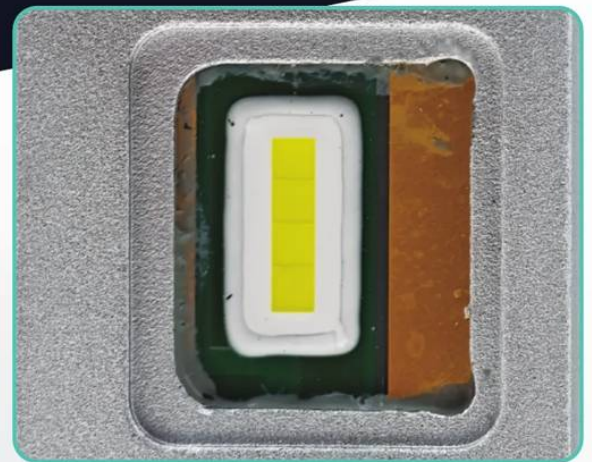




Booth Number

# Stability-Engineered LED LIGHTING for the aftermarket

- ▶ TST Technology Platform
- ▶ D-FLIP Series
- ▶ ECE R37 Certified Flagship



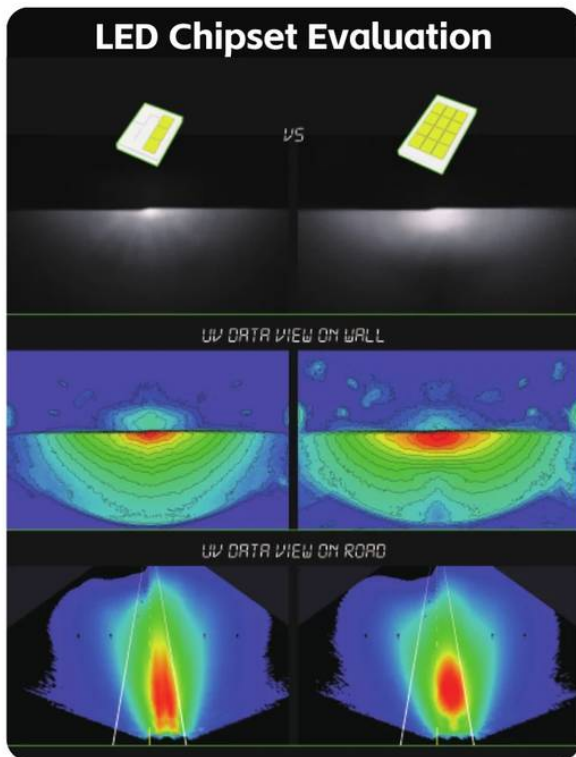
<https://www.led-car-light-manufacturer.com>

# One Bad Batch. One Lost Customer.

Aftermarket lighting buyers face  
the same four risks with every new supplier.

- 1. Beam Mismatch** Wrong pattern draws glare complaints and fails road worthiness checks.
  - 2. Compliance Gap** Non-approved products carry market and liability exposure.
  - 3. Electrical Incompatibility** CANBUS conflicts drive return volume.
  - 4. Batch Inconsistency** Unit-to-unit variation erodes distributor trust.
-

# Why Choose **ledo**



## **Direct Manufacturer**

15+ years focused on automotive LED lighting production and long-term supply.

## **Stable Supply**

Consistent quality, repeatable production and reliable lead times.

## **Designed for Beam Performance**

Developed and verified through beam pattern and reliability testing.

## **Controlled Production Quality**

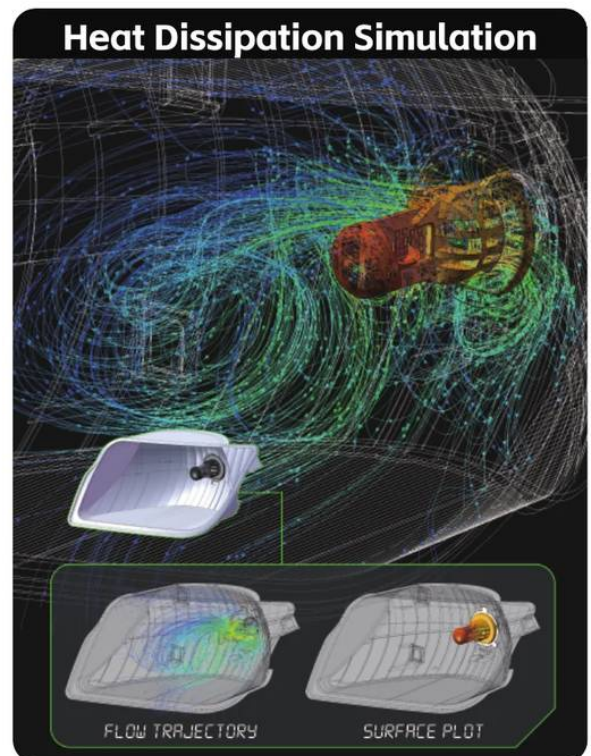
Key parameters checked before shipment to ensure stable performance.

## **Built for Professional Buyers**

Product lines designed for distributors and aftermarket brands.

## **OEM / ODM Support**

Private label, custom packaging and flexible product configuration.

