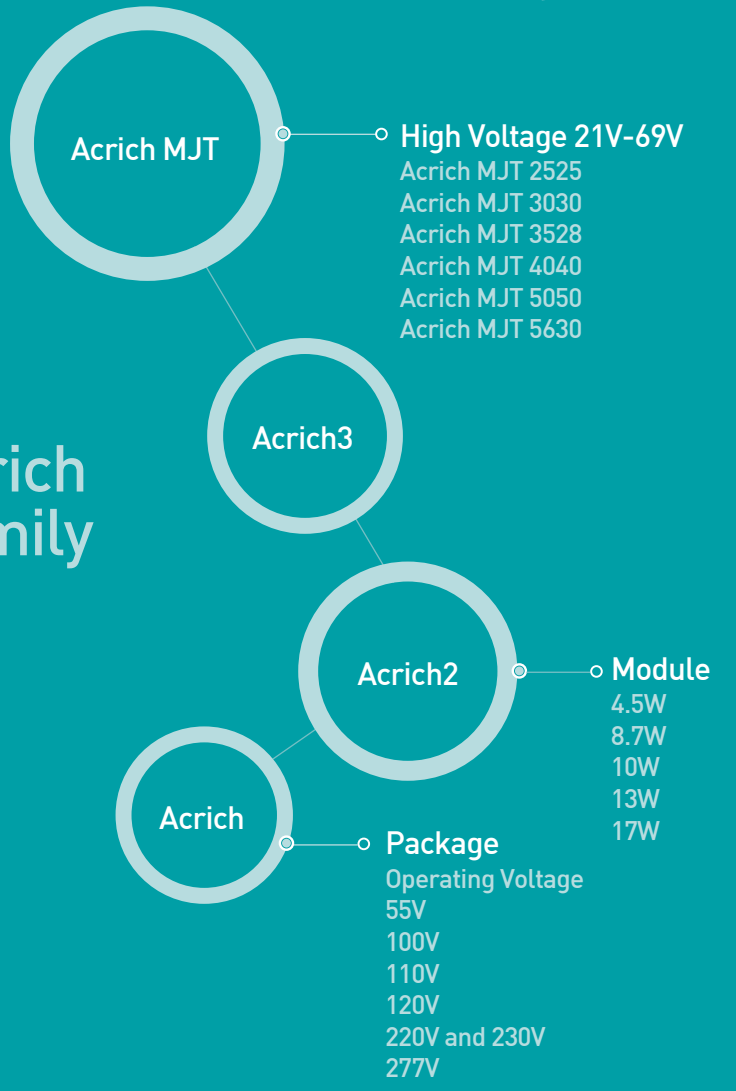
“WE DO NOT COMPETE WITH OUR CUSTOMERS.”



Acrich

› Acrich3
› Acrich2
› Acrich MJT

Acrich Family



Acrich3

Acrich3, Simplify your Smart Lighting System

Seoul Semiconductor proudly presents Acrich3 with advanced dimming and connections for your smart-lighting dreams.

With the ability to power IR sensors and Bluetooth controllers, the new advanced Acrich3 IC enables easy integration for your Smart-Lighting electronics. Acrich3 IC also incorporates an analog input for linear dimming based on your smart-lighting's 0-10 V command.

In addition, Acrich3 improves TRIAC Dimming compatibility. Acrich3's ability to precisely control the dimming range with a turn of knob or slide of the switch ensures smooth light control. as always, Acrich3 continues to lead the world in low-distortion power by having one of the lowest THDs and one of the highest power factors.

• Remarkably Improved TRIAC Dimming Compatibility

• Easy to build Smart Lighting interface

- Wireless Control (Wi-Fi and Bluetooth)
- Smart Sensing (IR, Motion Sensors)
- Analog Dimming
- Step Dimming
- CCT Control

• Cost Efficient Dimming System compared to Conventional LED system

• Acrich3 enables Simple and Compact Smart Lighting Module

Conventional Lighting Module	Acrich3 Smart Lighting
· AC/DC Converter · Separate Dimming Interface	· Compact Design · Save Space and Components by 6 mm x 6 mm Acrich IC · Easy Dimming Interface

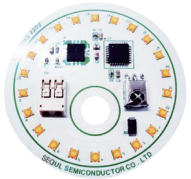
• Uniform Linear Analog Dimming

- Analog dimming is more important for commercial and industrial lighting
- Acrich3 performs uniform linear analog dimming

• More Energy Saving with Smart Lighting by Sensors

• Energy Saving with Motion Sensor
Lights on 100% in the presence of people and dims to 10-50% in the absence.

• Acrich3 power sensors directly from IC
Sensor modules can save component and space.
LED, IC and IR sensors, and others are all on one board



IR sensor Dimming Module
All Device on 1 Board

• Acrich3 enables various Wireless Controls

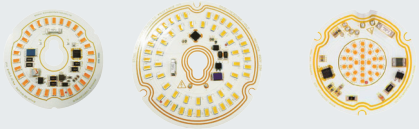
- Wi-Fi and Bluetooth

Acrich3 Standard Modules

COMING SOON!

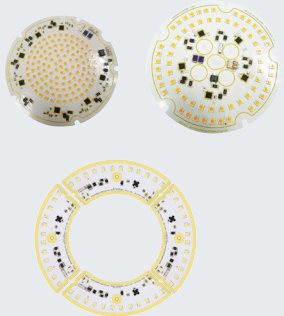
Application	Power	Size	Shape	Vac	Efficacy	Flux	Color	CRI	Fuction			
	W	mm	-	V	lm/W	lm	-	-	OTP	PWM	P.Comp	TRIAC Dimmable
Flush Mount	13	78	Round	120 220	90	1,170	Warm Cool: TBD	80, 90	O			O
	17	100			90	1,530		80, 90	O			O
Track Light	5	50			80	400		80	O			O
Down Light	20	70			100	2,000		80, 90	O		O	
High Bay	95	150			100	9,500	Cool	70				
	80	230			110	8,800		70	O		O	
	105	145			120	12,600		70	O		O	
Parking Light	16	120 x 90	Squre		100	1,600		80	O	O	O	
Street Light	25	70 x 220			120	2400		70	O	O	O	
	30	70 x 260			112	2800		70	O	O	O	
	40	100 x 180			120	3600		70	O	O	O	
	60	100 x 210			112	4500		70	O	O	O	
Troffer	24	A : 570	Linear		115	2,760		80	O		O	
	24	B : 550		277	115	2,760		80	O			

• Flush Mount / Down Light

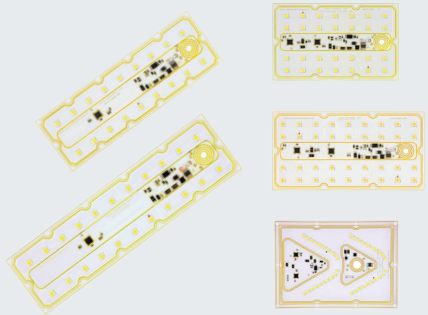


• Track Light

• High Bay



• Street Light Module



Acrich2

Get Plugged in with Acrich2

"The latest Acrich2 17 W module saves energy up to 50 percent and improves compatibility with phase cut dimmer and analog DC dimmer"

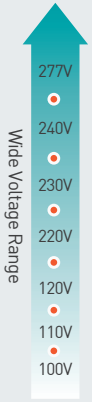
Features & Solutions

Acrich2 is a revolutionary family of LED modules for easy transition from conventional light sources to solid-state lighting (LEDs). These modules do not require the conventional drivers associated with conventional light sources.

The Acrich2 modules are the perfect replacement light sources for flush-mount fixtures, down lights, and sconces.

Applications

- Downlight
- Flush Mount
- Wall Sconce
- PAR
- MR16
- A19 Bulb
- GU10



Number of IC	x 1				x 2	...	x n	Dimming
A wide range of power distribution	4W	8W	12W	16W	32W	...	200W	Analog DC 0-10V Phase Cut Dimming
Application	MR (MR16) GU (GU10)	Bulb (A19) Tube		Down Light Spot Lamp PAR Lamp		...	High Watt Application (Street Lighting, HighBay)	

New Product
30W Street Light Module

Product Brief

Acrich 30W Street Light Module is comprised of Acrich MJT 5050 series LED, Acrich3 IC technology, and an innovative heat sink and secondary optics.
The Acrich Module can be operated directly from the AC mains which simplify designs, reduce component count, and improve on the reliability of luminaire.

