T-1 3/4 Sub-Miniature LED Replacement Lamp



Direct incandescent replacement LED lamp that delivers improved illumination, durability and long life. The T-1 3/4 Sub-Miniature LED lamps are drop in replacements for the less efficient filament lamps, typically used within pushbutton switches and indicators.



Key Features

- T-1 3/4 sub-miniature LED lamp (light bulb)
- Voltage: 2-28 VDC
- Base: bi-pin, bayonet, flange, groove, screw, wedge
- Available in six LED single colors: red, amber, green, orange, blue, white
- Available in one bi-color: red/green
- Low power consumption
- Mounts directly into industry standard sockets
- Single chip based LED
- Direct incandescent replacement
- Low power consumption - uses up to 90% less energy than an incandescent lamp
- Low heat generation, LEDs operate significantly cooler than traditional lamps
- Designed for quick installation and reduces overall cost due to less-frequent replacements
- Fast on/off cycling, shock resistance, and long operating life
- Compliant with RoHS and REACH

1 Model[1]

BP202[5]	Bi-Pin
MB200	Bayonet
MF200[6]	Flange
MG200	Groove
MS200	Screw
WB201	Wedge

TO ORDER, FOLLOW THE EXAMPLE:

Select one **BOLD** component from each SHADED column in the tables below.

1 Model	2 LED	3 Voltage
WB201	-BCG	12H

➜Part Number **WB201-BCG12H**

2 MEDIUM INTENSITY - TINTED ENCAPSULATION

LED	Color	λpk (nm)	Iv[2] (mcd)	Viewing Angle	V/C Table[3]
-BCR	RED	635	120	35	I
-BCA	AMB	583	100	35	I
-BCG	GRN	565	80	24	I

HIGH INTENSITY- WATERCLEAR ENCAPSULATION

LED	Color	λpk (nm)	Iv[2] (mcd)	Viewing Angle	V/C Table[3]
-NWR	RED	634	2800	30	I
-NWO	ORG	605	2000	30	I
-NWA	AMB	592	2800	30	I
-NWG	GRN	520	2400	45	II
-NWB	BLU	465	700	45	II
-NWW	CWHT		2500	50	II
-NWL	WWHT		1800	50	II
-NKR	RED	634	3600	15	I
-NKO	ORG	605	8000	15	I
-NKA	AMB	592	3600	15	I
-NKG	GRN	520	10000	15	II
-NKB	BLU	465	3000	15	II
-NKW	CWHT		9200	20	II
-NKL	WWHT		9200	15	II

WIDE ANGLE/FLAT-TOPPED-WATERCLEAR ENCAPSULATION

LED	Color	λpk (nm)	Iv[2] (mcd)	Viewing Angle	V/C Table[3]
-NFR	RED	634	780	75	I
-NFA	AMB	592	600	75	I
-NFG	GRN	520	780	75	II
-NFB	BLU	465	168	75	II
-NFW	WHT		280	75	II

SPECIALTY LEDs

LED	Color	λpk (nm)	Iv[2] (mcd)	Viewing Angle	V/C Table[3]	Description
-RLP[7]	RED	635	2.3	50	[3]	Low Power
-ALP[7]	AMB	583	2.1	50	[3]	Low Power
-GLP[7]	GRN	565	2.3	50	[3]	Low Power
-LRG[8]	RED/GRN	660/565	90/40	60	I	Bi-Color, Red Cathode

Voltage/Current

Design Vf/If	Max Vf/If
V/C Table I	
5V/22mA	5.5V/28mA
6V/21mA	7V/27mA
12V/20mA	14V/25mA
15V/24mA	16.5V/28mA
24V/17mA	26V/20mA
28V/16.5mA	30V/18mA

Voltage/Current

Design Vf/If	Max Vf/If
V/C Table II	
5V/15mA	5.5V/23mA
6V/15mA	7V/25mA
12V/15mA	14V/20mA
15V/15mA	16.5V/18mA
24V/15mA	26V/18mA
28V/15mA	30V/17mA

3 Voltage[4]

2
5H
6H
12H
15H
24H
28H
120

[1] All Models are center anode (note cathode notch for BP202, BP203 and WB201). Insert C after Model for center cathode (e.g. MF200C).

[2] Iv = typical luminous intensity @ If = 20mA (Ta=25°C). Low Power LEDs = 2mA.

[3] See Voltage/Current table for design specifications. Design current for low power LEDs = 2mA.

[4] Ta = 25°C. Voltage 2 indicates external resistor required. Voltages 5H through 28H are VDC. For AC operation, insert D after Voltage (e.g. 24HD). D indicates built-in rectifier: not required for 5H.

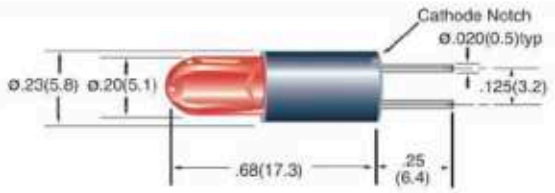
[5] Optional Socket available. See Model BPS-1 (pg. 72).

