SETi
Sensor Electronic Technology, Inc.

UVTOP®

Deep UV LED Technical Catalogue

Mission Statement

Sensor Electronic Technology, Inc. is the world's leading supplier of deep UV LEDs; LEDs with emission wavelengths shorter than 365nm. Using our proprietary and patented technology, we develop, manufacture and sell standard LED products under the UVTOP® trademark and custom LED products and solutions under the UVClean® trademark into public and private sectors. Certified to ISO9001:2008, we are committed to meeting and exceeding the needs of our customers and stakeholders through the highest levels of quality management.

Vertically Integrated Core Competencies

- Semiconductor Materials Growth
- UV LED Device Fabrication
- UV LED Packaging
- UV LED Systems design and integration

Core Competencies

Technology

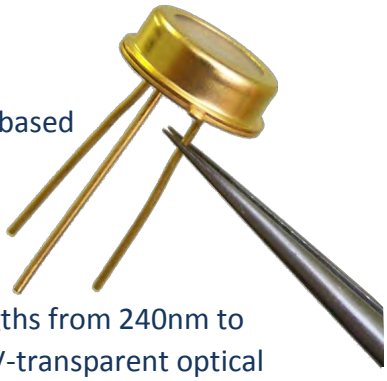
Sensor Electronic Technology, Inc's core technology is based around the growth of AlGaN semiconductor materials. We have developed patented processes, MEMOCVD® and MELEO. These novel processes allow Sensor Electronic Technology to lead the field in high aluminum content AlGaN semiconductors and has enabled us to become the world's leading manufacturer of Deep UV LEDs.

R&D

With a strong history of R&D, we have and continue to develop state-of-the-art deep UV LEDs products and solutions. Working closely with partners and customers, we can design, develop and produce custom lamps, light sources and complete solutions for your existing or new application.

Production

Our success is built on a vertically integrated business model with production facilities based in South Carolina, USA to cater to standard or custom orders, large or small.



UVTOP® LEDs

UVTOP® is a series of deep ultraviolet light emitting diodes with peak emission wavelengths from 240nm to 355nm. The LEDs are hermetically sealed in metal-glass TO packages with a choice of UV-transparent optical windows for beam profiling.

Features

- Miniature
- Robust
- Digital, Instant on/off
- Low voltage
- Flexible light design
- No hazardous waste

Applications

- Fluorescent spectroscopy
- Sensors and monitors
- Bio-analysis/detection
- Phototherapy
- UV Curing
- Disinfection

Markets

- Healthcare
- Petrochemical
- Environmental
- Military
- Industrial
- Consumer

Sensor Electronic Technology, Inc.

Rethinking UV Light Sources

UVTOP®

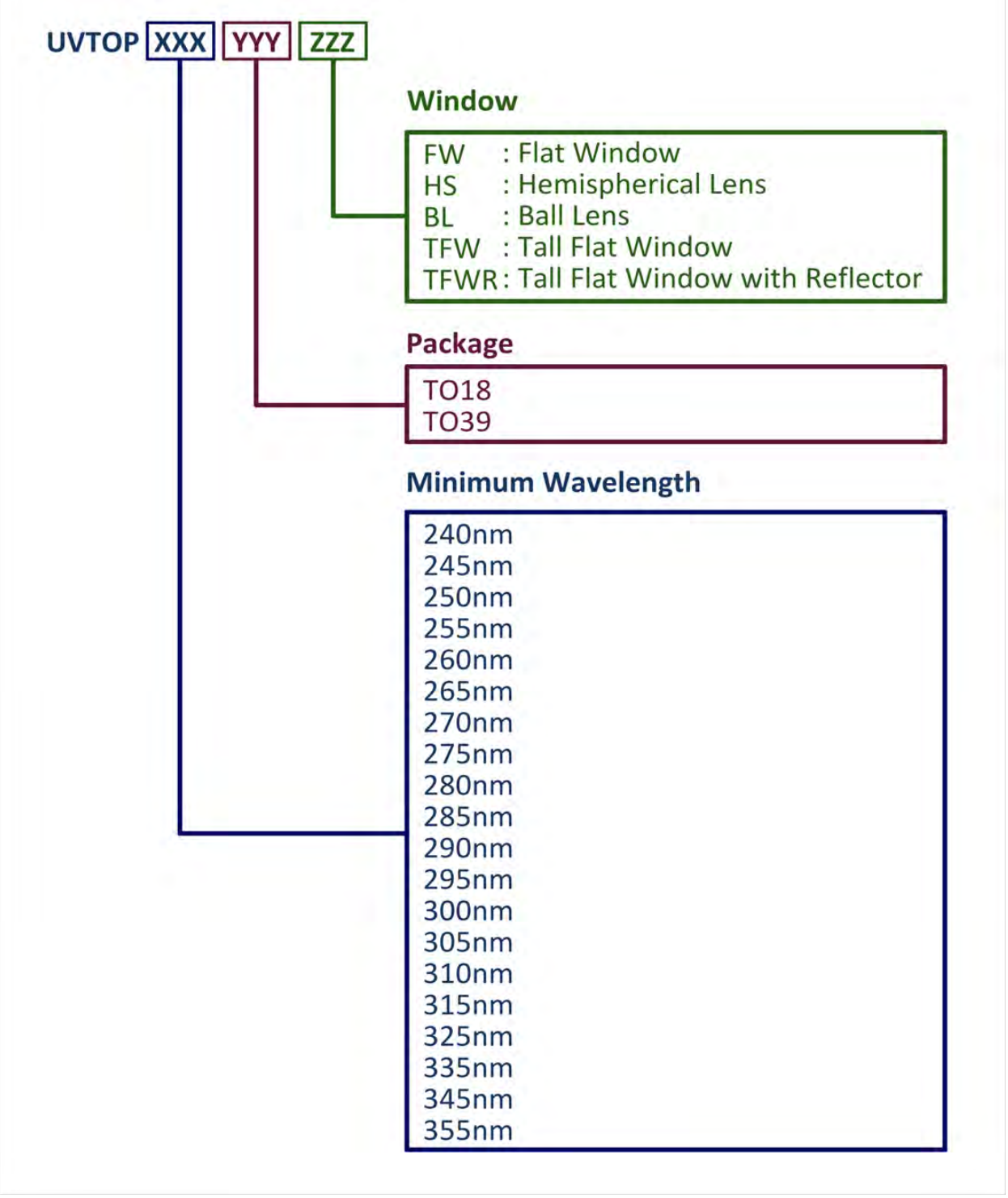
Deep UV LED Technical Catalogue

Product specifications are subject to change without notice.

Sensor Electronic Technology, Inc. reserves the right to alter process parameters that may affect the performance and/or other characteristics of the UVTOP® products listed within this catalogue. Products may be supplied subsequent to such process changes that continue to meet published product specifications, but may not be identical to products or samples supplied under prior orders.

Table of Contents

UVTOP Nomenclature



UVTOP240

Absolute Maximum Ratings
$T_A = 25^oC$

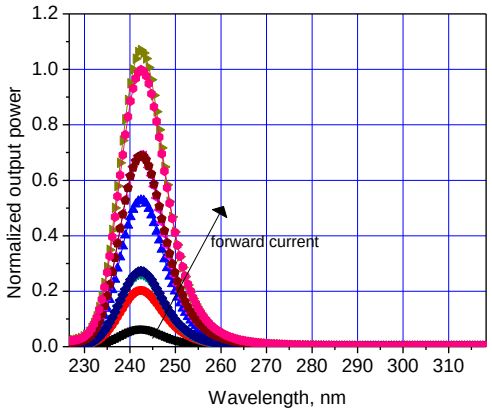
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	150
Forward Current, DC	mA	25
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	^oC	-30…+55
Storage Temperature	^oC	-30…+100

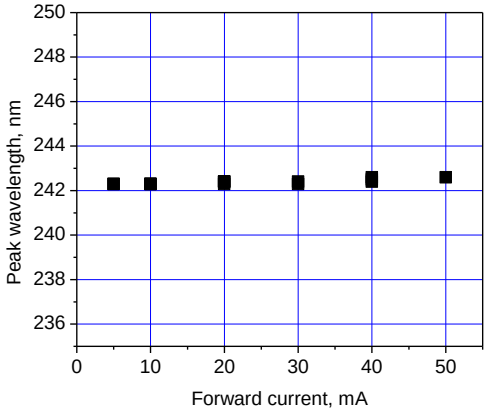
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (μW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (^{o})	FWHM (nm)	
Typical				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 240nm Typ: 245nm Max: 250nm	TO-18	FW	UVTOP240TO18FW	20	40	10.0	13.0	120	12	15
		BL	UVTOP240TO18BL	20	40	10.0	13.0	10	12	15
	TO-39	FW	UVTOP240TO39FW	30	70	10.0	13.0	120	12	15
		HS	UVTOP240TO39HS	20	40	10.0	13.0	7	12	15
		BL	UVTOP240TO39BL	30	70	10.0	13.0	7	12	15
		TFW	UVTOP240TO39TFW	10	30	10.0	13.0	120	12	15
		TFWR	UVTOP240TO39TFWR	20	40	10.0	13.0	120	12	15

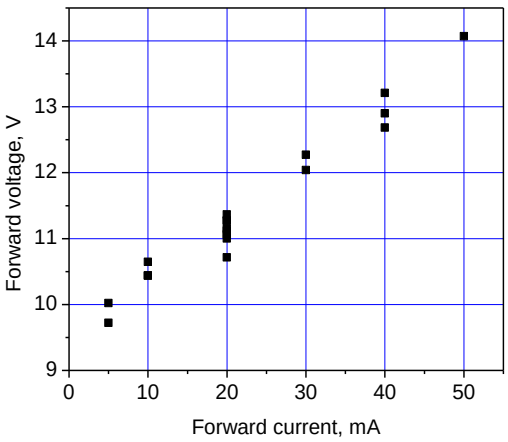
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

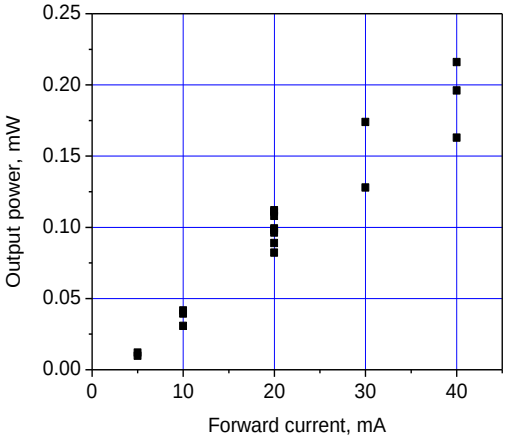
Typical Spectral Characteristics



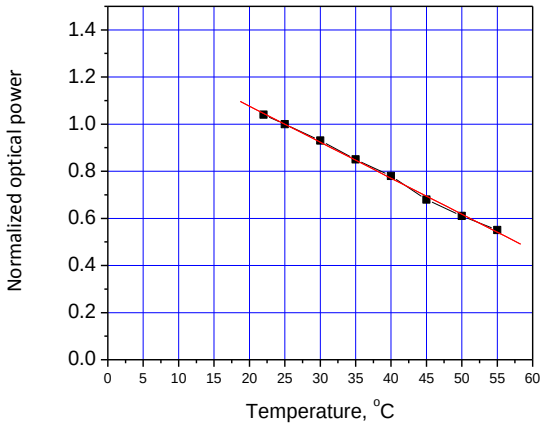


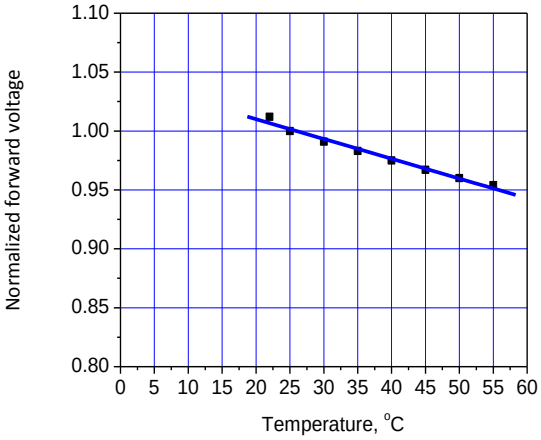
Typical LED Performance (T_A = 25°C, UVTOP240TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP255