Features

- Compact size and weight
  - 200(W) x 80(L) x 38.5(H)
  - About 700g
- Decrease of payback period
- Able to use enough surge protection devices

▲ SMJQ-133NFNSA

▲ Street light

Key Applications

- High-bay / Low-bay
- Security light
- Street light
- Tunnel light

Parameter	Unit	Value		
		Min.	Typ.	Max.
Luminous Flux	lm	2,900	3,100	-
CCT	K	4,700	5,000	5,300
CRI	-	70	-	-
Input Voltage	Vac		120	
			220	
Power Consumption	W	27	30	33
Operating Frequency	Hz		50 / 60	
Power Factor	-		Over 0.97	
Tolerance of Surge	V		1,000	

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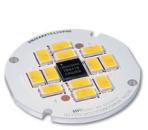
www.seoulsemicon.com

Electro Optical Characteristics

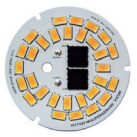
Part No.	Power	V_F	CCT	Binning	Flux Bin	Flux		CRI	Power Factor
						Min.	Typ.		
	W	V	K	-	-	lm		-	-
SMJE-2V04W1P3	4.5	120	4,700-6,000	MacAdam 3-Step	4a	290	330	Min.80	Min.0.95
			3,700-4,200		4b	380	400		
			2,600-3,200						
SMJE-3V04W1P3		220	4,700-6,000		4a	290	330	Min.80	Min.0.95
			3,700-4,200		4b	380	400		
			2,600-3,200						
SMJE-2V08W1P3	8.7	120	4,700-6,000	MacAdam 3-Step	8a	590	650	Min.80	Min.0.95
			3,700-4,200		8b	740	800		
			2,600-3,200						
SMJE-3V08W1P3		220	4,700-6,000		8a	590	650	Min.80	Min.0.95
			3,700-4,200		8b	740	800		
			2,600-3,200						
SMJD-HE2V10W3	10	120	4,700-5,300	10b(H, G, E) 10c (c)	10b	1,250	1,350	Min.80	Min.0.97
			3,700-4,200		10c	1,100	1,200		
			2,600-3,200						
SMJD-HE3V10W3		220	4,700-5,300		10b	1,250	1,350	Min.80	Min.0.97
			3,700-4,200		10c	1,100	1,200		
			2,600-3,200						
SMJD-2V12W2P3	13	120	4,700-6,000	MacAdam 3-Step	13a	880	1,000	Min.80	Min.0.97
			3,700-4,200		13b	1,140	1,210		
			2,600-3,200						
SMJD-3V12W2P3		220	4,700-6,000		13a	880	1,000	Min.80	Min.0.97
			3,700-4,200		13b	1,140	1,210		
			2,600-3,200						
SMJE-2V12W1P3		120	4,700-6,000	MacAdam 3-Step	13a	880	1,000	Min.80	Min.0.95
			3,700-4,200		13b	1,140	1,210		
			2,600-3,200						
SMJE-3V12W1P3		220	4,700-6,000		13a	880	1,000	Min.80	Min.0.95
			3,700-4,200		13b	1,140	1,210		
			2,600-3,200						
SMJE-2V12W2P3		120	4,700-6,000	MacAdam 3-Step	13a	880	1,000	Min.80	Min.0.97
			3,700-4,200		13b	1,140	1,210		
			2,600-3,200						
SMJE-3V12W2P3		220	4,700-6,000		13a	880	1,000	Min.80	Min.0.97
			3,700-4,200		13b	1,140	1,210		
			2,600-3,200						



4.3 W
(Ø33 mm)

8.7 W
(Ø46 mm)

10 W
(Ø100 mm)



13 W
(Ø50 mm)

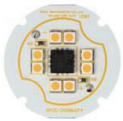
Electro Optical Characteristics

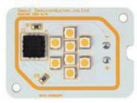
Part No.	Power	V_F	CCT	Binning	Flux Bin	Flux		CRI	Power Factor
						Min.	Typ.		
	W	V	K	-	-	lm		-	-
SMJD-2V16W1P3	17	120	4,700-6,000	MacAdam 3-Step	17a 17b	1,140 1,480	1,300 1,590	Min.80	Min.0.95
			3,700-4,200						
			2,600-3,200						
SMJD-3V16W1P3		220	4,700-6,000		17a 17b	1,140 1,480	1,300 1,590	Min.80	Min.0.95
			3,700-4,200						
			2,600-3,200						
SMJD-2V16W2P3		120	4,700-6,000		17a 17b	1,140 1,480	1,300 1,590	Min.80	Min.0.95
			3,700-4,200						
			2,600-3,200						
SMJD-3V16W2P3		220	4,700-6,000		17a 17b	1,140 1,480	1,300 1,590	Min.80	Min.0.95
			3,700-4,200						
			2,600-3,200						
SMJC-2V08W2P4*	8.7	120	4,700-6,000	-	ALL	580	670	Min.80	Min.0.97
			2,600-3,200						
SMJC-3V08W2P4*		220	4,700-6,000		ALL	580	670	Min.80	Min.0.97
			2,600-3,200						
SMJE-2V08W2P4**		120	4,700-6,000		ALL	540	670	Min.80	Min.0.97
			2,600-3,200						
SMJE-3V08W2P4**		220	4,700-6,000		ALL	540	670	Min.80	Min.0.97
			2,600-3,200						
SMJE-2V12W2P4**	12.7	120	4,700-6,000	MacAdam 3-Step	ALL	850	930	Min.80	Min.0.97
			2,600-3,200						
SMJE-3V12W2P4**		220	4,700-6,000			850	930	Min.80	Min.0.97
			2,600-3,200						

*Candle / **Eco (Acrich MJT 3528 used)


17 W (Ø70 mm)

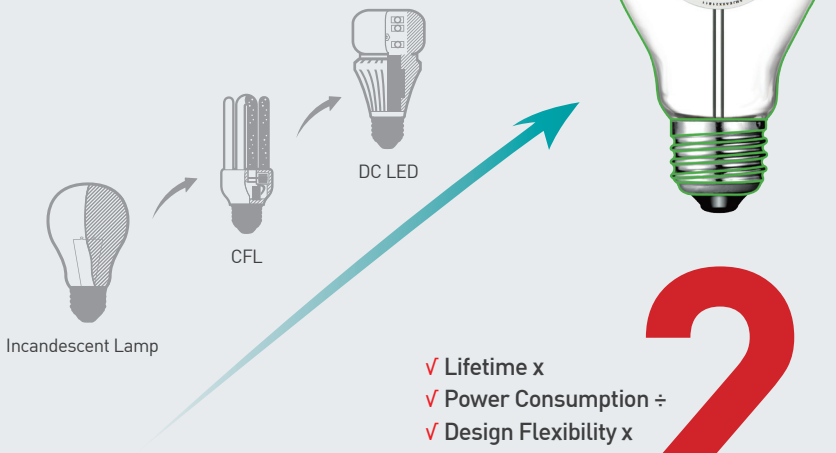

17 W (Ø100 mm)


8.7 W candle (Ø30 mm)


8.7 W Eco (35.9x25.3 mm^2)


12.7 W Eco (36.5x34 mm^2)

"That's what we have accomplished so far."



