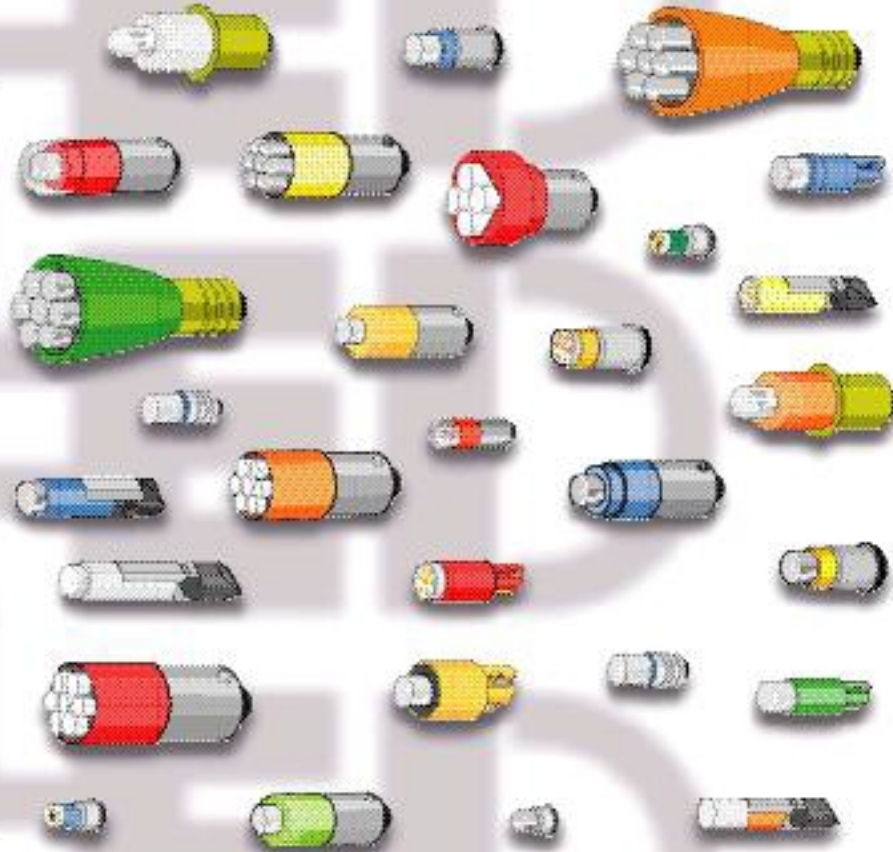


# miniature based

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*Miniature Based LED Lamps*



**LED**<sup>®</sup>  
**LEDTRONICS, INC.**  
**THE FUTURE OF LIGHT**

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[www.DataSheet4U.com](http://www.DataSheet4U.com)

Once limited to simple status indicators, Light Emitting Diodes (LEDs) now play prominent roles in back lighting, panel indication, decorative illumination, emergency lighting, animated signage, etc.... The emergence of LEDs as a viable alternative to incandescent lighting can be attributed to new manufacturing technologies, packaging innovations and an increasing number of colors. These factors along with the growing awareness of the advantages of LEDs (e.g., a life span measured in years not hours, vivid sunlight-visible colors and low power requirements) have engineers, product designers, purchasing agents and component vendors viewing LEDs in a whole new light.

For many applications LED lamps are superior to incandescent lighting. So why is it that in tens of millions of switches, indicators, control panels, signs, annunciators, displays, decor lights and dozens of other applications, design engineers still specify incandescent technology? It might be that they're just a few years behind what's really happening in LED illumination.

Although advances made in LED technology in the past few years have dramatically broadened the applications for these rugged little light sources, it wasn't that long ago that red was the only "daylight-visible" colored LED. And that wasn't the only thing limiting their use!

Unlike incandescent bulbs that give off the full spectrum of light in a spherical pattern, LEDs emit a focused beam of a single wavelength (color) in only one direction, in a variety of angles. For many applications, such as indicators or switch illuminators, this is not a problem, but it took the development of multi-chip arrays and high-flux LED chips to begin to achieve the effect of an incandescent filament.

Major advancements in LED technology have taken place in recent years such as development of new "doping" technologies that increase LED light output by as much as 20 times over earlier generations, and allow the production of daylight-visible LEDs in virtually any color of the spectrum. In addition to red, yellow, and amber/orange, LEDs are now available in many colors from leaf green to ultra blue. Even white light, long thought to be an impossibility, is now available in three different shades as a light-emitting diode.

The efficiency of LEDs is most apparent in applications requiring color. Light from a typical incandescent bulb must be filtered so that only light from a particular part of the spectrum (e.g., red, amber or green, etc...) for example—is visible. While LEDs deliver 100 percent of their energy as colored light, incandescent bulbs waste 90 percent or more of their energy in light blocked by the colored lens or filter. Incandescent bulbs also waste 80 percent to 90 percent of their energy on heat generation to reach the temperature for which (Kelvin scale) they are designed.

The point is that what was once a fairly marginal light source isn't marginal any more. In many applications, LEDs exceed the energy available from incandescent bulbs and offer significant additional benefits making LED clusters and lamps as friendly to the environment as they are to the operating budget.

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## Series Number – Page Number

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5SB206	25	BPF200	13	SL424	22
5SBF200	25	BSD1174	27	SL464	22
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BF3127	14,15,16,17	G206	11		
BF321	14,15,16,17	GF200	11		
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# Application Notes

Will the Panel LED replace another manufacturers parts? Dialight, Data Display Products, Industrial Devices Inc., etc...  
If so, what is the part number?

Mounting Type? Snap-in, Snap-in with mount clip, Bolt-on, Relampable, etc...

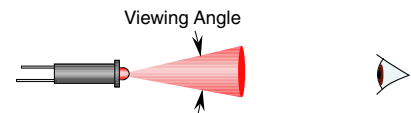
Mounting Diameter & Panel Thickness? What is the hole diameter into which the lamp assembly must fit? How thick is the wall of the panel?

Operating Voltage and Polarity? Actual open line voltage? AC or DC? Does it fluctuate?  
Indicate the Minimum/Maximum values?

Terminal Type? Are solid wire (0.02 sq.), pigtail flexible wire lead (24AWG), quick disconnect (3/16 rectangular), solder lug, turret, or screw-on type terminals preferred?

Viewing Distance? How far is the operator / technician when the indicator must be visible? 5 to 10 feet, 20 to 50 feet, 100 to 200 feet, 500 to 1000 feet?

Viewing Angle? 0 to 12 degrees – Narrow Beam  
30 to 60 degrees – Medium Beam  
100 to 160 degrees – Wide Beam



LED Color? Ultra Red, Hi-Efficiency Red, Standard Red, Orange, Yellow, Cool white, Ultra Green, Aqua Green, Blue

Lens Type? Diffused lenses are used in applications where direct viewing or indication is needed. Clear lenses are used in application where illumination is needed. Is the lens fluted?

Ambient Lighting? Standard office lighting. High ceiling factory lighting. Indirect sunlight. Direct sunlight

Potential Quality and Target Price? How many pieces are required within a given time frame?  
How much budgetary funding is allowed for this item or project?



# Based LED Questionnaire

Date \_\_\_\_\_

## About you

The following information assists LEDtronics in determining the most appropriate FREE LED product SAMPLE. Fax to (310) 534-1424 for fast response.






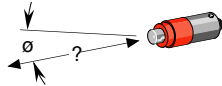
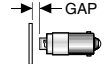
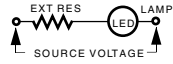
Name: \_\_\_\_\_ Phone: ( ) \_\_\_\_\_  
 Company: \_\_\_\_\_ Fax: ( ) \_\_\_\_\_  
 Address: \_\_\_\_\_ M/S: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 E-Mail: \_\_\_\_\_

## About your company

What does your company manufacture \_\_\_\_\_  
 Is your company  Govt/Military  Govt Contractor  OEM  Distributor  Utility  MRO  
 Requirement is for  R&D  Replacement  New Application  Other \_\_\_\_\_  
 Total annual quantity \_\_\_\_\_  
 Target price \_\_\_\_\_ Time frame  Immediate  3 months  6 months

For internal use only  
 SIC code: \_\_\_\_\_  
 Originator: \_\_\_\_\_  
 Rep: \_\_\_\_\_  
 Current Customer  Yes  No

## About your application

 Incandescent/LED No. \_\_\_\_\_ mAmps \_\_\_\_\_ Design Volts \_\_\_\_\_ MSCD \_\_\_\_\_  
 Base size  T1  T2  T1<sup>3/4</sup>  T3<sup>3/4</sup>  S6  15mm  Other \_\_\_\_\_  
 Base type  Flange  Bayonet  Wedge  Bi-pin  Screw  Groove  Other \_\_\_\_\_  
 Operating voltage (max)  5V  12V  24V  28V  120VAC  Other \_\_\_\_\_  
 Voltage (type)  AC  DC  Bipolar Polarity of center contact  +  -  
 Lens color  Red  Orange  Amber  Yellow  White  Green  Blue  Other \_\_\_\_\_  
 Lens type  Clear  Diffused Lens size  16mm  22mm  30mm  Other \_\_\_\_\_  
 Lens shape  Circular  Square  Rectangular  
 Jelly-jar  Other \_\_\_\_\_  
 Ambient lighting conditions  Indirect sunlight  Direct sun  Office  Lowlight  Darkroom  
 Maximum viewing distance desired  1 ft  5 ft  10 ft  20 ft  50 ft  Other \_\_\_\_\_  
 Maximum viewing angle desired  Straight on  30;  60;  90;  Other \_\_\_\_\_  
 Distance between top of lamp and lens/filter  1/8"  1/4"  1/2"  Other \_\_\_\_\_  
 Is an external resistor in series with the lamp  Yes  No If yes, Ohms \_\_\_\_\_ Watts \_\_\_\_\_  
 What is the source voltage if higher than the operating voltage of the lamp \_\_\_\_\_  
 Would like updated literature  Yes  No More info on:  Based  Panel  PCB  Discrete  Other \_\_\_\_\_  
 Applicable statutory and regulatory requirements  Yes  No Doc. No. \_\_\_\_\_

## Additional Notes/Sketches



# T1(3mm) Sub-Midget Based LEDs

Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  F121 Ceramic Base FF120 	682,685,714,718	FF120-0UR-005P	5V	20	100	120°	Center Contact Polarity P = Positive N = Negative  Replace FF120 With F120 Standard (65°) Beam Intensity 180 mcd/30 Ft.Cd
	7241	FF120-0UR-018P	18V	15	50		
	6839	FF120-0UR-024P	24V	12	33		
	6839	FF120-0UR-028P	28V	12	33		
<b>612nm Super Orange InGaAlP</b>  F121 Ceramic Base FF120 	682,685,714,718	FF120-0UO-005P	5V	20	85	120°	Center Contact Polarity P = Positive N = Negative  Replace FF120 With F120 Medium (50°) Beam Intensity 350 mcd
	7241	FF120-0UO-018P	18V	15	64		
	6839	FF120-0UO-024P	24V	12	51		
	6839	FF120-0UO-028P	28V	12	51		
<b>595nm Super Yellow InGaAlP</b>  F121 Ceramic Base FF120 	682,685,714,718	FF120-0UY-005P	5V	20	32	120°	Center Contact Polarity P = Positive N = Negative  Replace FF120 With F120 Medium (50°) Beam Intensity 1K mcd
	7241	FF120-0UY-018P	18V	15	21		
	6839	FF120-0UY-024P	24V	12	15		
	6839	FF120-0UY-028P	28V	12	15		
<b>8000K Cool White SiC/GaN</b>  F121 Ceramic Base FF120 	682,685,714,718	FF120-0CW-005P	5V	15	150	120°	Center Contact Polarity P = Positive N = Negative  Replace FF120 With F120 Std. (50°) Beam Intensity 650 mcd/75 Ft. cd
	7241	FF120-0CW-018P	18V	15	150		
	6839	FF120-0CW-024P	24V	10	100		
	6839	FF120-0CW-028P	28V	10	100		
<b>570nm Lime Green InGaAlP</b>  F121 Ceramic Base FF120 	682,685,714,718	FF120-0UG-005P	5V	20	36	120°	Center Contact Polarity P = Positive N = Negative  Replace FF120 With F120 Medium (50°) Beam Intensity 165 mcd @ 20 mA
	7241	FF120-0UG-018P	18V	15	27		
	6839	FF120-0UG-024P	24V	12	22		
	6839	FF120-0UG-028P	28V	12	22		
<b>525nm Aqua Green SiC/GaN</b>  F121 Ceramic Base FF120 	682,685,714,718	FF120-0AG-005P	5V	15	200	120°	Center Contact Polarity P = Positive N = Negative  Replace FF120 With F120 Narrow (15°) Beam Intensity 5K mcd/145 Ft.Cd
	7241	FF120-0AG-018P	18V	15	200		
	6839	FF120-0AG-024P	24V	10	150		
	6839	FF120-0AG-028P	28V	10	150		
<b>470nm Super Blue SiC/GaN</b>  F121 Ceramic Base FF120 	682,685,714,718	FF120-0PB-005P	5V	15	60	120°	Center Contact Polarity P = Positive N = Negative  Replace FF120 With F120 Std. (15°) Beam Intensity 1.5K mcd/32 Ft.Cd @ 15 mA
	7241	FF120-0PB-018P	18V	15	60		
	6839	FF120-0PB-024P	24V	10	45		
	6839	FF120-0PB-028P	28V	10	45		

All dimensions in inches. For millimeters multiply by 25.4

## Options

Series: F120 (No Resistor)  
 PN Example: F120-0UR-002F

Series: F121 (1 Chip, 160°)  
 PN Example: F121-0UY-005P

Series: F122 (2 Chip, 160°)  
 PN Example: F122-0UO-005P

Series: F124 (4 Chip, 160°)  
 PN Example: F124-0UR-028P

Series: HLD310 (Rear Mount)  
 PN Example: HLD310CW900-5V-P

Series: HLC310 (Front Mount)  
 PN Example: HLC310CB1K-5V-P

RFI EMI Shield

Holder: HLC2020

Lens: HL230

See Data Sheet Log #119 for Complete Information on Panel Mount LEDs

Log # 122A Rev 09-2000





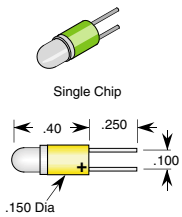


# T1(3mm) Sub-Midget Bi-Pin Based LEDs

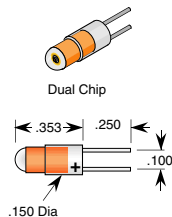
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  	7265,7680,7714	BPF120-0UR-005V	5V	20	100	120°	Contact Polarity V = DC only
		BPF120-0UR-014V	12/14V	15	50		Replace BPF120 With BP120 Standard (65°) Beam Intensity 180 mcd/30 Ft.Cd @ 20 mA
	7839	BPF120-0UR-024V	24V	12	33		
	7839	BPF120-0UR-028V	28V	12	33		
<b>612nm Super Orange InGaAlP</b>  	7265,7680,7714	BPF120-0UO-005V	5V	20	85	120°	Contact Polarity V = DC only
		BPF120-0UO-014V	12/14V	15	64		Replace BPF120 With BP120 Medium (50°) Beam Intensity 350 mcd@20 mA
	7839	BPF120-0UO-024V	24V	12	51		
	7839	BPF120-0UO-028V	28V	12	51		
<b>595nm Super Yellow InGaAlP</b>  	7265,7680,7714	BPF120-0UY-005V	5V	20	32	120°	Contact Polarity V = DC only
		BPF120-0UY-014V	12/14V	15	21		Replace BPF120 With BP120 Medium (50°) Beam Intensity 1K mcd @ 20 mA
	7839	BPF120-0UY-024V	24V	12	15		
	7839	BPF120-0UY-028V	28V	12	15		
<b>800K Cool White SiC/GaN</b>  	7265,7680,7714	BPF120-0CW-005V	5V	15	150	120°	Contact Polarity V = DC only
		BPF120-0CW-014V	12/14V	15	150		Replace BPF120 With BP120 Std (50°) Beam Intensity 650 mcd/75 Ft. cd @ 15 mA
	7839	BPF120-0CW-024V	24V	10	100		
	7839	BPF120-0CW-028V	28V	10	100		
<b>570nm Lime Green InGaAlP</b>  	7265,7680,7714	BPF120-0UG-005V	5V	20	36	120°	Contact Polarity V = DC only
		BPF120-0UG-014V	12/14V	15	27		Replace BPF120 With BP120 Medium (50°) Beam Intensity 165 mcd @ 20 mA
	7839	BPF120-0UG-024V	24V	12	22		
	7839	BPF120-0UG-028V	28V	12	22		
<b>525nm Aqua Green SiC/GaN</b>  	7265,7680,7714	BPF120-0AG-005V	5V	15	200	120°	Contact Polarity V = DC only
		BPF120-0AG-014V	12/14V	15	200		Replace BPF120 With BP120 Narrow (15°) Beam Intensity 5K mcd/145 Ft.Cd @ 15 mA
	7839	BPF120-0AG-024V	24V	10	150		
	7839	BPF120-0AG-028V	28V	10	150		
<b>470nm Super Blue SiC/GaN</b>  	7265,7680,7714	BPF120-0PB-005V	5V	15	60	120°	Contact Polarity V = DC only
		BPF120-0PB-014V	12/14V	15	60		Replace BPF120 With BP120 Std (15°) Beam Intensity 1.5K mcd/32 Ft.Cd @ 15 mA
	7839	BPF120-0PB-024V	24V	10	45		
	7839	BPF120-0PB-028V	28V	10	45		