Absolute Maximum Ratings
$T_A = 25^oC$

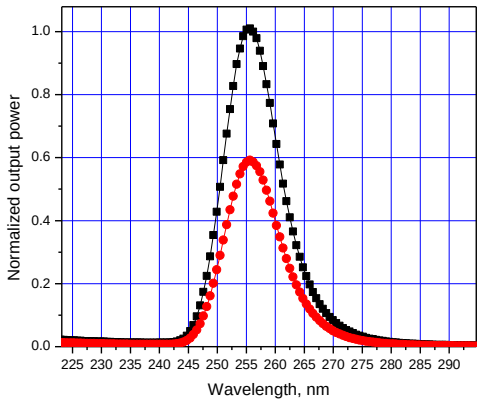
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	150
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	^oC	-30…+55
Storage Temperature	^oC	-30…+100

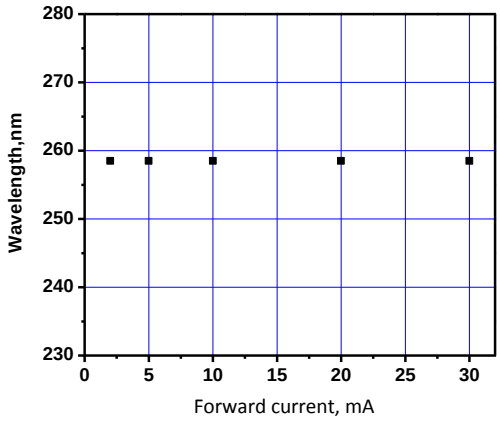
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm) Typical	Package	Window	Part Number	Optical Power P_{out} (µW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (^{o})	FWHM (nm)	
				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 255nm Typ: 260nm Max: 265nm	TO-18	FW	UVTOP255TO18FW	150	300	6.5	8.0	120	12	15
		BL	UVTOP255TO18BL	150	300	6.5	8.0	10	12	15
	TO-39	FW	UVTOP255TO39FW	180	300	6.5	8.0	120	12	15
		HS	UVTOP255TO39HS	120	200	6.5	8.0	7	12	15
		BL	UVTOP255TO39BL	180	300	6.5	8.0	7	12	15
		TFW	UVTOP255TO39TFW	80	125	6.5	8.0	120	12	15
		TFWR	UVTOP255TO39TFWR	120	200	6.5	8.0	120	12	15

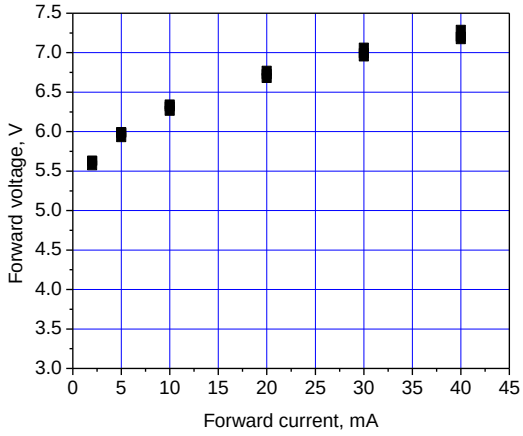
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

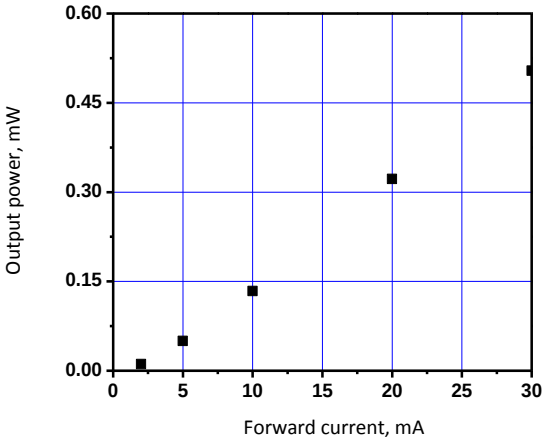
Typical Spectral Characteristics



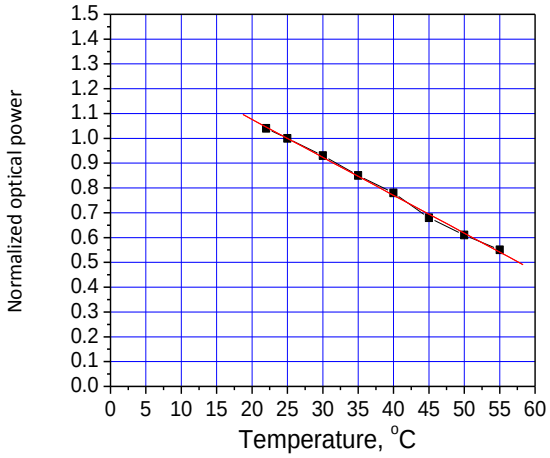


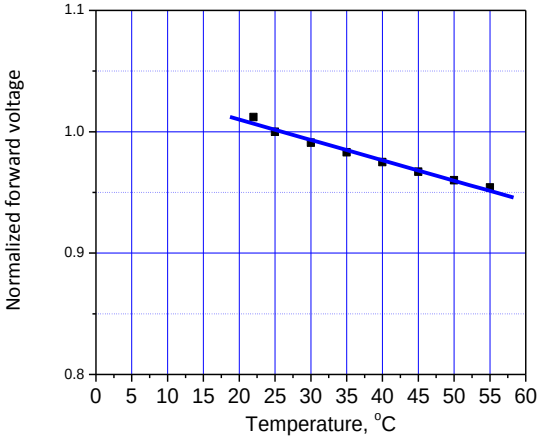
Typical LED Performance (T_A = 25°C, UVTOP255TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP260

Absolute Maximum Ratings
$T_A = 25^oC$

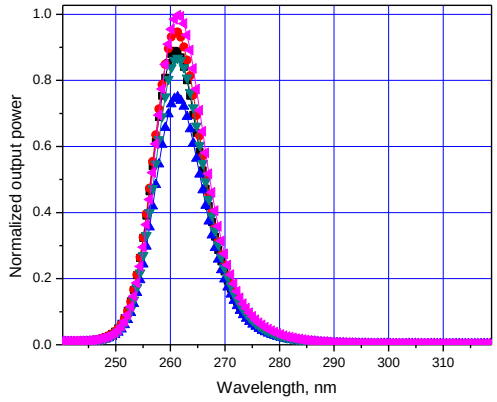
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	150
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	°C	-30…+55
Storage Temperature	°C	-30…+100

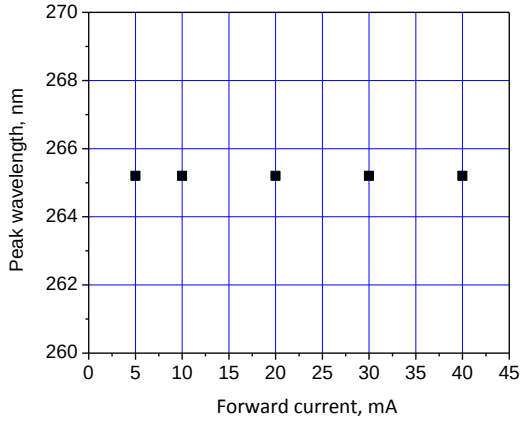
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm) Typical	Package	Window	Part Number	Optical Power P_{out} (μW) Min	Optical Power P_{out} (μW) Typ	Forward Voltage V_f (V) Typ	Forward Voltage V_f (V) Max	Viewing Angle $2\theta_{1/2}$ (°) Typ	FWHM (nm) Typ	FWHM (nm) Max
Min: 260nm Typ: 265nm Max: 270nm	TO-18	FW	UVTOP260TO18FW	150	250	6.5	8.0	120	12	15
		BL	UVTOP260TO18BL	150	250	6.5	8.0	10	12	15
	TO-39	FW	UVTOP260TO39FW	180	300	6.5	8.0	120	12	15
		HS	UVTOP260TO39HS	120	250	6.5	8.0	7	12	15
		BL	UVTOP260TO39BL	180	300	6.5	8.0	7	12	15
		TFW	UVTOP260TO39TFW	80	150	6.5	8.0	120	12	15
		TFWR	UVTOP260TO39TFWR	120	200	6.5	8.0	120	12	15

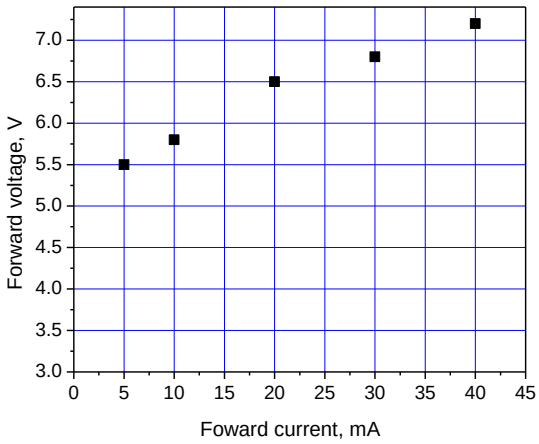
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

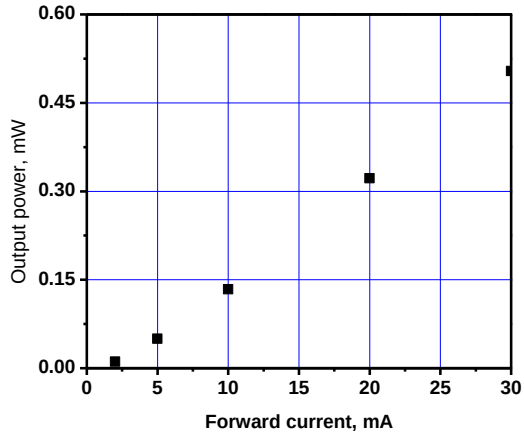
Typical Spectral Characteristics



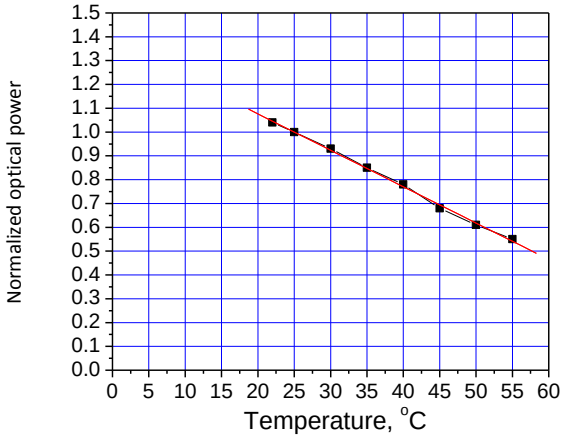


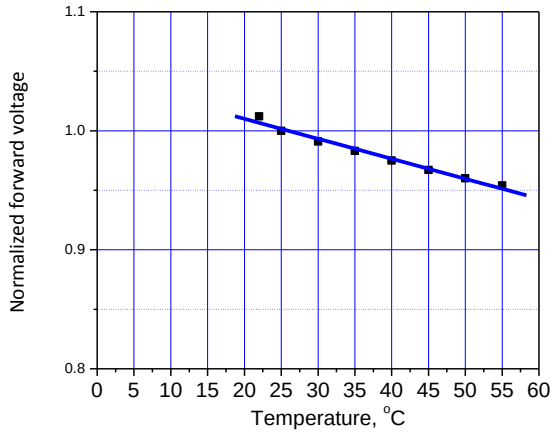
Typical LED Performance (T_A = 25°C, UVTOP260TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP270

Absolute Maximum Ratings
$T_A = 25^oC$

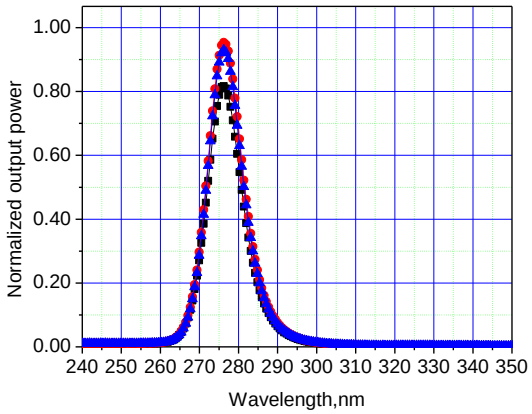
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	180
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	°C	-30…+55
Storage Temperature	°C	-30…+100

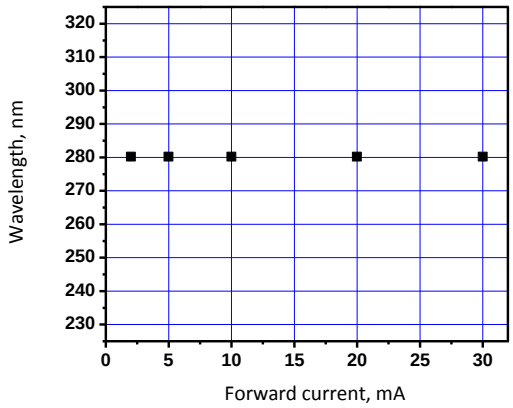
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (μW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (°)	FWHM (nm)	
Typical				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 270nm Typ: 275nm Max: 280nm	TO-18	FW	UVTOP270TO18FW	300	500	6.2	7.5	120	12	15
		BL	UVTOP270TO18BL	300	500	6.2	7.5	10	12	15
	TO-39	FW	UVTOP270TO39FW	480	800	6.2	7.5	120	12	15
		HS	UVTOP270TO39HS	360	600	6.2	7.5	7	12	15
		BL	UVTOP270TO39BL	360	600	6.2	7.5	7	12	15
		TFW	UVTOP270TO39TFW	180	300	6.2	7.5	120	12	15
		TFWR	UVTOP270TO39TFWR	240	400	6.2	7.5	120	12	15