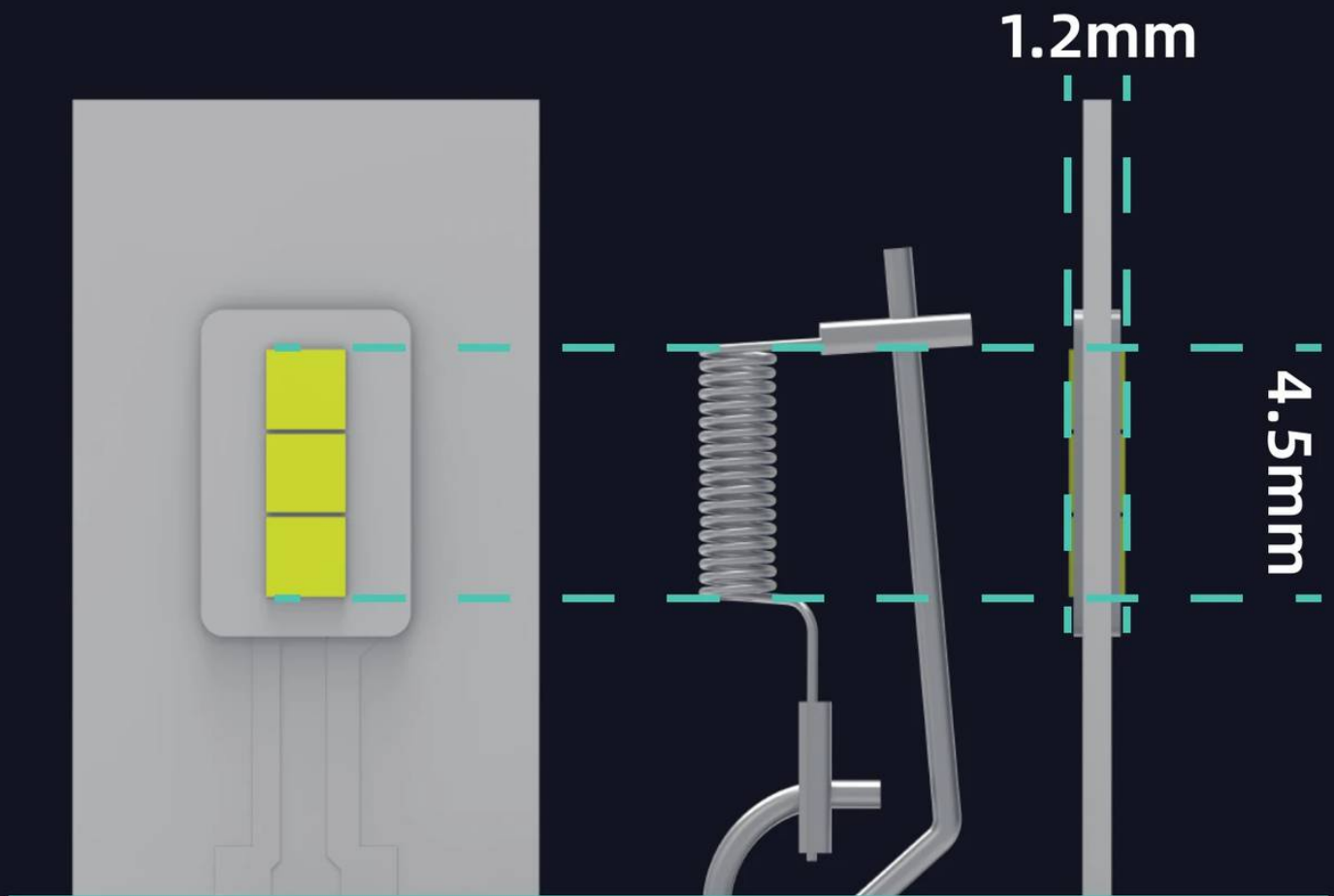


**Accurate Beam. Stable Quality.**  
**Easier to Sell.**

# D-Flip Tech

## Dual-sided Eutectic Flip Chip

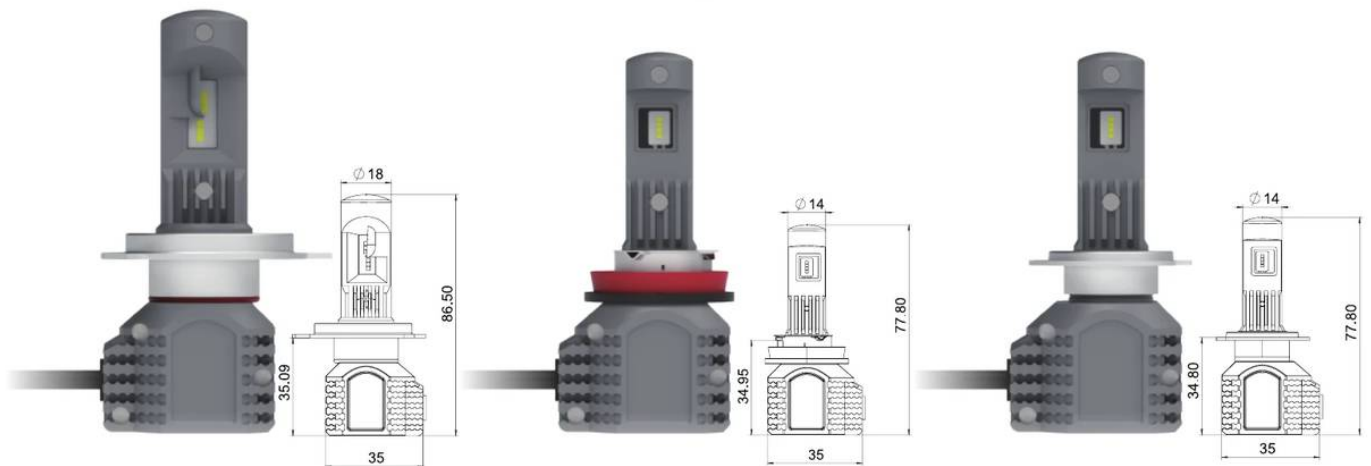
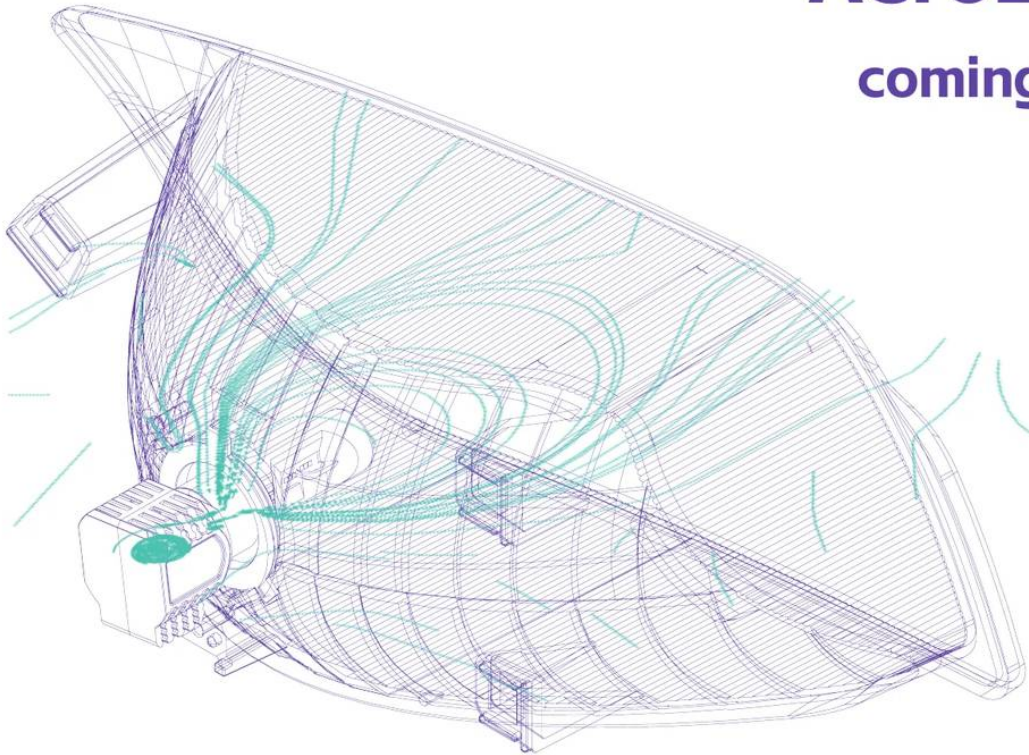
Using an AlN (Aluminum Nitride) substrate for precise alignment, keeping beam focus and cut-off consistent from the first unit to the last.



- ▶ **AlN substrate chip design**  
prevents positional drift, ensures stable optical performance
- ▶ **<1.2mm dual-sided light gap**  
Halogen-like filament geometry delivers accurate focus and maximizes hot spot output
- ▶ **1:1 halogen-equivalent design**  
maintains original focal position, true plug-and-play
- ▶ **Thin aluminum light engine**  
minimizes dark zones, improves beam uniformity

# AeroLoop

coming 2028



- ▶ Engineered for **ECE R37 compliance**.
- ▶ Fullysealed, dustproof & waterproof.
- ▶ Internal airflow actively channels heat to defog lens.
- ▶ Get sharper cut-off, stronger hotspot by **D-FLIP TECH**.
- ▶ 8-in-1 Certified Tooling-One mold, 8 models.
- ▶ Drastically reduce your upfront investment (while customizing your own ECE R37 certified products).
- ▶ Support: H11、H8、H9、H10、H16、HB3、HB4、HIR2

# EB

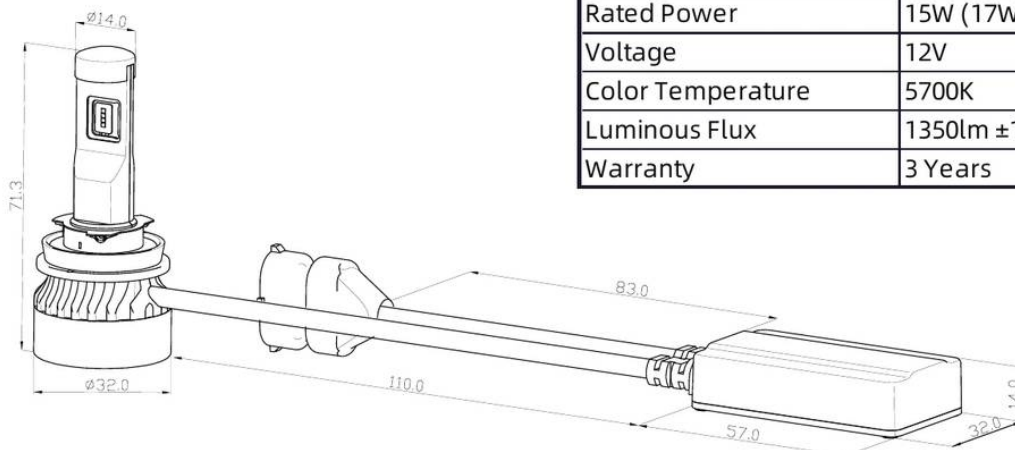
## 2x Halogen Output. Certified to UN R37.

Other certified LEDr bulbs hit the same lumen number. EB's D-FLIP design turns those lumens into higher center beam illuminance, where it actually matters on the road.

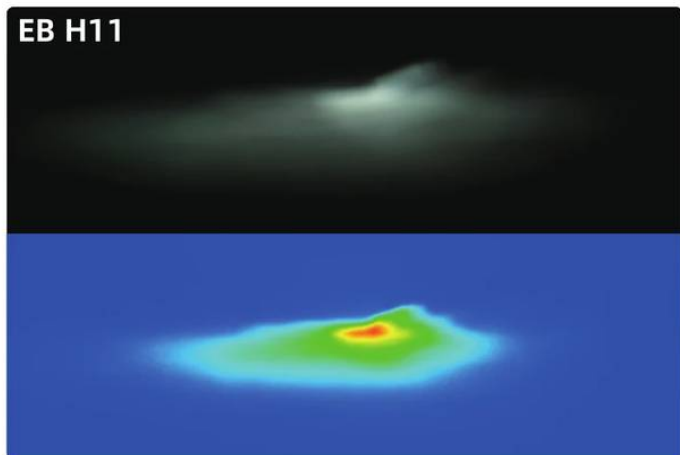


- **Dual-sided Eutectic FLIP** chips on an AlN substrate keep beam focus and cut-off line consistent from the first unit off the line to the last – precision that's harder to hold at scale with standard chip mounting.
- **Genuine UN R37 type approval**, backed by a full auditable document pack.
- **OEM/private label** supported through the approved identity-declaration path, not a certificate-loan arrangement.