All dimensions in inches. For millimeters multiply by 25.4

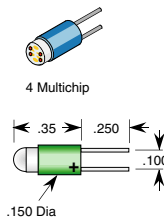
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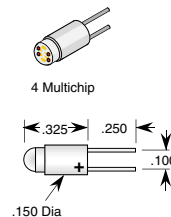
Series: BP120 (No Resistor)  
PN Example: BP120-0UY-005B



Series: BP122 (2Chip 160°)  
PN Example: BP122-0CO-005B



Series: BP124 (4 Chip 160°)  
PN Example: BP124-0UG-005B










Series: BP124 (4 Chip 160°)  
PN Example: BP124-0CW-005B

Log # 122B Rev 09-2000

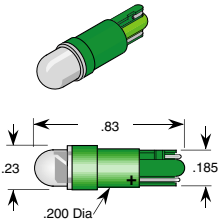


# T1-1/2 (4.5mm) Midget Wedge Based LEDs

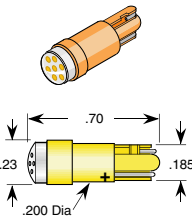
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25jC)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  WF150	56,79,84,86	WF150-OUR-005V	5V	20	115	120j	Contact Polarity V = DC only
	18,37,73,74	WF150-OUR-014V	12/14V	20	115		Replace WF150 With W150 Narrow Beam (15j) Intensity 1.6K mcd/52 Ft.Cd @20 mA
	17, 85	WF150-OUR-024V	24V	15	85		
	17, 85	WF150-OUR-028V	28V	15	85		
<b>612nm Super Orange InGaAlP</b>  WF150	56,79,84,86	WF150-UOU-005V	5V	20	130	120j	Contact Polarity V = DC only
	18,37,73,74	WF150-UOU-014V	12/14V	20	130		Replace WF150 With W150 Narrow Beam (15j) Intensity 3.5K mcd@20 mA
	17, 85	WF150-UOU-024V	24V	15	98		
	17, 85	WF150-UOU-028V	28V	15	98		
<b>595nm Super Yellow InGaAlP</b>  WF150	56,79,84,86	WF150-UUY-005V	5V	20	116	120j	Contact Polarity V = DC only
	18,37,73,74	WF150-UUY-014V	12/14V	20	116		Replace WF150 With W150 Narrow Beam (15j) Intensity 3.2K mcd@20 mA
	17, 85	WF150-UUY-024V	24V	15	75		
	17, 85	WF150-UUY-028V	28V	15	75		
<b>8000K Cool White SiC/GaN</b>  WF150	56,79,84,86	WF150-OCW-005V	5V	15	160	120j	Contact Polarity V = DC only
	18,37,73,74	WF150-OCW-014V	12/14V	15	160		Replace WF150 With W150 Std. Beam (50j) Intensity 750 mcd/75 Ft. cd @ 15 mA
	17, 85	WF150-OCW-024V	24V	15	160		
	17, 85	WF150-OCW-028V	28V	15	160		
<b>570nm Lime Green InGaAlP</b>  WF150	56,79,84,86	WF150-UUG-005V	5V	20	58	120j	Contact Polarity V = DC only
	18,37,73,74	WF150-UUG-014V	12/14V	20	58		Replace WF150 With W150 Narrow Beam (12-15j) Intensity 1K mcd @ 20 mA
	17, 85	WF150-UUG-024V	24V	15	44		
	17, 85	WF150-UUG-028V	28V	15	44		
<b>525nm Aqua Green SiC/GaN</b>  WF150	56,79,84,86	WF150-OAG-005V	5V	15	400	120j	Contact Polarity V = DC only
	18,37,73,74	WF150-OAG-014V	12/14V	15	400		Replace WF150 With W150 Narrow Beam (15j) Intensity 7K mcd/250 Ft.Cd @ 15 mA
	17, 85	WF150-OAG-024V	24V	15	400		
	17, 85	WF150-OAG-028V	28V	15	400		
<b>470nm Super Blue SiC/GaN</b>  WF150	56,79,84,86	WF150-OPB-005V	5V	15	125	120j	Contact Polarity V = DC only
	18,37,73,74	WF150-OPB-014V	12/14V	15	125		Replace WF150 With W150 Std. Beam (15j) Intensity 2K mcd/60 Ft.Cd @ 15 mA
	17, 85	WF150-OPB-024V	24V	15	125		
	17, 85	WF150-OPB-028V	28V	15	125		

All dimensions in inches. For millimeters multiply by 25.4

### Options



Series: W150  
PN Example: W150-OAG-005B


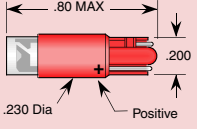

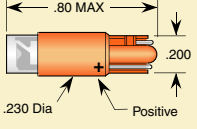
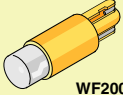
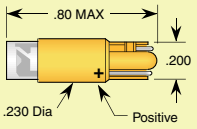

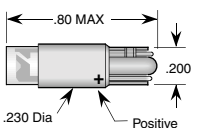

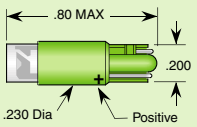

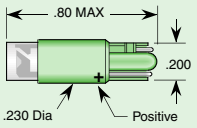
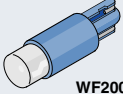
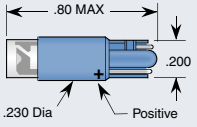


Series: W156  
PN Example: W156-UUY-005B



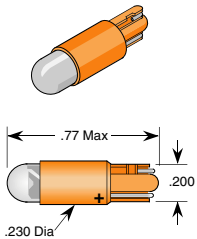


# T1-3/4 (5mm) Midget Wedge Based LEDs

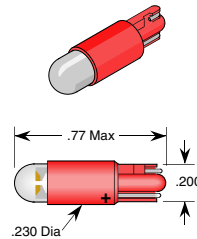
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  WF200		56,79,84,86	WF200-0UR-005V	5V	20	115	120° Contact Polarity V = DC only Replace WF200 With W200 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @20 mA
		18,37,73,74	WF200-0UR-014V	12/14V	20	115	
		17, 85	WF200-0UR-024V	24V	15	85	
		17, 85	WF200-0UR-028V	28V	15	85	
<b>612nm Super Orange InGaAlP</b>  WF200		56,79,84,86	WF200-0UO-005V	5V	20	130	120° Contact Polarity V = DC only Replace WF200 With W200 Narrow Beam (15°) Intensity 3.5K mcd @ 20 mA
		18,37,73,74	WF200-0UO-014V	12/14V	20	130	
		17, 85	WF200-0UO-024V	24V	15	98	
		17, 85	WF200-0UO-028V	28V	15	98	
<b>595nm Super Yellow InGaAlP</b>  WF200		56,79,84,86	WF200-0UY-005V	5V	20	116	120° Contact Polarity V = DC only Replace WF200 With W200 Narrow Beam (15°) Intensity 3.2K mcd @ 20 mA
		18,37,73,74	WF200-0UY-014V	12/14V	20	116	
		17, 85	WF200-0UY-024V	24V	15	75	
		17, 85	WF200-0UY-028V	28V	15	75	
<b>8000K Cool White SiC/GaN</b>  WF200		56,79,84,86	WF200-0CW-005V	5V	15	160	120° Contact Polarity V = DC only Replace WF200 With W200 Std. Beam (50°) Intensity 750 mcd/75 Ft. cd @ 15 mA
		18,37,73,74	WF200-0CW-014V	12/14V	15	160	
		17, 85	WF200-0CW-024V	24V	15	160	
		17, 85	WF200-0CW-028V	28V	15	160	
<b>570nm Lime Green InGaAlP</b>  WF200		56,79,84,86	WF200-0UG-005V	5V	20	58	120° Contact Polarity V = DC only Replace WF200 With W200 Narrow Beam (12-15°) Intensity 1K mcd @ 20 mA
		18,37,73,74	WF200-0UG-014V	12/14V	20	58	
		17, 85	WF200-0UG-024V	24V	15	44	
		17, 85	WF200-0UG-028V	28V	15	44	
<b>525nm Aqua Green SiC/GaN</b>  WF200		56,79,84,86	WF200-0AG-005V	5V	15	400	120° Contact Polarity V = DC only Replace WF200 With W200 Narrow Beam (15°) Intensity 7K mcd/250 Ft.Cd @ 15 mA
		18,37,73,74	WF200-0AG-014V	12/14V	15	400	
		17, 85	WF200-0AG-024V	24V	15	400	
		17, 85	WF200-0AG-028V	28V	15	400	
<b>470nm Super Blue SiC/GaN</b>  WF200		56,79,84,86	WF200-0PB-005V	5V	15	125	120° Contact Polarity V = DC only Replace WF200 With W200 Std. Beam (15°) Intensity 2K mcd/60 Ft.Cd @ 15 mA
		18,37,73,74	WF200-0PB-014V	12/14V	15	125	
		17, 85	WF200-0PB-024V	24V	15	125	
		17, 85	WF200-0PB-028V	28V	15	125	

All dimensions in inches. For millimeters multiply by 25.4

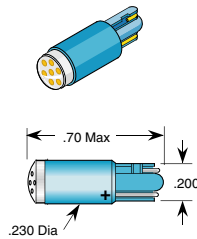
## Options



Series: W200  
PN Example: W200-0UO-005B




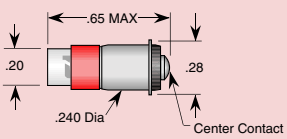

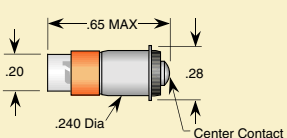

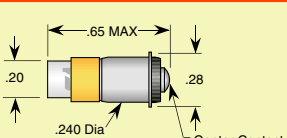

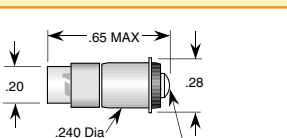

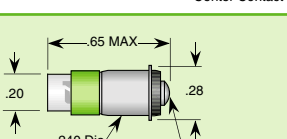

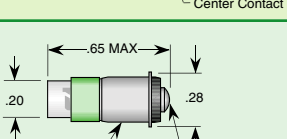

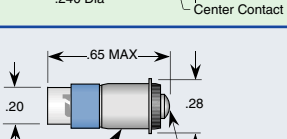
Series: W202  
PN Example: W202-0UR-005B



Series: W206  
PN Example: W206-0PB-005B

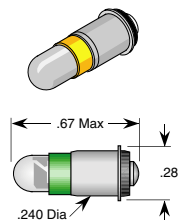


# T1-3/4 (5mm) Midget Flange Based LEDs

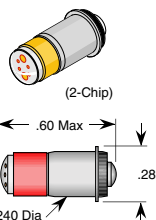
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  FF200		328,345,350	FF200-0UR-006B	5/6V	20	115	120° Center Contact Polarity B = BiPolar AC/DC Replace FF200 With F200 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @20 mA
		330,382,394	FF200-0UR-014B	12/14V	20	115	
		327,376,387	FF200-0UR-024B	24V	15	85	
		327,376,387	FF200-0UR-028B	28V	15	85	
<b>612nm Super Orange InGaAlP</b>  FF200		328,345,350	FF200-0UO-006B	5/6V	20	130	120° Center Contact Polarity B = BiPolar AC/DC Replace FF200 With F200 Narrow (15°) Beam Intensity 3.5K mcd @ 20 mA
		330,382,394	FF200-0UO-014B	12/14V	20	130	
		327,376,387	FF200-0UO-024B	24V	15	98	
		327,376,387	FF200-0UO-028B	28V	15	98	
<b>595nm Super Yellow InGaAlP</b>  FF200		328,345,350	FF200-0UY-006B	5/6V	20	116	120° Center Contact Polarity B = BiPolar AC/DC Replace FF200 With F200 Narrow (15°) Beam Intensity 3.2K mcd @ 20 mA
		330,382,394	FF200-0UY-014B	12/14V	20	116	
		327,376,387	FF200-0UY-024B	24V	15	75	
		327,376,387	FF200-0UY-028B	28V	15	75	
<b>8000K Cool White SiC/GaN</b>  FF200		328,345,350	FF200-0CW-006B	5V	15	160	120° Center Contact Polarity B = BiPolar AC/DC Replace FF200 With F200 Std. (50°) Beam Intensity 750 mcd/75 Ft. Cd
		330,382,394	FF200-0CW-014B	12/14V	15	160	
		327,376,387	FF200-0CW-024B	24V	15	160	
		327,376,387	FF200-0CW-028B	28V	15	160	
<b>570nm Lime Green InGaAlP</b>  FF200		328,345,350	FF200-0UG-006B	5/6V	20	58	120° Center Contact Polarity B = BiPolar AC/DC Replace FF200 With F200 Narrow (12-15°) Beam Intensity 1K mcd @ 20 mA
		330,382,394	FF200-0UG-014B	12/14V	20	58	
		327,376,387	FF200-0UG-024B	24V	15	44	
		327,376,387	FF200-0UG-028B	28V	15	44	
<b>525nm Aqua Green SiC/GaN</b>  FF200		328,345,350	FF200-0AG-006B	5/6V	15	400	120° Center Contact Polarity B = BiPolar AC/DC Replace FF200 With F200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
		330,382,394	FF200-0AG-014B	12/14V	15	400	
		327,376,387	FF200-0AG-024B	24V	15	400	
		327,376,387	FF200-0AG-028B	28V	15	400	
<b>470nm Super Blue SiC/GaN</b>  FF200		328,345,350	FF200-0PB-006B	5/6V	15	125	120° Center Contact Polarity B = BiPolar AC/DC Replace FF200 With F200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
		330,382,394	FF200-0PB-014B	12/14V	15	125	
		327,376,387	FF200-0PB-024B	24V	15	125	
		327,376,387	FF200-0PB-028B	28V	15	125	