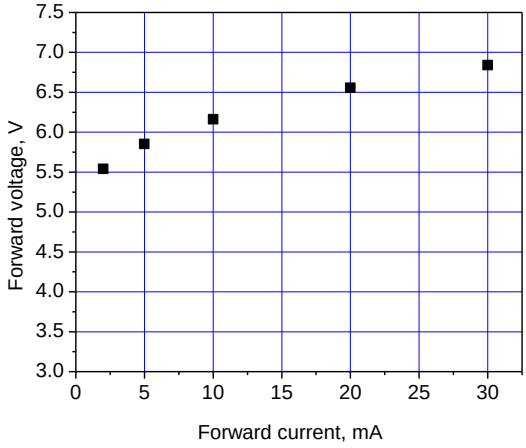
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

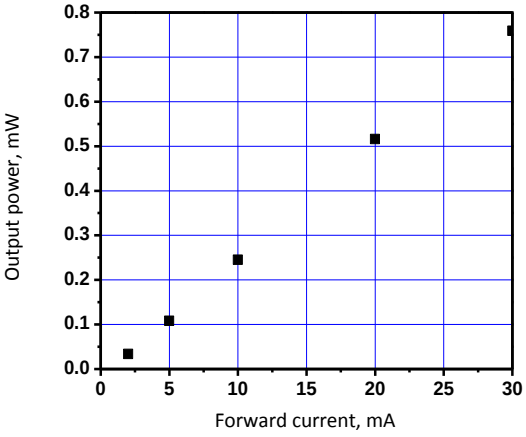
Typical Spectral Characteristics



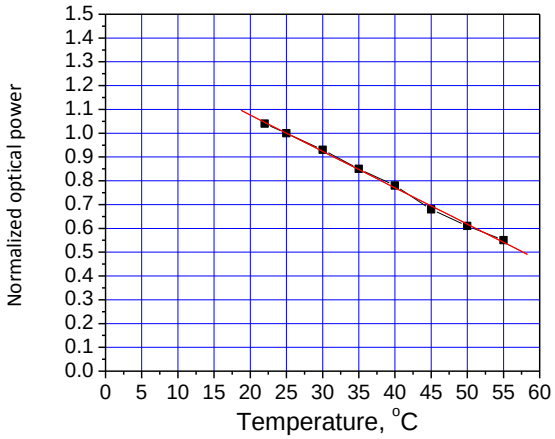


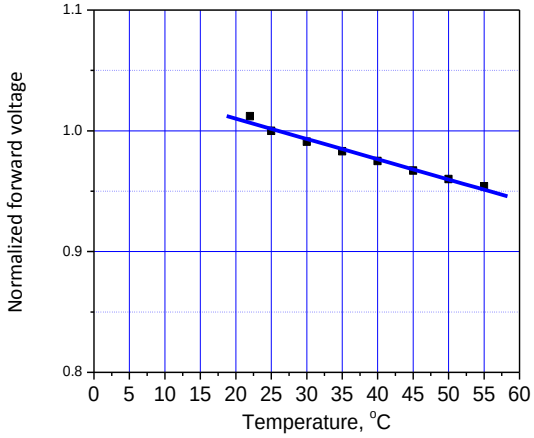
Typical LED Performance (T_A = 25°C, UVTOP270TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP280

Absolute Maximum Ratings
$T_A = 25^oC$

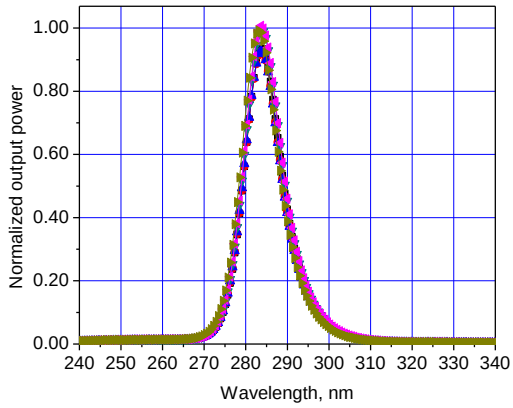
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	180
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	°C	-30…+55
Storage Temperature	°C	-30…+100

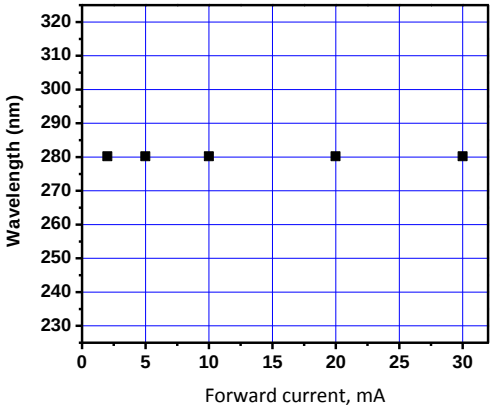
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm) Typical	Package	Window	Part Number	Optical Power P_{out} (μW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (°)	FWHM (nm)	
				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 280nm Typ: 285nm Max: 290nm	TO-18	FW	UVTOP280TO18FW	300	500	5.8	7.0	120	12	15
		BL	UVTOP280TO18BL	300	500	5.8	7.0	10	12	15
	TO-39	FW	UVTOP280TO39FW	480	800	5.8	7.0	120	12	15
		HS	UVTOP280TO39HS	360	600	5.8	7.0	7	12	15
		BL	UVTOP280TO39BL	360	600	5.8	7.0	7	12	15
		TFW	UVTOP280TO39TFW	180	300	5.8	7.0	120	12	15
		TFWR	UVTOP280TO39TFWR	240	400	5.8	7.0	120	12	15

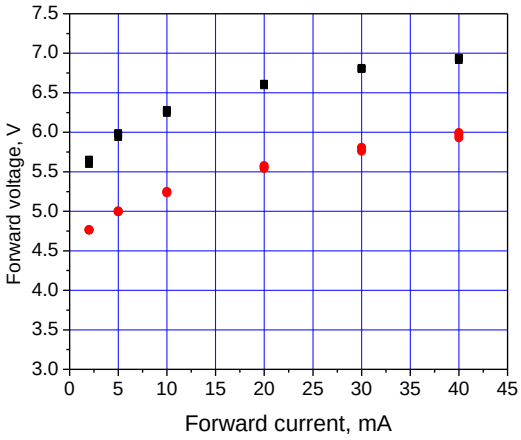
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

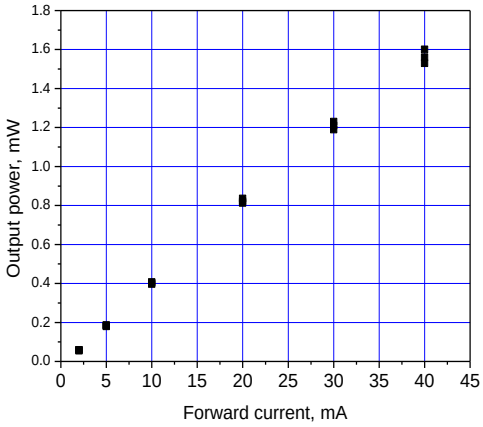
Typical Spectral Characteristics



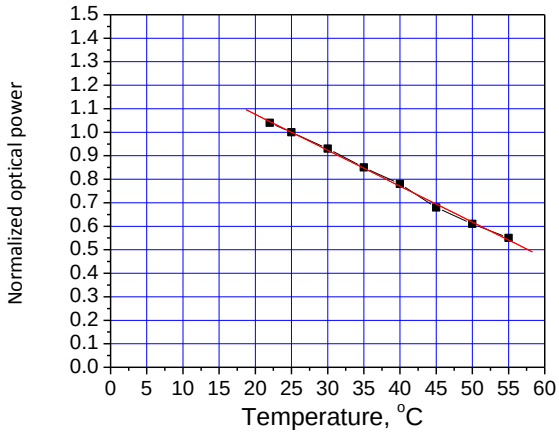


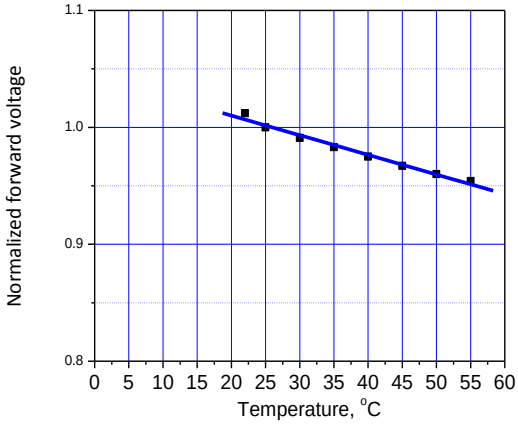
Typical LED Performance (T_A = 25°C, UVTOP280TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP285

Absolute Maximum Ratings
$T_A = 25^oC$

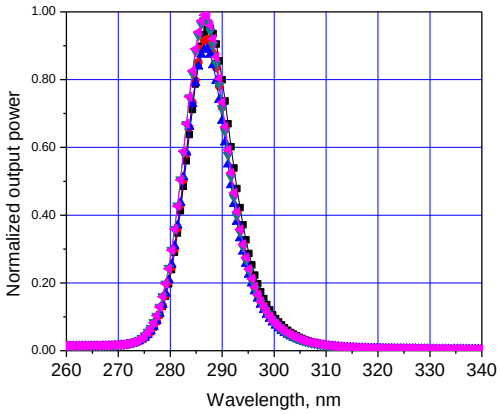
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	180
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	°C	-30…+55
Storage Temperature	°C	-30…+100

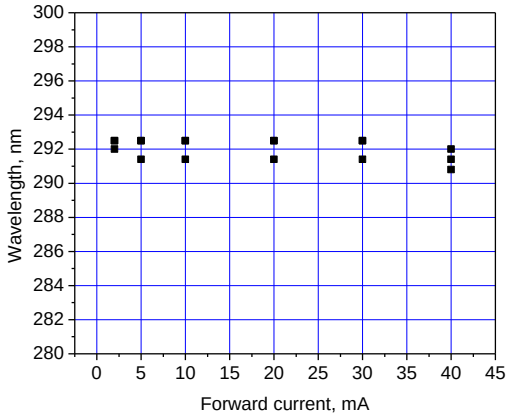
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (μW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (°)	FWHM (nm)	
				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 285nm Typ: 290nm Max: 295nm	TO-18	FW	UVTOP285TO18FW	300	500	5.8	7.0	120	12	15
		BL	UVTOP285TO18BL	300	500	5.8	7.0	10	12	15
	TO-39	FW	UVTOP285TO39FW	480	800	5.8	7.0	120	12	15
		HS	UVTOP285TO39HS	360	600	5.8	7.0	7	12	15
		BL	UVTOP285TO39BL	360	600	5.8	7.0	7	12	15
		TFW	UVTOP285TO39TFW	180	300	5.8	7.0	120	12	15
		TFWR	UVTOP285TO39TFWR	240	400	5.8	7.0	120	12	15

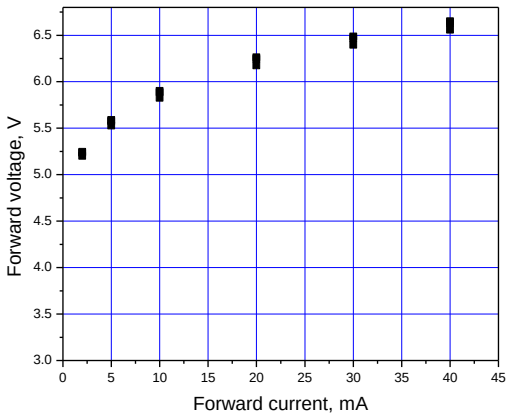
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