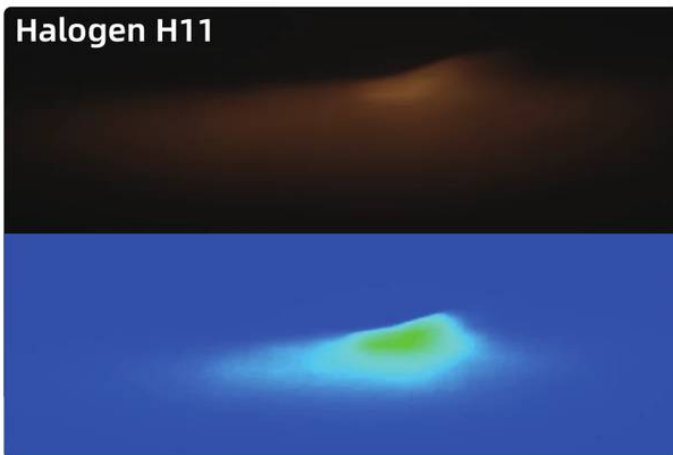
|                   |                         |
|-------------------|-------------------------|
| Certification     | ECER37 E8 0106          |
|                   | ECE R10 E8 06 17720     |
|                   | CE/ROSH                 |
| Mount             | Wired + external driver |
| Fitment           | H11 / PGJ19-2           |
| Rated Power       | 15W (17W max)           |
| Voltage           | 12V                     |
| Color Temperature | 5700K                   |
| Luminous Flux     | 1350lm ±10%             |
| Warranty          | 3 Years                 |



## EB H11



## Halogen H11



### Comparison: EB H11 vs. ECE Class B Minimum Measured Values (cd)

| Test Point | EB H11 Value | Legal Minimum | Comparison |
|------------|--------------|---------------|------------|
| 25L        | 3406         | 1700          | 200%       |
| 25R        | 5173         | 1700          | 304%       |
| 50R        | 20164        | 10100         | 200%       |
| 50V        | 13291        | 5100          | 261%       |
| 75R        | 13855        | 10100         | 137%       |

SCAN FOR  
MORE TESTS



| Series | Feature           | Structure    | Driver Type                            | Cooling     | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb | Lumen Maintenance | Available base                                                             |
|--------|-------------------|--------------|----------------------------------------|-------------|--------------|-------------|------|-----------------|---------------------|---------------------|-------------------|----------------------------------------------------------------------------|
| EB     | D-FLIP<br>ECE R37 | wire connect | External Switching<br>Constant Current | Fan cooling | Non-Polarity | 6500K       | H11  | 13.2V           | 15W                 | 1350 lm             | 99%               | H11: Certification Obtained<br>H8\H16\HB4: Awaiting Certification Approval |

Ministerstvo dopravy České republiky  
Ministry of Transport of the Czech Republic  
Nábřeží L. Svobody 12, 110 15 Praha 1, Czech Republic



OSVĚDČENÍ o:

UDĚLENÍ SCHVÁLENÍ  
ODMÍTNUTÍ SCHVÁLENÍ  
ROZŠÍŘENÍ SCHVÁLENÍ  
ODEJMUTÍ SCHVÁLENÍ  
UKONČENÍ VÝROBY

COMMUNICATION concerning:

APPROVAL GRANTED  
APPROVAL-REFUSED  
APPROVAL-EXTENDED  
APPROVAL-WITHDRAWN  
PRODUCTION DEFINITELY-DISCONTINUED

typu žárovky dle Předpisu č. 37  
of a type of filament lamp pursuant to Regulation No. 37

Schválení č.: E8\*37R03/49\*0106\*00  
Approval No.:

Schvalovací značka: IE (E8) 0106  
Approval code:

- Obchodní název nebo značka zdroje světla:  
Trade name or mark of the light source: AZMK
- Název výrobce typu zdroje světla:  
Manufacturer's name for the type of light source: EB  
Variants:  
Variants: EB, EL  
Název výrobce AE zařízení:  
Manufacturer's name(s) for the AE device(s): AUTOMOTIVE LIGHTING INTERNATIONAL CO., LIMITED
- Název a adresa výrobce:  
Manufacturer's name and address: AUTOMOTIVE LIGHTING INTERNATIONAL CO., LIMITED  
FLAT/RM 1405B 14/F THE BELGIAN BANK BUILDING, NOS. 721-725, NATHAN ROAD, MONGKOK, KL, HONGKONG  
Název a adresa výrobního závodu:  
Name and address of assembly plant: ZHONGSHAN CBUS ELECTRONIC TECHNOLOGY Co., LTD.  
Workshop B, 2nd Floor, Building A5, No. 10-1, East Jinsan Avenue, Jiaosan Town, Zhongshan City, Guangdong, China
- Název a adresa případného zástupce výrobce:  
If applicable, name and address of manufacturer's representative: N/A

Ministerstvo dopravy České republiky  
Ministry of Transport of the Czech Republic  
Nábřeží L. Svobody 12, 110 15 Praha 1, Czech Republic



OSVĚDČENÍ o:

UDĚLENÍ SCHVÁLENÍ  
ROZŠÍŘENÍ SCHVÁLENÍ  
ODMÍTNUTÍ SCHVÁLENÍ  
ODEJMUTÍ SCHVÁLENÍ  
UKONČENÍ VÝROBY

COMMUNICATION concerning:

APPROVAL GRANTED  
APPROVAL-EXTENDED  
APPROVAL-REFUSED  
APPROVAL-WITHDRAWN  
PRODUCTION DEFINITELY-DISCONTINUED

typu elektrické / elektronické montážní podskupiny z hlediska OSN předpisu č. 10.  
of a type of electrical / electronic sub-assembly with regard to UN Regulation No. 10.

Schválení č.: E8\*10R06/03\*17720\*00  
Approval No.:

Schvalovací značka: E8 10R - 06 17720  
Approval mark:

- Značka (obchodní název výrobce):  
Make (trade name of manufacturer): AZMK
- Typ a obchodní označení:  
Type and General commercial description: EB  
LED replacement light sources  
Náhradní LED světelné zdroje  
Variants:  
variants: EB, EL
- Způsob označení typu, je-li uvedeno na vozidle / konstrukční části / samostatném technickém celku:  
Means of identification of type, if marked on the-vehicle / component / separate-technical-unit: Písmena Letters
- Umístění tohoto označení:  
Location of that marking: Sítotisk nebo laserový tisk na krytu  
Silk screen printing or laser on the housing
- Kategorie vozidla:  
Category of vehicle: N/A
- Název a adresa výrobce:  
Name and address of manufacturer: AUTOMOTIVE LIGHTING INTERNATIONAL CO., LIMITED  
FLAT/RM 1405B 14/F THE BELGIAN BANK BUILDING, NOS. 721-725, NATHAN ROAD, MONGKOK, KL, HONGKONG, China

# EBp

## ECE Beam Plus

EB PLUS pushes past standard brightness while keeping the same beam control the platform was built for.



H11 to H8\H9\H16  
conversion kit



H11 to H10\HB3\HB4\HIR2  
conversion kit



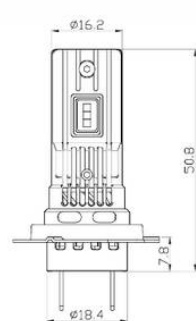
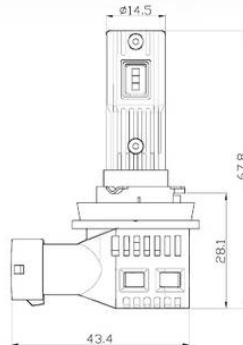
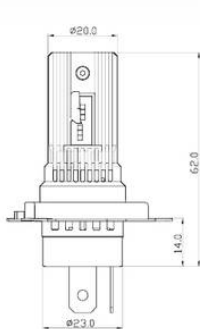
| Series  | Feature           | Structure    | Driver Type                            | Cooling     | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb | Lumen Maintenance | Available base                        |
|---------|-------------------|--------------|----------------------------------------|-------------|--------------|-------------|------|-----------------|---------------------|---------------------|-------------------|---------------------------------------|
| EB plus | D-FLIP<br>ECE R37 | wire connect | External Switching<br>Constant Current | Fan cooling | Non-Polarity | 6500K       | H11  | 13.2V           | 23W                 | 1850 lm             | 95%               | H7\H8\H9\H10\H11\H16\<br>HB3\HB4\HIR2 |

- **Built on the EB platform**  
Same D-FLIP chip and AlN substrate,  
so the extra output isn't a cheaper build cutting corners
- **One switch unlocks up to 500 extra lumens over standard output**  
One SKU, two brightness tiers
- **One bulb body, multiple fitments**  
Swap the base clip and add a connector cable to cover a wide  
range of socket types (see fitment chart)

# LB

## Legal Beam

Most LED retrofits don't hold their beam pattern well enough to pass a national type-approval test. Legal Beam's halogen-matched geometry is engineered to pass it.



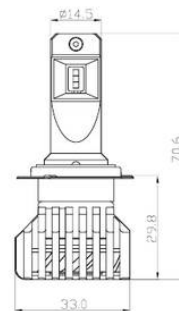
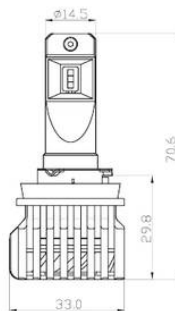
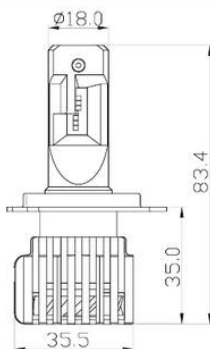
| Series | Feature | Structure  | Driver Type                         | Cooling     | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb      | Lumen Maintenance | Available base                                                             |
|--------|---------|------------|-------------------------------------|-------------|--------------|-------------|------|-----------------|---------------------|--------------------------|-------------------|----------------------------------------------------------------------------|
| LB     | D-FLIP  | all in one | Internal Switching Constant Current | Fan cooling | Non-Polarity | 6000K       | H4   | 13.2V           | 23.0 W              | Lo:1600 lm<br>Hi:2100 lm | 76.10%            | H4\H13\9004\9007\H7\H11\H10\9005\9006\9012\5202\PSX24\PSX26\P13W\H1\H3\H27 |
|        |         |            |                                     |             |              |             | H11  | 13.2 V          | 23.0 W              | 2833 lm                  | 74.00%            |                                                                            |
|        |         |            |                                     |             |              |             | H7   | 13.2V           | 20.0 W              | 2584 lm                  | 77.94%            |                                                                            |

- **D-FLIP chip + AlN substrate**  
Precise, stable beam pattern unit to unit
- **<1.2mm dual-sided light gap**  
Halogen filament geometry, accurate focus
- **Higher illuminance** than equal-lumen competitors in reflector-bowl housings

# LBp

## Legal Beam Plus

High-output variant of LB, wired configuration.