√ Lifetime x
√ Power Consumption ÷
√ Design Flexibility x
√ Heatsink size ÷

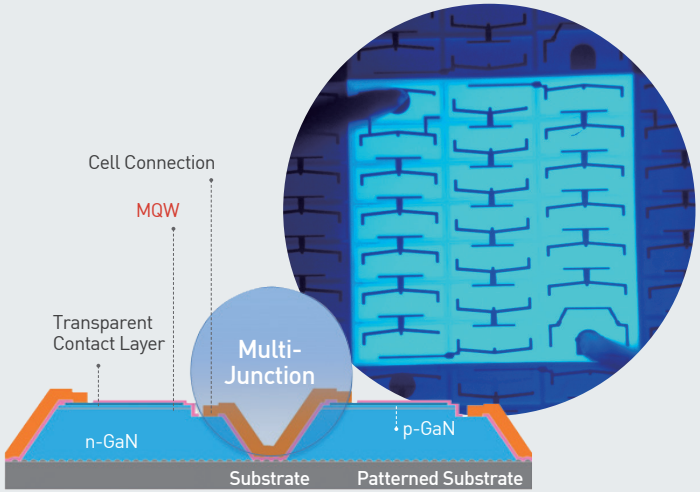
2

"The revolution of lighting has been started from Acrich."

Acrich MJT

Multi-Junction Technology

MJT stands for Multi Junction Technology, eliminating the use of multiple wire bonds among several dies. Since it uses only one chip, it vastly improves the reliability of LED package, reducing the potential number of failure modes associated with wire bonds within the LED package. It can be driven at higher voltage than Conventional DC LEDs are, providing designers high voltage options without large form factors of multi-die chip-on-boards.



Why Acrich MJT?

MJT Feature	Benefit
High Reliability	Eliminates multiple wire bonds among several dies to create the high voltage architecture improving reliability of the LED package
High Efficiency; Low Cost	Low current high voltage architecture enables simpler, smaller, cheaper, and more efficient driver topologies in luminaire designs.
Better Thermal Management	Improved efficiency of the driver electronics results in less heat generated and fewer electronic components used in the driver design allowing more space for thermal management within the luminaire
Scalability	Various package sizes possible for different lumen outputs, forward voltages, and power consumption

Seoul Semiconductor MJT

Advantages of Multi-Junction Technology

FEATURES

- High voltage, low current operation
- Efficient, cost-effective drivers
- Accelerates time to market
- Ideal for high voltage DC and AC designs
- Wide range of voltages 21 V-69 V
- High luminous efficacy up to 141 lm/W

▲ Acrich MJT 3030 ▲ Acrich MJT 3528 ▲ Acrich MJT 4040 ▲ Acrich MJT 5050 ▲ Acrich MJT 5630

Applications

- Troffer
- Flood Light
- Street Light
- Tunnel
- Wall Washer

Electro Optical Characteristics

Series	Part No.	Size	Color	V_F	I_F	Flux	CCT	CRI	2θ½
				V	mA	lm	K	-	°
Acrich MJT 2525	SAW8FS72A	2.5x2.5x2.2	Cool	23	40	105	2,600-7,000	Min.80	130
			Neutral						
			Warm						
NEW Acrich MJT 3030	SAW8C72A	3.0x3.0x0.65	Cool	22.5	40	109	4,700-7,000	Min.80	120
			Neutral			106	3,700-4,700		
			Warm			103	2,600-3,700		
Acrich MJT 3528	SAW8WA2A	3.5x2.8x0.6	Cool	32.5	40	132	3,700-7,000	Min.80	120
			Warm			124	2,600-3,700		
Acrich MJT 4040	SAW09A0A	4.0x4.0x2.2	Cool	31	40	170	4,200-6,500	Min.70	120
	SAW09H0A			64	20	165	4,200-6,000		
NEW Acrich MJT 5050	SAW8LH0A	5.0x5.0x0.65	Warm	64	20	155	2,600-3,700	Min.80	120
	SAW0LH0A		Cool			180	4,700-7,000	Min.70	
Acrich MJT 5630	SAW8KG0B	5.6x3.0x0.75	Warm	22	20	49	2,600-3,700	Min.80	115
			Cool			53	3,700-7,000		
	SAW9KG0B		Warm	22	20	45	2,600-3,700	Min.90	

New Product
Acrich MJT 3030

Product Brief

Acrich MJT 3030 is optimized for replacement lighting.
It can be applied to bulbs and MR lamps without changing design with its standard size of 3.0 x 3.0 mm. It can be driven to the maximum of 1.5W, providing high-lumen output at mid-power prices.

Features

- Optimized for small-form factor applications
- High efficiency
- LM80 6,000hrs completed
  - The best lumen maintenance of 98.56% (@85℃)
- Advantageous cost for application level
  - With MJT solution, 12.3% price saving in 12W bulb
- Compatible with 3030 standard size

▲ SAW8C72A

Key Applications

- Indoor lighting
- Automotive
- Portable torch
- Home appliance

Parameter		Unit	Value		
			Min.	Typ.	Max.
Forward Current		mA	-	40	60
Forward Voltage		V	21.5	-	24.5
Luminous Flux	4,700K-7,000K	lm	-	109	-
	3,700K-4,700K		-	106	-
	2,600K-3,700K		-	103	-
CRI		-	80	-	-
Viewing Angle		°	-	120	-
Junction Temperature		°C	-	125	-
Storage Temperature		°C	-40	-	+100
Thermal Resistance (J to S)		°C/W	-	9	-

For latest information, please visit our website.
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New Product
Acrich MJT 5050

Product Brief

Acrich MJT 5050 has high lumen intensity, reliability, and price competitiveness (lm/$). It is optimized for outdoor lighting such as street lights, security lights, tunnel lighting and warehouse lighting such as high-bay and low-bay.

Features & Benefits

- Available at max.4.5 W for outdoor applications
- High luminous flux up to max.440 lm
- High price competitiveness (lm/$)
- Decrease of payback period by 30%
- High reliability for extreme environment

▲ SAW8LH0A (Warm) ▲ SAW0LH0A (Cool)

Key Applications

- Outdoor lighting
- High bay / Low bay
- Industrial lighting
- Down light / PAR
- Street lighting

Electro – Optical Characteristics, T_j=25°C

	Color	I_F [mA]	V_F [V]	Power [W]	Luminous flux [lm]	lm/W
SAW0LH0A	Cool	20	63.8	1.28	180	141
SAW8LH0A	Warm	20	63.8	1.28	155	121

For latest information, please visit our website.
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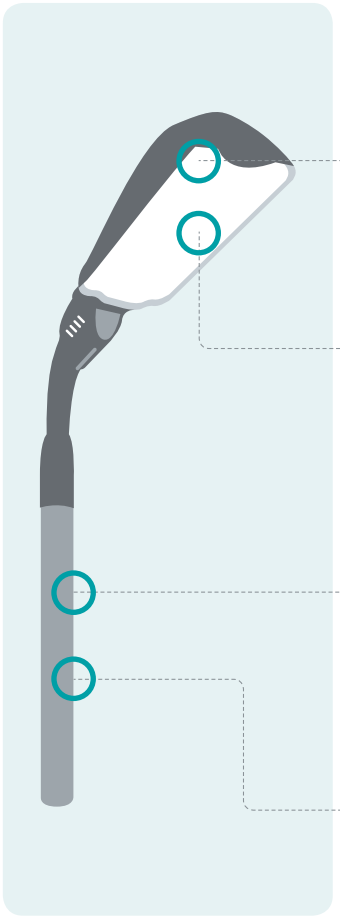
Seoul Semiconductor
MJT

Acrich, Best Solution for Outdoor Lighting



- No bulky converter
- Smaller heat sink
- Light weight
- Long life time

- Cost competitive solution for high power lighting systems
  - High lumen/$ PKG
  - Easy implementation of MJT PKGs and Acrich IC
  - Fewer components

- Maintenance cost :
  50% less than DC LED systems
- Power consumption :
  55% less than high-pressure sodium lamps

