



Light is significant  
Electronic message signs  
and signals

Light is **OSRAM**

**OSRAM**  
Opto Semiconductors

Offering latest technologies, outstanding performance and a dedicated product range, OSRAM Opto Semiconductors' light emitting components for electronic message signs and signals support our customers with new reliable and flexible value-added opportunities.





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# Setting signals for a world in motion

OSRAM Opto Semiconductors' innovative optical components are the perfect match for modern information and signaling solutions. Their unique features and powerful performance enable the design of new market-leading products, which distinguish themselves through clear, precise visibility and eye-catching appearance.

OSRAM Opto Semiconductors delivers a broad portfolio of state-of-the-art LED components, ready to use, designed for your special needs and requirements. All of our products comply with international standards for both viewing angle and color.

Thanks to our extremely reliable components and the energy efficiency inherent in LED technology, the once unimaginable has become today's reality. Our products combine the competence of nearly 40 years of expertise in the semiconductor industry with 100 years of experience in lighting technology from OSRAM GmbH. We concentrate all opto semiconductor processes under one roof – from chip development, packages and phosphors to finalized components.





Regardless of the location, on the road or on rails, at bus stops or on platforms, in airport terminals or train stations, on the outside of vehicles, big or small: OSRAM Opto Semiconductors has the perfect solutions for a great variety of electronic message signs and signal applications.





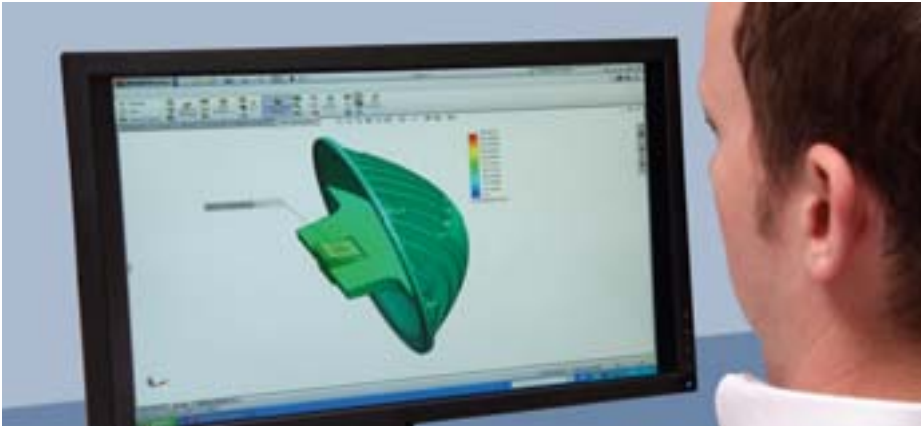
## Your PASS to the future

With PASS, you'll get access to OSRAM Opto Semiconductors' application engineering expertise and lab services through a lean, affordable, á la carte program. PASS is an open, collaborative design and testing process that keeps you involved, allowing flexibility along the way.

Make it good, make it fast and make it easy – with PASS you'll access our Premium Application Support Services through a dedicated web page, where you can request services through a dynamic menu featuring simulation, prototype, LED data and system metrology services. Our qualification process determines if your business is a good fit for PASS services. And, if we can't provide everything you need, we'll help you to find the right solution through our LED Light for you program, the premier lighting solutions network of certified industry partners.







### Simulation

Simulate your system to study illumination and thermal performance before hardware is realized.

- Simulate your optical system
- Model your illumination environment
- Simulate your thermal system
- Optics and thermal design support

### Prototype

Choose from a list of standard printed circuit boards (PCBs), specify a custom PCB or work with engineering to realize an entire system mockup for proof of concept.

- Standard PCBs
- Custom PCBs
- System mockups

### LED data

LED characterization and lifetime estimation based on your specified parts and drive current.

- LED measurements
- Lumen maintenance estimation
- LM-80/TM-21 reports

### System metrology

Get photometric and thermal measurements for your solution.