All dimensions in inches. For millimeters multiply by 25.4

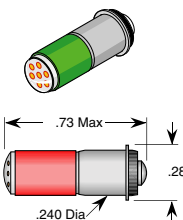
## Options



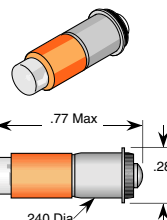
Series: F200  
PN Example: F200-0AG-006B



Series: F206  
PN Example: F206-0UR-006B



Series: FL206  
PN Example: FL206-0UR-006B




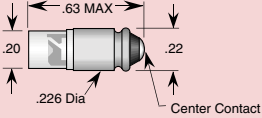

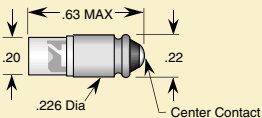

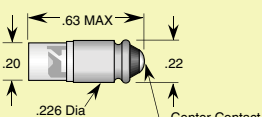

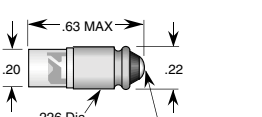

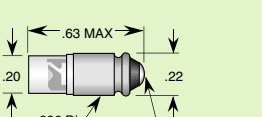

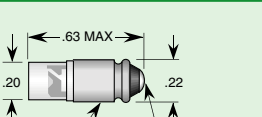

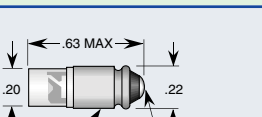
Series: FFL200  
PN Example: FFL200-0UO-006B



Log # 122Dd Rev 09-2000

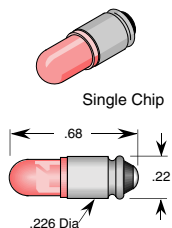


# T1-3/4 (5mm) Midget Groove Based LEDs

Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  GF200 	337,379,398	GF200-0UR-006B	5/6V	20	115	120°	Center Contact Polarity B = BiPolar AC/DC
	386	GF200-0UR-014B	12/14V	20	115		Replace GF200 With G200 Narrow (15°) Beam Intensity 1.6K mcd/52 Ft.Cd @ 20 mA
	334,388	GF200-0UR-024B	24V	15	85		
	334,388	GF200-0UR-028B	28V	15	85		
<b>612nm Super Orange InGaAlP</b>  GF200 	337,379,398	GF200-0UO-006B	5/6V	20	130	120°	Center Contact Polarity B = BiPolar AC/DC
	386	GF200-0UO-014B	12/14V	20	130		Replace GF200 With G200 Narrow (15°) Beam Intensity 3.5K mcd@ 20 mA
	334,388	GF200-0UO-024B	24V	15	98		
	334,388	GF200-0UO-028B	28V	15	98		
<b>595nm Super Yellow InGaAlP</b>  GF200 	337,379,398	GF200-0UY-006B	5/6V	20	116	120°	Center Contact Polarity B = BiPolar AC/DC
	386	GF200-0UY-014B	12/14V	20	116		Replace GF200 With G200 Narrow (15°) Beam Intensity 3.2K mcd@ 20 mA
	334,388	GF200-0UY-024B	24V	15	75		
	334,388	GF200-0UY-028B	28V	15	75		
<b>8000K Cool White SiC/GaN</b>  GF200 	337,379,398	GF200-0CW-006B	5/6V	15	160	120°	Center Contact Polarity B = BiPolar AC/DC
	386	GF200-0CW-014B	12/14V	15	160		Replace GF200 With G200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd
	334,388	GF200-0CW-024B	24V	15	160		
	334,388	GF200-0CW-028B	28V	15	160		
<b>570nm Lime Green InGaAlP</b>  GF200 	337,379,398	GF200-0UG-006B	5/6V	20	58	120°	Center Contact Polarity B = BiPolar AC/DC
	386	GF200-0UG-014B	12/14V	20	58		Replace GF200 With G200 Narrow (12-15°) Beam Intensity 1K mcd@ 20 mA
	334,388	GF200-0UG-024B	24V	15	44		
	334,388	GF200-0UG-028B	28V	15	44		
<b>525nm Aqua Green SiC/GaN</b>  GF200 	337,379,398	GF200-0AG-006B	5/6V	15	400	120°	Center Contact Polarity B = BiPolar AC/DC
	386	GF200-0AG-014B	12/14V	15	400		Replace GF200 With G200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
	334,388	GF200-0AG-024B	24V	15	400		
	334,388	GF200-0AG-028B	28V	15	400		
<b>470nm Super Blue SiC/GaN</b>  GF200 	337,379,398	GF200-0PB-006B	5/6V	15	125	120°	Center Contact Polarity B = BiPolar AC/DC
	386	GF200-0PB-014B	12/14V	15	125		Replace GF200 With G200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
	334,388	GF200-0PB-024B	24V	15	125		
	334,388	GF200-0PB-028B	28V	15	125		

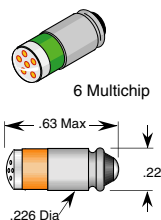
All dimensions in inches. For millimeters multiply by 25.4

## Options



Single Chip

Series: G200  
PN Example: G200-0UR-028B




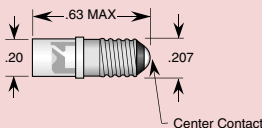

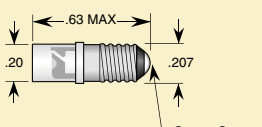

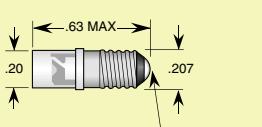

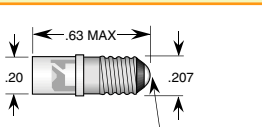

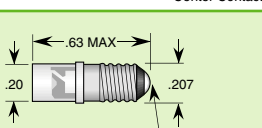

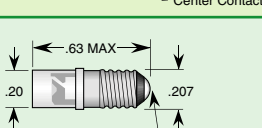

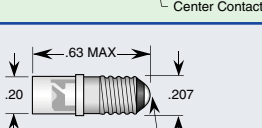
6 Multichip

Series: G206  
PN Example: G206-0UO-028B

Log # 122E Rev 09-2000

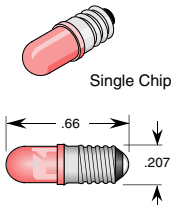


# T1-3/4 (5mm) Midget Screw Based LEDs

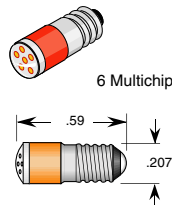
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  SF200 	378,1768,1775	SF200-0UR-005P	5V	20	115	120°	Center Contact Polarity P = Positive N = Negative  Replace SF200 With S200 Narrow (15°) Beam Intensity 1.6K mcd/52 Ft.Cd @ 20 mA
	336,383	SF200-0UR-014P	12/14V	20	115		
	342	SF200-0UR-024P	24V	15	85		
	335,342,369,399	SF200-0UR-028P	28V	15	85		
<b>612nm Super Orange InGaAlP</b>  SF200 	378,1768,1775	SF200-0UO-005P	5V	20	130	120°	Center Contact Polarity P = Positive N = Negative  Replace SF200 With S200 Narrow (15°) Beam Intensity 3.5K mcd@20 mA
	336,383	SF200-0UO-014P	12/14V	20	130		
	342	SF200-0UO-024P	24V	15	98		
	335,342,369,399	SF200-0UO-028P	28V	15	98		
<b>595nm Super Yellow InGaAlP</b>  SF200 	378,1768,1775	SF200-0UY-005P	5V	20	116	120°	Center Contact Polarity P = Positive N = Negative  Replace SF200 With S200 Narrow (15°) Beam Intensity 3.2K mcd@20 mA
	336,383	SF200-0UY-014P	12/14V	20	116		
	342	SF200-0UY-024P	24V	15	75		
	335,342,369,399	SF200-0UY-028P	28V	15	75		
<b>8000K Cool White SiC/GaN</b>  SF200 	378,1768,1775	SF200-0CW-005P	5/6V	15	160	120°	Center Contact Polarity P = Positive N = Negative  Replace SF200 With S200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd
	336,383	SF200-0CW-014P	12/14V	15	160		
	342	SF200-0CW-024P	24V	15	160		
	335,342,369,399	SF200-0CW-028P	28V	15	160		
<b>570nm Lime Green InGaAlP</b>  SF200 	378,1768,1775	SF200-0UG-005P	5V	20	58	120°	Center Contact Polarity P = Positive N = Negative  Replace SF200 With S200 Narrow (12-15°) Beam Intensity 1K mcd@ 20 mA
	336,383	SF200-0UG-014P	12/14V	20	58		
	342	SF200-0UG-024P	24V	15	44		
	335,342,369,399	SF200-0UG-028P	28V	15	44		
<b>525nm Aqua Green SiC/GaN</b>  SF200 	378,1768,1775	SF200-0AG-005P	5V	15	400	120°	Center Contact Polarity P = Positive N = Negative  Replace SF200 With S200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
	336,383	SF200-0AG-014P	12/14V	15	400		
	342	SF200-0AG-024P	24V	15	400		
	335,342,369,399	SF200-0AG-028P	28V	15	400		
<b>470nm Super Blue SiC/GaN</b>  SF200 	378,1768,1775	SF200-0PB-005P	5V	15	125	120°	Center Contact Polarity P = Positive N = Negative  Replace SF200 With S200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
	336,383	SF200-0PB-014P	12/14V	15	125		
	342	SF200-0PB-024P	24V	15	125		
	335,342,369,399	SF200-0PB-028P	28V	15	125		

All dimensions in inches. For millimeters multiply by 25.4

## Options



Single Chip



6 Multichip

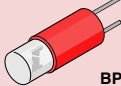
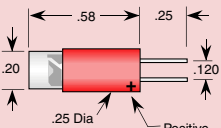

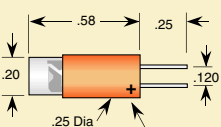

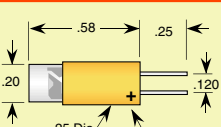

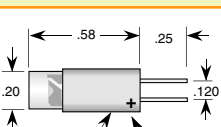

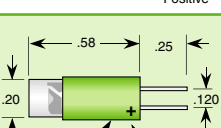

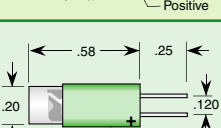

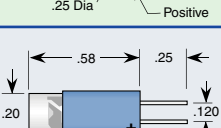
Series: S200  
PN Example: S200-0UR-024P

Series: S206  
PN Example: S206-0UY-024B

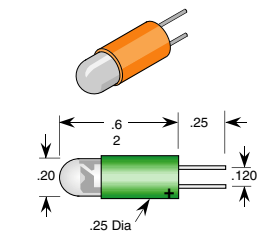
Log # 122F Rev 09-2000



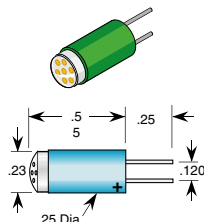
# T1-3/4 (5mm) Midget Bi-Pin Based LEDs

Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  <b>BPF200</b>		7328	BPF200-0UR-005V	5V	20	115	120° Contact Polarity V = DC only Replace BPF200 With BP200 Narrow (15°) Beam Intensity 1.6K mcd/52 Ft.Cd @ 20 mA
		7371	BPF200-0UR-012V	12V	20	115	
		7330,7382	BPF200-0UR-014V	12/14V	20	115	
		7327,7387	BPF200-0UR-024V	24V	15	85	
		7327,7387	BPF200-0UR-028V	28V	15	85	
<b>612nm Super Orange InGaAlP</b>  <b>BPF200</b>		7328	BPF200-0UO-005V	5V	20	130	120° Contact Polarity V = DC only Replace BPF200 With BP200 Narrow (15°) Beam Intensity 3.5K mcd @ 20 mA
		7371	BPF200-0UO-012V	12V	20	130	
		7330,7382	BPF200-0UO-014V	12/14V	20	130	
		7327,7387	BPF200-0UO-024V	24V	15	98	
		7327,7387	BPF200-0UO-028V	28V	15	98	
<b>595nm Super Yellow InGaAlP</b>  <b>BPF200</b>		7328	BPF200-0UY-005V	5V	20	116	120° Contact Polarity V = DC only Replace BPF200 With BP200 Narrow (15°) Beam Intensity 3.2K mcd @ 20 mA
		7371	BPF200-0UY-012V	12V	20	116	
		7330,7382	BPF200-0UY-014V	12/14V	20	116	
		7327,7387	BPF200-0UY-024V	24V	15	75	
		7327,7387	BPF200-0UY-028V	28V	15	75	
<b>8000K Cool White SiC/GaN</b>  <b>BPF200</b>		7328	BPF200-0CW-005V	5V	15	160	120° Contact Polarity V = DC only Replace BPF200 With BP200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd
		7371	BPF200-0CW-012V	12V	15	160	
		7330,7382	BPF200-0CW-014V	12/14V	15	160	
		7327,7387	BPF200-0CW-024V	24V	15	160	
		7327,7387	BPF200-0CW-028V	28V	15	160	
<b>570nm Lime Green InGaAlP</b>  <b>BPF200</b>		7328	BPF200-0UG-005V	5V	20	58	120° Contact Polarity V = DC only Replace BPF200 With BP200 Narrow (12-15°) Beam Intensity 1K mcd @ 20 mA
		7371	BPF200-0UG-012V	12V	20	58	
		7330,7382	BPF200-0UG-014V	12/14V	20	58	
		7327,7387	BPF200-0UG-024V	24V	15	44	
		7327,7387	BPF200-0UG-028V	28V	15	44	
<b>525nm Aqua Green SiC/GaN</b>  <b>BPF200</b>		7328	BPF200-0AG-005V	5V	15	400	120° Contact Polarity V = DC only Replace BPF200 With BP200 Narrow (15°) Beam Intensity 7K mcd/250 Ft. Cd
		7371	BPF200-0AG-012V	12V	15	400	
		7330,7382	BPF200-0AG-014V	12/14V	15	400	
		7327,7387	BPF200-0AG-024V	24V	15	400	
		7327,7387	BPF200-0AG-028V	28V	15	400	
<b>470nm Super Blue SiC/GaN</b>  <b>BPF200</b>		7328	BPF200-0PB-005V	5V	15	125	120° Contact Polarity V = DC only Replace BPF200 With BP200 Std. (15°) Beam Intensity 2K mcd/60 Ft. Cd
		7371	BPF200-0PB-012V	12V	15	125	
		7330,7382	BPF200-0PB-014V	12/14V	15	125	
		7327,7387	BPF200-0PB-024V	24V	15	125	
		7327,7387	BPF200-0PB-028V	28V	15	125	

All dimensions in inches. For millimeters multiply by 25.4



Series: BP200  
PN Example: BP200-0AG-014V



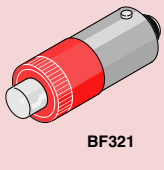
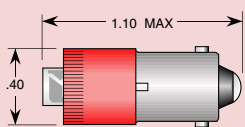
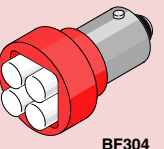
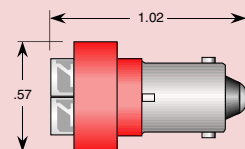
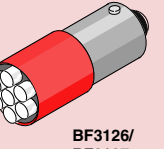
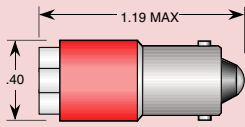
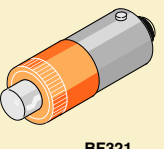
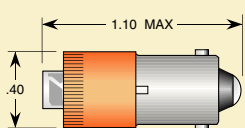
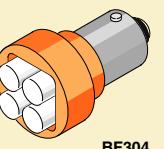
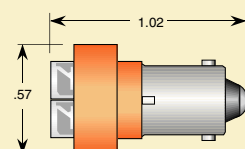
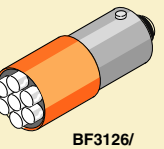
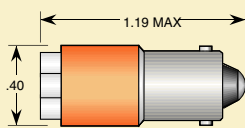
Series: BP203  
PN Example: BP203-1UB-014V