- Utilizing the existing streetlight poles

New Era of LED

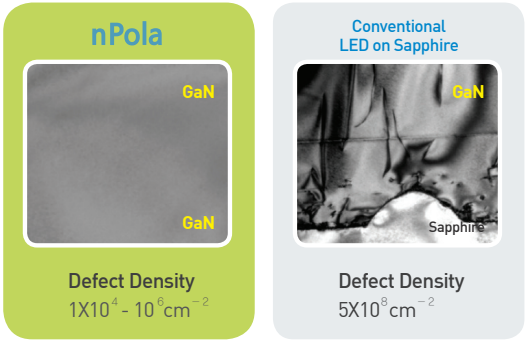
nPola

Seoul Semiconductor
New Era of LED
nPola

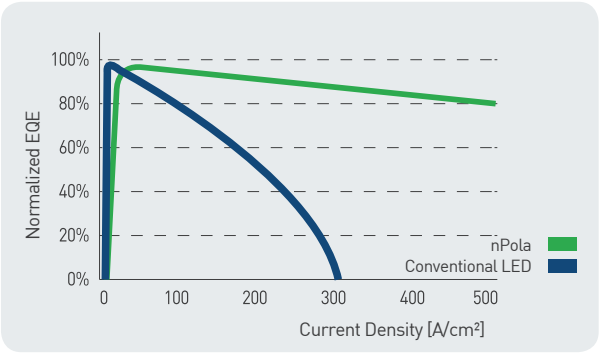
nPola

The brightness of nPola has been dramatically improved from 5 to10 times compared to one of the conventional LEDs based on equivalent die surface area.

nPola can decrease Defect Density down to 1/10,000



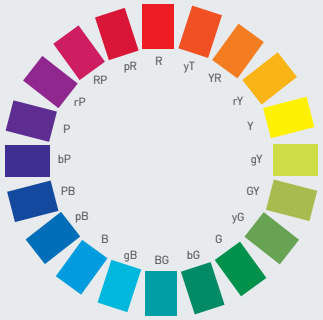
nPola frees LEDs from Efficacy Droops

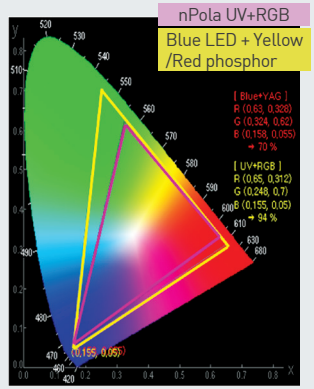


High Quality White LED by nPola UV

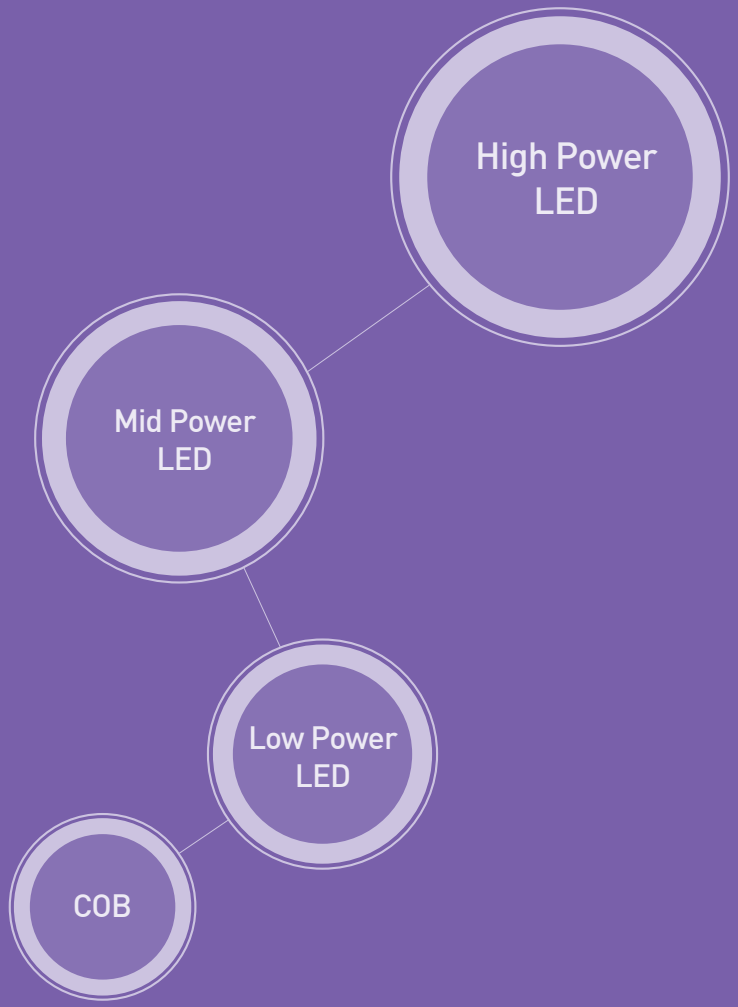
- In a white LED, the values that determine the color quality between R9-R15 are most important. Conventional white LED uses blue LED + yellow/red phosphor and it has imitation to reach high CRI in R9 and R15.
- nPola Technology strengthens UV power by 15 to 20 times compared to conventional technology.
- nPola UV LED + RGB phosphor solution can get us values of over 95 in all CRI ranges from R1 to R15

- Able to reach High Gamut for TV and Monitor





LEDs by Power



High Power LED

Seoul Semiconductor's High Power LEDs are optimal LEDs for world famous events.

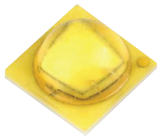
- 120th anniversary of Eiffel Tower
- 2008 Olympic Games
- 2010 Asian Games

Case Study
Z-power series installed as stage lighting at the opening ceremonies of 2010 Asian Games

Seoul Semiconductor
High Power LED

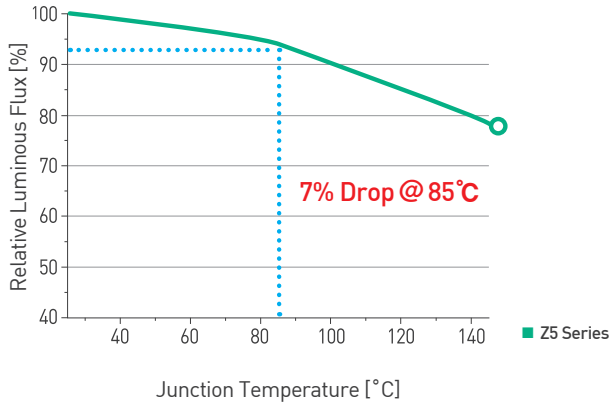
Excellent Hot Lumen Maintenance of Z5 Series

The Z5 series, the world's leading high power LEDs, has excellent hot lumen maintenance. The Z5 series shows only 7% drop of luminous flux at 85°C and is even available with a color rendering index (CRI) of 90.

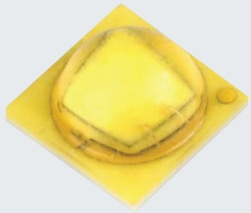


▲ Z5M2

- LM80
- ANSI compliant
- AEC-Q101
- RoHS-compliant



New Product
Z5M2



Product Brief

Z5M2 delivers high lm/W and lm/$.
Based on specifications, Seoul Semiconductor's Z5M2 became a strong high power package among 1W 3535 packages delivering best lm/W.

Features

- Excellent Reliability - more than 100,000 hours (@55, 85, 105℃)
- Hot lumen binning @ T_j=85℃, 700mA
- Performance - R&D max 170.6 lm/W @ 4,000K CRI70

Key Applications

- Outdoor & Indoor lighting
- Portable Torch / Home appliance
- Architectural lighting
- Industrial lighting (High/Low Bay)

Parameter		Unit	Value		
			Min.	Typ.	Max.
Forward Current		mA	-	350	1,500
Forward Voltage		V	2.75	2.95	3.00
Luminous Flux	5,000K	lm	-	168	-
	4,000K		-	168	-
	3,000K		-	139	-
CCT		K	2,600	-	7,000
CRI		Ra	70	-	-
Viewing Angle		°	-	118.5	-
Junction Temperature		°C	-	-	150
Thermal Resistance (J to S)		K/W	-	3.45	-

Z-Power LED (White)