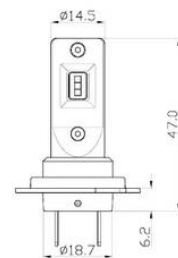
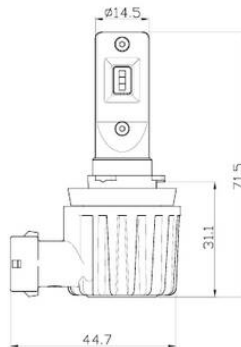
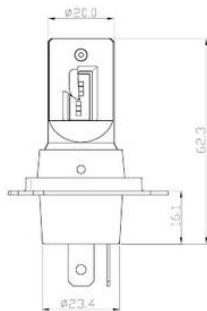
| Series  | Feature | Structure    | Driver Type                         | Cooling     | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb      | Lumen Maintenance | Available base          |
|---------|---------|--------------|-------------------------------------|-------------|--------------|-------------|------|-----------------|---------------------|--------------------------|-------------------|-------------------------|
| LB plus | D-FLIP  | wire connect | Internal Switching Constant Current | Fan cooling | Non-Polarity | 5800K       | H4   | 13.2V           | 27.0 W              | Lo:1688 lm<br>Hi:1989 lm | 89.00%            | H4\H7\H11\9005\9006\H10 |
|         |         |              |                                     |             |              |             | H11  | 13.2V           | 25.0 W              | 2584 lm                  | 77.94%            |                         |
|         |         |              |                                     |             |              |             | H7   | 13.2V           | 25.0 W              | 2584 lm                  | 77.94%            |                         |

- **Same D-FLIP optical core, higher power ceiling**  
Brighter than direct-plug Legal Beam
- **Separate driver dissipates heat independently**  
Sustains the higher output without thermal derating

# Ap

## ATOM pro

Fanless direct-plug bulbs usually trade output for simplicity. ATOM Pro keeps the fanless design and still leads on illuminance in its class.



| Series   | Feature | Structure  | Driver Type                         | Cooling | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb | Lumen Maintenance | Available base                                                                  |
|----------|---------|------------|-------------------------------------|---------|--------------|-------------|------|-----------------|---------------------|---------------------|-------------------|---------------------------------------------------------------------------------|
| Atom Pro | D-FLIP  | all in one | Internal Switching Constant Current | Fanless | Non-Polarity | 6000K       | H4   | 13.2V           | 16.0 W              | Lo:1450<br>Hi:1800  | 72.20%            | H4\H19\9004\9007\H13\H7\H11\<br>H10\9005\9006\9012\5202\<br>PSX24\H1\H3\880\881 |
|          |         |            |                                     |         |              |             | H11  | 13.2V           | 16.0 W              | 2218 lm             | 76.74%            |                                                                                 |
|          |         |            |                                     |         |              |             | H7   | 13.2V           | 13.0 W              | 1950 lm             | 64.36%            |                                                                                 |

- Built on a decade-proven platform, now upgraded with **D-FLIP chip + AlN substrate** for tighter beam precision
- **Fanless 1:1 direct plug-in** across headlight and fog light fitments, no rewiring

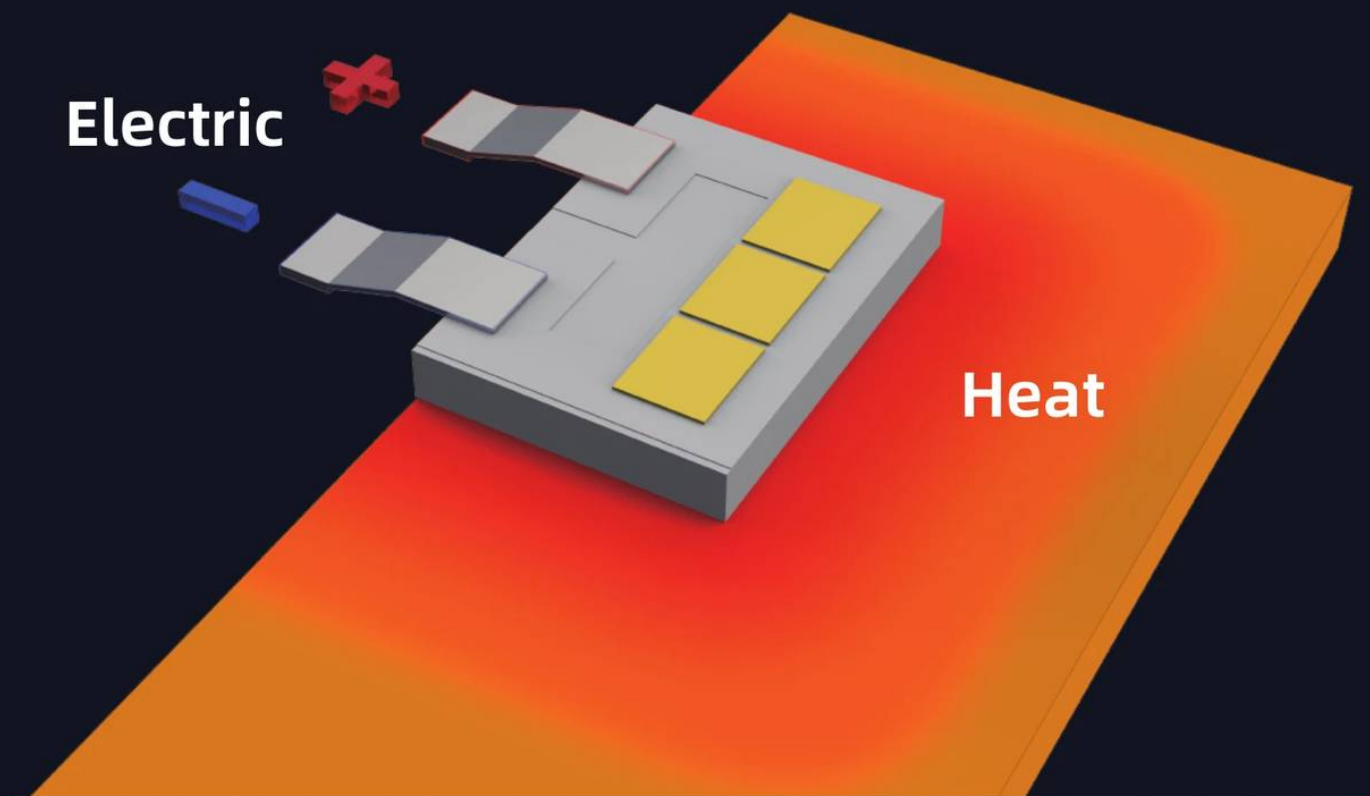
# TST-embed Tech

## Thermoelectric Seperation Technology

The ultimate fusion of enduring thermal stability and physical optical precision.

Thermoelectric Separation Technology (TST) drives heat directly from the chip to the copper base, completely bypassing insulating layers to guarantee zero lumen depreciation.

The embedded LED design minimizes the emitting gap to its absolute physical limit. This ultra-thin core perfectly simulates a halogen filament for a sharp, focused beam.



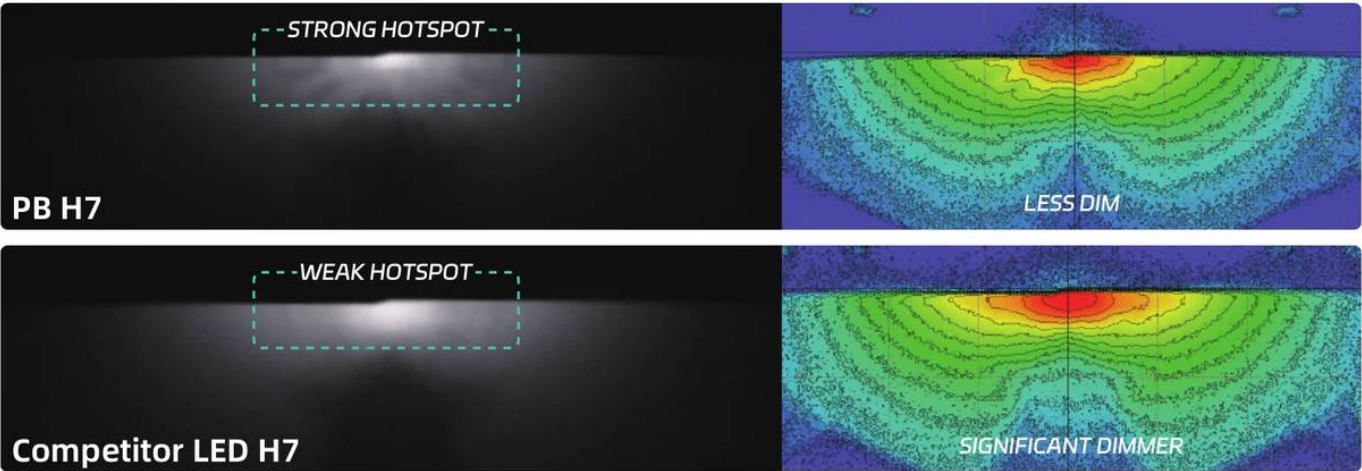
PB

Perfect Beam

90% lumen retention, the smallest dark zone, a halogen-precise beam  
Direct plug-in (1:1) bulb built for 12V and 24V fleets alike.