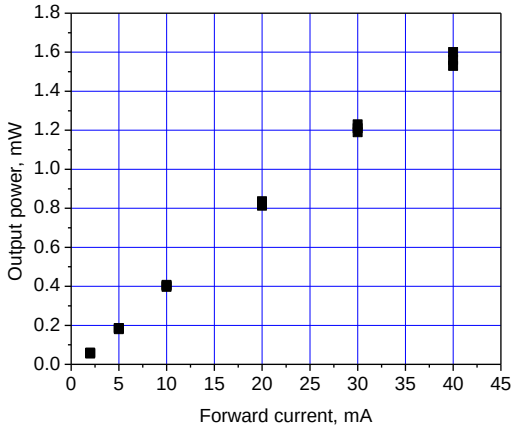
Typical Spectral Characteristics



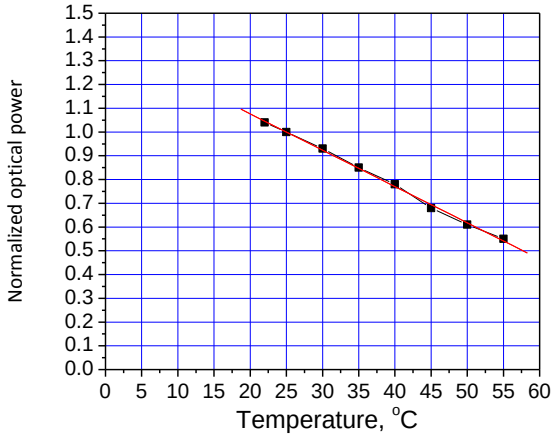


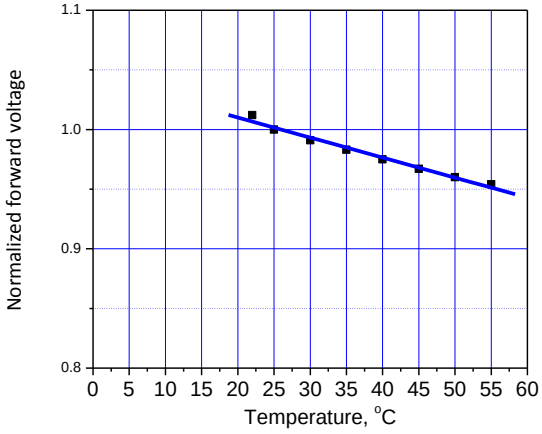
Typical LED Performance (T_A = 25°C, UVTOP285TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP295

Absolute Maximum Ratings
$T_A = 25^oC$

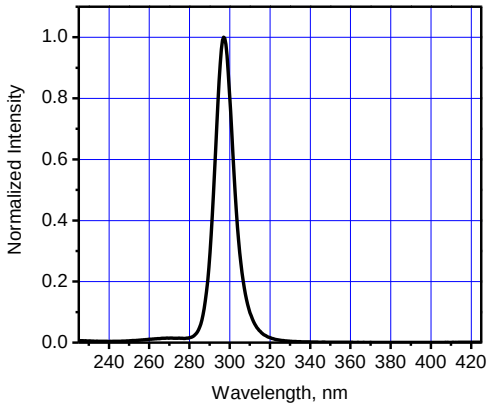
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	150
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	°C	-30…+55
Storage Temperature	°C	-30…+100

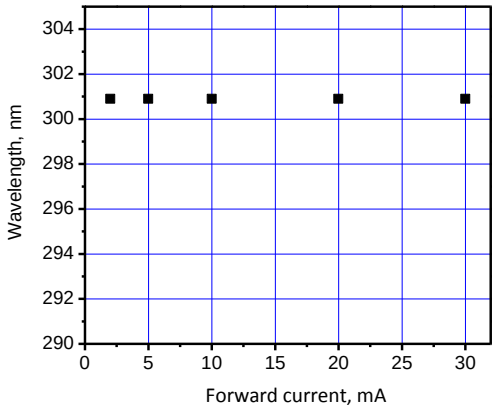
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (μW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (°)	FWHM (nm)	
				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 295nm Typ: 300nm Max: 305nm	TO-18	FW	UVTOP295TO18FW	300	500	5.5	7.5	120	12	15
		BL	UVTOP295TO18BL	300	500	5.5	7.5	10	12	15
	TO-39	FW	UVTOP295TO39FW	300	500	5.5	7.5	120	12	15
		HS	UVTOP295TO39HS	300	350	5.5	7.5	7	12	15
		BL	UVTOP295TO39BL	300	500	5.5	7.5	7	12	15
		TFW	UVTOP295TO39TFW	100	200	5.5	7.5	120	12	15
		TFWR	UVTOP295TO39TFWR	150	400	5.5	7.5	120	12	15

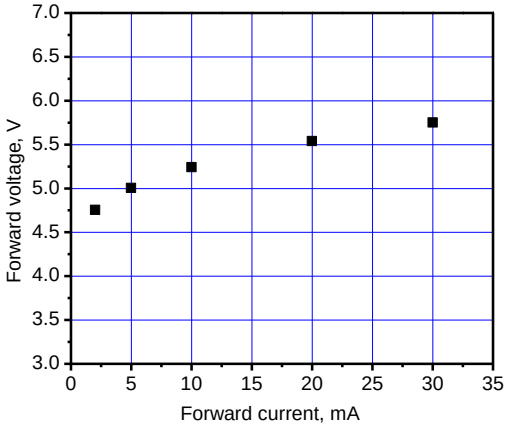
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

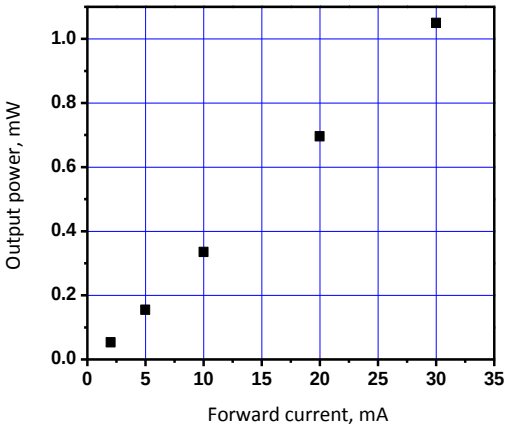
Typical Spectral Characteristics



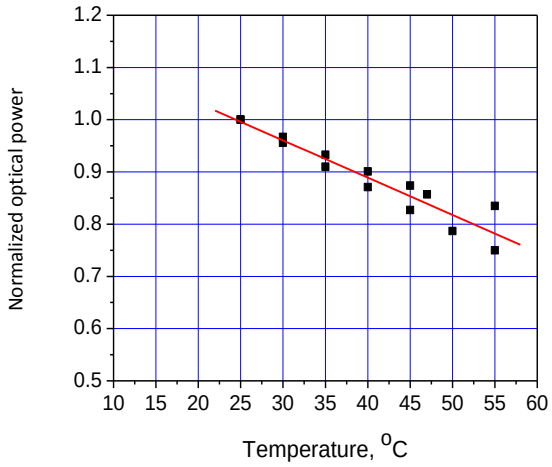


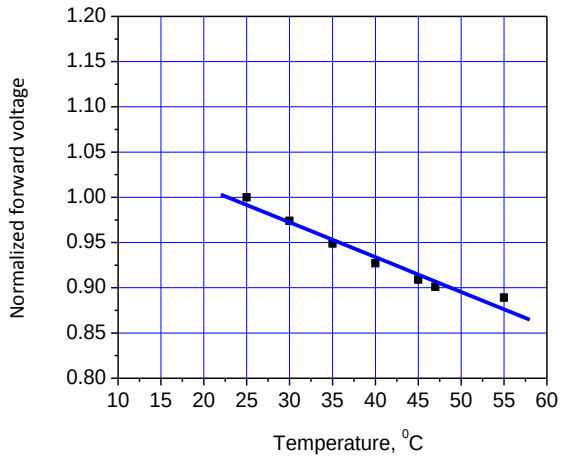
Typical LED Performance (T_A = 25°C, UVTOP295TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP310

Absolute Maximum Ratings
$T_A = 25^oC$

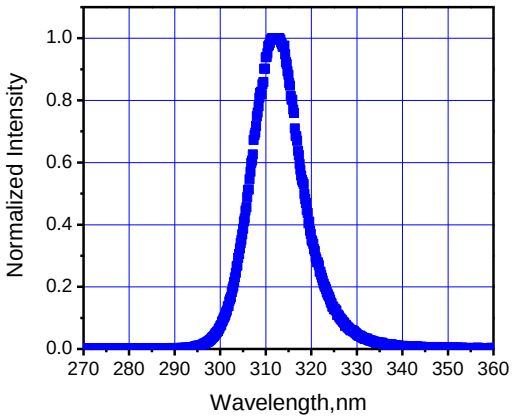
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	180
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	°C	-30…+55
Storage Temperature	°C	-30…+100

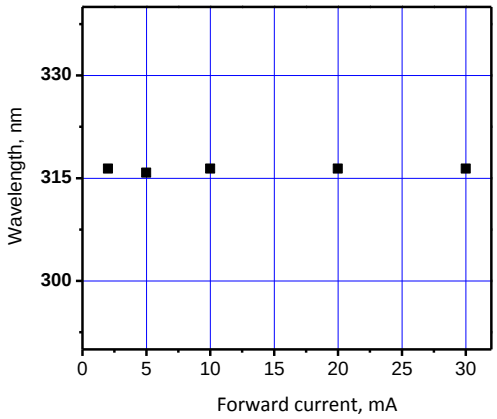
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (µW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (°)	FWHM (nm)	
Typical				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 310nm Typ: 315nm Max: 320nm	TO-18	FW	UVTOP310TO18FW	300	500	5.5	7.5	120	10	20
		BL	UVTOP310TO18BL	300	500	5.5	7.5	10	10	20
	TO-39	FW	UVTOP310TO39FW	360	600	5.5	7.5	120	10	20
		HS	UVTOP310TO39HS	240	400	5.5	7.5	7	10	20
		BL	UVTOP310TO39BL	240	600	5.5	7.5	7	10	20
		TFW	UVTOP310TO39TFW	180	300	5.5	7.5	120	10	20
		TFWR	UVTOP310TO39TFWR	240	400	5.5	7.5	120	10	20

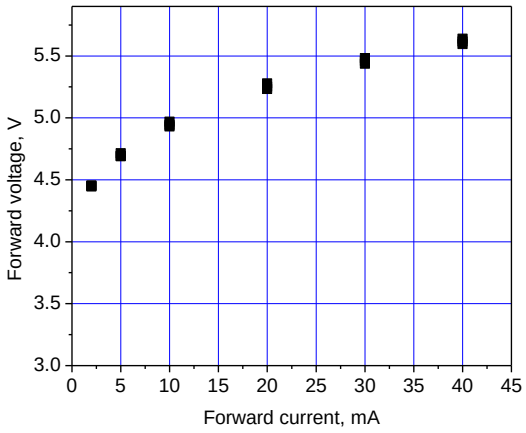
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

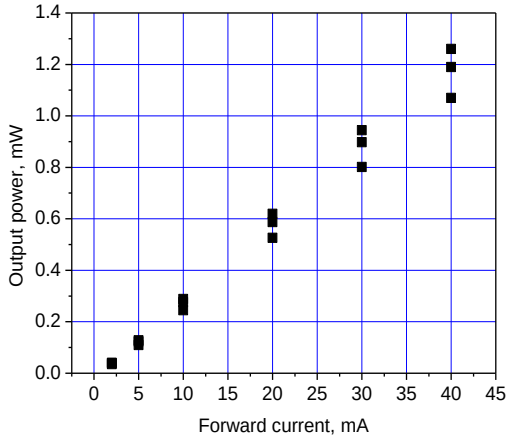
Typical Spectral Characteristics



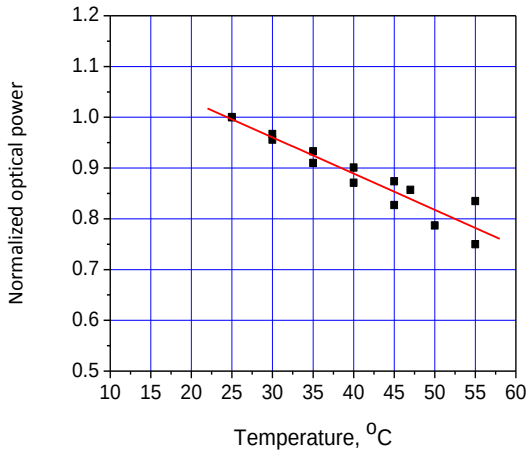


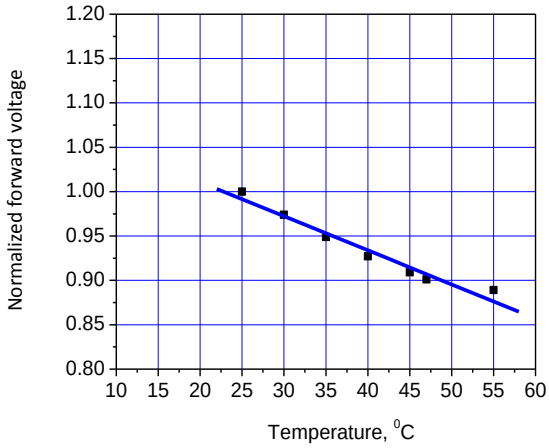
Typical LED Performance (T_A = 25°C, UVTOP310TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP320