Electro-Optical Characteristics

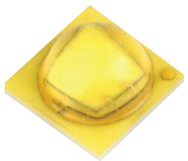
Series	Part No.	Color	V_F [V]	Flux [lm]	CCT [K]	CRI	I_F [mA]	I_F [mA] (Max.)	2θ½ [°]	Type
Z5M1	SZ5-M1-W0-00	Cool	2.95	158	5,300	Min.70	350	1,500	118	Emitter
	SZ5-M1-WN-00	Neutral	2.95	156	4,000	Min.70	350	1,500	118	Emitter
	SZ5-M1-WN-C8	Neutral	2.95	142	4,000	Min.80	350	1,500	118	Emitter
	SZ5-M1-WW-C8	Warm	2.95	128	3,000	Min.80	350	1,500	118	Emitter
	SZ5-M1-WW-C9	Warm	2.95	105	3,000	Min.90	350	1,500	118	Emitter
	SZ5-M1-WW-00	Warm	2.95	148	3,000	Min.70	350	1,500	118	Emitter
Z5M0	SZ5-M0-WN-C9	Neutral	2.95	95	4,000	Min.90	350	1,500	120	Emitter
	SZ5-M0-WW-C9	Warm	2.95	93	2,700	Min.90	350	1,500	120	Emitter
	SZ5-M0-WW-C8	Warm	2.95	116	3,000	Min.80	350	1,500	120	Emitter
	SZ5-M0-WN-C8	Neutral	2.95	122	4,000	Min.80	350	1,500	120	Emitter
	SZ5-M0-WN-00	Neutral	2.95	140	4,000	Min.70	350	1,500	120	Emitter
	SZ5-M0-W0-C8	Cool	2.95	135	5,300	Min.80	350	1,500	120	Emitter
	SZ5-M0-W0-00	Cool	2.95	142	5,300	Min.70	350	1,500	120	Emitter
Z5P1*	SZ5-P1-W0-00	Cool	3.05	148	5,300	Min.70	350	1,000	118	Emitter
	SZ5-P1-WN-00	Neutral	3.05	143	4,000	Min.70	350	1,000	118	Emitter
	SZ5-P1-WN-C8	Neutral	3.05	128	4,000	Min.80	350	1,000	118	Emitter
	SZ5-P1-WW-C8	Warm	3.05	115	3,000	Min.80	350	1,000	118	Emitter
Z5P0	SZ5-P0-W0-00*	Cool	3.2	135	6,000	Typ.70	350	1,000	120	Emitter
	SZ5-P0-WN-00*	Neutral	3.2	125	4,200	Min.65	350	1,000	120	Emitter
	SZ5-P0-WN-C8	Neutral	3.2	118.5	4,200	Min.80	350	1,000	120	Emitter
	SZ5-P0-WW-C8	Warm	3.2	112	3,000	Min.80	350	1,000	120	Emitter
Z5	SZW05A0A	Cool	3.3	105	6,300	Typ.70	350	700	120	Emitter
	SZW05A0B*	Cool	3.3	124	6,000	Typ.70	350	700	120	Emitter
Z4	SZWW4A0A	Warm	8.6	100	3,000	Min.80	120	200	130	Emitter
Z1	WZ10150	Cool	3.6	100	6,300	Typ.68	400	450	120	Emitter
	NZ10150	Warm	3.6	76	3,000	Typ.80	400	450	120	Emitter
P8	SPW08F0D	Cool	3.4	82	6,000	Typ.73	350	500	120	Emitter
	SPW88F0E	Cool	3.4	100	6,000	Typ.80	300	400	120	Emitter
	SPWW8F0E	Warm	3.4	95	3,000	Typ.80	300	400	120	Emitter
P8*	SPW08F0Z	Cool	3.3	43	6,000	Typ.74	150	250	120	Emitter
	SPW08F0D	Cool	3.4	82	6,000	Typ.73	350	500	120	Emitter
P4	W42180-07	Cool	3.1	108	6,300	Typ.73	350	800	127	Emitter
	W42180-08	Cool	3.3	110	6,000	Typ.70	350	1,000	123	Emitter
	W42182-08	Cool	3.3	110	6,000	Typ.70	350	1,000	123	Star
	W49180-08	Cool	3.3	125	6,000	Typ.73	350	700	95	Emitter
	S42180-08	Neutral	3.3	88	4,000	Typ.91	350	700	123	Emitter
	S42180H-08	Neutral	3.3	98	4,000	Typ.80	350	700	123	Emitter
	S42182	Neutral	3.25	61	4,000	Typ.93	350	700	124	Star
	S42182-08	Neutral	3.3	88	4,000	Typ.91	350	700	123	Star
	N42180-08	Warm	3.3	84	3,000	Typ.91	350	700	123	Emitter
	N42180H-08	Warm	3.3	93	3,000	Typ.80	350	700	123	Emitter
	N42182-08	Warm	3.3	84	3,000	Typ.91	350	700	123	Star
P9	W92050C	Cool	3.65	28	6,300	Typ.70	150	200	130	Emitter

* Automotive

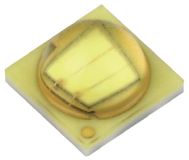
Z-Power LED (Color)

Electro-Optical Characteristics

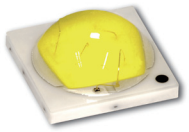
Series	Part No.	Color	V_F [V]	Flux [lm]	λd [nm]	I_F [mA]	I_F [mA] (Max.)	2θ½ [°]	Type
Z5	SZR05A0A*	Red	2.4	55	625	350	700	123	Emitter
	SZG05A0A	Green	3.3	100	525	350	700	128	Emitter
	SZB05A0A	Blue	3.3	22	460	350	700	128	Emitter
	SZA05A0A*	Amber	2.3	46	592	350	700	123	Emitter
P4	R42180	Red	2.3	48	625	350	800	130	Emitter
	G42180	Green	3.25	70	525	350	1,000	130	Emitter
	B42180	Blue	3.25	22	465	350	1,000	130	Emitter
	A42180	Amber	2.3	48	590	350	800	130	Emitter
	A42182	Amber	2.3	48	590	350	800	130	Star
P5-II	F50360	Full Color	2.5	35	625	350	400	120	Emitter
			3.8	57	525	350	400	120	
			3.6	13	460	350	400	120	



▲ Z5M2



▲ Z5M1



▲ Z4

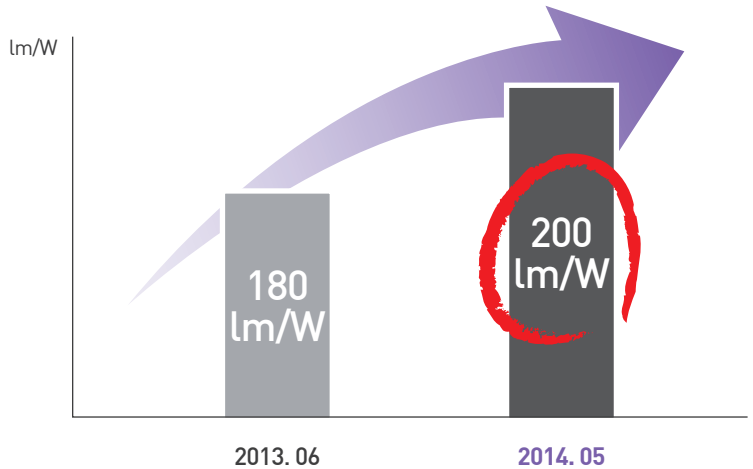
▲ P4

Mid Power LED

We head towards the better and brighter future with Mid Power LED

5630, 3030, 2525 Blue Pump ...

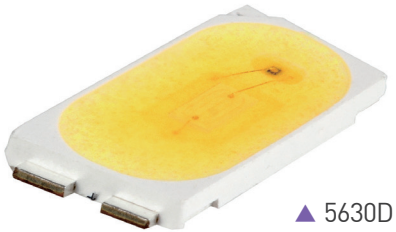
- Cost competitive with high lm/W (max.200 lm/W)
- Industry leading reliability
- Max. current up to 200 mA
- High CRI solutions (CRI 90)
- Energy star binning
- MacAdam 3 step binning (2,600-7,000 K)



Seoul Semiconductor Mid Power LED

5630D, the best performance with 200 lm/W

- World's best performance of lm/W (up to 200 lm/W)
- PKG can be driven at 0.1 W~ max.0.7 W
  - Max.200 lm/W @ 0.2 W, 5,000 K
- Sulfur gas corrosion prevented
- High reliability product
- Optimized for High Efficacy LED lighting, L-Tube and Bulb



▲ 5630D

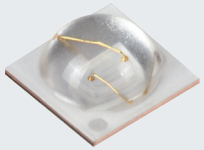
Electro-Optical Characteristics (@ 60 mA, T_a=25°C)

Part Number	CCT	Flux	Forward Voltage	Efficacy	CRI [Min]	Viewing Angle
	K	lm	V_F	lm/W	Ra	°
STW8Q14D	5,000	30.8 [Typ]	2.8	184	80	120
		33.2 [Max.]	2.76	200	80	120
	3,000	28.3 [Typ]	2.8	168	80	120
		30 [Max.]	2.76	181	80	120

New Product
2525 Blue Pump

Product Brief

The new 2525 Blue Pump creates a new category in LED packages which can be driven from mid power to high power. This compact size Blue Pump LED has a dome lens to provide a wider viewing angle.