- Integrating sphere measurement
- Goniophotometer measurement
- Thermal spot & area measurement
- System luminance





**OSLON® Signal**



	<b>LJ CKBP</b>	<b>LY CKBP</b>	<b>LCY CLBP</b>	<b>LV CQBP</b>
Wavelength (nm; typ.)	612 – 632	590	590	505
Luminous flux in lm @350 mA (typ.)	70	45	100	80
LED package size in mm	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7
Viewing angle	120°	120°	120°	120°
Package Type	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens

**TOPLED® Black**



	<b>LY T64F</b>	<b>LR T64F</b>	<b>LV T64G</b>
Wavelength (nm; typ.)	589	625	505
Intensity in mcd @20 mA (typ.)	5600	5600	7100
LED package size in mm	3.2 × 2.8 × 3.8	3.2 × 2.8 × 3.8	3.2 × 2.8 × 3.8
Viewing angle	30°	30°	30°
Package Type	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin



# Always a safe choice

Using state-of-the-art LEDs from OSRAM Opto Semiconductors, new innovative traffic lights can be realized with full flexibility and absolute freedom of design. Our highly efficient and optically perfectly designed LEDs are available in various performance classes, offering bin selections that comply with international and many national standards.

## **OSLON® Signal**

The ceramic-based high-performance package supports cutting edge traffic light designs, with a significantly reduced number of LEDs per signal. The portfolio sets new standards in terms of electro-optical efficiency even at high temperatures, including a high-efficiency yellow LED with a ceramic converter.

The 120° beam angle of this tiny power pack with a package size of 3.0 mm × 3.0 mm × 1.7 mm is perfect for standard secondary lenses for signal lights available on the market.

## **TOPLED® Black**

30° narrow angle radiation based on an SMD TOPLED® footprint, and a standard component platform support full flexibility for basic traffic lights, equipped with low power components.



# Ready for fast reaction

The lights of emergency vehicles have to meet many national and international standards. For many of them, the OSRAM Opto Semiconductors bin selection possibilities provide the perfect match. The radiation characteristics of all colors are optically matched to make designs of secondary optics very efficient. Also including low power components for small message sign areas within warning bars, our product range offers one-stop-shopping opportunities for complete LED solutions.



### OSLON® Signal

The ceramic-based high-performance package supports cutting edge signal and warning light designs, with a significantly reduced number of LEDs per signal. The portfolio sets new standards in terms of electro-optical efficiency even at high temperatures, including a high-efficiency yellow LED with a ceramic converter. The 120° beam angle of this tiny power pack with a package size of 3.0 mm x 3.0 mm x 1.7 mm is perfect for standard secondary lenses for signal lights available on the market.

### TOPLED® Black

30° narrow angle radiation based on an SMD TOPLED® footprint, and a standard component platform support full flexibility for basic signals and warning lights, equipped with low power components.

### OSLON® Signal



	LJ CKBP	LY CKBP	LCY CLBP	LCB CRBP	LUW CRBP	LB CRBP
Wavelength/color coordinates (nm; CxCy; typ.)	612 – 632	590	590	475	x/y=0.33/0.33	465
Luminous flux in lm @350 mA (typ.)	70	45	100	55	130	40
LED package size in mm	3.0 x 3.0 x 1.7	3.0 x 3.0 x 1.7	3.0 x 3.0 x 1.7	3.0 x 3.0 x 1.7	3.0 x 3.0 x 1.7	3.0 x 3.0 x 1.7
Viewing angle	120°	120°	120°	120°	120°	120°
Package Type	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens


**TOPLED® Black**


	<b>LY T64F</b>	<b>LR T64F</b>
Wavelength (nm; typ.)	589	625
Intensity in mcd @20 mA (typ.)	5600	5600
LED package size in mm	3.2 × 2.8 × 3.8	3.2 × 2.8 × 3.8
Viewing angle	30°	30°
Package Type	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin



# Made for special cases



Not only ambulances, police cars or fire trucks run much better with LEDs from OSRAM Opto Semi-conductors. We also hold the right solutions for very special lighting applications and designs, whether light buoys, navigation light or flight path lights.