Log # 122G Rev 08-2000





# T3-1/4 (9mm) Miniature Based LED Lamps

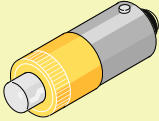
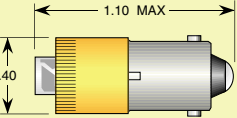
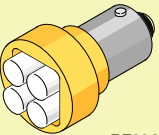
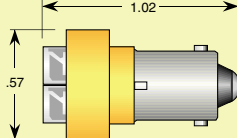
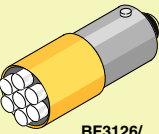
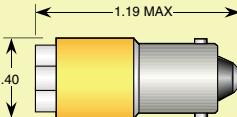
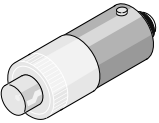
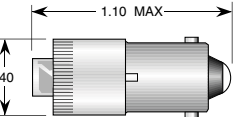
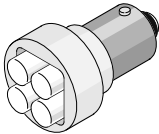
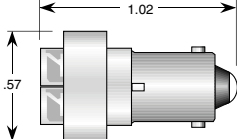
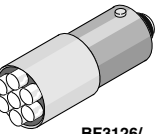
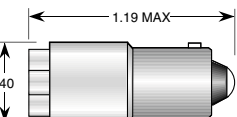
Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAs</b>  <b>BF321</b> 	<b>T3-1/4 (9mm) Miniature Bayonet</b>	6MB, 44, 47, 755	BF321-0UR-006B	5/6V	20	115	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Narrow Beam (15°) 1.6K mcd/52 Ft.Cd @ 20mA
		12MB, 756	BF321-0UR-014B	12/14V	20	115	
		24MB,	BF321-0UR-024B	24V	20	115	
		313,757,1819,1829	BF321-0UR-028B	28V	20	115	
		48MB	BF321-0UR-048B	48V	12	65	
		60MB,1835	BF321-0UR-060B	60V	12	65	
		120MB, NE51H	BF321-0UR-120A	120VAC	10	50	
	BF321-0UR-130B	130V	8	40			
<b>660nm Ultra Red GaAlAs/GaAs</b>  <b>BF304</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF304-0UR-006B	5/6V	80	460	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF304 With B304 for Narrow Beam (15°) 6.4K mcd/208 Ft.Cd @ 20mA
		12MB, 756	BF304-0UR-014B	12/14V	40	460	
		24MB,	BF304-0UR-024B	24V	20	460	
		313,757,1819,1829	BF304-0UR-028B	28V	20	460	
		48MB	BF304-0UR-048B	48V	12	260	
		60MB,1835	BF304-0UR-060B	60V	12	260	
		120MB, NE51H	BF304-0UR-120A	120VAC	10	200	
	BF304-0UR-130B	130V	8	160			
<b>660nm Ultra Red GaAlAs/GaAs</b>  <b>BF3126/ BF3127</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF3126-0UR-006B	5/6V	120	600	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF3126/3127 With B3126/3127 for Narrow Beam (65°) 1.3K mcd/210 Ft.Cd @ 20mA
		12MB, 756	BF3126-0UR-014B	12/14V	40	600	
		24MB,	BF3127-0UR-024B	24V	20	700	
		313,757,1819,1829	BF3127-0UR-028B	28V	20	700	
		48MB	BF3127-0UR-048B	48V	12	230	
		60MB,1835	BF3127-0UR-060B	60V	12	230	
		120MB, NE51H	BF3127-0UR-120A	120VAC	10	160	
	BF3127-0UR-130B	130V	8	140			
<b>612nm Super Orange InGaAlP</b>  <b>BF321</b> 	<b>T3-1/4 (9mm) Miniature Bayonet</b>	6MB, 44, 47, 755	BF321-0UO-006B	5/6V	20	130	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Narrow Beam (15°) 3.5 K mcd @ 20mA
		12MB, 756	BF321-0UO-014B	12/14V	20	130	
		24MB,	BF321-0UO-024B	24V	20	130	
		313,757,1819,1829	BF321-0UO-028B	28V	20	130	
		48MB	BF321-0UO-048B	48V	12	78	
		60MB,1835	BF321-0UO-060B	60V	12	78	
		120MB, NE51H	BF321-0UO-120A	120VAC	10	65	
	BF321-0UO-130B	130V	8	52			
<b>612nm Super Orange InGaAlP</b>  <b>BF304</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF304-0UO-006B	5/6V	80	520	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF304 With B304 for Narrow Beam (15°) 14 K mcd @ 20mA
		12MB, 756	BF304-0UO-014B	12/14V	40	520	
		24MB,	BF304-0UO-024B	24V	20	520	
		313,757,1819,1829	BF304-0UO-028B	28V	20	520	
		48MB	BF304-0UO-048B	48V	12	312	
		60MB,1835	BF304-0UO-060B	60V	12	312	
		120MB, NE51H	BF304-0UO-120A	120VAC	10	260	
	BF304-0UO-130B	130V	8	208			
<b>612nm Super Orange InGaAlP</b>  <b>BF3126/ BF3127</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF3126-0UO-006B	5/6V	120	510	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF3126/3127 With B3126/3127 for Medium Beam (50°) 2.45 K mcd @ 20mA
		12MB, 756	BF3126-0UO-014B	12/14V	40	510	
		24MB,	BF3127-0UO-024B	24V	20	595	
		313,757,1819,1829	BF3127-0UO-028B	28V	20	595	
		48MB	BF3127-0UO-048B	48V	12	357	
		60MB,1835	BF3127-0UO-060B	60V	12	357	
		120MB, NE51H	BF3127-0UO-120A	120VAC	10	298	
	BF3127-0UO-130B	130V	8	238			

All dimensions in inches. For millimeters multiply by 25.4

Log # 12ZH Rev 10-2000



# LED<sup>®</sup> T3-1/4 (9mm) Miniature Based LED Lamps

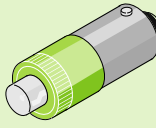
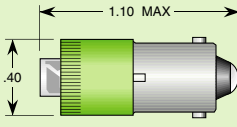
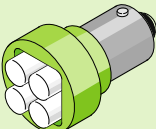
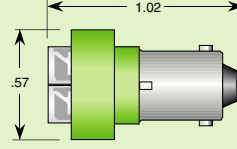
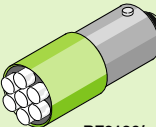
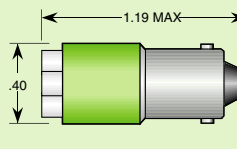
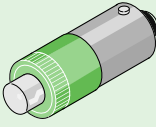
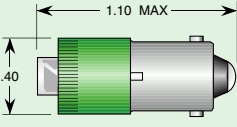
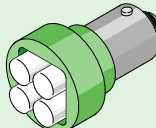
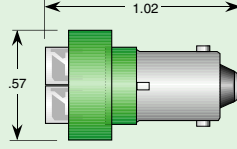
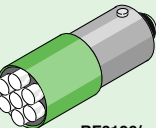
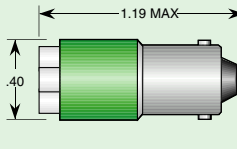
Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>595nm Super Yellow InGaAlP</b>  <b>BF321</b> 	<b>T3-1/4 (9mm) Miniature Bayonet</b>	6MB, 44, 47, 755	BF321-0UY-006B	5/6V	20	116	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Narrow Beam (15°) 3.2K mcd @ 20mA
		12MB, 756	BF321-0UY-014B	12/14V	20	116	
		24MB,	BF321-0UY-024B	24V	20	116	
		313,757,1819,1829	BF321-0UY-028B	28V	20	116	
		48MB	BF321-0UY-048B	48V	12	54	
		60MB,1835	BF321-0UY-060B	60V	12	54	
		120MB, NE51H	BF321-0UY-120A	120VAC	10	39	
	BF321-0UY-130B	130V	8	24			
<b>595nm Super Yellow InGaAlP</b>  <b>BF304</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF304-0UY-006B	5/6V	80	464	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF304 With B304 for Narrow Beam (15°) 12.8K mcd @ 20mA
		12MB, 756	BF304-0UY-014B	12/14V	40	464	
		24MB,	BF304-0UY-024B	24V	20	464	
		313,757,1819,1829	BF304-0UY-028B	28V	20	464	
		48MB	BF304-0UY-048B	48V	12	216	
		60MB,1835	BF304-0UY-060B	60V	12	216	
		120MB, NE51H	BF304-0UY-120A	120VAC	10	156	
	BF304-0UY-130B	130V	8	96			
<b>595nm Super Yellow InGaAlP</b>  <b>BF3126/ BF3127</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF3126-0UY-006B	5/6V	120	192	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF3126/3127 With B3126/3127 for Medium Beam (50°) 7K mcd @ 20mA
		12MB, 756	BF3126-0UY-014B	12/14V	40	192	
		24MB,	BF3127-0UY-024B	24V	20	224	
		313,757,1819,1829	BF3127-0UY-028B	28V	20	224	
		48MB	BF3127-0UY-048B	48V	12	105	
		60MB,1835	BF3127-0UY-060B	60V	12	105	
		120MB, NE51H	BF3127-0UY-120A	120VAC	10	87	
	BF3127-0UY-130B	130V	8	70			
<b>8000K Cool White SiC/GaN</b>  <b>BF321</b> 	<b>T3-1/4 (9mm) Miniature Bayonet</b>	6MB, 44, 47, 755	BF321-0CW-006B	5/6V	15	160	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Std. Beam (50°)
		12MB, 756	BF321-0CW-014B	12/14V	15	160	
		24MB,	BF321-0CW-024B	24V	15	160	
		313,757,1819,1829	BF321-0CW-028B	28V	15	160	
		48MB	BF321-0CW-048B	48V	12	128	
		60MB,1835	BF321-0CW-060B	60V	12	128	
		120MB, NE51H	BF321-0CW-120A	120VAC	10	106	
	BF321-0CW-130B	130V	8	85			
<b>8000K Cool White SiC/GaN</b>  <b>BF304</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF304-0CW-006B	5/6V	60	640	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF304 With B304 for Std. Beam (50°)
		12MB, 756	BF304-0CW-014B	12/14V	30	640	
		24MB,	BF304-0CW-024B	24V	15	640	
		313,757,1819,1829	BF304-0CW-028B	28V	15	640	
		48MB	BF304-0CW-48B	48V	12	512	
		60MB,1835	BF304-0CW-60B	60V	12	512	
		120MB, NE51H	BF304-0CW-120A	120VAC	10	424	
	BF304-0CW-130B	130V	8	340			
<b>8000K Cool White SiC/GaN</b>  <b>BF3126/ BF3127</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF3126-0CW-006B	5/6V	90	900	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF3126/3127 With B3126/3127 for Std. Beam (50°)
		12MB, 756	BF3126-0CW-014B	12/14V	30	900	
		24MB,	BF3126-0CW-024B	24V	15	900	
		313,757,1819,1829	BF3127-0CW-028B	28V	15	1050	
		48MB	BF3127-0CW-048B	48V	12	840	
		60MB,1835	BF3127-0CW-060B	60V	12	840	
		120MB, NE51H	BF3127-0CW-120A	120VAC	10	700	
	BF3127-0CW-130B	130V	8	560			

All dimensions in inches. For millimeters multiply by 25.4

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# T3-1/4 (9mm) Miniature Based LED Lamps

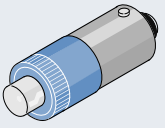
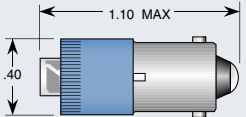
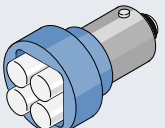
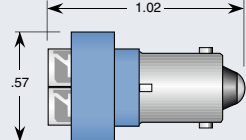
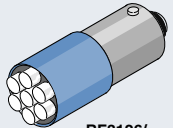
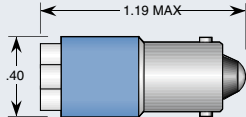
Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>570nm Lime Green InGaAlP</b>  <b>BF321</b> 	<b>T3-1/4 (9mm) Miniature Bayonet</b>	6MB, 44, 47, 755	BF321-0UG-006B	5/6V	20	58	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Narrow Beam (12-15°) 1K mcd @ 20mA
		12MB, 756	BF321-0UG-014B	12/14V	20	58	
		24MB,	BF321-0UG-024B	24V	20	58	
		313,757,1819,1829	BF321-0UG-028B	28V	20	58	
		48MB	BF321-0UG-048B	48V	12	35	
		60MB,1835	BF321-0UG-060B	60V	12	35	
		120MB, NE51H	BF321-0UG-120A	120VAC	10	29	
	BF321-0UG-130B	130V	8	23			
<b>570nm Lime Green InGaAlP</b>  <b>BF304</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF304-0UG-006B	5/6V	80	232	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF304 With B304 for Narrow Beam (12-15°) 4K mcd @ 20mA
		12MB, 756	BF304-0UG-014B	12/14V	40	232	
		24MB,	BF304-0UG-024B	24V	20	232	
		313,757,1819,1829	BF304-0UG-028B	28V	20	232	
		48MB	BF304-0UG-048B	48V	12	140	
		60MB,1835	BF304-0UG-060B	60V	12	140	
		120MB, NE51H	BF304-0UG-120A	120VAC	10	116	
	BF304-0UG-130B	130V	8	92			
<b>570nm Lime Green InGaAlP</b>  <b>BF3126/ BF3127</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF3126-0UG-006B	5/6V	120	216	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF3126/3127 With B3126/3127 for Medium Beam (50°) 1.2K mcd @ 20mA
		12MB, 756	BF3126-0UG-014B	12/14V	40	216	
		24MB,	BF3127-0UG-024B	24V	20	252	
		313,757,1819,1829	BF3127-0UG-028B	28V	20	252	
		48MB	BF3127-0UG-048B	48V	12	154	
		60MB,1835	BF3127-0UG-060B	60V	12	154	
		120MB, NE51H	BF3127-0UG-120A	120VAC	10	126	
	BF3127-0UG-130B	130V	8	100			
<b>525nm Aqua Green SiC/GaN</b>  <b>BF321</b> 	<b>T3-1/4 (9mm) Miniature Bayonet</b>	6MB, 44, 47, 755	BF321-0AG-006B	5/6V	15	400	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Narrow Beam (15°) 7K mcd/250 Ft.Cd @ 15mA
		12MB, 756	BF321-0AG-014B	12/14V	15	400	
		24MB,	BF321-0AG-024B	24V	15	400	
		313,757,1819,1829	BF321-0AG-028B	28V	15	400	
		48MB	BF321-0AG-048B	48V	12	320	
		60MB,1835	BF321-0AG-060B	60V	12	320	
		120MB, NE51H	BF321-0AG-120A	120VAC	10	275	
	BF321-0AG-130B	130V	8	230			
<b>525nm Aqua Green SiC/GaN</b>  <b>BF304</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF304-0AG-006B	5/6V	60	1600	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF304 With B304 for Narrow Beam (15°) 28K mcd/1000 Ft.Cd @ 15mA
		12MB, 756	BF304-0AG-014B	12/14V	30	1600	
		24MB,	BF304-0AG-024B	24V	15	1600	
		313,757,1819,1829	BF304-0AG-028B	28V	15	1600	
		48MB	BF304-0AG-048B	48V	12	1280	
		60MB,1835	BF304-0AG-060B	60V	12	1280	
		120MB, NE51H	BF304-0AG-120A	120VAC	10	1100	
	BF304-0AG-130B	130V	8	920			
<b>525nm Aqua Green SiC/GaN</b>  <b>BF3126/ BF3127</b> 	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b>	6MB, 44, 47, 755	BF3126-0AG-006B	5/6V	90	1200	120°  Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF3126/3127 With B3126/3127 for Narrow Beam (15°) 30K mcd/800 Ft.Cd @ 15mA
		12MB, 756	BF3126-0AG-014B	12/14V	30	1200	
		24MB,	BF3126-0AG-024B	24V	15	1200	
		313,757,1819,1829	BF3127-0AG-028B	28V	15	1400	
		48MB	BF3127-0AG-048B	48V	12	1190	
		60MB,1835	BF3127-0AG-060B	60V	12	1190	
		120MB, NE51H	BF3127-0AG-120A	120VAC	10	1050	
	BF3127-0AG-130B	130V	8	910			