| Series | Feature | Structure  | Driver Type                         | Cooling     | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb      | Lumen Maintenance | Available base                                                          |
|--------|---------|------------|-------------------------------------|-------------|--------------|-------------|------|-----------------|---------------------|--------------------------|-------------------|-------------------------------------------------------------------------|
| PB     | TST     | all in one | Internal Switching Constant Current | Fan cooling | Non-Polarity | 6000K       | H1   | 13.2V           | 14.2 W              | 1050 lm                  | 99.80%            | H4\H19\9004\9007\H13\H7\H11\H10\9005\9006\9012\5202\PSX24\H1\H3\880\881 |
|        |         |            |                                     |             |              |             | H4   | 13.2V           | 22.0 W              | Lo:1550 lm<br>Hi:1950 lm | 87.10%            |                                                                         |
|        |         |            |                                     |             |              |             | H7   | 13.2V           | 18.0 W              | 2240 lm                  | 94.87%            |                                                                         |
|        |         |            |                                     |             |              |             | H11  | 13.2V           | 22.0 W              | 2641 lm                  | 88.94%            |                                                                         |

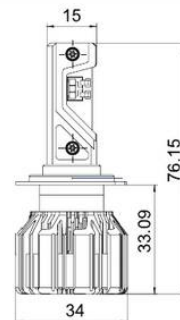
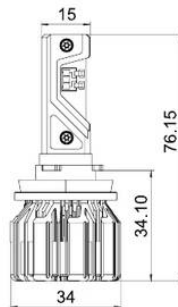
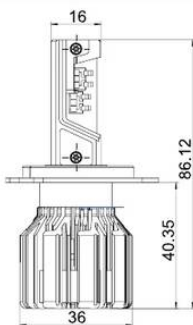


# UB

## Ultra Beam

Most high-brightness LEDs blur their beam pattern.

Ultra Beam doesn't – 9600LM, glare-free, 90% lumen retention.



| Series | Feature | Structure    | Driver Type                         | Cooling                    | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb        | Lumen Maintenance | Available base          |
|--------|---------|--------------|-------------------------------------|----------------------------|--------------|-------------|------|-----------------|---------------------|----------------------------|-------------------|-------------------------|
| UB     | TST     | wire connect | Internal Switching Constant Current | Fan cooling + Thermal pipe | Non-Polarity | 5700k       | H4   | 13.2V           | 44.0 W              | Hi: 4270 lm<br>Lo: 2862 lm | 89.10%            | H4\H7\H11\9005\9006\H10 |
|        |         |              |                                     |                            |              |             | H7   | 13.2V           | 44.0 W              | 5360 lm                    | 89.76%            |                         |
|        |         |              |                                     |                            |              |             | H11  | 13.2V           | 43.6 W              | 3305 lm                    | 89.42%            |                         |

- **TST-Embed design** keeps the cut-off sharp even at full power

- **120lm/W+ efficiency**

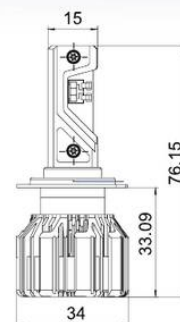
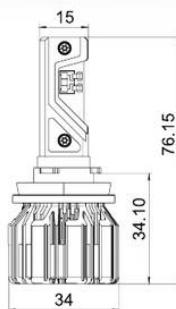
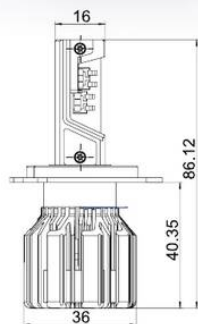


# UBp

## Ultra Beam Plus

UB plus enhanced CANBUS decoding for wired installations. Standard LED retrofits often trigger CANBus error codes or flicker on decoder-sensitive vehicles.

UB Plus comes bridged with an external decoder – same 9600LM brightness, zero error codes, plug and play.



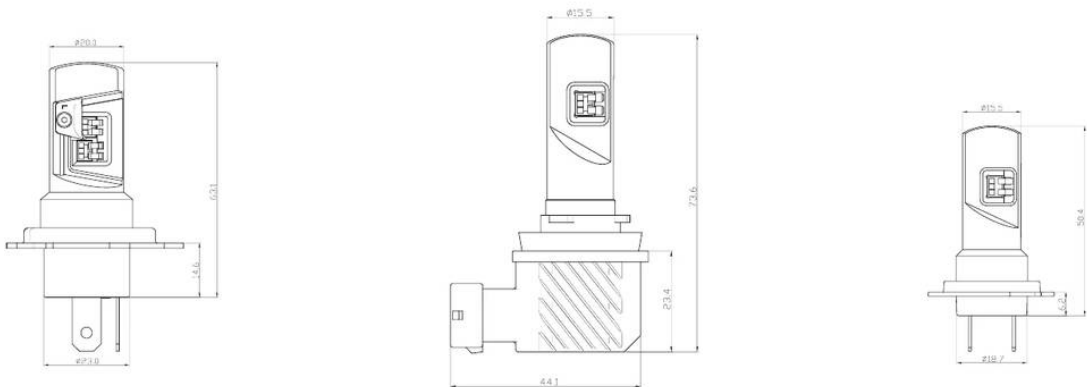
| Series  | Feature | Structure    | Driver Type                         | Cooling                    | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb       | Lumen Maintenance | Available base          |
|---------|---------|--------------|-------------------------------------|----------------------------|--------------|-------------|------|-----------------|---------------------|---------------------------|-------------------|-------------------------|
| UB plus | TST     | wire connect | Internal Switching Constant Current | Fan cooling + Thermal pipe | Non-Polarity | 5700k       | H4   | 13.2V           | 56.0 W              | Hi:4270 lm<br>Lo: 2862 lm | 89.10%            | H4\H7\H11\9005\9006\H10 |
|         |         |              |                                     |                            |              |             | H7   | 13.2V           | 56.0 W              | 5360 lm                   | 89.76%            |                         |
|         |         |              |                                     |                            |              |             | H11  | 13.2V           | 56.0 W              | 5360 lm                   | 89.76%            |                         |



# DHM

## Direct Heatsink Mounted

Fanless direct plug-in design. Fanless usually means a trade-off on output. TST-DHM breaks that: chip bonded directly to the housing – no PCB, no fan – delivers 120-130 lm/W, efficient higher than most fan-cooled LED bulbs on the market today.