## Power TOPLED®



	LR E67F	LA E67F	LY E67F	LT E6SG	LB E6SG
Wavelength (nm; typ.)	625	617	590	525	470
Intensity in mcd @20 mA (typ.)	1800	2500	2000	2000 @30mA	520 @30mA
LED package size in mm	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9
Viewing angle	120°	120°	120°	120°	120°
Package Type	white PLCC-4 package, colorless clear resin	white PLCC-4 package, colorless clear resin	white PLCC-4 package, colorless clear resin	white PLCC-4 package, colorless clear resin	white PLCC-4 package, colorless clear resin

## OSLON® Signal



	LJ CKBP	LY CKBP	LCY CLB	LT CQBP	LV CQBP	LCB CRBP
Wavelength/color coordinates (nm; Cx/Cy; typ.)	612 – 632	590	590	535	505	475
Luminous flux in lm @350 mA (typ.)	70	45	100	100	80	55
LED package size in mm	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7	3.0 × 3.0 × 1.7
Viewing angle	120°	120°	120°	120°	120°	120°
Package Type	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens



### Power TOPLED®

The classic Power TOPLED® package with its outstanding reliability is the perfect component for designers who want to operate with low power LEDs and cost efficient thermal designs. The variety of colors and the color selection options make them ideal for any kind of regional signal standards.

### OSLON® Signal

The ceramic-based high-performance package supports cutting edge signal and warning light designs, with a significantly reduced number of LEDs per signal. The portfolio sets new standards in terms of electro-optical efficiency even at high temperatures, including a high-efficiency yellow LED with a ceramic converter. Color coordinate selection possibilities for the red LJ CKBP device offer best fit for a broad variety of signal standard requirements. The 120° beam angle of this tiny power pack with a package size of 3.0 mm × 3.0 mm × 1.7 mm is perfect for standard secondary lenses for signal lights available on the market.

### TOPLED®

Classic TOPLED® package available with tailored white bins to support single color bin delivery option.



LUW CRBP	LB CRBP
x/y=0.33/0.33	465
130	40
3.0×3.0×1.7	3.0×3.0×1.7
120°	120°
SMD ceramic package with silicone resin with lens	SMD ceramic package with silicone resin with lens

### TOPLED®



	LV T6SG
Wavelength (nm; typ.)	505
Intensity in mcd @20 mA (typ.)	1120
LED package size in mm	3.2 × 2. × 1.9
Viewing angle	120°
Package Type	white PLCC-2 package, colorless clear resin

# With all the comforts

Variable Message Signs (VMS) contribute to more convenience for people on the move. They address the demand for reliable real time information, e. g. of departure dates, and provide useful service information. The LEDs from OSRAM Opto Semiconductors designed for these applications make the look at the signs to a brilliant, eye-catching experience.



### MULTILED® Black Surface

Individual addressability of each color, high contrast thanks to small reflector size and premium intensity. Available in three-in-one and two-in-one options for full color or tricolor message signs.

### TOPLED®

Classic TOPLED® package available with tailored white bins to support single color bin delivery option.

### MULTILED® Black Surface



	LRTB GVTG	LRT GFTM
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 625 T: 528
Intensity in mcd @20 mA (typ.)	R: 650 T: 1700 B: 300	R: 650 @10 mA T: 1200 @20 mA
LED package size in mm	3.3 × 3.4 × 1.8	3.3 × 3.4 × 1.8
Viewing angle	120°	120°
Package Type	white PLCC-6 package, black surface	white PLCC-6 package, black surface

### TOPLED®



	LW TVSG.BB
Color coordinates (CxCy; typ.)	0.34/0.35
Intensity in mcd @20 mA (typ.)	2100
LED package size in mm	3.2 × 2.8 × 1.9
Viewing angle	120°
Package Type	white PLCC-2 package, colored diffused resin