All dimensions in inches. For millimeters multiply by 25.4

Log # 122K Rev 10-2000

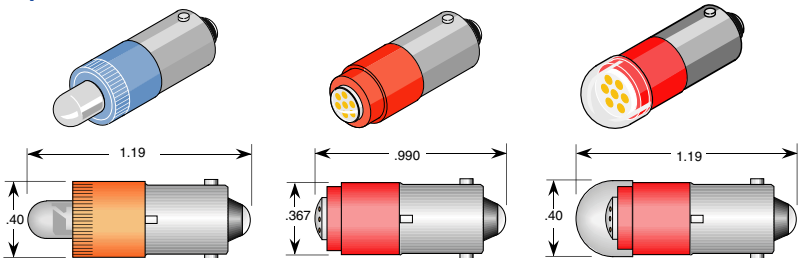


# T3-1/4 (9mm) Miniature Based LED Lamps

Miniature Packages		Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
				Voltage V typ	Current mA typ	Intensity mcd		
<b>470nm Super Blue SiC/GaN</b>  <b>BF321</b>	<b>T3-1/4 (9mm) Miniature Bayonet</b> 	6MB, 44, 47, 755	BF321-0PB-006B	5/6V	15	116	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Std. Beam (15°)
		12MB, 756	BF321-0PB-014B	12/14V	15	116		
		24MB,	BF321-0PB-024B	24V	15	116		
		313,757,1819,1829	BF321-0PB-028B	28V	15	116		
		48MB	BF321-0PB-048B	48V	12	84		
		60MB,1835	BF321-0PB-060B	60V	12	84		
		120MB, NE51H	BF321-0PB-120A	120VAC	10	74		
	BF321-0PB-130B	130V	8	53				
<b>470nm Super Blue SiC/GaN</b>  <b>BF304</b>	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b> 	6MB, 44, 47, 755	BF304-0PB-006B	5/6V	60	464	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF304 With B304 for Std. Beam (15°)
		12MB, 756	BF304-0PB-014B	12/14V	30	464		
		24MB,	BF304-0PB-024B	24V	15	464		
		313,757,1819,1829	BF304-0PB-028B	28V	15	464		
		48MB	BF304-0PB-048B	48V	12	336		
		60MB,1835	BF304-0PB-060B	60V	12	336		
		120MB, NE51H	BF304-0PB-120A	120VAC	10	296		
	BF304-0PB-130B	130V	8	212				
<b>470nm Super Blue SiC/GaN</b>  <b>BF3126/ BF3127</b>	<b>T3-1/4 (9mm) Miniature Bayonet LED Cluster</b> 	6MB, 44, 47, 755	BF3126-0PB-006B	5/6V	90	360	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF3126/3127 With B3126/3127 for Std. Beam (15°)
		12MB, 756	BF3126-0PB-014B	12/14V	30	360		
		24MB,	BF3127-0PB-024B	24V	15	420		
		313,757,1819,1829	BF3127-0PB-028B	28V	15	420		
		48MB	BF3127-0PB-048B	48V	12	336		
		60MB,1835	BF3127-0PB-060B	60V	12	336		
		120MB, NE51H	BF3127-0PB-120A	120VAC	10	315		
	BF3127-0PB-130B	130V	8	252				

## Options

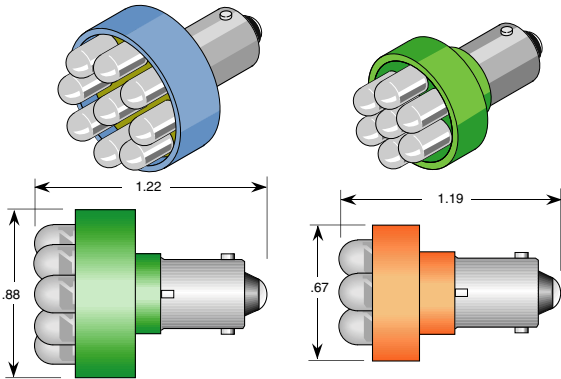
All dimensions in inches. For millimeters multiply by 25.4



Series: B321  
PN Example: B321-0UO-006B

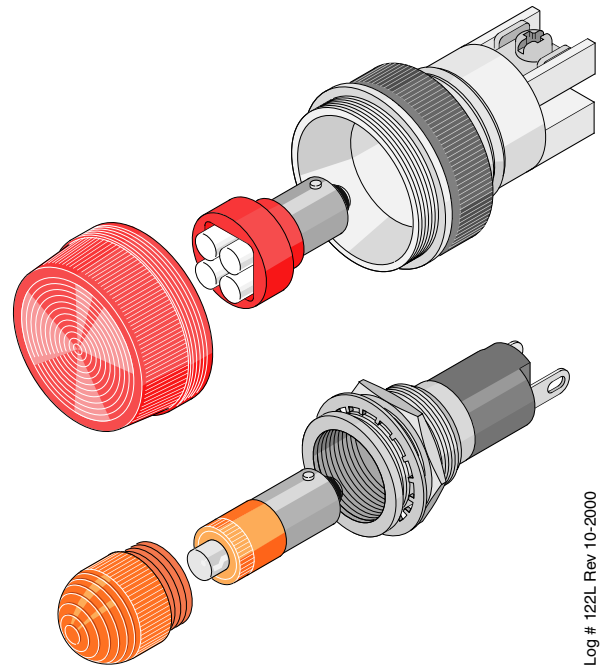
Series: BM326  
PN Example: BM326-0UR-006B

Series: B3206  
PN Example: B3206-0UR-120A



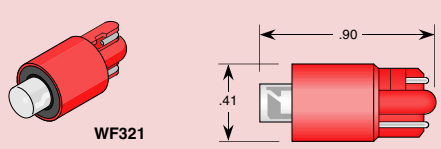
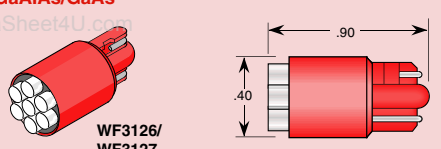
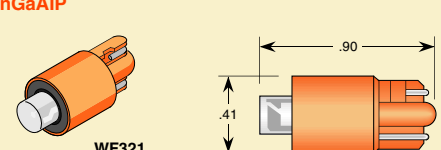
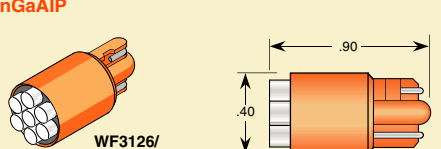
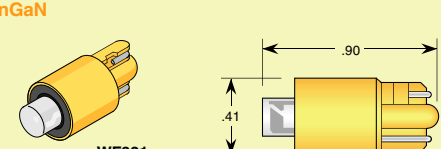
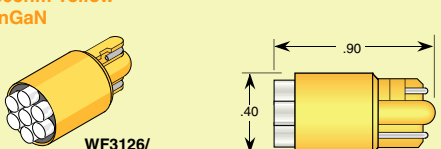
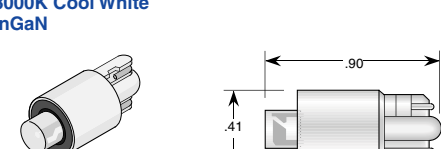
Series: BN309  
PN Example: BN309-0AG-024B

Series: BN306/BN307  
PN Example: BN306-0UO-006B



Log # 122L Rev 10-2000

# LED<sup>®</sup> T3-1/4 (9mm) Miniature Wedge Based LEDs

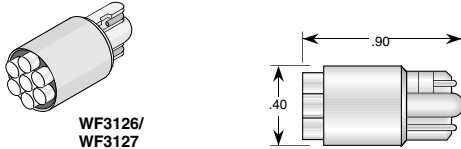
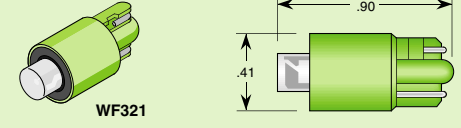
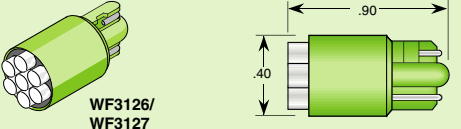
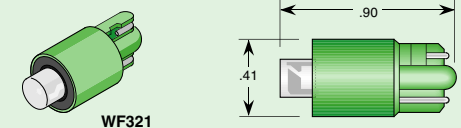
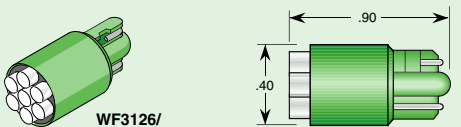
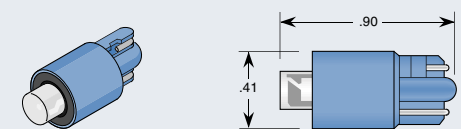
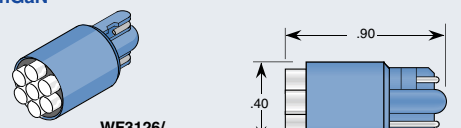
Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
 <p><b>660nm Ultra Red GaAlAs/GaAs</b></p> <p>WF321</p>	159,259,555,1995-7	WF321-OUR-006B	5/6V	20	115	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only  Replace WF321 With W321 for Narrow Beam (15°) 1.6K mcd/52Ft.Cd @ 20mA
	124,658,2080,936	WF321-OUR-014B	12/14V	20	115		
	656,657,400,464,655	WF321-OUR-024B	24V	20	115		
	656,657,400,464,655	WF321-OUR-028B	28V	20	115		
		WF321-OUR-048B	48V	12	65		
		WF321-OUR-120A	120VAC	10	50		
 <p><b>660nm Ultra Red GaAlAs/GaAs</b></p> <p>WF3126/ WF3127</p>	159,259,555,1995-7	WF3126-OUR-006B	5/6V	120	600	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only
	124,658,2080,936	WF3126-OUR-014B	12/14V	40	600		
	656,657,400,464,655	WF3127-OUR-024B	24V	20	700		
	656,657,400,464,655	WF3127-OUR-028B	28V	20	700		
		WF3127-OUR-048B	48V	12	230		
		WF3127-OUR-120A	120VAC	10	160		
 <p><b>612nm Orange InGaAlP</b></p> <p>WF321</p>	159,259,555,1995-7	WF321-UOU-006B	5/6V	20	130	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only  Replace WF321 With W321 for Narrow Beam (15°) 3.5 K mcd @ 20mA
	124,658,2080,936	WF321-UOU-014B	12/14V	20	130		
	656,657,400,464,655	WF321-UOU-024B	24V	20	130		
	656,657,400,464,655	WF321-UOU-028B	28V	20	130		
		WF321-UOU-048B	48V	12	78		
		WF321-UOU-120A	120VAC	10	65		
 <p><b>612nm Orange InGaAlP</b></p> <p>WF3126/ WF3127</p>	159,259,555,1995-7	WF3126-UOU-006B	5/6V	120	510	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only
	124,658,2080,936	WF3126-UOU-014B	12/14V	40	510		
	656,657,400,464,655	WF3127-UOU-024B	24V	20	595		
	656,657,400,464,655	WF3127-UOU-028B	28V	20	595		
		WF3127-UOU-048B	48V	12	357		
		WF3127-UOU-120A	120VAC	10	298		
 <p><b>595nm Yellow InGaN</b></p> <p>WF321</p>	159,259,555,1995-7	WF321-UUY-006B	5/6V	20	116	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only  Replace WF321 With W321 for Narrow Beam (15°) 3.2K mcd @ 20mA
	124,658,2080,936	WF321-UUY-014B	12/14V	20	116		
	656,657,400,464,655	WF321-UUY-024B	24V	20	116		
	656,657,400,464,655	WF321-UUY-028B	28V	20	116		
		WF321-UUY-048B	48V	12	54		
		WF321-UUY-120A	120VAC	10	39		
 <p><b>595nm Yellow InGaN</b></p> <p>WF3126/ WF3127</p>	159,259,555,1995-7	WF3126-UUY-006B	5/6V	120	192	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only
	124,658,2080,936	WF3126-UUY-014B	12/14V	40	192		
	656,657,400,464,655	WF3127-UUY-024B	24V	20	224		
	656,657,400,464,655	WF3127-UUY-028B	28V	20	224		
		WF3127-UUY-048B	48V	12	105		
		WF3127-UUY-120A	120VAC	10	87		
 <p><b>8000K Cool White InGaN</b></p> <p>WF321</p>	159,259,555,1995-7	WF321-OCW-006B	5/6V	15	160	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only  Replace WF321 With W321 for Std. Beam (50°)
	124,658,2080,936	WF321-OCW-014B	12/14V	15	160		
	656,657,400,464,655	WF321-OCW-024B	24V	15	160		
	656,657,400,464,655	WF321-OCW-028B	28V	15	160		
		WF321-OCW-048B	48V	12	128		
		WF321-OCW-120A	120VAC	10	106		
	WF321-OCW-130V	130V	8	85			

All dimensions in inches. For millimeters multiply by 25.4

Log # 122LL Rev 10-2000



# LED<sup>®</sup> T3-1/4 (9mm) Miniature Wedge Based LEDs

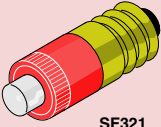
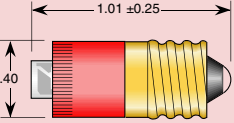
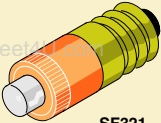
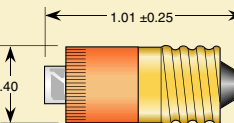
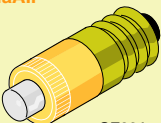
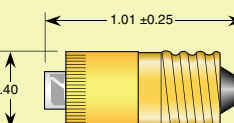
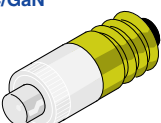
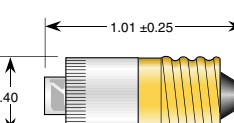

