About Samsung Electronics Co., Ltd.
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Samsung Electronics Co., Ltd.
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Samsung LED
CSP LEDs

- Mid-power LEDs
- High Power LEDs
- Indoor Linear Modules
- Down & Spot Modules
- Outdoor Modules
The First and Biggest

First manufacturer of CSP LEDs started in 2014
High reliability backed by thousands of installations around the world
Unmatched versatility to suit virtually any application

The World’s Best IP Position

Patents of CSP technologies

Since 2001

61 registrations

High-efficiency epitaxial technology
Epitaxial growth technology such as carrier injection, internal radiative efficiency and light extraction

High-efficiency phosphor technology
Reducing interference of red and green phosphors

High-efficiency process technology
Achieving high extraction efficiency by embedded mold, phosphor film and color uniformity
New technology provides high performance and energy conserving

Samsung’s CSP significantly scales down the size of an LED package, which enables more flexible and compact designs and lowers the manufacturing and operational costs of an LED lighting system.

### Design Flexibility

<table>
<thead>
<tr>
<th>Mid Power LED</th>
<th>Ceramic High Power LED</th>
<th>CSP High Power LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>LM301A / 36ea</td>
<td>LH351B / 9ea</td>
<td>LH181A /12ea</td>
</tr>
<tr>
<td>389㎟ (100%)</td>
<td>132㎟ (34%)</td>
<td>53㎟ (14%)</td>
</tr>
</tbody>
</table>

### Thermal management

- **Flux**
  - Flip-chip CSP
  - Epi-up lead frame package

- **Thermal Resistance**
  - 10k/W
  - 2k/W

**Mid Power LED**

**Ceramic High Power LED**

**CSP High Power LED**

**Ambient**

- **Mainstream linear fixture**
  - FEC could be an LED platform of mainstream luminaire with 190lm/W LED performance.

- **Flexible edge lit fixture**
  - POC makes beautiful light with wide beam distribution (volume emission).

**Spot light**

- **FEC**
  - 120° beam distribution
  - Easy to design lens

- **POC**
  - 140-150° beam distribution
  - Suitable for flood lighting

**Downlight**

- **FEC**
  - Helps to make extremely tight LES without concern of X-talk by surface emitted light

- **POC and FEC**
  - Can naturally mix warm and cool color by tiny form factor

**Outdoors**

- **Street light**
  - POC could be profitable for flood light by wide beam distribution and FEC is easy to adapt in lens based design for special distribution

**Mid-Power LED**

**High-Power LED**
### Line-up

<table>
<thead>
<tr>
<th>Product</th>
<th>Key Features</th>
<th>Efficacy (lm/W)</th>
<th>Lifespan</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSP Spot</td>
<td>• Designed following Zhaga specification, excellent compatibility of eco-partner's component</td>
<td>• Possible to design various sizes of downlights</td>
<td></td>
</tr>
<tr>
<td>CSP Spot Tunable</td>
<td>• 1,000/2,000lm color tunable solutions with a small LES</td>
<td>• White tunable mixing 2700K+6500K</td>
<td></td>
</tr>
<tr>
<td>T-series</td>
<td>• White tunable mixing 2700K+6500K</td>
<td>• Same foot-print with Samsung's Indoor linear modules, H2X/Y-series</td>
<td></td>
</tr>
<tr>
<td>Modular Platform</td>
<td>• Total solution integrating LED+Optic+Thermal</td>
<td>• With LH181A, higher lumen density of 2,850lm</td>
<td></td>
</tr>
</tbody>
</table>

### Modules

#### CSP Spot

**Product**

- **CO10**
- **CO20**
- **CO30**
- **CO40**

**Key Features**

- **CO10**
  - Designed following Zhaga specification, excellent compatibility of eco-partner's component
  - Possible to design various sizes of downlights

- **CO20**
  - Possible to design various sizes of downlights

- **CO30**
  - High performance, 4,400lm (700mA) with efficacy of 132lm/W
  - IP66

- **CO40**
  - Total solution integrating LED+Optic+Thermal
  - With LH181A, higher lumen density of 2,850lm
  - IP66

**Product Luminous Flux (lm)**

- **CO10**: 1070, 1090, 1140, 1180
- **CO20**: 2040, 2110, 2160, 2240
- **CO30**: 2980, 3140, 3360
- **CO40**: 3970, 4120, 4220, 4490