Absolute Maximum Ratings
$T_A = 25^oC$

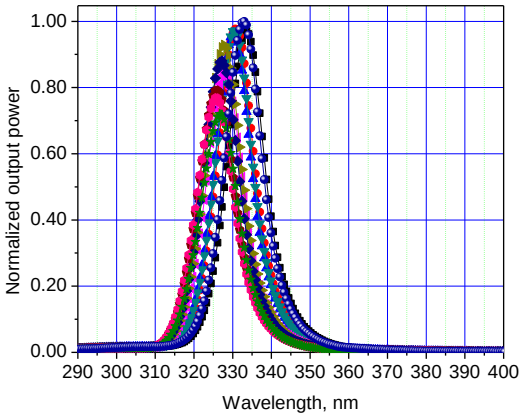
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	180
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	^oC	-30…+55
Storage Temperature	^oC	-30…+100

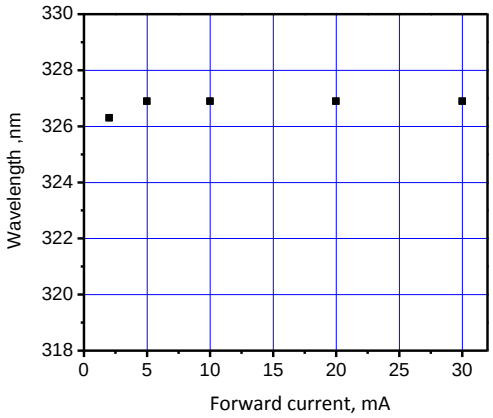
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (µW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (^{o})	FWHM (nm)	
Typical				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 320nm Typ: 325nm Max: 330nm	TO-18	FW	UVTOP320TO18FW	210	350	5.0	6.2	120	15	20
		BL	UVTOP320TO18BL	210	350	5.0	6.2	10	15	20
	TO-39	FW	UVTOP320TO39FW	240	400	5.0	6.2	120	15	20
		HS	UVTOP320TO39HS	180	300	5.0	6.2	7	15	20
		BL	UVTOP320TO39BL	240	400	5.0	6.2	7	15	20
		TFW	UVTOP320TO39TFW	120	200	5.0	6.2	120	15	20
		TFWR	UVTOP320TO39TFWR	165	275	5.0	6.2	120	15	20

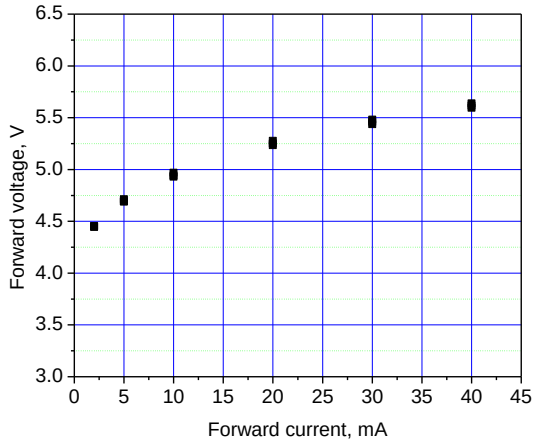
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

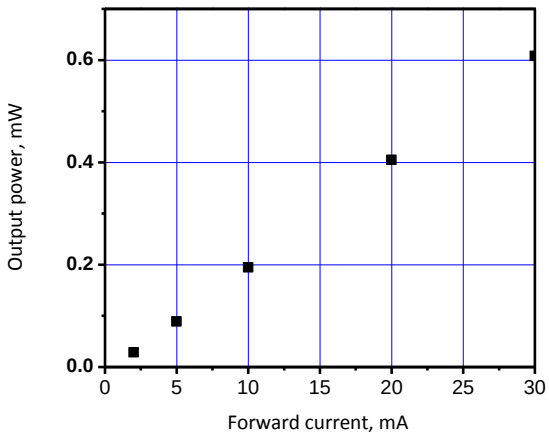
Typical Spectral Characteristics



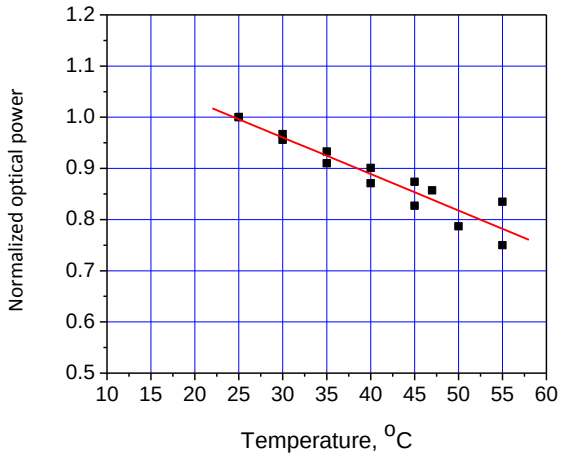


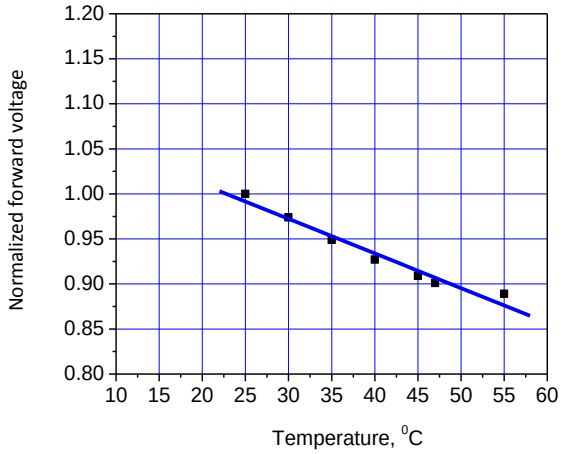
Typical LED Performance (T_A = 25°C, UVTOP320TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP335

Absolute Maximum Ratings
$T_A = 25^oC$

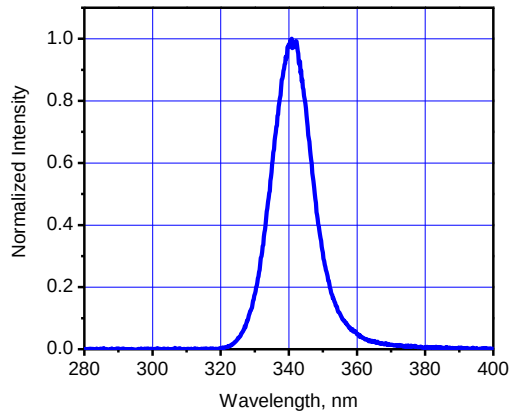
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	180
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	°C	-30…+55
Storage Temperature	°C	-30…+100

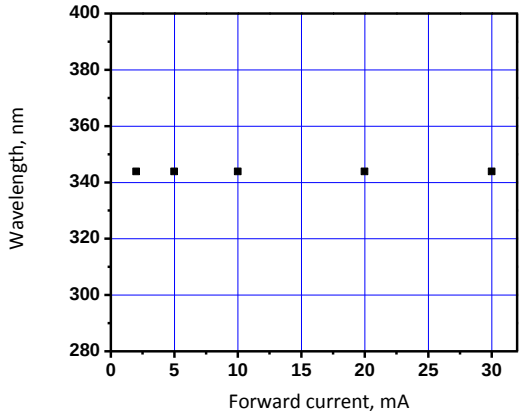
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (μW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (°)	FWHM (nm)	
Typical				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 335nm Typ: 340nm Max: 345nm	TO-18	FW	UVTOP335TO18FW	210	350	5.0	6.2	120	15	20
		BL	UVTOP335TO18BL	210	350	5.0	6.2	10	15	20
	TO-39	FW	UVTOP335TO39FW	240	400	5.0	6.2	120	15	20
		HS	UVTOP335TO39HS	180	300	5.0	6.2	7	15	20
		BL	UVTOP335TO39BL	240	400	5.0	6.2	7	15	20
		TFW	UVTOP335TO39TFW	120	200	5.0	6.2	120	15	20
		TFWR	UVTOP335TO39TFWR	165	275	5.0	6.2	120	15	20

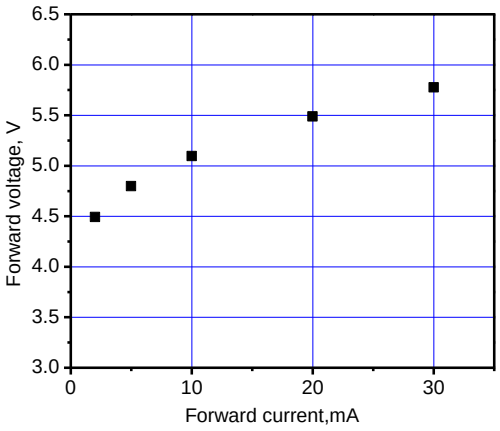
Notes:
Peak wavelength measurement tolerance is ± 2 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

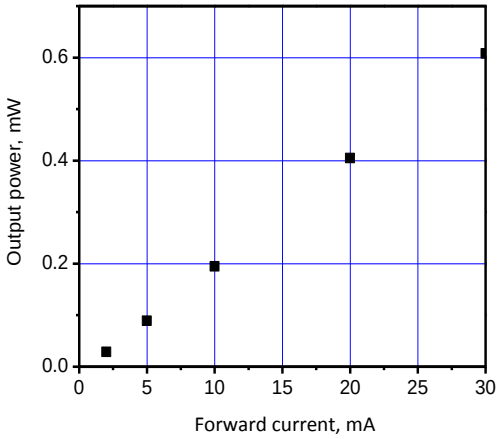
Typical Spectral Characteristics



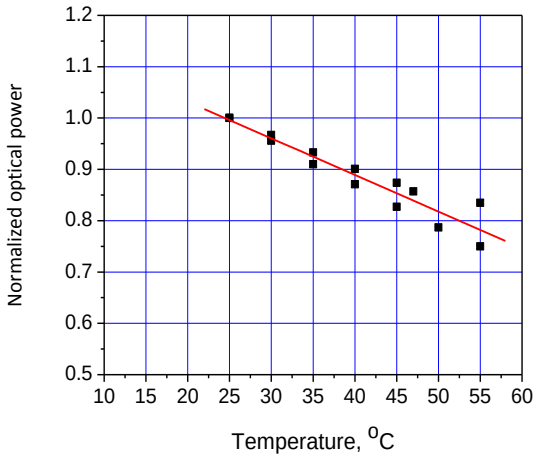


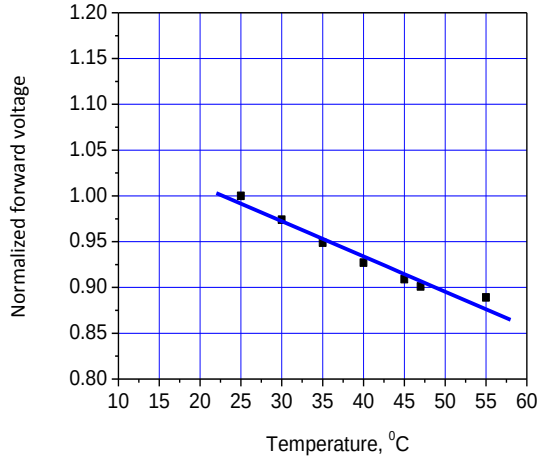
Typical LED Performance (T_A = 25°C, UVTOP335TO39FW)





Typical Temperature Dependence (I_F = 20mA)





UVTOP355

Absolute Maximum Ratings
$T_A = 25^oC$

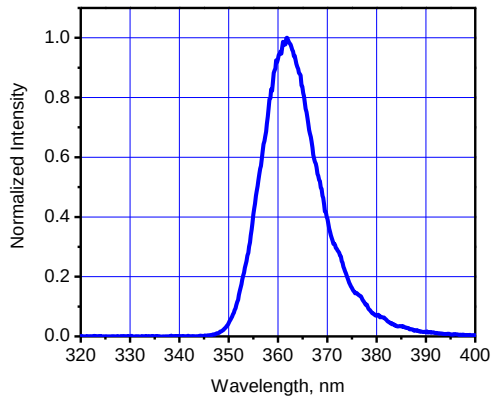
Parameter	Unit	Maximum Rated Value (TO-39)
Power Dissipation, DC	mW	180
Forward Current, DC	mA	30
Pulsed Forward Current (1% duty factor, 1KHz frequency)	mA	200
Reverse Voltage	V	-6
Operating Temperature Range	^oC	-30…+55
Storage Temperature	^oC	- 30…+100