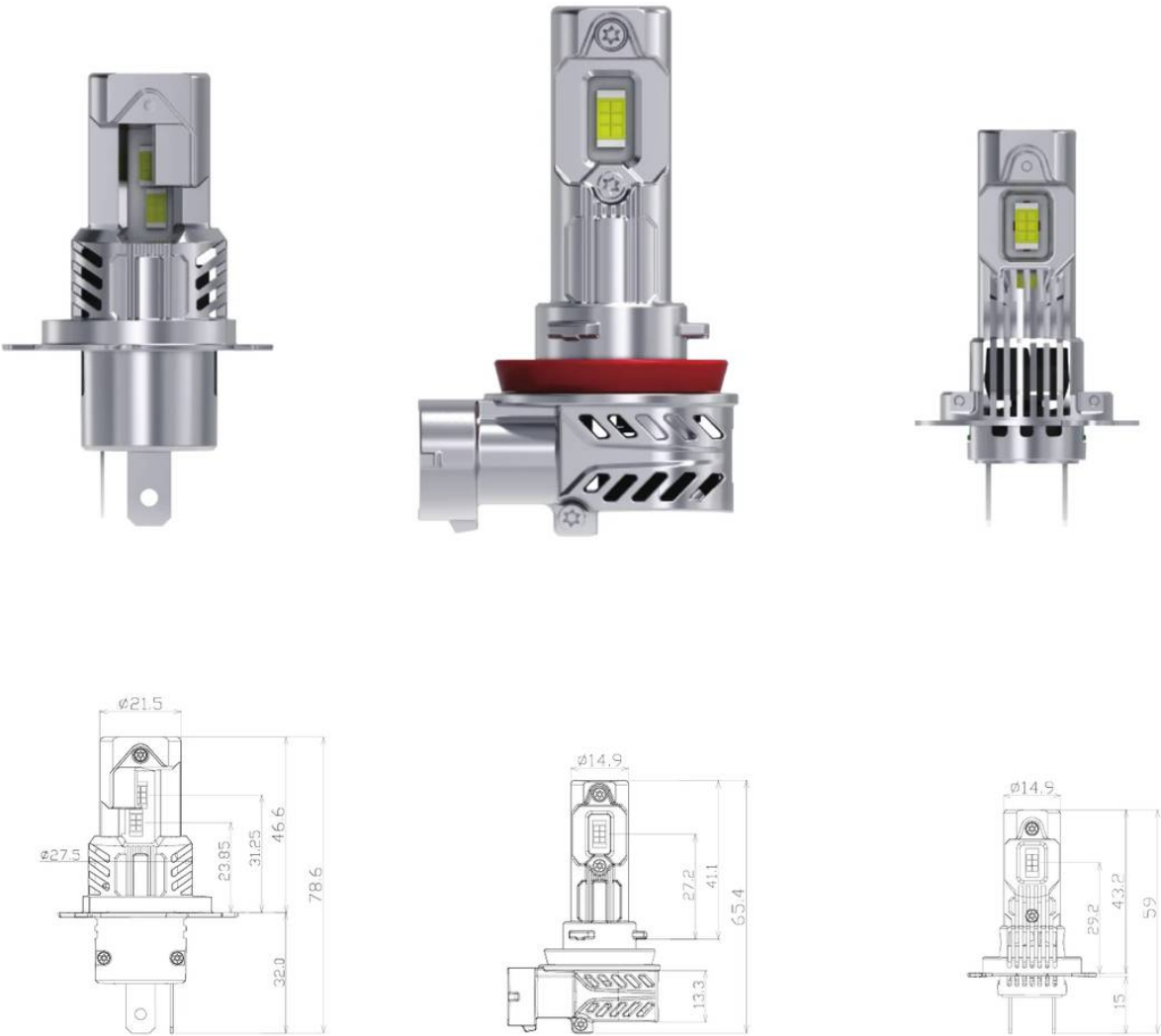


| Series | Feature | Structure  | Driver Type                         | Cooling | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb      | Lumen Maintenance | Available base                                                          |
|--------|---------|------------|-------------------------------------|---------|--------------|-------------|------|-----------------|---------------------|--------------------------|-------------------|-------------------------------------------------------------------------|
| DHM    | TST     | all in one | Internal Switching Constant Current | Fanless | Non-Polarity | 6000K       | H4   | 13.2V           | 16.0 W              | Lo:1350 lm<br>Hi:1750 lm | 74.20%            | H4\H19\9004\9007\H13\H7\H11\H10\9005\9006\9012\5202\PSX24\H1\H3\880\881 |
|        |         |            |                                     |         |              |             | H11  | 13.2V           | 14.0 W              | 1922 lm                  | 82.41%            |                                                                         |
|        |         |            |                                     |         |              |             | H7   | 13.2V           | 11.0 W              | 1563 lm                  | 71.40%            |                                                                         |

# M9

## 9-90V Driver 1:1 ALL IN ONE

Covers passenger vehicle and heavy-duty electrical systems

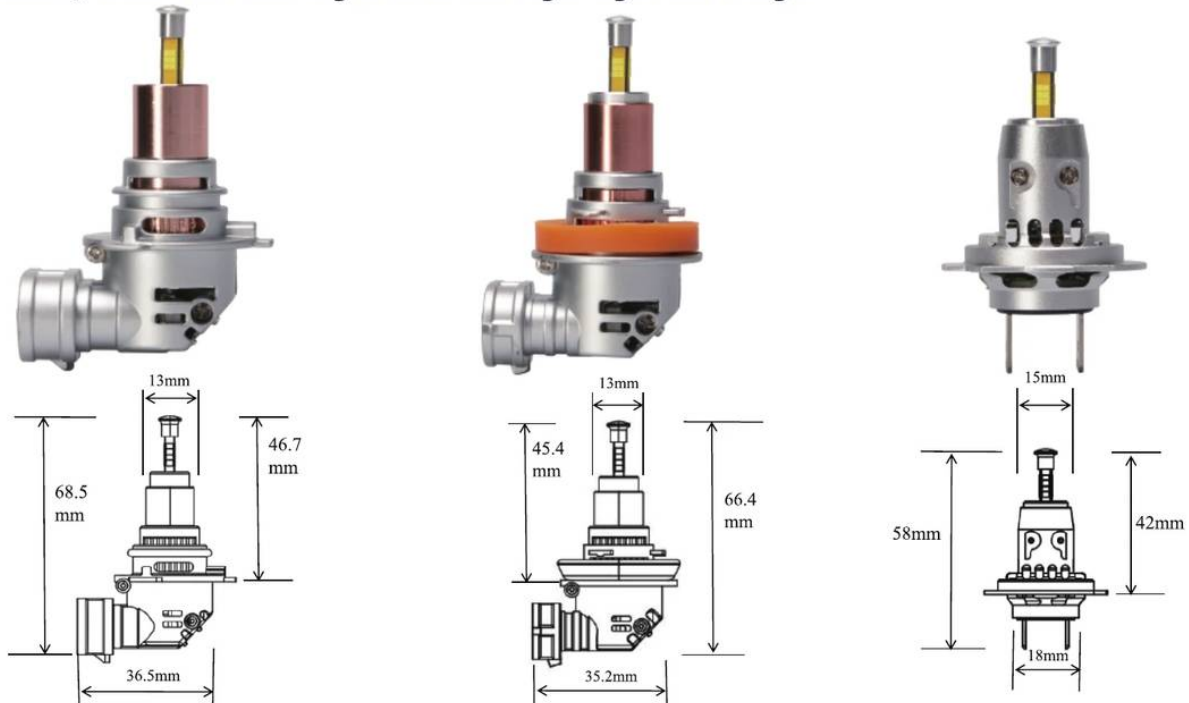


| Series | Feature      | Structure  | Driver Type                         | Cooling     | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb      | Lumen Maintenance | Available base                                                  |
|--------|--------------|------------|-------------------------------------|-------------|--------------|-------------|------|-----------------|---------------------|--------------------------|-------------------|-----------------------------------------------------------------|
| M9     | Wide Voltage | all in one | Internal Switching Constant Current | Fan cooling | Non-Polarity | 6500K       | H4   | 13.5V           | 35.0 W              | Lo:5000 lm<br>Hi:6000 lm | 80.00%            | H4\H19\H13\9004\9007\H7\H18\H11\H8\H10\9005\9006\9012\H1\H3\H27 |
|        |              |            |                                     |             |              |             | H7   | 13.5V           | 30.0 W              | 7200 lm                  | 77.78%            |                                                                 |
|        |              |            |                                     |             |              |             | H11  | 13.5V           | 30.0 W              | 7200 lm                  | 77.78%            |                                                                 |

# PJ360

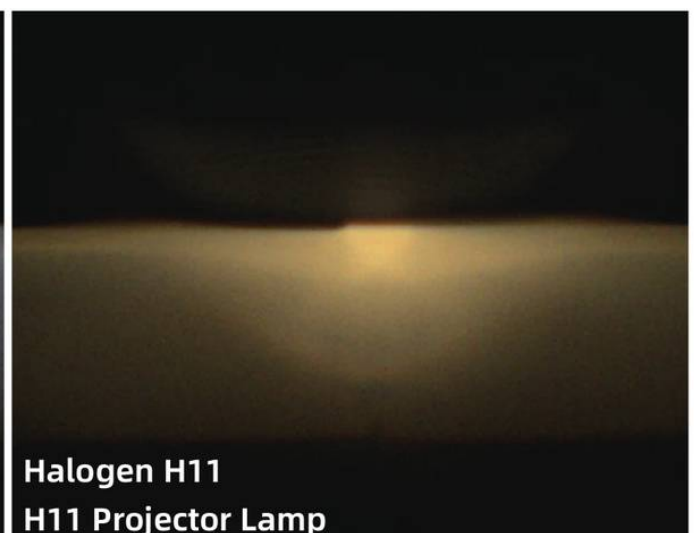
## 4-Sided LED for Halogen Projector

Dual-side LEDs leave a dark gap – even top brands can't fill it.  
PJ360 does, with true 360° light and full sign-light coverage.



| Series | Feature     | Structure  | Driver Type                         | Cooling                    | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb | Lumen Maintenance | Available base         |
|--------|-------------|------------|-------------------------------------|----------------------------|--------------|-------------|------|-----------------|---------------------|---------------------|-------------------|------------------------|
| PJ360  | 4 sided LED | all in one | Internal Switching Constant Current | Fan cooling + Thermal pipe | Non-Polarity | 6000K       | 9005 | 13.2V           | 30.0 W              | 3000 lm             | 76.67%            | H1\H4\H7\9005\H11\9012 |
|        |             |            |                                     |                            |              |             | H11  | 13.2V           | 30.0 W              | 3000 lm             | 76.67%            |                        |
|        |             |            |                                     |                            |              |             | H7   | 13.2V           | 33.0 W              | 3000 lm             | 72.72%            |                        |

- ▶ **True 360° light from a 4-sided LED chip**  
no dark zone, no transition gap
- ▶ **Purpose-built for projector-lens headlights,**  
where beam geometry precision matters most
- ▶ **Projects sign light**  
that dual-side LED bulbs cannot produce  
(overhead road sign illumination)
- ▶ **Halogen-matching form factor**  
for true direct-fit installation



# D

## X-chip for D-series Projector

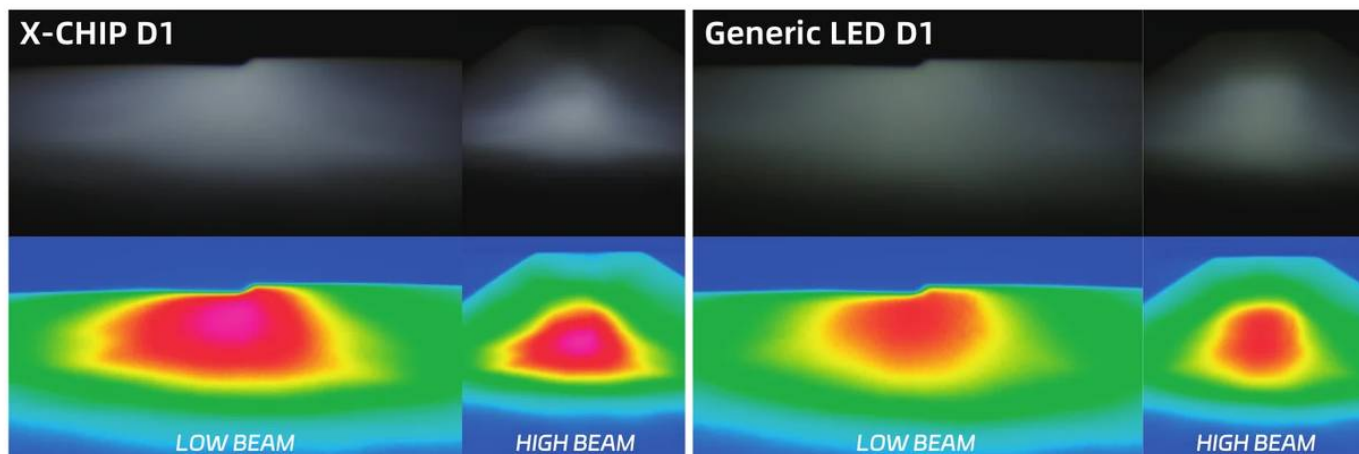
Generic D-series LEDs spread light thin, with no real hotspot.