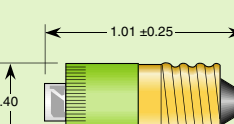

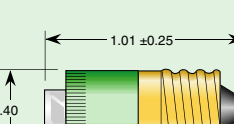

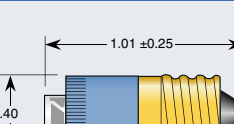
Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
 <p>WF3126/ WF3127</p>	159,259,555,1995-7	WF3126-0CW-006B	5/6V	90	900	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only
	124,658,2080,936	WF3126-0CW-014B	12/14V	30	900		
	656,657,400,464,655	WF3126-0CW-024B	24V	15	900		
	656,657,400,464,655	WF3127-0CW-028B	28V	15	1050		
		WF3127-0CW-048B	48V	12	840		
		WF3127-0CW-120A	120VAC	10	700		
	WF3127-0CW-130V	130V	8	560			
 <p>WF321</p>	159,259,555,1995-7	WF321-0UG-006B	5/6V	20	58	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only Replace WF321 With W321 for Narrow Beam (12-15°) 1K mcd@ 20mA
	124,658,2080,936	WF321-0UG-014B	12/14V	20	58		
	656,657,400,464,655	WF321-0UG-024B	24V	20	58		
	656,657,400,464,655	WF321-0UG-028B	28V	20	58		
		WF321-0UG-048B	48V	12	35		
		WF321-0UG-120A	120VAC	10	29		
	WF321-0UG-130V	130V	8	23			
 <p>WF3126/ WF3127</p>	159,259,555,1995-7	WF3126-0UG-006B	5/6V	120	216	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only
	124,658,2080,936	WF3126-0UG-104B	12/14V	40	216		
	656,657,400,464,655	WF3127-0UG-024B	24V	20	252		
	656,657,400,464,655	WF3127-0UG-28B	28V	20	252		
		WF3127-0UG-48B	48V	12	154		
		WF3127-0UG-120A	120VAC	10	126		
	WF3127-0UG-130V	130V	8	100			
 <p>WF321</p>	159,259,555,1995-7	WF321-0AG-006B	5/6V	15	400	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only Replace WF321 With W321 for Narrow Beam (15°) 7K mcd/250 Ft.Cd @ 15mA
	124,658,2080,936	WF321-0AG-014B	12/14V	15	400		
	656,657,400,464,655	WF321-0AG-024B	24V	15	400		
	656,657,400,464,655	WF321-0AG-028B	28V	15	400		
		WF321-0AG-048B	48V	12	320		
		WF321-0AG-120A	120VAC	10	275		
	WF321-0AG-130V	130V	8	230			
 <p>WF3126/ WF3127</p>	159,259,555,1995-7	WF3126-0AG-006B	5/6V	90	1200	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only
	124,658,2080,936	WF3126-0AG-014B	12/14V	30	1200		
	656,657,400,464,655	WF3126-0AG-024B	24V	15	1200		
	656,657,400,464,655	WF3127-0AG-028B	28V	15	1400		
		WF3127-0AG-048B	48V	12	1190		
		WF3127-0AG-120A	120VAC	10	1050		
	WF3127-0AG-130V	130V	8	910			
 <p>WF321</p>	159,259,555,1995-7	WF321-0PB-006B	5/6V	15	116	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only Replace WF321 With W321 for Std. Beam (15°)
	124,658,2080,936	WF321-0PB-014B	12/14V	15	116		
	656,657,400,464,655	WF321-0PB-024B	24V	15	116		
	656,657,400,464,655	WF321-0PB-028B	28V	15	116		
		WF321-0PB-048B	48V	12	84		
		WF321-0PB-120A	120VAC	10	106		
	WF321-0PB-130V	130V	8	53			
 <p>WF3126/ WF3127</p>	159,259,555,1995-7	WF3126-0PB-006B	5/6V	90	360	120°	Contact Polarity B = Bipolar AC/DC A = AC only V = DC only
	124,658,2080,936	WF3126-0PB-014B	12/14V	30	360		
	656,657,400,464,655	WF3127-0PB-024B	24V	15	420		
	656,657,400,464,655	WF3127-0PB-028B	28V	15	420		
		WF3127-0PB-048B	48V	12	336		
		WF3127-0PB-120A	120VAC	10	315		
	WF3127-0PB-130V	130V	8	252			

All dimensions in inches. For millimeters multiply by 25.4

Log # 122LLL Rev 08-2000

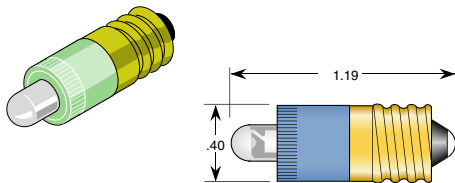


# T3-1/4 (9mm) Miniature Screw Based LEDs

Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  SF321 	407,502,3708	SF321-OUR-006B	5/6V	20	115	120°	Center Contact Polarity B = BiPolar AC/DC A = AC only  Replace SF321 With S321 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @20 mA
	3724,1446	SF321-OUR-014B	12/14V	20	115		
	1449,52	SF321-OUR-024B	24V	15	85		
		SF321-OUR-028B	28V	15	85		
		SF321-OUR-120A	120VAC	10	50		
<b>612nm Super Orange InGaAlP</b>  SF321 	407,502,3708	SF321-UOU-006B	5/6V	20	130	120°	Center Contact Polarity B = BiPolar AC/DC A = AC only  Replace SF321 With S321 Narrow (15°) Beam Intensity 3.5K mcd@20 mA
	3724,1446	SF321-UOU-014B	12/14V	20	130		
	1449,52	SF321-UOU-024B	24V	15	98		
		SF321-UOU-028B	28V	15	98		
		SF321-UOU-120A	120VAC	10	65		
<b>595nm Super Yellow InGaAlP</b>  SF321 	407,502,3708	SF321-UUY-006B	5/6V	20	116	120°	Center Contact Polarity B = BiPolar AC/DC A = AC only  Replace SF321 With S321 Narrow (15°) Beam Intensity 3.2K mcd@20 mA
	3724,1446	SF321-UUY-014B	12/14V	20	116		
	1449,52	SF321-UUY-024B	24V	15	75		
		SF321-UUY-028B	28V	15	75		
		SF321-UUY-120A	120VAC	10	39		
<b>8000K Cool White SiC/GaN</b>  SF321 	407,502,3708	SF321-OCW-006B	5V	15	160	120°	Center Contact Polarity B = BiPolar AC/DC A = AC only  Replace SF321 With S321 Std. (50°) Beam Intensity 750 mcd/75 Ft. Cd
	3724,1446	SF321-OCW-014B	12/14V	15	160		
	1449,52	SF321-OCW-024B	24V	15	160		
		SF321-OCW-028B	28V	15	160		
		SF321-OCW-120A	120VAC	10	106		
<b>570nm Lime Green InGaAlP</b>  SF321 	407,502,3708	SF321-UG-006B	5/6V	20	58	120°	Center Contact Polarity B = BiPolar AC/DC A = AC only  Replace SF321 With S321 Narrow (12-15°) Beam Intensity 1K mcd@20 mA
	3724,1446	SF321-UG-014B	12/14V	20	58		
	1449,52	SF321-UG-024B	24V	15	44		
		SF321-UG-028B	28V	15	44		
		SF321-UG-120A	120VAC	10	29		
<b>525nm Aqua Green SiC/GaN</b>  SF321 	407,502,3708	SF321-OAG-006B	5/6V	15	400	120°	Center Contact Polarity B = BiPolar AC/DC A = AC only  Replace SF321 With S321 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
	3724,1446	SF321-OAG-014B	12/14V	15	400		
	1449,52	SF321-OAG-024B	24V	15	400		
		SF321-OAG-028B	28V	15	400		
		SF321-OAG-120A	120VAC	10	275		
<b>470nm Super Blue SiC/GaN</b>  SF321 	407,502,3708	SF321-OPB-006B	5/6V	15	125	120°	Center Contact Polarity B = BiPolar AC/DC A = AC only  Replace SF321 With S321 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
	3724,1446	SF321-OPB-014B	12/14V	15	125		
	1449,52	SF321-OPB-024B	24V	15	125		
		SF321-OPB-028B	28V	15	125		
		SF321-OPB-120A	120VAC	10	74		

## Options

All dimensions in inches. For millimeters multiply by 25.4



Series: S321CB1K (15° Illumination)  
PN Example: S321-OPB-024B





# S6 Candelabra Screw Based LEDs

Miniature Packages	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
		Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b> 	SLF461-0UR-024B	24V	20	115	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace SLF461 With SL461 for Narrow Beam (15°) 1.6K mcd/52Ft.Cd @ 20mA
	SLF461-0UR-120A	120VAC	10	50		
	SLF461-0UR-130B	130V	8	40		
	SLF461-0UR-220A	220VAC	4	15		
	SLF464-0UR-024B	24V	20	460		
	SLF464-0UR-120A	120VAC	10	200		
	SLF464-0UR-130B	130V	8	160		
	SLF464-0UR-220A	220VAC	4	60		
	SLF467-0UR-024B	24V	20	800		
	SLF467-0UR-120A	120VAC	10	350		
	SLF467-0UR-130B	130V	8	280		
	SLF467-0UR-220A	220VAC	4	105		
<b>612nm Super Orange InGaAlP</b> 	SLF461-0UO-024B	24V	20	130	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace SLF461 With SL461 for Narrow Beam (15°) 3.5 K mcd@ 20mA
	SLF461-0UO-120A	120VAC	10	65		
	SLF461-0UO-130B	130V	8	52		
	SLF461-0UO-220A	220VAC	4	26		
	SLF464-0UO-024B	24V	20	520		
	SLF464-0UO-120A	120VAC	10	260		
	SLF464-0UO-130B	130V	8	208		
	SLF464-0UO-220A	220VAC	4	104		
	SLF467-0UO-024B	24V	20	910		
	SLF467-0UO-120A	120VAC	10	455		
	SLF467-0UO-130B	130V	8	364		
	SLF467-0UO-220A	220VAC	4	182		
<b>595nm Super Yellow InGaAlP</b> 	SLF461-0UY-024B	24V	20	116	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace SLF461 With SL461 for Narrow Beam (15°) 3.2K mcd@ 20mA
	SLF461-0UY-120A	120VAC	10	39		
	SLF461-0UY-130B	130V	8	24		
	SLF461-0UY-220A	220VAC	4	4		
	SLF464-0UY-024B	24V	20	464		
	SLF464-0UY-120A	120VAC	10	156		
	SLF464-0UY-130B	130V	8	96		
	SLF464-0UY-220A	220VAC	4	16		
	SLF467-0UY-024B	24V	20	812		
	SLF467-0UY-120A	120VAC	10	273		
	SLF467-0UY-130B	130V	8	168		
	SLF467-0UY-220A	220VAC	4	28		
<b>8000K Cool White SiC/GaN</b> 	SLF461-0CW-024B	24V	15	160	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Std. Beam (50°)
	SLF461-0CW-120A	120VAC	10	106		
	SLF461-0CW-130B	130V	8	85		
	SLF461-0CW-220A	220VAC	4	42		
	SLF464-0CW-024B	24V	15	640		
	SLF464-0CW-120A	120VAC	10	424		
	SLF464-0CW-130B	130V	8	340		
	SLF464-0CW-220A	220VAC	4	168		
	SLF467-0CW-024B	24V	15	960		
	SLF467-0CW-120A	120VAC	10	742		
	SLF467-0CW-130B	130V	8	595		
	SLF467-0CW-220A	220VAC	4	294		

All dimensions in inches. For millimeters multiply by 25.4

Log # 122N Rev.09-2000

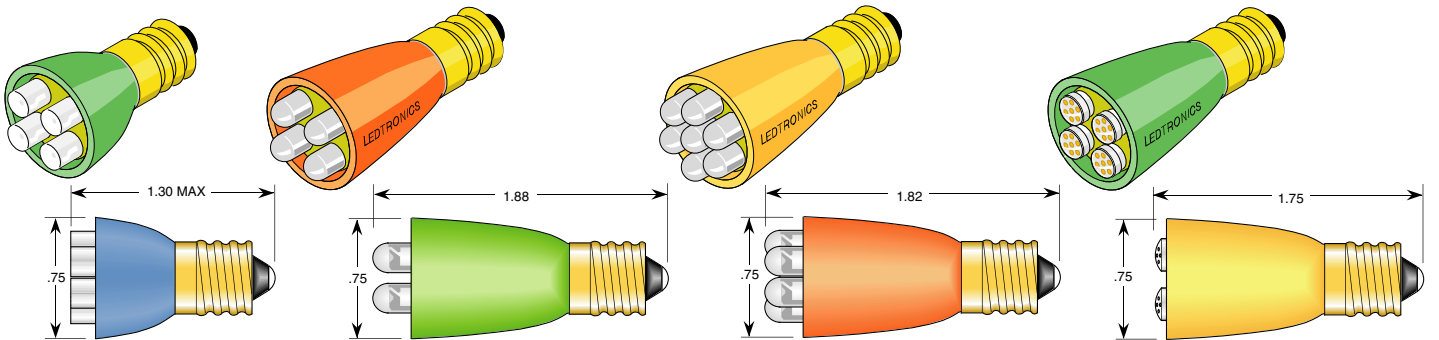


# S6 Candelabra Screw Based LEDs

Miniature Packages	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features			
		Voltage V typ	Current mA typ	Intensity mcd					
<b>570nm Lime Green InGaAlP</b> 	SLF461-0UG-024B	24V	20	58	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace SLF461 With SL461 for Narrow Beam (12-15°) 1K mcd @ 20mA			
	SLF461-0UG-120A	120VAC	10	29					
	SLF461-0UG-130B	130V	8	23					
	SLF461-0UG-220A	220VAC	4	12					
	SLF464-0UG-024B	24V	20	232					
	SLF464-0UG-120A	120VAC	10	116					
	SLF464-0UG-130B	130V	8	92					
	SLF464-0UG-220A	220VAC	4	48					
	SLF467-0UG-024B	24V	20	406					
	SLF467-0UG-120A	120VAC	10	203					
	SLF467-0UG-130B	130V	8	161					
	SLF467-0UG-220A	220VAC	4	84					
	<b>525nm Aqua Green SiC/GaN</b> 	SLF461-0AG-024B	24V	15			400	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace SLF461 With SL461 for Narrow Beam (15°) 7K mcd/250 Ft.Cd @ 15mA
		SLF461-0AG-120A	120VAC	10			275		
SLF461-0AG-130B		130V	8	230					
SLF461-0AG-220A		220VAC	4	140					
SLF464-0AG-024B		24V	15	1600					
SLF464-0AG-120A		120VAC	10	1100					
SLF464-0AG-130B		130V	8	920					
SLF464-0AG-220A		220VAC	4	560					
SLF466-0AG-024B		24V	15	2400					
SLF467-0AG-120A		120VAC	10	1900					
SLF467-0AG-130B		130V	8	1600					
SLF467-0AG-220A		220VAC	4	980					
<b>470nm Super Blue SiC/GaN</b> 		SLF461-0PB-024B	24V	15	116	120°	Center Contact Polarity B = Bipolar AC/DC A = AC only  Replace BF321 With B321 for Std. Beam (15°)		
		SLF461-0PB-120A	120VAC	10	74				
	SLF461-0PB-130B	130V	8	53					
	SLF461-0PB-220A	220VAC	4	7					
	SLF464-0PB-024B	24V	15	464					
	SLF464-0PB-120A	120VAC	10	296					
	SLF464-0PB-130B	130V	8	212					
	SLF464-0PB-220A	220VAC	4	28					
	SLF467-0PB-024B	24V	15	812					
	SLF467-0PB-120A	120VAC	10	518					
	SLF467-0PB-130B	130V	8	370					
	SLF467-0PB-220A	220VAC	4	49					

## Options

All dimensions in inches. For millimeters multiply by 25.4



Series: SF464  
PN Example: SF464-0PB-024B

Series: SL464 (15° Illumination)  
PN Example: SL464-0UG-024B

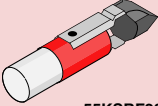
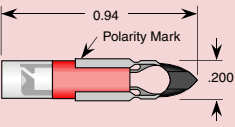

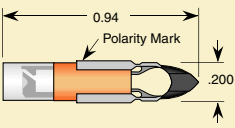
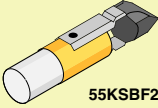
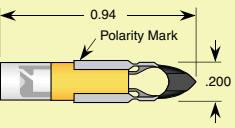
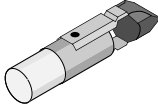
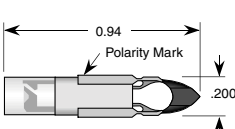
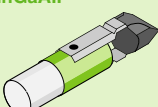
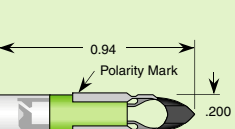