▲ STB0FS12A

Features & Benefits

- Mid power package which can be driven from mid to high wattage
- Dominant wavelength 450-460 nm and I_F=150 mA
- Compact size package for compact applications
- 2525 Blue Pump is the best solution for remote phosphor applications due to high optical output with dome lens.

Key Applications

- General lighting
- Interior lighting
- Architectural
- Decorative lighting
- Indoor and outdoor displays

Characteristics I_F=150 mA, T_j=25°C, RH 30%

Parameter	Unit	Value		
		Min.	Typ.	Max.
Forward Current	mA	-	150	-
Forward Voltage	V	-	3.2	-
Radiant Power	Mw	-	260	-
Dominant Wavelength	nm	450	-	460
Viewing Angle	°	-	140	-
Junction Temperature	°C	-	-	125
Thermal Resistance (J to S)	°C/W	-	17	-

For latest information, please visit our website.
www.seoulsemicon.com

Mid Power LED (White)

Electro-Optical Characteristics

Part No.	Color	Size	V_F [V]	I_F [mA]	I_F [mA] Max.	Binning	Flux [lm] Typ.	CCT [K]	CRI	2θ ½[°]	Junction Temp. [℃]
NEW STW8C2SB	Cool	3.0x3.0x0.6	6	100	200	3-step	87	5000	Min.80	120	125
NEW STW8C2SB	Warm	3.0x3.0x0.6	6	100	200	3-step	80	2700	Min.80	120	125

Part No.	Color	Size [mm]	V_F [V]	Iv [mcd]	CCT (K)	I_F (mA)	I_F (mA) (Max.)	2θ ½ (°)	CRI
STW9B12C	White	3.0x2.0x0.6	3.2	9,500	2,600-4,200	100	120	120	Min.90
STW8B12B	White	3.0x2.0x0.6	3.05	5,050	2,600-7,000	40	80	120	Min.80
STW8B12C	White	3.0x2.0x0.6	3.15	11,350	2,600-7,000	100	120	120	Min.80
STW9B12G	Warm	3.0x2.0x0.6	3	2,600	2,600-3,700	30	40	120	Min.90
C9WT821	White	3.5x2.8x1.9	3.3	4,500	2,600-7,000	60	90	120	Typ.92
SWT821-S	White	3.5x2.8x1.9	3.2	5,500	4,800-10,000	60	90	120	Typ.68
STW7C2SA	White	3.0x3.0x0.65	6.1	27,500	4,700-7,000	100	200	120	Min.70
STW8C2SA	White	3.0x3.0x0.65	6.1	26,300	2,600-7,000	100	200	120	Min.80
STW9C2SA	White	3.0x3.0x0.65	6.1	20,000	2,600-4,200	100	200	120	Min.90
STW7T16A	White	5.0x5.0x1.4	3.1	7,000	4,700-7,000	60	90	120	Min.75
STW8T16A	Cool	5.0x5.0x1.4	3.1	6,800	3,700-7,000	60	90	120	Min.80
	Warm			6,400	2,600-3,700				
STW8T36B	Cool	5.0x5.0x1.4	3.2	6,300	3,700-8,200	60	90	120	Typ.80
	Warm			5,500	2,600-3,700				
STW9T36B	Cool	5.0x5.0x1.4	3.2	5,000	3,700-8,200	60	90	120	Typ.90
	Warm			4,800	2,600-3,700				
STW8T16C	Cool	5.0x5.0x1.0	3.1	9,000	3,700-8,200	65	100	120	Min.80
	Warm	5.0x5.0x1.0	3.1	8,200	2,600-3,700				
STW8Q14C	White	5.6x3.0x0.75	3.1	14,000	2,600-7,000	100	160	120	Min.80
STW9Q14C	White	5.6x3.0x0.75	3.1	10,200	2,600-4,200	100	160	120	Min.90
NEW STW8Q14D	White	5.6x3.0x0.65	2.8	10,400	2,600-7,000	65	200	120	Min.80
STW9Q14B	White	5.6x3.0x0.9	3.2	9,500	2,600-4,500	100	160	120	Min.90
STW8Q14BE	Cool	5.6x3.0x0.9	3.2	11,700	3,700-7,000	100	160	120	Min.80
	Warm			11,000	2,600-3,700				
STW8Q2PA	Cool	5.6x3.0x0.9	3.2	9,500	3,700-7,000	100	160	120	Min.75
	Warm			8,900	2,600-3,700				Min.80

Mid Power LED (Color)

Electro-Optical Characteristics

Part No.	Color	Size [mm]	V_F [V]	Radiant Power [mW]	λd [nm] (Min–Max.)	I_F (mA)	I_F [mA] (Max.)	2θ½ (°)
NEW STB0FS12A	Royal Blue	2.5x2.5x1.12	3.2	260	450-460	150	300	140

Part No.	Color	Size [mm]	V_F [V]	Iv [mcd]	Iv [mcd] (Max.)	λd [nm]	I_F (mA)	I_F [mA] (Max.)	2θ½ (°)
SFT825N-S	Full Color	3.5x2.8x1.4	2.1	700	1,100	623	20	30	120
			3.2	1,200	1,600	527			
			3.2	400	560	460			
SFT825Z-S	Full Color	3.5x2.8x1.4	2.1	700	1,100	623	20	30	120
			3.2	1,200	1,600	527			
			3.2	400	560	460			
SFT722N-S	Full Color	6.0x5.0x2.5	2.1	700	1,100	623	20	30	120
			3.2	1,200	1,600	527			
			3.2	200	560	460			

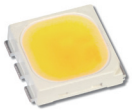
NEW

▲ 3030B

NEW

▲ 2525 Blue Pump

▲ 3030



▲ 5050

▲ 5630

Low Power LED

SMD Type

Best Solution for Retail Lighting

Proper lighting is crucial since the food has to look fresh and tasty in the food section. Therefore, not only the light intensity but also the color spectrum of used lamps play an important role.

One of the largest retailers in Switzerland installed a new, eco-friendly, and energy energy-efficient System with Seoul Semiconductor's 803 series.
Seoul Semiconductor's 803 series is ideal for retail lighting applications which require homogeneous light distribution and a high color rendering index.

SMD Type : Top View LED

Electro-Optical Characteristics

Part No.	Color	Size [mm]	V_F [V]	Iv [mcd]	Iv [mcd] (Max.)	CCT [K] λd [nm]	I_F [mA]	I_F [mA] (Max.)	2θ½ [°]	CRI
KWT803-S	White	3.0x2.0x1.2	3.2	2,100	2,500	5,300-8,900	20	30	115	Typ.68
C8WT803	White	3.0x2.0x1.2	3.2	1,800	2,300	2,600-7,000	20	30	115	Typ.80
C9WT803	White	3.0x2.0x1.2	3.2	1,500	2,000	2,600-7,000	20	30	115	Typ.90
AWT801-S	White	3.5x2.8x1.9	3.3	1,600	-	2,700-4,500	20	30	120	-
ERT801-S	Red	3.5x2.8x1.9	2	90	130	635	20	30	120	-
LUYT801-S	Yellow	3.5x2.8x1.9	2.1	130	210	587	20	30	120	-
FAT801-S	Amber	3.5x2.8x1.9	2.2	220	320	606	20	30	120	-
UYGT801-S	Yellow Green	3.5x2.8x1.9	2.1	90	105	572	20	30	120	-
UPGT801-S	Green	3.5x2.8x1.9	2.2	17	36	562	20	30	120	-
MBT801-S	Blue	3.5x2.8x1.9	3.2	335	600	470	20	30	120	-

Low Power LED

Through Hole Type

Holiday lighting in Belgium using 4Φ Can type Lamp LED

Designing and implementing decorative but energy efficient illumination displays is always the most delicate issue for holidays like Christmas – the luminaires and displays must be able to deal with wintertime outdoor conditions such as rain, snow and ice, or very cold temperature.