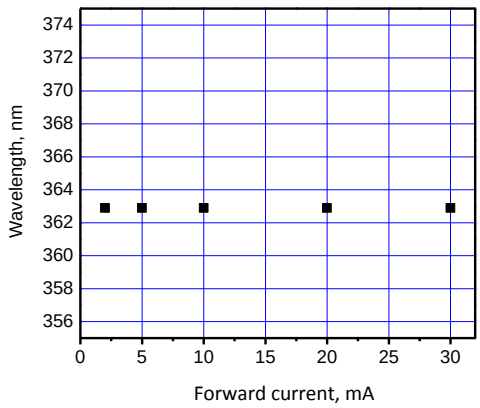
Electro-Optical Characteristics
$T_A = 25^oC$
$I_F = 20mA$

Peak Wavelength λ_p (nm)	Package	Window	Part Number	Optical Power P_{out} (μW)		Forward Voltage V_f (V)		Viewing Angle $2\theta_{1/2}$ (^{o})	FWHM (nm)	
Typical				Min	Typ	Typ	Max	Typ	Typ	Max
Min: 355nm Typ: 365nm Max: 370nm	TO-18	FW	UVTOP355TO18FW	480	800	4.5	6.5	120	15	20
		BL	UVTOP355TO18BL	480	800	4.5	6.5	10	15	20
	TO-39	FW	UVTOP355TO39FW	480	800	4.5	6.5	120	15	20
		HS	UVTOP355TO39HS	330	550	4.5	6.5	7	15	20
		BL	UVTOP355TO39BL	480	800	4.5	6.5	7	15	20
		TFW	UVTOP355TO39TFW	195	325	4.5	6.5	120	15	20
		TFWR	UVTOP355TO39TFWR	390	650	4.5	6.5	120	15	20

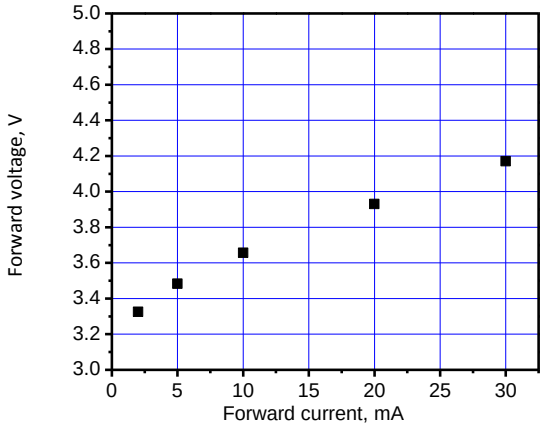
Notes:
Peak wavelength measurement tolerance is ± 3 nm
Optical power output measurement tolerance is ± 10%
Forward voltage measurement tolerance is ± 2%

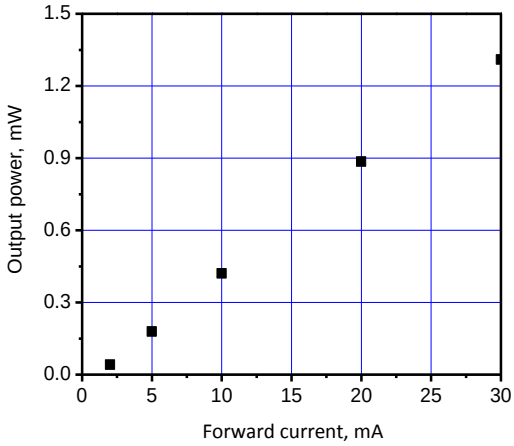
Typical Spectral Characteristics



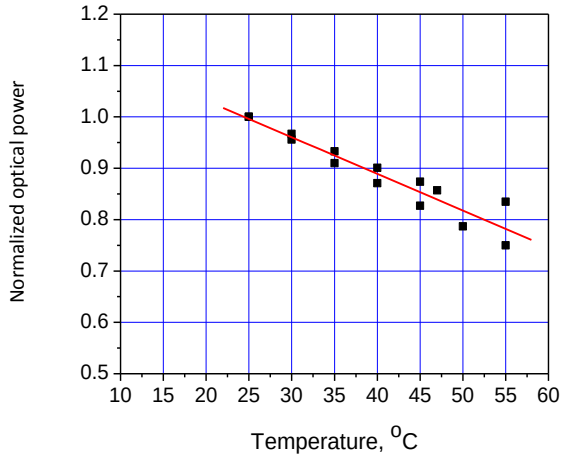


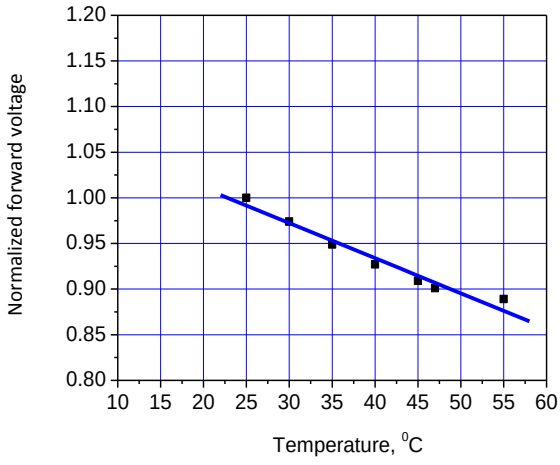
Typical LED Performance (T_A = 25°C, UVTOP355TO39FW)





Typical Temperature Dependence (I_F = 20mA)





Cautions

UV Light

These devices are ultraviolet LEDs. During operation, the LED emits high intensity ultraviolet (UV) light, which is harmful to skin and eyes.

UV light is hazardous to skin and may cause cancer. Avoid exposure to UV light when LED is operational.

Precautions must be taken to avoid looking directly at the UV light without the use of UV light protective glasses. Do not look directly at the front of the LED or at the LED's lens when LED is operational.

Attach the following warning labels on products/systems that use UV LEDs.

Static Electricity

These products are ESD (electrostatic discharge) sensitive; static electricity and surge voltages seriously damage UV LEDs and can result in complete failure of the device. Precautions must be taken against ESD when handling or operating these devices.

Operating Conditions

In order to ensure the correct functioning of these LEDs, compliance to the maximum electrical specifications is paramount. These LEDs are particularly sensitive to any current value that exceeds the absolute maximum rating of the product. Any applied current in excess of the maximum specification will cause damage and possible complete failure of the product.

The current flowing in a LED is an exponential function of the voltage across it. A small change in voltage can produce a very large change in current and lead to complete failure of the LED. The use of current regulated drive circuits are recommended for these products.

Any attempt to drive these UV LEDs with a voltage source instead of a current source will cause damage and possible complete failure of the product.

Soldering Conditions and Precautions

Solder no closer than 3mm from the base of the header

Following conditions must be avoided during soldering: overheating, ESD, mechanical shock, vibration, ultrasonic shock, mechanical damage and contamination.

- Only solder to the package leads. Soldering to the LED header or the cap will result in damage to the device.
- If clamping the LED is required, mechanical stress on the LED should be minimized.
- Mechanical stress, shock and vibration must be avoided during soldering.
- Do not mount the LED directly on the PCB or heat sink by soldering directly to the LED header or cap.
- Only use non-corrosive flux.
- Only cut device leads at room temperature using an ESD protected tool. Do not apply stress to the leads while hot.
- Do not apply current to the device until it has cooled down to room temperature after soldering.
- When forming leads, the leads should be bent at a point at least 3mm from the base of the header.
- Form leads prior to soldering.
- Do not use header or can of LED to form leads.

Recommended soldering conditions:

Dip Soldering		Hand Soldering	
Pre-Heat Time	30 seconds, max.	Temperature at Solder Point	190° C
Solder Bath Temperature	190° C	Soldering Time	5 seconds, max.
Dipping Time	5 seconds, max.		

The above table contains the maximum specifications for the soldering conditions. However, it is recommended that soldering always be performed at the lowest possible temperature.

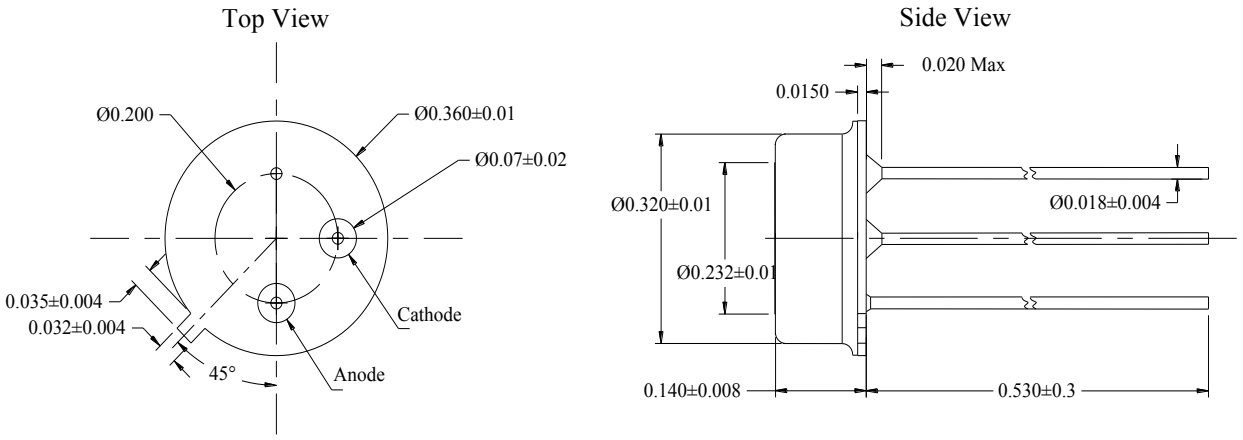
Cleaning

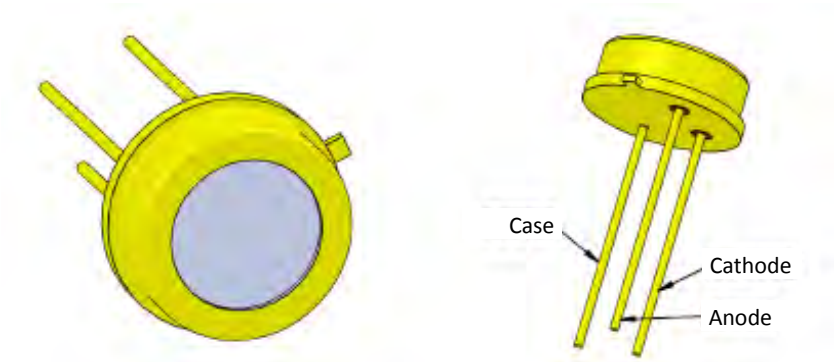
Cleaning with isopropyl alcohol is recommended. Propanol and ethyl alcohol may also be used. DO NOT USE acetone, chloroseen, trichloroethylene, or MKS to clean the LEDs.

Do not use ultrasonic cleaners with the LEDs.

Outline Drawings

TO39 with Flat Window





All dimensions are labeled in inches. Dimensions without tolerances are nominal.