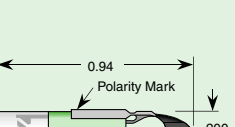

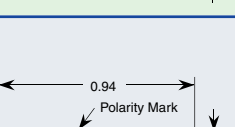
Series: SL467 (15° Illumination)  
PN Example: SL467-0UO-024B

Series: SL424  
PN Example: SL424-0UY-006B

Log # 122P Rev 10-2000

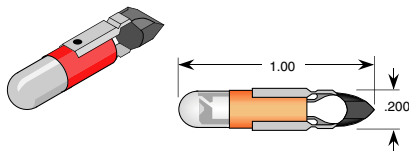


# T5.5K European Telephone Slide Based LEDs

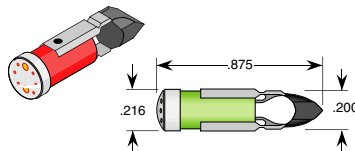
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  55KSBF200		55KSBF200-0UR-006V	5/6V	20	115	120°	Contact Polarity V = DC only A = AC only  Replace 55KSBF200 With 55KSB200 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @ 20 mA
		55KSBF200-0UR-014V	12/14V	20	115		
		55KSBF200-0UR-024V	24V	15	85		
		55KSBF200-0UR-028V	28V	15	85		
		55KSBF200-0UR-048V	48V	12	65		
		55KSBF200-0UR-120A	120VAC	10	50		
<b>612nm Super Orange InGaIP</b>  55KSBF200		55KSBF200-0UO-006V	5/6V	20	130	120°	Contact Polarity V = DC only A = AC only  Replace 55KSBF200 With 55KSB200 Narrow Beam (15°) Beam Intensity 3.5K mcd@ 20 mA
		55KSBF200-0UO-014V	12/14V	20	130		
		55KSBF200-0UO-024V	24V	15	98		
		55KSBF200-0UO-028V	28V	15	98		
		55KSBF200-0UO-048V	48V	12	78		
		55KSBF200-0UO-120A	120VAC	10	65		
<b>595nm Super Yellow InGaIP</b>  55KSBF200		55KSBF200-0UY-006V	5/6V	20	116	120°	Contact Polarity V = DC only A = AC only  Replace 55KSBF200 With 55KSB200 Narrow (15°) Beam Intensity 3.2K mcd@ 20 mA
		55KSBF200-0UY-014V	12/14V	20	116		
		55KSBF200-0UY-024V	24V	15	75		
		55KSBF200-0UY-028V	28V	15	75		
		55KSBF200-0UY-048V	48V	12	54		
		55KSBF200-0UY-120A	120VAC	10	39		
<b>8000K Cool White SiC/GaN</b>  55KSBF200		55KSBF200-0CW-006V	5V	15	160	120°	Contact Polarity V = DC only A = AC only  Replace 55KSBF200 With 55KSB200 Std. (50°) Beam Intensity 750 mcd/75 Ft. Cd
		55KSBF200-0CW-014V	12/14V	15	160		
		55KSBF200-0CW-024V	24V	15	160		
		55KSBF200-0CW-028V	28V	15	160		
		55KSBF200-0CW-048V	48V	12	128		
		55KSBF200-0CW-120A	120VAC	10	106		
<b>570nm Lime Green InGaIP</b>  55KSBF200		55KSBF200-0UG-006V	5/6V	20	58	120°	Contact Polarity V = DC only A = AC only  Replace 55KSBF200 With 55KSB200 Narrow (12-15°) Beam Intensity 1K mcd@ 20 mA
		55KSBF200-0UG-014V	12/14V	20	58		
		55KSBF200-0UG-024V	24V	15	44		
		55KSBF200-0UG-028V	28V	15	44		
		55KSBF200-0UG-048V	48V	12	35		
		55KSBF200-0UG-120A	120VAC	10	29		
<b>525nm Aqua Green SiC/GaN</b>  55KSBF200		55KSBF200-0AG-006V	5/6V	15	400	120°	Contact Polarity V = DC only A = AC only  Replace 55KSBF200 With 55KSB200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
		55KSBF200-0AG-014V	12/14V	15	400		
		55KSBF200-0AG-024V	24V	15	400		
		55KSBF200-0AG-028V	28V	15	400		
		55KSBF200-0AG-048V	48V	12	320		
		55KSBF200-0AG-120A	120VAC	10	275		
<b>470nm Super Blue SiC/GaN</b>  55KSBF200		55KSBF200-0PB-006V	5/6V	15	125	120°	Contact Polarity V = DC only A = AC only  Replace 55KSBF200 With 55KSB200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
		55KSBF200-0PB-014V	12/14V	15	125		
		55KSBF200-0PB-024V	24V	15	125		
		55KSBF200-0PB-028V	28V	15	125		
		55KSBF200-0PB-048V	48V	12	84		
		55KSBF200-0PB-120A	120VAC	10	74		

## Options

All dimensions in inches. For millimeters multiply by 25.4



Series: 55KSB200 (15° Illumination)  
 PN Example: 55KSB200-0UO-024V

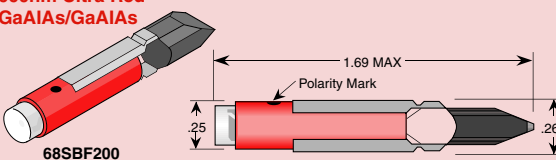
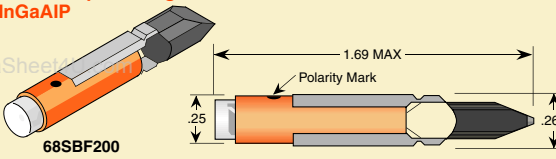
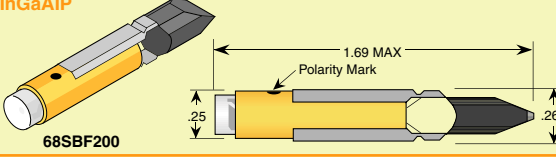
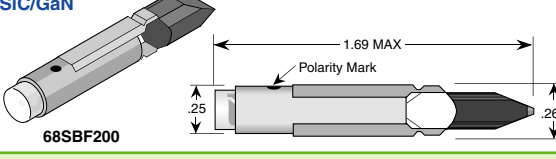
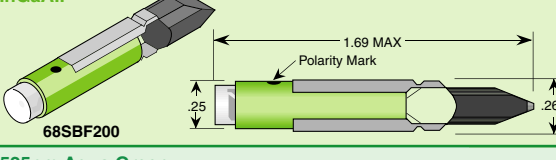
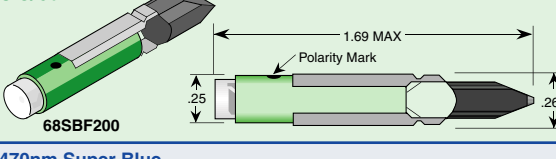
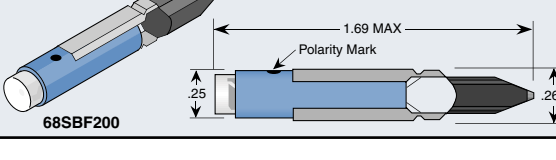


Series: 55KSB206 (160° Illumination)  
 PN Example: 55KSB206-0AG-024V



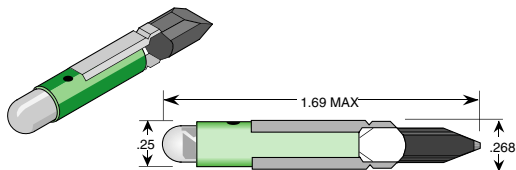


# T6.8 European Telephone Slide Based LEDs

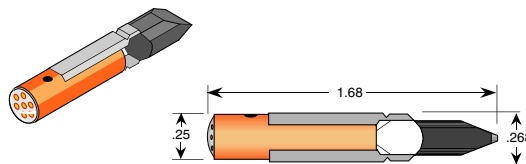
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b> 		68SBF200-OUR-006B	5/6V	20	115	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 68SBF200 With 68SB200 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @ 20 mA
		68SBF200-OUR-014B	12/14V	20	115		
		68SBF200-OUR-024B	24V	15	85		
		68SBF200-OUR-028B	28V	15	85		
		68SBF200-OUR-048B	48V	12	65		
		68SBF200-OUR-120A	120VAC	10	50		
<b>612nm Super Orange InGaAlP</b> 		68SBF200-UOU-006B	5/6V	20	130	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 68SBF200 With 68SB200 Narrow (15°) Beam Intensity 3.5K mcd@ 20 mA
		68SBF200-UOU-014B	12/14V	20	130		
		68SBF200-UOU-024B	24V	15	98		
		68SBF200-UOU-028B	28V	15	98		
		68SBF200-UOU-048B	48V	12	78		
		68SBF200-UOU-120A	120VAC	10	65		
<b>595nm Super Yellow InGaAlP</b> 		68SBF200-UUY-006B	5/6V	20	116	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 68SBF200 With 68SB200 Narrow (15°) Beam Intensity 3.2K mcd@ 20 mA
		68SBF200-UUY-014B	12/14V	20	116		
		68SBF200-UUY-024B	24V	15	75		
		68SBF200-UUY-028B	28V	15	75		
		68SBF200-UUY-048B	48V	12	54		
		68SBF200-UUY-120A	120VAC	10	39		
<b>8000K Cool White SiC/GaN</b> 		68SBF200-OCW-006B	5V	15	160	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 68SBF200 With 68SB200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd
		68SBF200-OCW-014B	12/14V	15	160		
		68SBF200-OCW-024B	24V	15	160		
		68SBF200-OCW-028B	28V	15	160		
		68SBF200-OCW-048B	48V	12	128		
		68SBF200-OCW-120A	120VAC	10	106		
<b>570nm Lime Green InGaAlP</b> 		68SBF200-UG-006B	5/6V	20	58	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 68SBF200 With 68SB200 Narrow (12-15°) Beam Intensity 1K mcd@ 20 mA
		68SBF200-UG-014B	12/14V	20	58		
		68SBF200-UG-024B	24V	15	44		
		68SBF200-UG-028B	28V	15	44		
		68SBF200-UG-048B	48V	12	35		
		68SBF200-UG-120A	120VAC	10	29		
<b>525nm Aqua Green SiC/GaN</b> 		68SBF200-OAG-006B	5/6V	15	400	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 68SBF200 With 68SB200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
		68SBF200-OAG-014B	12/14V	15	400		
		68SBF200-OAG-024B	24V	15	400		
		68SBF200-OAG-028B	28V	15	400		
		68SBF200-OAG-048B	48V	12	320		
		68SBF200-OAG-120A	120VAC	10	275		
<b>470nm Super Blue SiC/GaN</b> 		68SBF200-OPB-006B	5/6V	15	125	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 68SBF200 With 68SB200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
		68SBF200-OPB-014B	12/14V	15	125		
		68SBF200-OPB-024B	24V	15	125		
		68SBF200-OPB-028B	28V	15	125		
		68SBF200-OPB-048B	48V	12	84		
		68SBF200-OPB-120A	120VAC	10	74		

## Options

All dimensions in inches. For millimeters multiply by 25.4



Series: 68SB200 (15° Illumination)  
PN Example: 68SB200-OAG-024B



Series: 68SB206 (6 Chip 160° Illumination)  
PN Example: 68SB206-UOU-120A


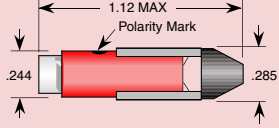

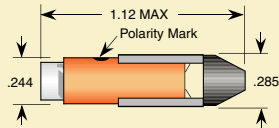
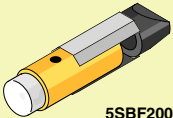
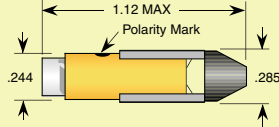

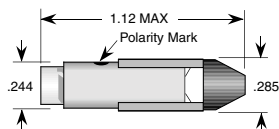

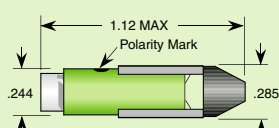
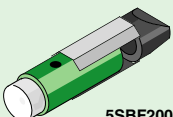
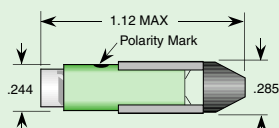
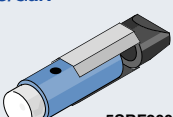
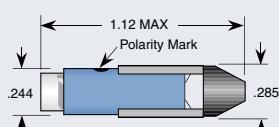
Log # 122T Rev 09-2000





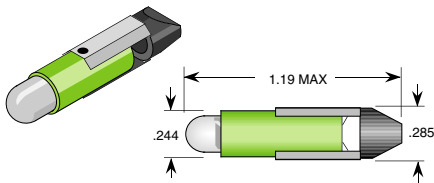


# T2 ANSI #5 Telephone Slide Based LEDs

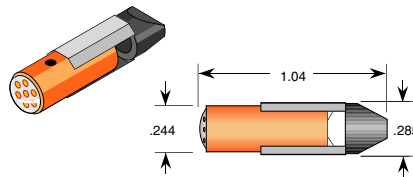
Subminiature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  5SBF200 	6 PSB	5SBF200-0UR-006B	5/6V	20	115	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 5SBF200 With 5SB200 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @20 mA
	12 PSB	5SBF200-0UR-014B	12/14V	20	115		
	24 PSB	5SBF200-0UR-024B	24V	15	85		
	28 PSB	5SBF200-0UR-028B	28V	15	85		
		5SBF200-0UR-048B	48V	12	65		
	120 PSB	5SBF200-0UR-120A	120VAC	10	50		
<b>612nm Super Orange InGaIP</b>  5SBF200 	6 PSB	5SBF200-0UO-006B	5/6V	20	130	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 5SBF200 With 5SB200 Narrow (15°) Beam Intensity 3.5K mcd@20 mA
	12 PSB	5SBF200-0UO-014B	12/14V	20	130		
	24 PSB	5SBF200-0UO-024B	24V	15	98		
	28 PSB	5SBF200-0UO-028B	28V	15	98		
		5SBF200-0UO-048B	48V	12	78		
	120 PSB	5SBF200-0UO-120A	120VAC	10	65		
<b>595nm Super Yellow InGaIP</b>  5SBF200 	6 PSB	5SBF200-0UY-006B	5/6V	20	116	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 5SBF200 With 5SB200 Narrow (15°) Beam Intensity 3.2K mcd@20 mA
	12 PSB	5SBF200-0UY-014B	12/14V	20	116		
	24 PSB	5SBF200-0UY-024B	24V	15	75		
	28 PSB	5SBF200-0UY-028B	28V	15	75		
		5SBF200-0UY-048B	48V	12	54		
	120 PSB	5SBF200-0UY-120A	120VAC	10	39		
<b>8000K Cool White SiC/GaN</b>  5SBF200 	6 PSB	5SBF200-0CW-006B	5V	15	160	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 5SBF200 With 5SB200 Std. (50°) Beam Intensity 750 mcd/75 Ft. Cd
	12 PSB	5SBF200-0CW-014B	12/14V	15	160		
	24 PSB	5SBF200-0CW-024B	24V	15	160		
	28 PSB	5SBF200-0CW-028B	28V	15	160		
		5SBF200-0CW-048B	48V	12	128		
	120 PSB	5SBF200-0CW-120A	120VAC	10	106		
<b>570nm Lime Green InGaIP</b>  5SBF200 	6 PSB	5SBF200-0UG-006B	5/6V	20	58	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 5SBF200 With 5SB200 Narrow (12-15°) Beam Intensity 1K mcd@ 20 mA
	12 PSB	5SBF200-0UG-014B	12/14V	20	58		
	24 PSB	5SBF200-0UG-024B	24V	15	44		
	28 PSB	5SBF200-0UG-028B	28V	15	44		
		5SBF200-0UG-048B	48V	12	35		
	120 PSB	5SBF200-0UG-120A	120VAC	10	29		
<b>525nm Aqua Green SiC/GaN</b>  5SBF200 	6 PSB	5SBF200-0AG-006B	5/6V	15	400	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 5SBF200 With 5SB200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
	12 PSB	5SBF200-0AG-014B	12/14V	15	400		
	24 PSB	5SBF200-0AG-024B	24V	15	400		
	28 PSB	5SBF200-0AG-028B	28V	15	400		
		5SBF200-0AG-048B	48V	12	320		
	120 PSB	5SBF200-0AG-120A	120VAC	10	275		
<b>470nm Super Blue SiC/GaN</b>  5SBF200 	6 PSB	5SBF200-0PB-006B	5/6V	15	125	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 5SBF200 With 5SB200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
	12 PSB	5SBF200-0PB-014B	12/14V	15	125		
	24 PSB	5SBF200-0PB-024B	24V	15	125		
	28 PSB	5SBF200-0PB-028B	28V	15	125		
		5SBF200-0PB-048B	48V	12	84		
	120 PSB	5SBF200-0PB-120A	120VAC	10	74		