X-CHIP concentrates it – a sharp, strong hotspot with multi-brand ballast compatibility.



| Series | Feature | Structure  | Driver Type                         | Cooling     | Polarity | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb | Lumen Maintenance | Available base |
|--------|---------|------------|-------------------------------------|-------------|----------|-------------|------|-----------------|---------------------|---------------------|-------------------|----------------|
| D      | X-CHIP  | all in one | Internal Switching Constant Current | Fan cooling | /        | 6500K       | D1   | 12V             | 45W                 | 3949 lm             | 87.00%            | D1\D2\D3\D4\D8 |
|        |         |            |                                     |             |          |             | D2   | 12V             | 45W                 | 4073 lm             | 85.00%            |                |

- ▶ **Custom-shaped chip array concentrates light into a true hotspot**  
Not a generic rectangular chip
- ▶ **Compact point-source layout mimics a xenon arc,**  
for stronger center beam intensity
- ▶ **Selectable modes match multiple ballast brands via a simple switch**  
No errors, no flicker



# DECODER SPECIFICATION

| Series | Voltage | Power | Available base                                         |
|--------|---------|-------|--------------------------------------------------------|
| HMD    | 12V     | 4W    | H4/H13/9004/9007/H7/H11/9005/9006/H1/H3/881/5202/D1/D4 |
| HLR    | 12V     | 13W   | H4/H13/9004/9007/H7/H11/9005/9006/H1/H3/881/5202/D1/D4 |

## HMD PWM Decoder



for  $\geq$  27W LED Headlight Bulbs

## HLR Resistor Decoder



for  $<$  27W LED Headlight Bulbs

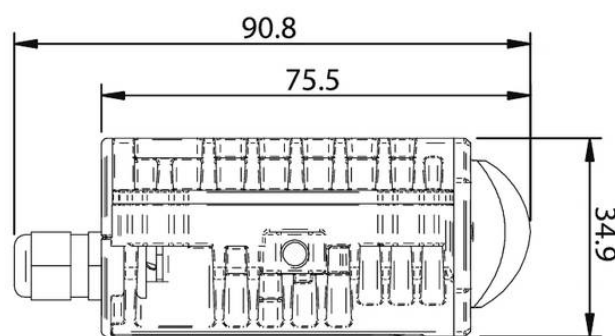
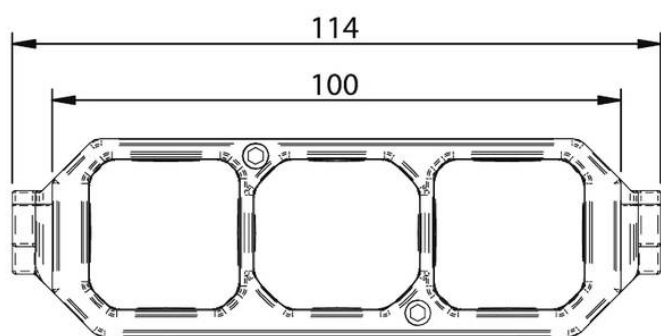
# GRILLE LIGHT



*Voltage: 9-16V DC*

*Power: L53W/H74W*

*Color Temp.: 6000K*



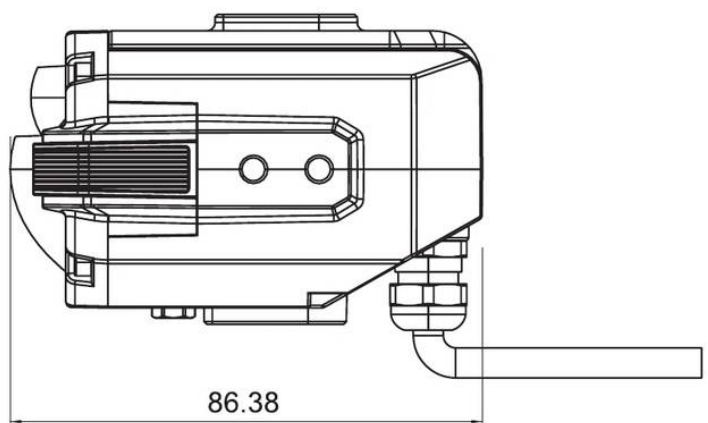
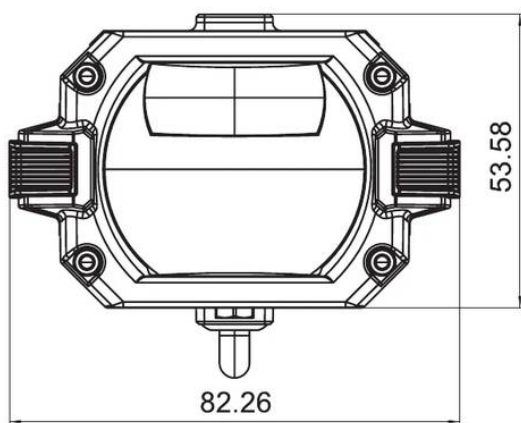
# AUXILIARY LIGHT



*Voltage: 9-18V DC*

*Power: L35W/H60W*

*Color Temp.: 6000K*



## FPA Signal Bulbs



T10



T15



1156



1157



T20

## PHA Signal Bulbs



T10



T15



1156



1157



T20

## S09 Signal Bulbs



T10a



T10b



T15



1156



1157



T20

# 3D Signal Bulbs



**T10**  
T10-15MD-3030



**T10**  
T10-15MD-1860



**BA9S**  
BA9S-15MD-3030



**BA9S**  
BA9S-15MD-1860



**29mm**  
F29-4SMD-3030



**31mm**  
F31-4SMD-3030



**36mm**  
F36-8SMD-5730



**39mm**  
F39-8SMD-5730



**42mm**  
F42-8SMD-5730

# SIGNAL BULB SPECIFICATION

| Series | Driver Type                         | Cooling    | Polarity     | Color      | Base   | Nominal Voltage | Initial Power           | Initial Lumen               | LED TYPE                 |
|--------|-------------------------------------|------------|--------------|------------|--------|-----------------|-------------------------|-----------------------------|--------------------------|
| FPA    | Internal Linear constant current    | Fan cooing | Non-Polarity | 6500K±500K | 1156   | 13.5V           | 30W±10%                 | 2800LM±10%                  | 7035-8core               |
|        |                                     |            |              |            | BAU15S | 13.5V           | 30W±10%                 | 2800LM±10%                  | 7035-8core               |
|        |                                     |            |              |            | 1157   | 13.5V           | H:30W±10%<br>L:5W±10%   | H:2200LM±10%<br>L:500LM±10% | 7035-8core<br>3020-3core |
|        |                                     |            |              |            | 3156   | 13.5V           | 30W±10%                 | 2800LM±10%                  | 7035-8core               |
|        |                                     |            |              |            | 3157   | 13.5V           | H:30W±10%<br>L:5W±10%   | H:2200LM±10%<br>L:500LM±10% | 7035-8core<br>3020-3core |
|        |                                     |            |              |            | 7440   | 13.5V           | 30W±10%                 | 2800LM±10%                  | 7035-8core               |
|        |                                     |            |              |            | 7443   | 13.5V           | H:30W±10%<br>L:5W±10%   | H:2200LM±10%<br>L:500LM±10% | 7035-8core<br>3020-3core |
|        |                                     |            |              |            | T15    | 13.5V           | 30W±10%                 | 2500LM±10%                  | 5530-6core               |
|        |                                     | Fanless    | Polarity     | 6500K±500K | T10    | 13.5V           | 4.5W±10%                | 400LM±10%                   | 5530-6core               |
| PHA    | Internal Linear constant current    | Fanless    | Polarity     | 6500K±500K | T10    | 13.5V           | 3W±10%                  | 200lm                       | 3020-3core               |
|        |                                     |            | Non-Polarity | 6500K±500K | T15    | 13.5V           | 20W±10%                 | 2000LM±10%                  | 5530-6core               |
| S09    | Internal Linear constant current    | Fanless    | Non-Polarity | 6500K±500K | T10a   | 13.5V           | 5.2W±10%                | 560LM±10%                   | GC-2835                  |
|        |                                     | Fan cooing | Non-Polarity | 6500K±500K | T10b   | 13.5V           | 5W±10%                  | 450LM±10%                   | GC-2835/3020             |
|        |                                     |            |              |            | T15    | 13.5V           | 20W±10%                 | 1900LM±10%                  | GC-7035                  |
|        |                                     |            |              |            | 7443   | 13.5V           | H:32W±10%<br>L:6.5W±10% | H:2200LM±10%<br>L:450LM±10% | GC-3020                  |
|        |                                     |            |              |            | 7440   | 13.5V           | 32W±10%                 | 2700LM±10%                  | GC-3020                  |
|        |                                     |            |              |            | 3157   | 13.5V           | H:32W±10%<br>L:6.5W±10% | H:2200LM±10%<br>L:450LM±10% | GC-3020                  |
|        |                                     |            |              |            | 3156   | 13.5V           | 32W±10%                 | 2700LM±10%                  | GC-3020                  |
|        |                                     |            |              |            | 1157   | 13.5V           | H:32W±10%<br>L:6.5W±10% | H:2200LM±10%<br>L:450LM±10% | GC-3020                  |
|        |                                     |            |              |            | 1156   | 13.5V           | 32W±10%                 | 2700LM±10%                  | GC-3020                  |
| LSB05  | Internal Switching constant current | Fanless    | Non-Polarity | 6500K±500K | BA9S   | 13.5V           | 2.03W±20%               | 240 lm                      | 1860                     |
|        |                                     |            |              |            | F29mm  | 13.5V           | 1.36W±20%               | 130 lm                      | 3030                     |
|        |                                     |            |              |            | F31mm  | 13.5V           | 1.36W±20%               | 130 lm                      | 3030                     |
|        |                                     |            |              |            | F36mm  | 13.5V           | 1.3W±20%                | 170 lm                      | 5730                     |
|        |                                     |            |              |            | F39mm  | 13.5V           | 1.3W±20%                | 170 lm                      | 5730                     |
|        |                                     |            |              |            | F42mm  | 13.5V           | 1.3W±20%                | 170 lm                      | 5730                     |
|        |                                     |            |              |            | T10    | 13.5V           | 1.14W±20%               | 140 lm                      | 1860                     |
| LSB05B | Internal Switching constant current | Fanless    | Polarity     | 6500K±500K | BA9S   | 13.5V           | 0.63W±20%               | 60 lm                       | 3030                     |
|        |                                     |            |              |            | T10    | 13.5V           | 0.63W±20%               | 60 lm                       | 3030                     |