**DISPLIX®**

	<b>Black LRTB GRUG</b>	<b>Blackprint LRTB GRTG</b>	<b>Oval KY HAVPA1.22 yellow</b>	<b>Oval KR HAVPA1.22 red</b>	<b>Oval KT HAVPA1.12 true green</b>	<b>Oval KB HAVPA1.12 blue</b>
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 625 T: 528 B: 470	590	620	528	466
Intensity in mcd @ 20 mA (typ.)	R: 350 T: 900 B: 180	R: 850 T: 1850 B: 350	1000	1000	2600	600
LED package size in mm	4.5 × 4.5 × 2.1	4.5 × 4.5 × 2.1	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5
Viewing angle	120°	120°	110° horizontal, 60° vertical	110° horizontal, 60° vertical	110° horizontal, 60° vertical	110° horizontal, 60° vertical
Package Type	black PLCC-6 package	white PLCC-6 package, black surface	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens

**DISPLIX®**

Optimized outdoor stability to withstand high humidity levels, wide fluctuations in temperature and even torrential rain, combined with excellent contrast even in direct sunlight, precise color rendering even after long operating time and impressive brightness values. Perfect choices for video walls in outdoor areas, full color displays and road signs.

**TOPLED® Black**

60° angle radiation based on an SMD TOPLED® footprint, and a standard component platform support full flexibility for basic destination signs inside vehicles or price changers for gas stations, equipped with low power components. The black package generates superior contrast.

**TOPLED® Black Surface**

The TOPLED® Black Surface package is the classic component par excellence. It is used in platform and hall signs since almost two decades.

**TOPLED® Black**

	<b>LY T66F</b>	<b>LR T66F</b>	<b>LT T66G</b>
Wavelength (nm; typ.)	589	625	528
Intensity in mcd @20 mA (typ.)	1800	1800	3550
LED package size in mm	3.2 × 2.8 × 3.5	3.2 × 2.8 × 3.5	3.2 × 2.8 × 3.5
Viewing angle	60°	60°	60°
Package Type	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin

**TOPLED® Black Surface**

	<b>LY T68F</b>	<b>LR T68F</b>
Wavelength (nm; typ.)	589	625
Intensity in mcd @20 mA (typ.)	750	750
LED package size in mm	3.5 × 2.8 × 1.7	3.5 × 2.8 × 1.7
Viewing angle	120°	120°
Package Type	white PLCC-2 package, black surface	white PLCC-2 package, black surface

# On the right path

Variable message signs also make road traffic safer and provide more flow. Whether speed limit, warnings or road markings, LEDs from OSRAM Opto Semiconductors show the way with excellent visibility and high contrast.



### TOPLED® Black

30° narrow angle radiation based on an SMD TOPLED® footprint, and a standard component platform support full flexibility for road message signs, equipped with low power components. The black package generates superior contrast.

### TOPLED®

Classic TOPLED® package available in white and verde green, with tailored color bins to comply with most traffic standards.

### Power TOPLED®

The classic Power TOPLED® package with its outstanding reliability is the perfect match to the TOPLED® Black Surface for clustering in full color road message signs. The color selection options make them ideal for any kind of regional signal standards.

### TOPLED® Black



	LY T64F	LR T64F	LT T64G	LB T64G	LV T64G
Wavelength (nm; typ.)	589	625	528	470	505
Intensity in mcd @20 mA (typ.)	5600	5600	9000	1400	7100
LED package size in mm	3.2×2.8×3.8	3.2×2.8×3.8	3.2×2.8×3.8	3.2×2.8×3.8	3.2×2.8×3.8
Viewing angle	30°	30°	30°	30°	30°
Package Type	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin	black PLCC-2 package, colorless resin



### MULTILED® Black Surface

Individual addressability of each color, high contrast thanks to small reflector size and premium intensity. The perfect LED to combine with an external optics for full color road message signs.