Our 4Φ Can type Lamp LEDs in cool white and warm white provide a perfect solution for decoration lightings, and we proudly deliver high quality LEDs customized for special outdoor projects.

Through Hole Type : Lamp LED

Electro-Optical Characteristics

Part No.		Color	V_F [V]	Iv [mcd]	I_F [mA]	I_F [mA] (Max.)	CIE [x,y] λd [nm]	2θ½ [°]	CRI
Ø5 Round	LW514	White	3.2	26,000	20	30	0.31,0.31	15	Typ.68
	LW520A	White	3.2	14,000	20	30	0.31,0.31	22	Typ.68
	LW540A	White	3.3	6,000	20	30	0.31,0.31	40	Typ.68
	LW540AS	White	3.3	6,000	20	30	0.31,0.31	40	Typ.68
	LW551A	White	3.2	2,200	20	30	0.31,0.31	52	Typ.68
	LB520	Blue	3.2	3,500	20	30	470	22	-
	LR521	Red	2	7,500	20	30	625	22	-
	LR530	Red	2.2	6,500	20	30	625	30	-
	LY530	Yellow	2.2	6,000	20	30	590	30	-
Ø5 Oval	LR770D	Red	2.2	700	20	30	625	70	-
Ø5 Cylinder	LB580A	Blue	3.6	250	20	30	470	80	-
Ø3 Round	LW340A	White	3.3	5,500	20	30	0.31,0.31	44	68
	LB340	Blue	3.6	800	20	30	470	40	-
	LY350	Yellow	2.2	2,500	20	30	590	45	-

Through Hole Type : High Flux LED

Electro-Optical Characteristics

Part No.	Color	V_F [V]	V_F [V] (Max.)	Φ_v [lm]	Iv [mcd]	I_F [mA]	I_F [mA] (Max.)	CIE [x,y] λd [nm]	2θ½ [°]	CRI
HW321A	White	3.4	4	6	2,500	30	30	0.31,0.31	70	68
HW331A	White	3.4	4	6	1,600	30	30	0.31,0.31	110	68
HR310	Red	2.6	3	6	10,000	70	70	625	40	-

Chip On Board

The ZC series Chip-On-Board (COB) LED Arrays are now available in in the minimum of 90 CRI option. With the minimum R9 values greater than 50, these arrays are ideal for high quality lighting to render skin tones, art work, clothing, and grocery store products. The COB packages have the best efficacy among other arrays in the same class. They offer high lumen density, easy use, and excellent color consistency over a wide range of lumen outputs.

Features

- Wide range of lumen outputs 500 lm – 6,000 lm
- ANSI Compliant 3 SDCM binning
- Efficacies up to 150 lm/W
- Existing ecosystem of holders/optics/drivers readily available
- Full range of CCTs and CRI options
- LM80 reports available

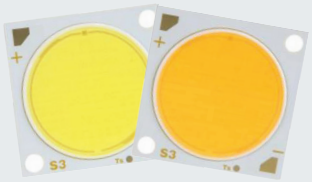
Key Applications

Indoor/Outdoor area lighting, retrofit lamps, high/low bay, and spotlights

Advantages & Benefits

- Enables wide range of general lighting applications
- Fixture to fixture color consistency
- Easier to meet energy efficiency standards
- High quality of light with high efficacy

NEW ZC 60W SDW06F1C, SDW86F1C



Applications

- Down lighting - Commercial lighting
- High Bay - Industrial lighting
- Architectural lighting
- Decoration lighting

Part No.	Power	Color	Size	V_F	I_F	Flux Typ.	CCT	CRI	2θ½
	W	-	mm	V	mA	lm	K	-	°
SDW06F1C	60	Cool	28.0*28.0	54.5	1,100	8,300	5,000	Min.70	120
SDW86F1C	60	Neutral	28.0*28.0	54.5	1,100	8,000	4,000	Min.80	120
	60	Warm	28.0*28.0	54.5	1,100	7,600	3,000	Min.80	120

NEW ZC 100W SDW07F1C, SDW87F1C

Applications

- Street Lighting
- Down lighting - Commercial lighting
- High Bay - Industrial lighting
- Architectural lighting
- Low Bay Lighting
- Security Lighting

Part No.	Power	Color	Size	V_F	I_F	Flux Typ.	CCT	CRI	2θ½
	W	-	mm	V	mA	lm	K	-	°
SDW07F1C	80	Cool	38.0*38.0	53	1,500	11,800	5,000	Min.70	124
SDW87F1C	80	Neutral	38.0*38.0	53	1,500	11,400	4,000	Min.80	124
	80	Warm	38.0*38.0	53	1,500	11,000	3,000	Min.80	124

ZC series (Chip-On-Board)

Part No.	Power	Color	Size	V_F	I_F	Flux Typ.	CCT	CRI	2θ½
	W	-	mm	V	mA	lm	K	-	°
SDW01F1B	4	Cool	13.5*13.5	8.8	500	590	5,000	Min.70	120
	4	Neutral	13.5*13.5	8.8	500	630	4,000	Min.70	120
SDW81F1B	4	Cool	13.5*13.5	8.8	500	593	5,000	Min.80	120
	4	Neutral	13.5*13.5	8.8	500	565	4,000	Min.80	120
	4	Warm	13.5*13.5	8.8	500	520	3,000	Min.80	120
SDW01F1C	6	Cool	13.5*13.5	35	180	885	5,000	Min.70	120
	6	Neutral	13.5*13.5	35	180	913	4,000	Min.70	120
SDW81F1C	6	Cool	13.5*13.5	35	180	750	5,000	Min.80	120
	6	Neutral	13.5*13.5	35	180	775	4,000	Min.80	120
	6	Warm	13.5*13.5	35	180	820	3,000	Min.80	120
SDW91F1C	6	Neutral	13.5*13.5	35	180	680	4,000	Min.90	120
	6	Warm	13.5*13.5	35	180	635	3,000	Min.90	120
SDW02F1C	12	Cool	19.0*19.0	36	350	1,839	5,000	Min.70	120
	12	Neutral	19.0*19.0	36	350	1,890	4,000	Min.70	120
SDW82F1C	12	Cool	19.0*19.0	36	350	1,680	5,000	Min.80	120
	12	Neutral	19.0*19.0	36	350	1,590	4,000	Min.80	120
	12	Warm	19.0*19.0	36	350	1,530	3,000	Min.80	120
SDW92F1C	12	Neutral	19.0*19.0	36	350	1,385	4,000	Min.90	120
	12	Warm	19.0*19.0	36	350	1,295	3,000	Min.90	120
SDW03F1C	18	Cool	19.0*19.0	36	500	2,520	5,000	Min.70	120
	18	Neutral	19.0*19.0	36	500	2,547	4,000	Min.70	120
SDW83F1C	18	Cool	19.0*19.0	36	500	2,273	5,000	Min.80	120
	18	Neutral	19.0*19.0	36	500	2,220	4,000	Min.80	120
	18	Warm	19.0*19.0	36	500	2,128	3,000	Min.80	120
SDW93F1C	18	Neutral	19.0*19.0	36	500	1,940	4,000	Min.90	120
	18	Warm	19.0*19.0	36	500	1,810	3,000	Min.90	120
SDW04F1C	25	Cool	28.0*28.0	36	700	3,700	5,000	Min.70	120
	25	Neutral	28.0*28.0	36	700	3,774	4,000	Min.70	120
SDW84F1C	25	Cool	28.0*28.0	36	700	3,529	5,000	Min.80	120
	25	Neutral	28.0*28.0	36	700	3,400	4,000	Min.80	120
	25	Warm	28.0*28.0	36	700	3,245	3,000	Min.80	120
SDW94F1C	25	Neutral	28.0*28.0	36	700	2,770	4,000	Min.90	120
	25	Warm	28.0*28.0	36	700	2,590	3,000	Min.90	120
SDW05F1C	36	Cool	28.0*28.0	36	1,000	5,300	5,000	Min.70	120
	36	Neutral	28.0*28.0	36	1,000	5,180	4,000	Min.70	120
SDW85F1C	36	Cool	28.0*28.0	36	1,000	4,961	5,000	Min.80	120
	36	Neutral	28.0*28.0	36	1,000	4,783	4,000	Min.80	120
	36	Warm	28.0*28.0	36	1,000	4,575	3,000	Min.80	120
SDW95F1C	36	Neutral	28.0*28.0	36	1,000	3,876	4,000	Min.90	120
	36	Warm	28.0*28.0	36	1,000	3,800	3,000	Min.90	120