# HEADLIGHT BULB SPECIFICATION

| Series   | Feature           | Structure    | Driver Type                            | Cooling                       | Polarity     | Color Temp. | Base | Nominal Voltage | Initial Power /bulb | Initial Lumen /bulb        | Lumen Maintenance | Available base                                                             |
|----------|-------------------|--------------|----------------------------------------|-------------------------------|--------------|-------------|------|-----------------|---------------------|----------------------------|-------------------|----------------------------------------------------------------------------|
| EB       | D-FLIP<br>ECE R37 | wire connect | External Switching<br>Constant Current | Fan cooling                   | Non-Polarity | 6500K       | H11  | 13.2V           | 15W                 | 1350 lm                    | 99%               | H11: Certification Obtained<br>H8\H16\HB4: Awaiting Certification Approval |
| EB plus  | D-FLIP<br>ECE R37 | wire connect | External Switching<br>Constant Current | Fan cooling                   | Non-Polarity | 6500K       | H11  | 13.2V           | 23W                 | 1850 lm                    | 95%               | H7\H8\H9\H10\H11\H16\HB3\HB4\HIR2                                          |
| LB       | D-FLIP            | all in one   | Internal Switching<br>Constant Current | Fan cooling                   | Non-Polarity | 6000K       | H4   | 13.2V           | 23.0 W              | Lo:1600 lm<br>Hi:2100 lm   | 76.10%            | H4\H13\9004\9007\H7\H11\H10\9005\9006\9012\5202\PSX24\PSX26\P13W\H1\H3\H27 |
|          |                   |              |                                        |                               |              |             | H11  | 13.2 V          | 23.0 W              | 2833 lm                    | 74.00%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 20.0 W              | 2584 lm                    | 77.94%            |                                                                            |
| LB plus  | D-FLIP            | wire connect | Internal Switching<br>Constant Current | Fan cooling                   | Non-Polarity | 5800K       | H4   | 13.2V           | 27.0 W              | Lo:1688 lm<br>Hi:1989 lm   | 89.00%            | H4\H7\H11\9005\9006\H10                                                    |
|          |                   |              |                                        |                               |              |             | H11  | 13.2V           | 25.0 W              | 2584 lm                    | 77.94%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 25.0 W              | 2584 lm                    | 77.94%            |                                                                            |
| Atom Pro | D-FLIP            | all in one   | Internal Switching<br>Constant Current | Fanless                       | Non-Polarity | 6000K       | H4   | 13.2V           | 16.0 W              | Lo:1450<br>Hi:1800         | 72.20%            | H4\H19\9004\9007\H13\H7\H11\H10\9005\9006\9012\5202\PSX24\H1\H3\880\881    |
|          |                   |              |                                        |                               |              |             | H11  | 13.2V           | 16.0 W              | 2218 lm                    | 76.74%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 13.0 W              | 1950 lm                    | 64.36%            |                                                                            |
| PB       | TST               | all in one   | Internal Switching<br>Constant Current | Fan cooling                   | Non-Polarity | 6000K       | H1   | 13.2V           | 14.2 W              | 1050 lm                    | 99.80%            | H4\H19\9004\9007\H13\H7\H11\H10\9005\9006\9012\5202\PSX24\H1\H3\880\881    |
|          |                   |              |                                        |                               |              |             | H4   | 13.2V           | 22.0 W              | Lo:1550 lm<br>Hi:1950 lm   | 87.10%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 18.0 W              | 2240 lm                    | 94.87%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H11  | 13.2V           | 22.0 W              | 2641 lm                    | 88.94%            |                                                                            |
| UB       | TST               | wire connect | Internal Switching<br>Constant Current | Fan cooling +<br>Thermal pipe | Non-Polarity | 5700K       | H4   | 13.2V           | 44.0 W              | Hi: 4270 lm<br>Lo: 2862 lm | 89.10%            | H4\H7\H11\9005\9006\H10                                                    |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 44.0 W              | 5360 lm                    | 89.76%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H11  | 13.2V           | 43.6 W              | 3305 lm                    | 89.42%            |                                                                            |
| UB plus  | TST               | wire connect | Internal Switching<br>Constant Current | Fan cooling +<br>Thermal pipe | Non-Polarity | 5700K       | H4   | 13.2V           | 56.0 W              | Hi:4270 lm<br>Lo:2862 lm   | 89.10%            | H4\H7\H11\9005\9006\H10                                                    |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 56.0 W              | 5360 lm                    | 89.76%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H11  | 13.2V           | 56.0 W              | 5360 lm                    | 89.76%            |                                                                            |
| DHM      | TST               | all in one   | Internal Switching<br>Constant Current | Fanless                       | Non-Polarity | 6000K       | H4   | 13.2V           | 16.0 W              | Lo:1350 lm<br>Hi:1750 lm   | 74.20%            | H4\H19\9004\9007\H13\H7\H11\H10\9005\9006\9012\5202\PSX24\H1\H3\880\881    |
|          |                   |              |                                        |                               |              |             | H11  | 13.2V           | 14.0 W              | 1922 lm                    | 82.41%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 11.0 W              | 1563 lm                    | 71.40%            |                                                                            |
| M9       | Wide Voltage      | all in one   | Internal Switching<br>Constant Current | Fan cooling                   | Non-Polarity | 6500K       | H4   | 13.5V           | 35.0 W              | Lo:5000 lm<br>Hi:6000 lm   | 80.00%            | H4\H19\H13\9004\9007\H7\H18\H11\H8\H10\9005\9006\9012\H1\H3\H27            |
|          |                   |              |                                        |                               |              |             | H7   | 13.5V           | 30.0 W              | 7200 lm                    | 77.78%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H11  | 13.5V           | 30.0 W              | 7200 lm                    | 77.78%            |                                                                            |
| PJ360    | 4 sided LED       | all in one   | Internal Switching<br>Constant Current | Fan cooling +<br>Thermal pipe | Non-Polarity | 6000K       | 9005 | 13.2V           | 30.0 W              | 3000 lm                    | 76.67%            | H1\H4\H7\9005\H11\9012                                                     |
|          |                   |              |                                        |                               |              |             | H11  | 13.2V           | 30.0 W              | 3000 lm                    | 76.67%            |                                                                            |
|          |                   |              |                                        |                               |              |             | H7   | 13.2V           | 33.0 W              | 3000 lm                    | 72.72%            |                                                                            |
| D        | X-CHIP            | all in one   | Internal Switching<br>Constant Current | Fan cooling                   | /            | 6500K       | D1   | 12V             | 45W                 | 3949 lm                    | 87.00%            | D1\D2\D3\D4\D8                                                             |
|          |                   |              |                                        |                               |              |             | D2   | 12V             | 45W                 | 4073 lm                    | 85.00%            |                                                                            |

## Manufacturing Capability

- ▶ Automotive LED lighting since 2012
  - ▶ Full automation: laser etching, solder stenciling, pick-and-place, reflow soldering, 100% AOI inspection
- 

## Quality Process

- ▶ 5-stage system – IQC → IPQC → LQC → FQC → OQC, incoming material to shipment
  - ▶ AQL sampling before every batch release
  - ▶ In-house optical lab
  - ▶ Full environmental testing
- 

## Compliance System

- ▶ UN R37 H11 LEDr type-approved light source
  - ▶ Full auditable document pack – certificate, marking photo, test reports
  - ▶ R10 EMC and other supporting compliance evidence available
- 

## OEM / Customization Capability

- ▶ 40+ OEM/ODM brand partnerships across 70+ countries
  - ▶ Customizable light source, brightness, color temp, driver (IC/CANBus)
  - ▶ Customizable finish, industrial design, packaging
  - ▶ Ready production lines – new products go straight to mass production
-



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