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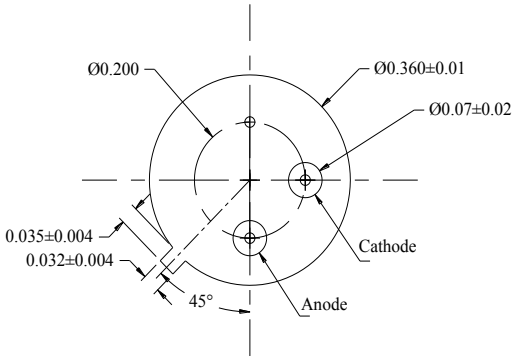
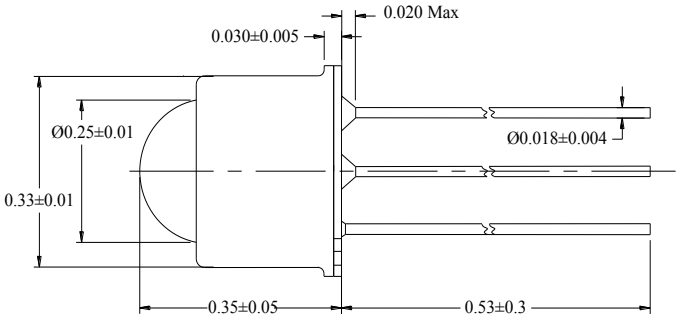
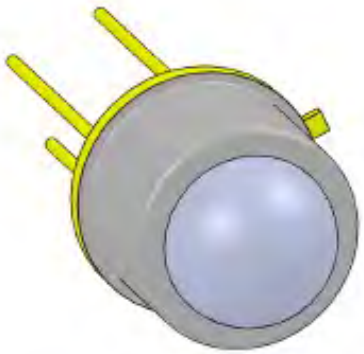
TO39 with Ball Lens

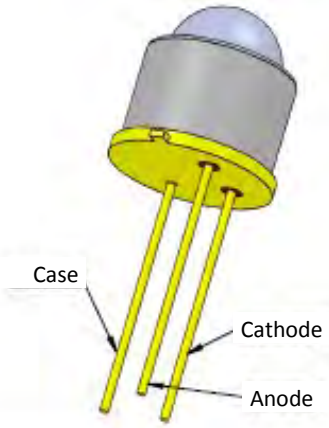
Top View

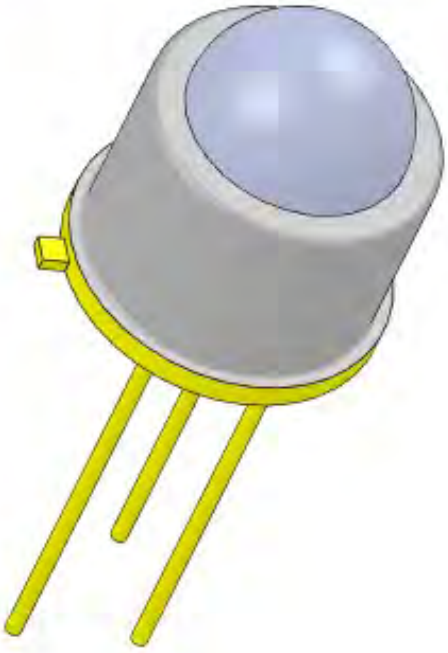


Side View





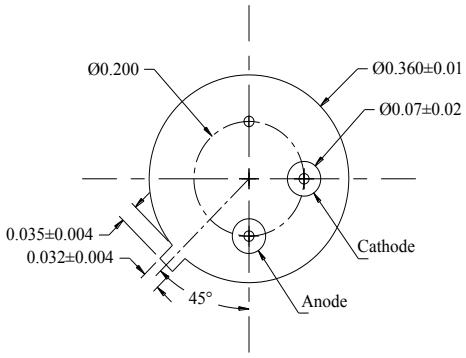




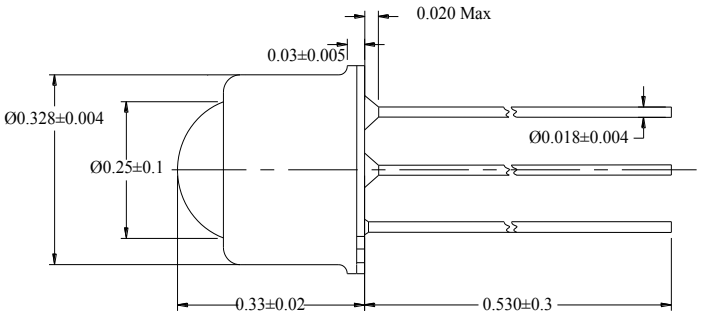
All dimensions are labeled in inches. Dimensions without tolerances are nominal.

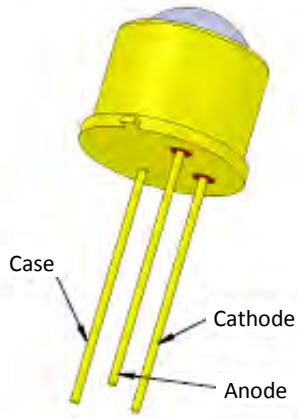
TO39 with Hemispherical Lens

Top View



Side View

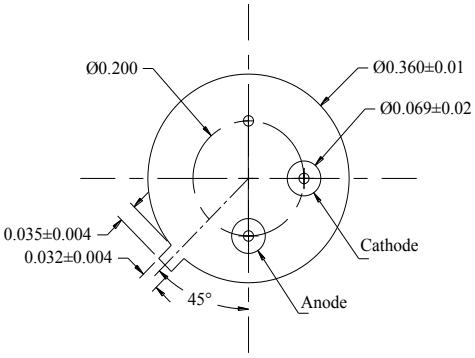




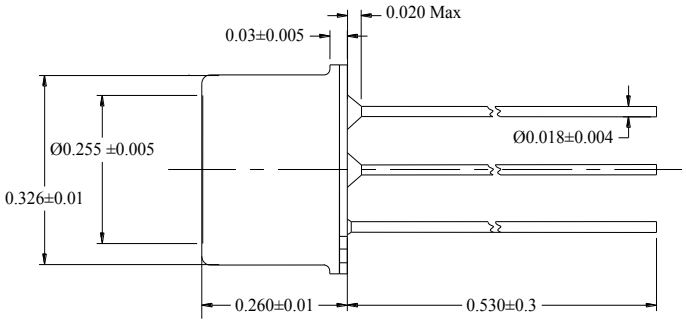
All dimensions are labeled in inches. Dimensions without tolerances are nominal.

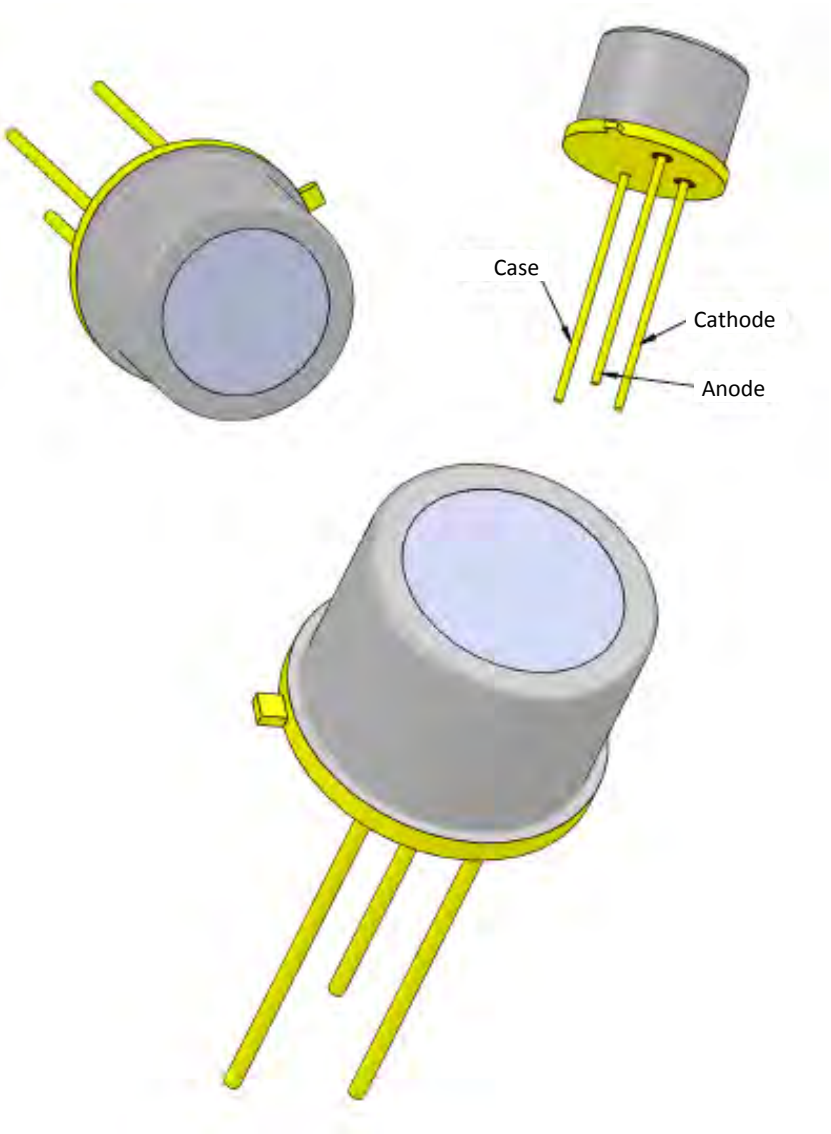
TO39 with Tall Flat Window

Top View



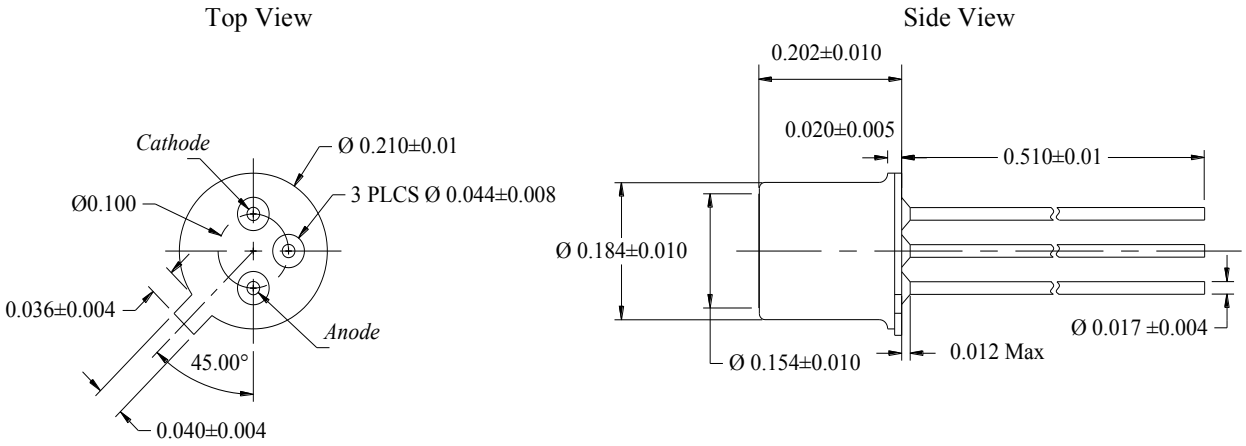
Side View

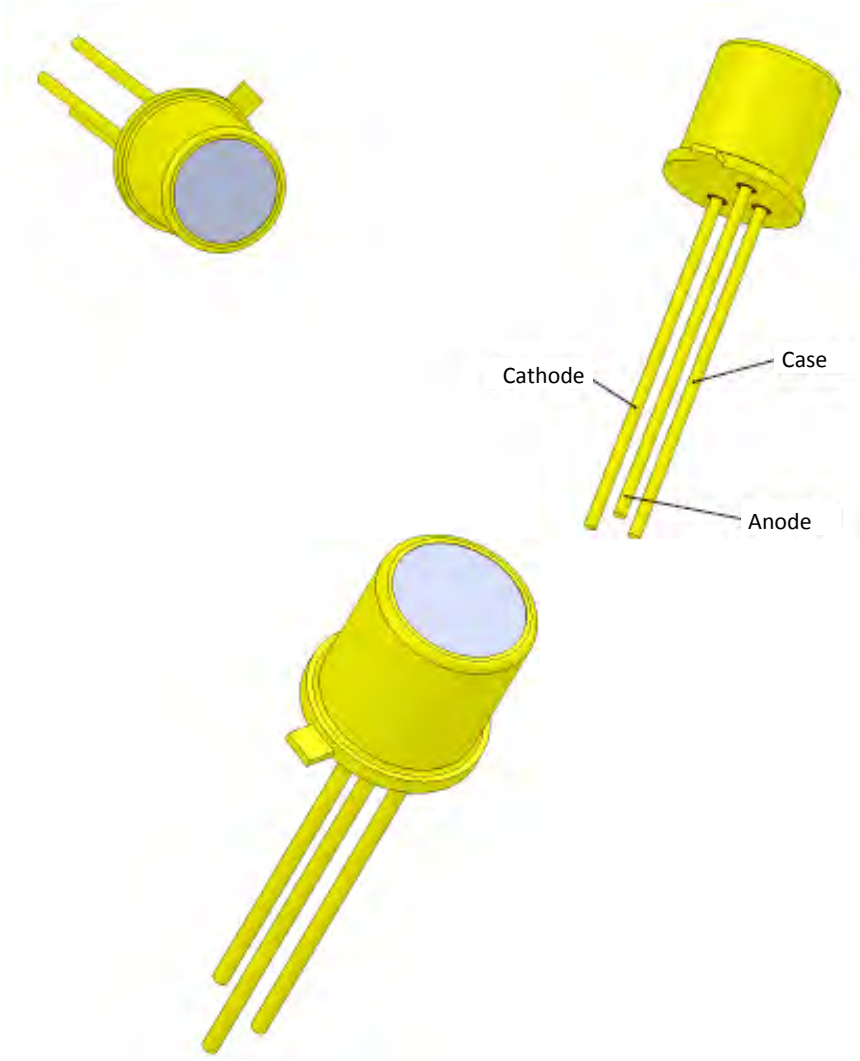




All dimensions are labeled in inches. Dimensions without tolerances are nominal.