### TOPLED® Black Surface

The TOPLED® Black Surface package is the classic component par excellence. It is used together with external optics in all kind of traffic signs.

### MULTILED® Black Surface



	<b>LRTB GVTG</b>
Wavelength (nm; typ.)	R: 625, T: 528, B: 470
Intensity in mcd @20 mA (typ.)	R: 650, T: 1700, B: 300
LED package size in mm	3.3 × 3.4 × 1.8
Viewing angle	120°
Package Type	white PLCC-6 package, black surface

### TOPLED®



	<b>LV T6SG</b>	<b>LW TVSG.BB</b>
Wavelength/color coordinates (nm; CxCy; typ.)	505	0.34/0.35
Intensity in mcd @20 mA (typ.)	1120	2100
LED package size in mm	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9
Viewing angle	120°	120°
Package Type	white PLCC-2 package, colored diffused resin	white PLCC-2 package, colored diffused resin

### Power TOPLED®



	<b>LT E6SG</b>	<b>LB E6SG</b>
Wavelength (nm; typ.)	525	470
Intensity in mcd @30 mA (typ.)	2000	520
LED package size in mm	3.2 × 2.8 × 1.9	3.2 × 2.8 × 1.9
Viewing angle	120°	120°
Package Type	white PLCC-4 package, colorless clear resin	white PLCC-4 package, colorless clear resin

### TOPLED® Black Surface



	<b>LY T68F</b>	<b>LR T68F</b>
Wavelength (nm; typ.)	589	625
Intensity in mcd @20 mA (typ.)	750	750
LED package size in mm	3.5 × 2.8 × 1.7	3.5 × 2.8 × 1.7
Viewing angle	120°	120°
Package Type	white PLCC-2 package, black surface	white PLCC-2 package, black surface



# Choose perfection – easily

## ✓ recommendation

	Traffic lights	Emergency vehicles	Special signal applications	Variable message signs Mass transportation	Variable message signs Road message signs	Page
<b>MULTILED® Black Surface</b>						
LRTB GVTG				✓	✓	14, 17
LRT GFTM				✓		14
<b>TOPLED®</b>						
LV T6SG			✓		✓	13, 17
LW TVSG.BB				✓	✓	14, 17
<b>DISPLIX®</b>						
LRTB GRUG				✓		15
LRTB GRTG				✓		15
KY HAVPA1.22				✓		15
KR HAVPA1.22				✓		15
KT HAVPA1.12				✓		15
KB HAVPA1.12				✓		15
<b>TOPLED® Black</b>						
LY T64F	✓	✓			✓	8, 10, 16
LR T64F	✓	✓			✓	8, 10, 16
LT T64G					✓	16
LB T64G					✓	16
LV T64G	✓				✓	8, 16
LY T66F				✓		15
LR T66F				✓		15
LT T66G				✓		15
<b>TOPLED® Black Surface</b>						
LY T68F				✓	✓	15, 17
LR T68F				✓	✓	15, 17
<b>Power TOPLED®</b>						
LR E67F			✓			12
LA E67F			✓			12
LY E67F			✓			12
LT E6SG			✓		✓	12, 17
LB E6SG			✓		✓	12, 17
<b>OSLON® Signal</b>						
LJ CKBP	✓	✓	✓			8, 10, 12
LY CKBP	✓	✓	✓			8, 10, 12
LCY CLBP	✓	✓	✓			8, 10, 12
LT CQBP			✓			12
LV CQBP	✓		✓			8, 12
LCB CRBP		✓	✓			10, 12
LUW CRBP		✓	✓			10, 13
LB CRBP		✓	✓			10, 13

# Be informed – completely

Looking for more information and data on our products for LEDs in general lighting or LEDs in general? All you need to know about our state-of-the-art products, modern LED technology and the latest LED trends can be found on our website along with other related links.