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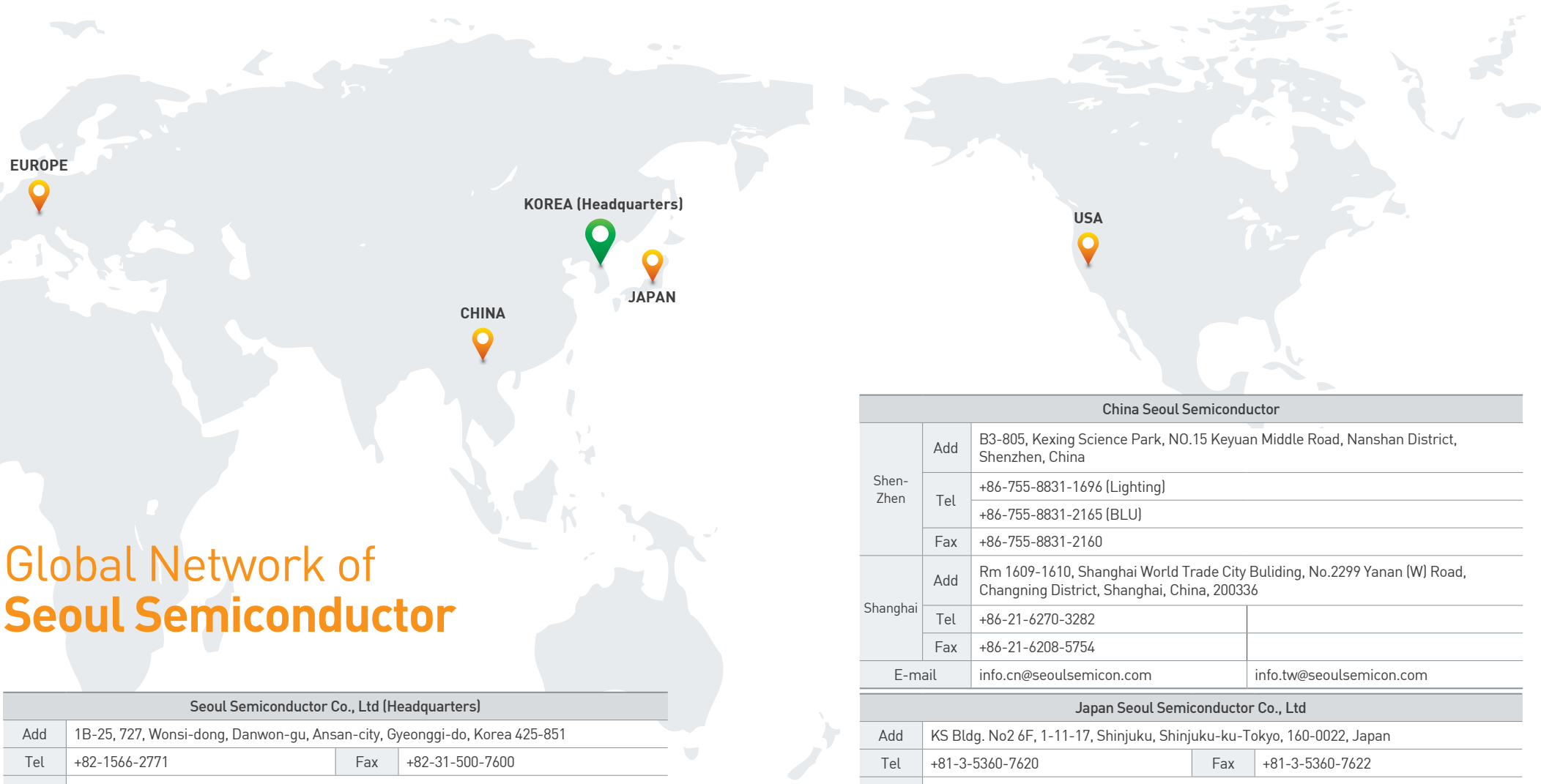

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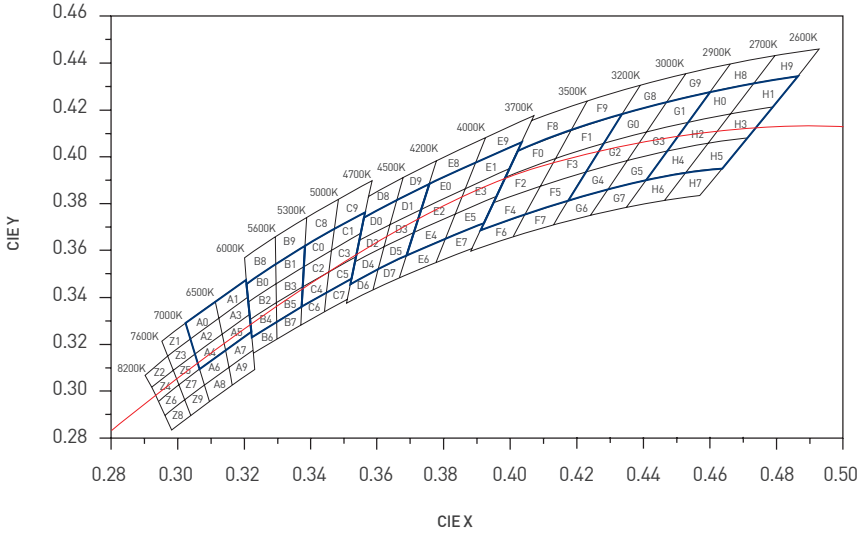
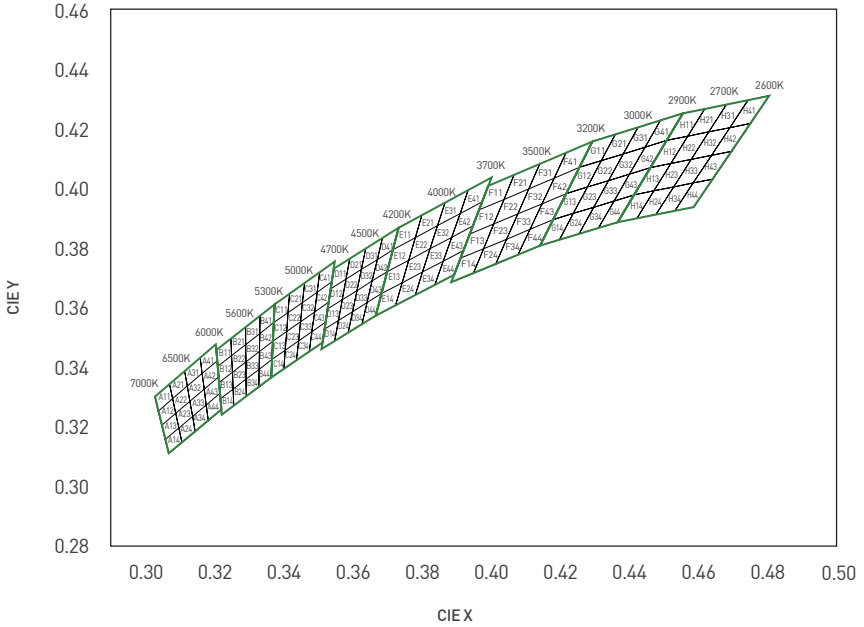


MacAdam 3-STEP Rank



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