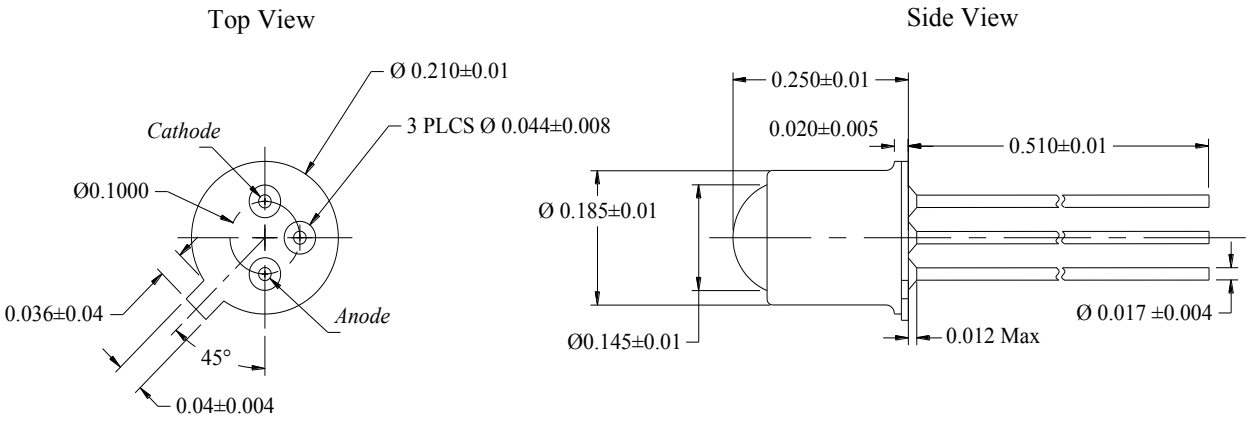
TO18 with Flat Window

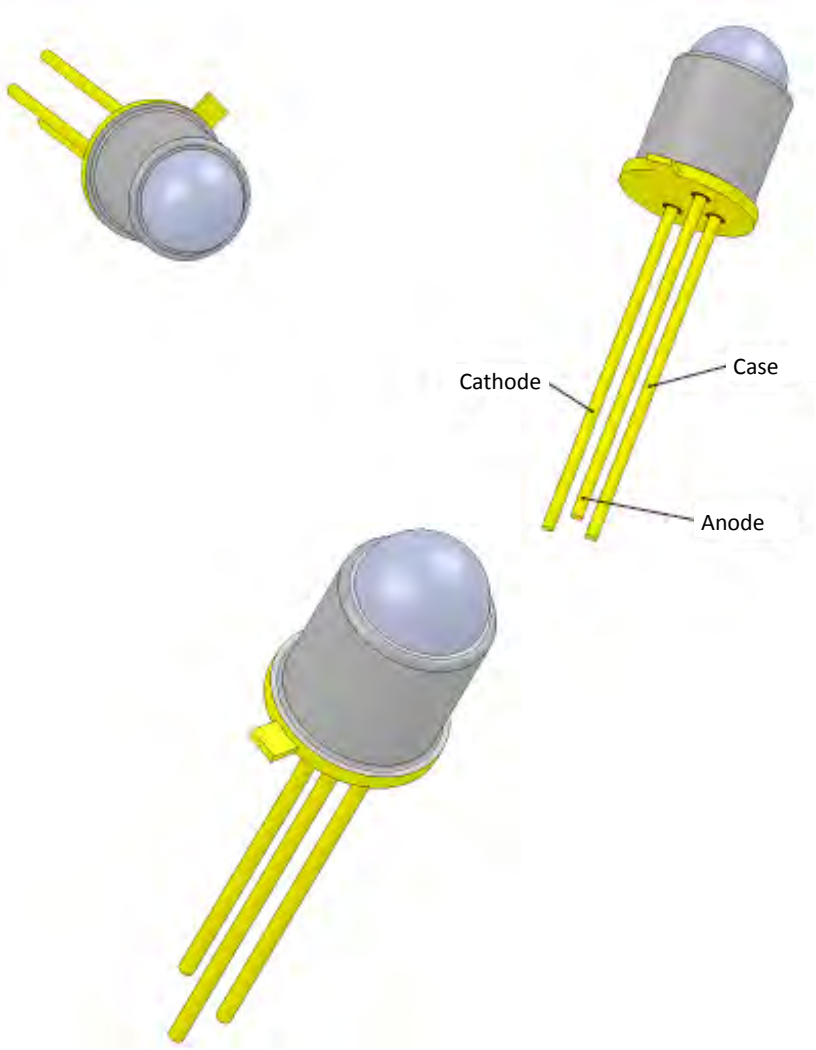




All dimensions are labeled in inches. Dimensions without tolerances are nominal.

TO18 with Ball Lens

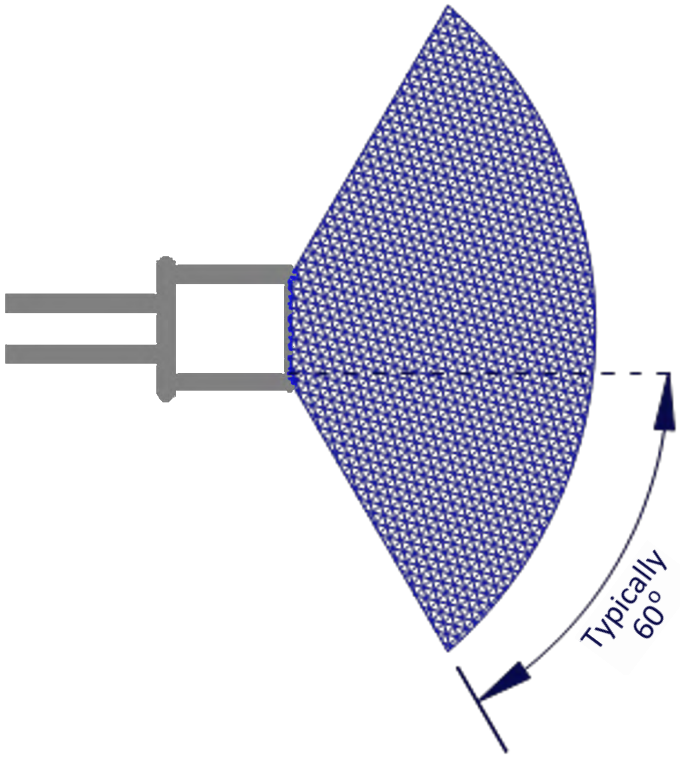




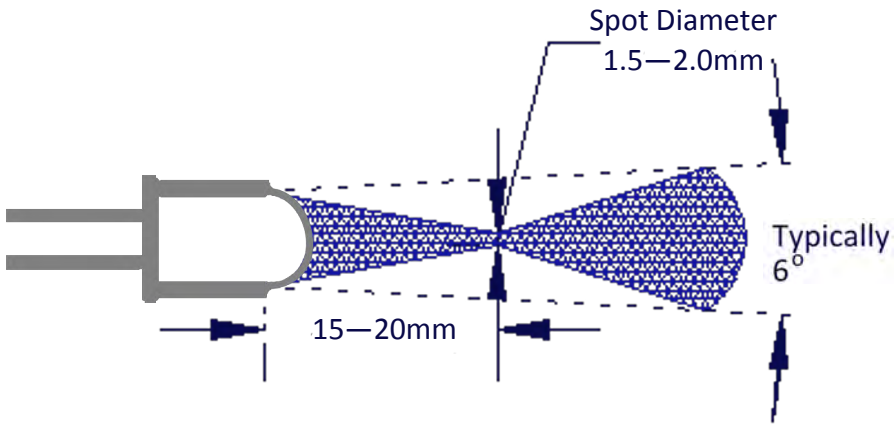
All dimensions are labeled in inches. Dimensions without tolerances are nominal.

Typical Emission Pattern

Flat Window



Ball Lens



Hemispherical Lens

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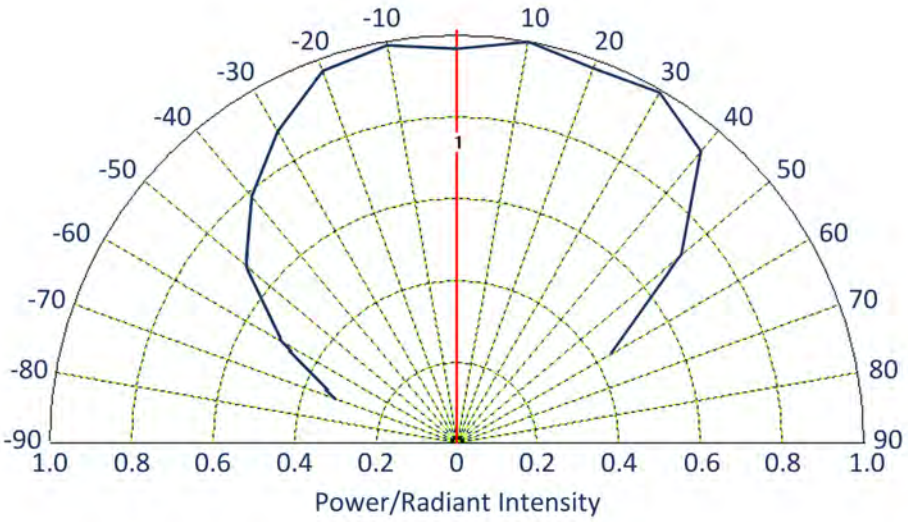
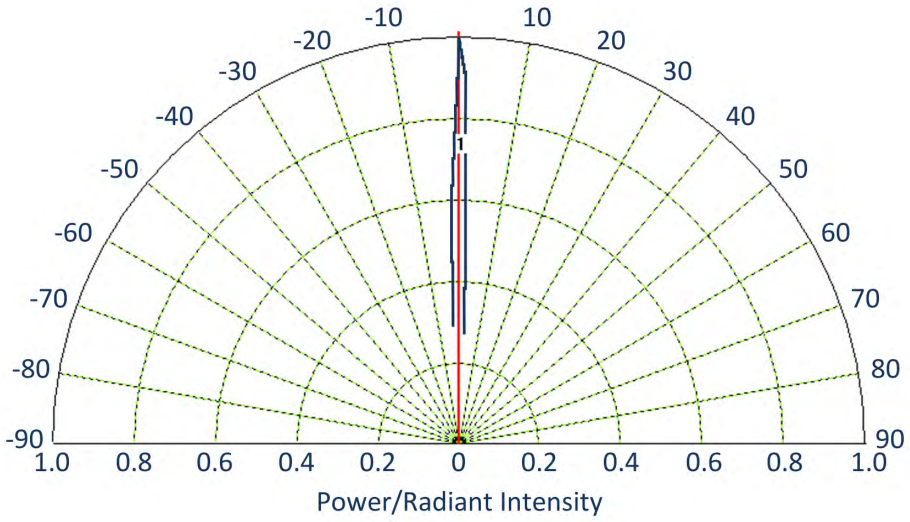
Typical Angular Diagrams

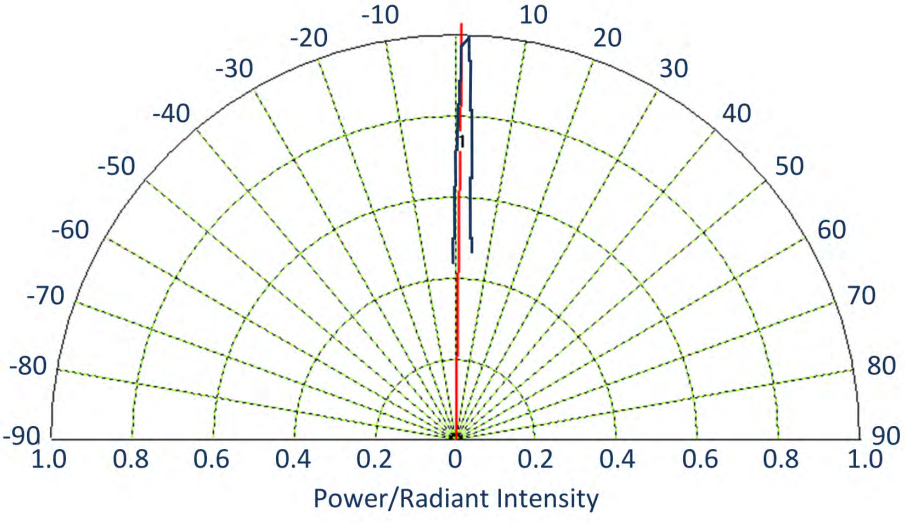
Flat Window



Ball Lens



Hemispherical Lens



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