## [catalog.osram-os.com](http://catalog.osram-os.com)

Our complete product catalog with all available products

## [www.osram-os.com/solid-state-lighting](http://www.osram-os.com/solid-state-lighting)

Products and solutions for general lighting/solid state lighting

## [ledlight.osram-os.com](http://ledlight.osram-os.com)

The leading source of LED information, resources, tools, technology & LED lighting solutions for the solid state lighting and general illumination sectors

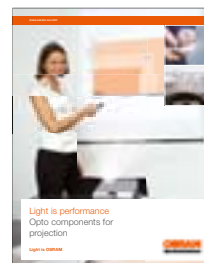
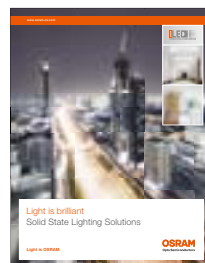
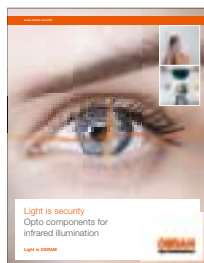
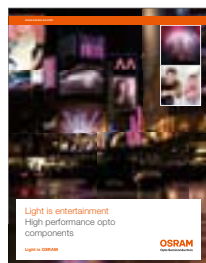
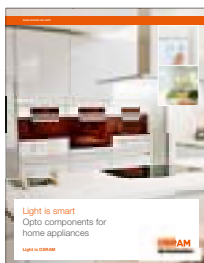
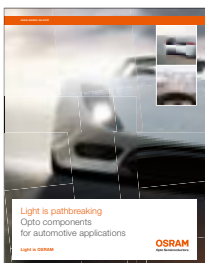
## [www.ledlightforyou.com](http://www.ledlightforyou.com)

The network for LED lighting technology – powered by OSRAM



## Application brochures available from OSRAM Opto Semiconductors

Our innovative products open up a wide variety of applications. Just contact us for assistance with your specific design (for contact information see last page) or order our application brochures: [www.osram-os.com/downloads](http://www.osram-os.com/downloads).



## Bringing your visions to life

OSRAM Opto Semiconductors is one of the world's leading manufacturers of optoelectronic semiconductors and is considered an authority on innovative light technologies. With numerous patented technologies, a deep understanding of customer needs, close customer relations and highly committed employees, we take an active part in shaping the future of light.

### **Leader in technology**

Because for decades we have been investing in technology and quality, steadily expanding our competencies, OSRAM Opto Semiconductors today sets the highest international standards in the fields of illumination, visualization and sensor technology. Our products range from high-performance light-emitting diodes (LEDs) and infrared diodes (IREDs) to detectors.





**Your partner of choice**

OSRAM Opto Semiconductors' close cooperation with our customers and partners generates new ideas for products and light solutions. Not least, these joint efforts have also resulted in an application-specific portfolio for a variety of applications: our semiconductors are used, for instance, in light solutions for automotive, white goods, entertainment and infotainment, projection and general lighting as well as numerous infrared and laser solutions.



**Driver for innovation**

Continuous commitment to research and development have established a solid foundation at OSRAM Opto Semiconductors for product development and manufacturing at a consistently high level. We have, for example, turned out pioneering technologies for almost 40 years and hold thousands of patents. Milestones reached in setting numerous standards in LED light technologies include the development of the first surface-mountable LED (TOPLED®), the first LED with white light and the OSRAM OSTAR® product platform with its versatile package design.



**Competent light solutions around the globe**

By engineering and manufacturing highly complex semiconductor chips and consistently developing new products for new applications, OSRAM Opto Semiconductors is able to satisfy the needs and requirements of customers around the world. With our headquarters in Regensburg (Germany), Sunnyvale (USA) for North America and Hong Kong for Asia, production sites in Regensburg, Penang (Malaysia) and soon in Wuxi (China), some of the most modern LED chip manufacturing facilities in the world, and a global network of sales and marketing centers, we and you are in an excellent position to meet the challenges of today and tomorrow.



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