**Certification**

- CE, ENEC, UL, cUL

**Part Number**

- SI-N8W0916E0WW
- SI-N8V0916E0WW
- SI-N8U0916E0WW
- SI-N8T0916E0WW

#### CSP Spot Tunable

**Product**

- **T010**
- **T020**

**Key Features**

- **T010**
  - Designed following Zhaga specification, excellent compatibility of eco-partner's component
  - Possible to design various sizes of downlights

- **T020**
  - Possible to design various sizes of downlights

**Product Luminous Flux (lm)**

- **T010**: 1010, 1050, 1140, 1240
- **T020**: 1940, 2040, 2160

**Certification**

- CE, ENEC, UL, cUL

**Part Number**

- SI-N8W1816E0WW
- SI-N8V1816E0WW
- SI-N8U1816E0WW
- SI-N8T1816E0WW

---

**Notes:**

- **CSP LEDs**
  - Samsung LED
- **6**
  - Samsung LED
- **Modular Platform**
  - T-type Gen2.5
  - Total solution integrating LED+Optic+Thermal
  - With LH181A, higher lumen density of 2,850lm
  - IP66
- **HiLOM**
  - Greater design flexibility for various fixture designs
  - High performance, 4,400lm (700mA) with efficacy of 133lm/W
- **LM101A**
  - 0.5W mid power LED
  - Wider beam angle than lead-frame type
  - High degree of reliability with plastic-free structure
- **LM102A**
  - 1W mid power LED
  - Wider beam angle than lead-frame type
  - High degree of reliability with plastic-free structure
- **LM141A**
  - 2W class high power LED
  - Phosphor film directly attached to flip chip surface
  - Plastic-free structure delivers low thermal resistance
- **LM181A**
  - 3W class high power LED
  - Phosphor film directly attached to flip chip surface
  - Plastic-free structure delivers low thermal resistance
- **LM181B**
  - Operates at a maximum current of up to 1.4A
  - Maximized efficiency by fillet structure, 173lm/W (@350mA)
  - Less cross-talk
### Modules

#### T-series

<table>
<thead>
<tr>
<th>Product</th>
<th>Luminous Flux (lm)</th>
<th>Power Consumption (W)</th>
<th>Input Voltage (V)</th>
<th>IP</th>
<th>‘E’</th>
<th>IF (mA)</th>
<th>Ima (mA)</th>
<th>Efficiency (lm/W)</th>
<th>CRI</th>
<th>CCT (K)</th>
<th>Beam Angle (°)</th>
<th>Size (mm)</th>
<th>Temperature Range (°C)</th>
<th>Life Time (hrs)</th>
<th>Certification</th>
<th>Part Number</th>
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<tbody>
<tr>
<td>LT-T562B</td>
<td>1860</td>
<td>161</td>
<td>18</td>
<td>900</td>
<td>1000</td>
<td>25+25</td>
<td>80+</td>
<td>2700</td>
<td>140</td>
<td>560x24x5.8</td>
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<td>140</td>
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<td>6500</td>
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</table>

#### Modular Platform Engine

- **T-type Gen2.5 HiLOM**
- **HiLOM**
- **HiLOM Gen2.5 T-type**

### Packages

#### LT-M101A

<table>
<thead>
<tr>
<th>Model Connector</th>
<th>Luminous Flux (lm)</th>
<th>Bin</th>
<th>Min.</th>
<th>Max.</th>
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<tbody>
<tr>
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<td>3000</td>
<td>SD</td>
<td>55</td>
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<tr>
<td>SCP7UT78HPL1SE</td>
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<td>SE</td>
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<td>SCP7UT78HPL1SF</td>
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</table>

**Note:** "☆" can be "L" (MacAdam 5-step), "U" (MacAdam 3-step)
| Packages |

**CRI** | **CCT (K)** | **Part Number** | **Luminous Flux (lm)** |
<table>
<thead>
<tr>
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<tr>
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<td></td>
<td></td>
<td>SB</td>
<td>87</td>
</tr>
</tbody>
</table>

**Note:** "L" can be "U" (MacAdam 5-step), "L" (MacAdam 3-step)