## Options

All dimensions in inches. For millimeters multiply by 25.4



Series: 5SB200 (15° Illumination)  
 PN Example: 5SB200-0UG-024B



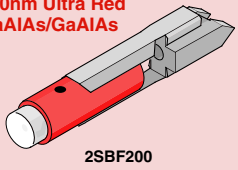
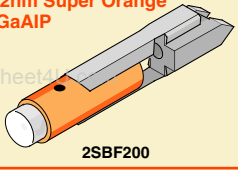
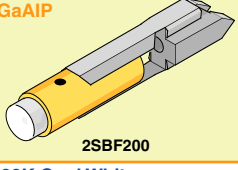
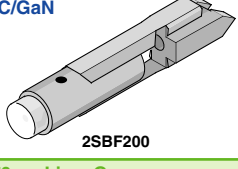
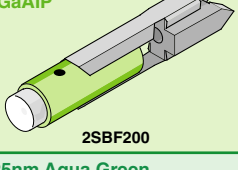
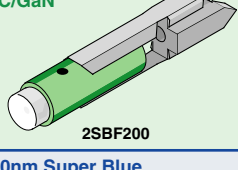
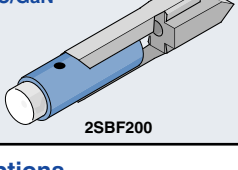
Series: 5SB206 (160° Illumination)  
 PN Example: 5SB206-0UO-028B

Log # 122S Rev 09-2000



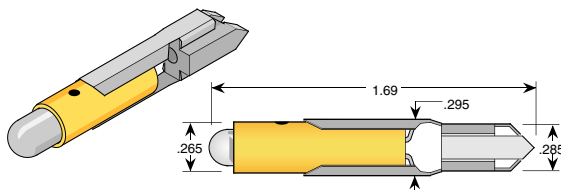


# T2 ANSI #2 & #3 Telephone Slide Based LEDs

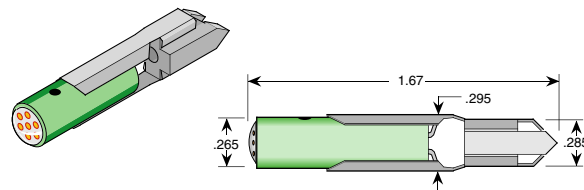
Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  2SBF200		2SBF200-0UR-006B	5/6V	20	115	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 2SBF200 With 2SB200 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @20 mA
		2SBF200-0UR-014B	12/14V	20	115		
	24E,24X	2SBF200-0UR-024B	24V	15	85		
		2SBF200-0UR-028B	28V	15	85		
	48A,D,C	2SBF200-0UR-048B	48V	12	65		
	2SBF200-0UR-120A	120VAC	10	50			
<b>612nm Super Orange InGaAlP</b>  2SBF200		2SBF200-0UO-006B	5/6V	20	130	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 2SBF200 With 2SB200 Narrow (15°) Beam Intensity 3.5K mcd@20 mA
		2SBF200-0UO-014B	12/14V	20	130		
	24E,24X	2SBF200-0UO-024B	24V	15	98		
		2SBF200-0UO-028B	28V	15	98		
	48A,D,C	2SBF200-0UO-048B	48V	12	78		
	2SBF200-0UO-120A	120VAC	10	65			
<b>595nm Super Yellow InGaAlP</b>  2SBF200		2SBF200-0UY-006B	5/6V	20	116	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 2SBF200 With 2SB200 Narrow (15°) Beam Intensity 3.2K mcd@20 mA
		2SBF200-0UY-014B	12/14V	20	116		
	24E,24X	2SBF200-0UY-024B	24V	15	75		
		2SBF200-0UY-028B	28V	15	75		
	48A,D,C	2SBF200-0UY-048B	48V	12	54		
	2SBF200-0UY-120A	120VAC	10	39			
<b>8000K Cool White SiC/GaN</b>  2SBF200		2SBF200-0CW-006B	5V	15	160	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 2SBF200 With 2SB200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd
		2SBF200-0CW-014B	12/14V	15	160		
	24E,24X	2SBF200-0CW-024B	24V	15	160		
		2SBF200-0CW-028B	28V	15	160		
	48A,D,C	2SBF200-0CW-048B	48V	12	128		
	2SBF200-0CW-120A	120VAC	10	106			
<b>570nm Lime Green InGaAlP</b>  2SBF200		2SBF200-0UG-006B	5/6V	20	58	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 2SBF200 With 2SB200 Narrow (12-15°) Beam Intensity 1K mcd @ 20 mA
		2SBF200-0UG-014B	12/14V	20	58		
	24E,24X	2SBF200-0UG-024B	24V	15	44		
		2SBF200-0UG-028B	28V	15	44		
	48A,D,C	2SBF200-0UG-048B	48V	12	35		
	2SBF200-0UG-120A	120VAC	10	29			
<b>525nm Aqua Green SiC/GaN</b>  2SBF200		2SBF200-0AG-006B	5/6V	15	400	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 2SBF200 With 2SB200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
		2SBF200-0AG-014B	12/14V	15	400		
	24E,24X	2SBF200-0AG-024B	24V	15	400		
		2SBF200-0AG-028B	28V	15	400		
	48A,D,C	2SBF200-0AG-048B	48V	12	320		
	2SBF200-0AG-120A	120VAC	10	275			
<b>470nm Super Blue SiC/GaN</b>  2SBF200		2SBF200-0PB-006B	5/6V	15	125	120°	Contact Polarity B = BiPolar AC/DC A = AC only Replace 2SBF200 With 2SB200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
		2SBF200-0PB-014B	12/14V	15	125		
	24E,24X	2SBF200-0PB-024B	24V	15	125		
		2SBF200-0PB-028B	28V	15	125		
	48A,D,C	2SBF200-0PB-048B	48V	12	84		
	2SBF200-0PB-120A	120VAC	10	74			

## Options

All dimensions in inches. For millimeters multiply by 25.4



Series: 2SB200 (15° Illumination)  
 PN Example: 2SB200-0UY-024B



Series: 2SB206 (160° Illumination)  
 PN Example: 2SB206-0AG-028B

Log # 122U Rev 09-2000



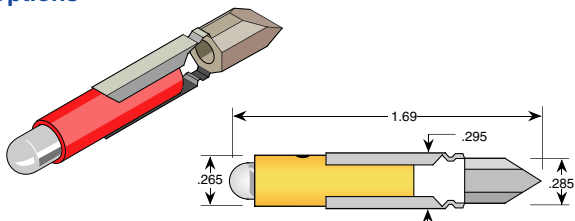




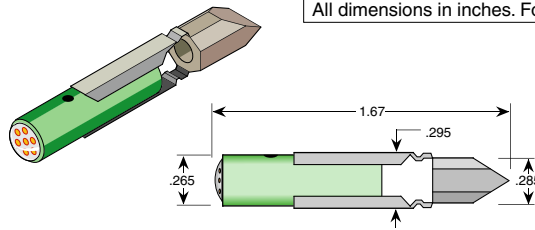
# T2 #1 Telephone Slide Based LEDs

Miniature Packages	Replaces Incandescent	Part Number	Electrical-Optical Characteristics (Ta = 25°C)			Angle of Illumination	Special Features
			Voltage V typ	Current mA typ	Intensity mcd		
<b>660nm Ultra Red GaAlAs/GaAlAs</b>  1SBF200		1SBF200-0UR-006B	5/6V	20	115	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 2SBF200 With 2SB200 Narrow Beam (15°) Intensity 1.6K mcd/52 Ft.Cd @ 20 mA
		1SBF200-0UR-014B	12/14V	20	115		
		1SBF200-0UR-024B	24V	15	85		
		1SBF200-0UR-028B	28V	15	85		
		1SBF200-0UR-048B	48V	12	65		
		1SBF200-0UR-120A	120VAC	10	50		
<b>612nm Super Orange InGaAlP</b>  1SBF200		1SBF200-0UO-006B	5/6V	20	130	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 2SBF200 With 2SB200 Narrow (15°) Beam Intensity 3.5K mcd@20 mA
		1SBF200-0UO-014B	12/14V	20	130		
		1SBF200-0UO-024B	24V	15	98		
		1SBF200-0UO-028B	28V	15	98		
		1SBF200-0UO-048B	48V	12	78		
		1SBF200-0UO-120A	120VAC	10	65		
<b>595nm Super Yellow InGaAlP</b>  1SBF200		1SBF200-0UY-006B	5/6V	20	116	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 2SBF200 With 2SB200 Narrow (15°) Beam Intensity 3.2K mcd@20 mA
		1SBF200-0UY-014B	12/14V	20	116		
		1SBF200-0UY-024B	24V	15	75		
		1SBF200-0UY-028B	28V	15	75		
		1SBF200-0UY-048B	48V	12	54		
		1SBF200-0UY-120A	120VAC	10	39		
<b>8000K Cool White SiC/GaN</b>  1SBF200		1SBF200-0CW-006B	5V	15	160	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 2SBF200 With 2SB200 Std. (50°) Beam Intensity 750 mcd/75 Ft. cd
		1SBF200-0CW-014B	12/14V	15	160		
		1SBF200-0CW-024B	24V	15	160		
		1SBF200-0CW-028B	28V	15	160		
		1SBF200-0CW-048B	48V	12	128		
		1SBF200-0CW-120A	120VAC	10	106		
<b>570nm Lime Green InGaAlP</b>  1SBF200		1SBF200-0UG-006B	5/6V	20	58	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 2SBF200 With 2SB200 Narrow (12-15°) Beam Intensity 1K mcd@ 20 mA
		1SBF200-0UG-014B	12/14V	20	58		
		1SBF200-0UG-024B	24V	15	44		
		1SBF200-0UG-028B	28V	15	44		
		1SBF200-0UG-048B	48V	12	35		
		1SBF200-0UG-120A	120VAC	10	29		
<b>525nm Aqua Green SiC/GaN</b>  1SBF200		1SBF200-0AG-006B	5/6V	15	400	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 2SBF200 With 2SB200 Narrow (15°) Beam Intensity 7K mcd/250 Ft.Cd
		1SBF200-0AG-014B	12/14V	15	400		
		1SBF200-0AG-024B	24V	15	400		
		1SBF200-0AG-028B	28V	15	400		
		1SBF200-0AG-048B	48V	12	320		
		1SBF200-0AG-120A	120VAC	10	275		
<b>470nm Super Blue SiC/GaN</b>  1SBF200		1SBF200-0PB-006B	5/6V	15	125	120°	Contact Polarity B = BiPolar AC/DC A = AC only  Replace 2SBF200 With 2SB200 Std. (15°) Beam Intensity 2K mcd/60 Ft.Cd
		1SBF200-0PB-014B	12/14V	15	125		
		1SBF200-0PB-024B	24V	15	125		
		1SBF200-0PB-028B	28V	15	125		
		1SBF200-0PB-048B	48V	12	84		
		1SBF200-0PB-120A	120VAC	10	74		

## Options



Series: 1SB200 (15° Illumination)  
 PN Example: 1SB200-0UY-024B



Series: BSD-1174 (160° Illumination)  
 PN Example: BSD-1174-0AG-028B

All dimensions in inches. For millimeters multiply by 25.4





# LED Color Chart

LEDtronics Code	LED Chip Code	Wavelength nm	Color Name	Fwd Voltage Vf @ 20mA	Intensity 5mm LEDs	Viewing Angle	LED Dye Material
941	IR941	940	Infrared	1.5	16mW @ 50mA	15°	GaAlAs/GaAs - Gallium Aluminum Arsenide/ Gallium Arsenide
881	IR881	880	Infrared	1.7	18mW @ 50mA	15°	GaAlAs/GaAs - Gallium Aluminum Arsenide/ Gallium Arsenide
851	IR851	850	Infrared	1.7	26mW @ 50mA	15°	GaAlAs/GaAlAs - Gallium Aluminum Arsenide/ Gallium Aluminum Arsenide
0UR	R3KF	660	Ultra Red	1.8	2000mcd @ 20mA	15°	GaAlAs/GaAlAs - Gallium Aluminum Arsenide/ Gallium Aluminum Arsenide
00R	R3/R4/R5	635	High Eff. Red	2.0	200mcd @ 20mA	15°	GaAsP/GaP - Gallium Arsenic Phosphide /Gallium Phosphide
0ER	E3K	633	Super Red	2.2	3500mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
0UO	O3K/O6K	620	Super Orange	2.2	4500mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
0UO	O3KF	612	Super Orange	2.2	6500mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
00O	O4/O5	605	Orange	2.1	160mcd @ 20mA	15°	GaAsP/GaP - Gallium Arsenic Phosphide /Gallium Phosphide
0UY	Y3KF	595	Super Yellow	2.2	5500mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
0PY	Y3KH	592	Super Pure Yellow	2.1	7000mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
00Y	Y3/Y4/Y5	585	Yellow	2.1	100mcd @ 20mA	15°	GaAsP/GaP - Gallium Arsenic Phosphide /Gallium Phosphide
0IW	IW2K	4500K	Incand White	3.6	2000mcd @ 20mA	20°	SiC/GaN - Silicon Carbide/Gallium Nitride
0PW	PW4K	6500K	Pale White	3.6	4000mcd @ 20mA	20°	SiC/GaN - Silicon Carbide/Gallium Nitride
0CW	CW6K	8000K	Cool White	3.6	6000mcd @ 20mA	20°	SiC/GaN - Silicon Carbide/Gallium Nitride
0LY	LY1K	574	Super Lime Yellow	2.4	1000mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
0UG	G1K	570	Super Lime Green	2.0	1000mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
00G	G3/G4/G5	565	High Eff. Green	2.1	200mcd @ 20mA	15°	GaP/GaP - Gallium Phosphide/Gallium Phosphide
UPG	PG350	560	Super Pure Green	2.1	350mcd @ 20mA	15°	InGaAlP - Indium Gallium Aluminum Phosphide
0PG	PG5	555	Pure Green	2.1	80mcd @ 20mA	15°	GaP/GaP - Gallium Phosphide/Gallium Phosphide
0AG	AG10K	525	Aqua Green	3.5	10,000mcd @ 20mA	15°	SiC/GaN - Silicon Carbide/Gallium Nitride
0BG	BG2K	505	Blue Green	3.5	2000mcd @ 20mA	45°	SiC/GaN - Silicon Carbide/Gallium Nitride
0PB	PB3K	470	Super Blue	3.6	3000mcd @ 20mA	15°	SiC/GaN - Silicon Carbide/Gallium Nitride
00B	UB500	430	Ultra Blue	3.8	100mcd @ 20mA	15°	SiC/GaN - Silicon Carbide/Gallium Nitride