[6] Optional Socket available. See Model MFS1-B (pg. 74).

[7] Omit "H" Voltage designation (e.g. MG200-RLP12).

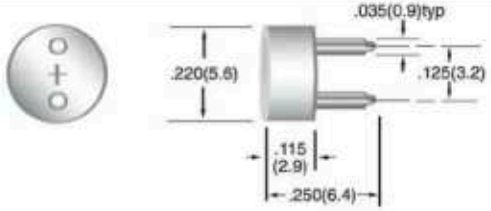
[8] Cathode energized negative and anode positive lights red. Cathode energized positive and anode negative lights green.

BP202

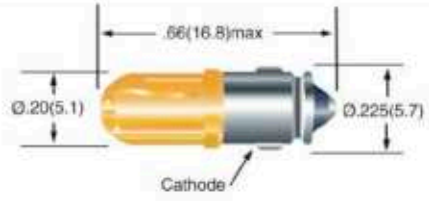




BPS-1 (Socket for BP202 Lamp)

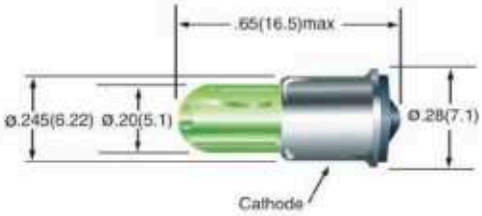


MB200



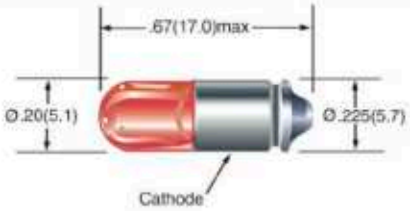
Available with Center Cathode

MF200



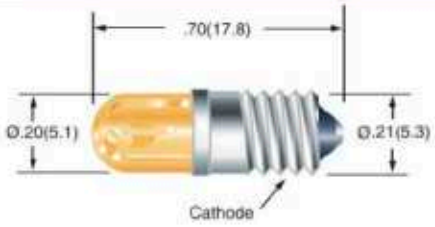
Available with Center Cathode

MG200



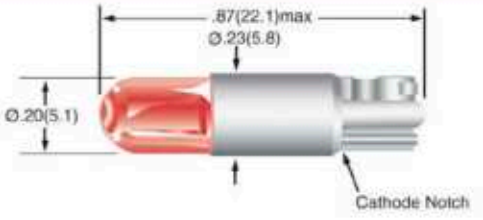
Available with Center Cathode

MS200



Available with Center Cathode

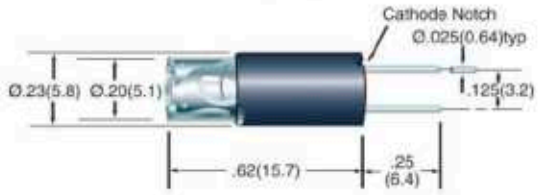
WB201



All dimensions are in inches (mm)
Tolerances: .xx"(.x) ±.025"(.63) / .xxx"(.xx)±.010"(.25)
Specifications are subject to change without notice.

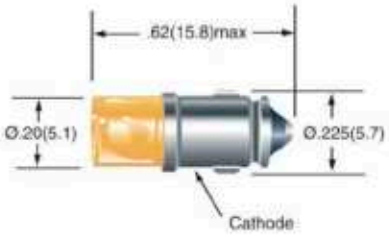
Wide Angle LED Lamps

BP202, NFX Series (75°)



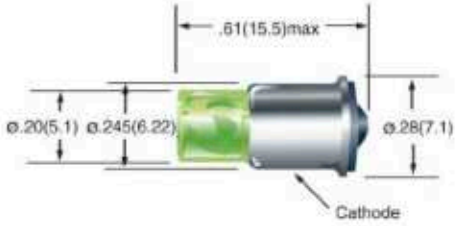


MB200, NFX Series (75°)



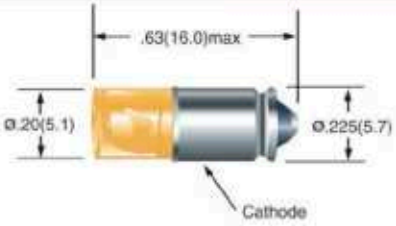
Available with Center Cathode

MF200, NFX Series (75°)



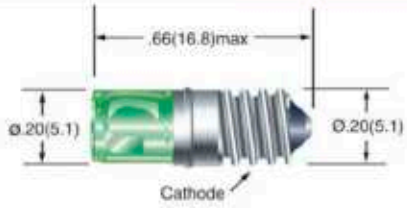
Available with Center Cathode

MG200, NFX Series (75°)



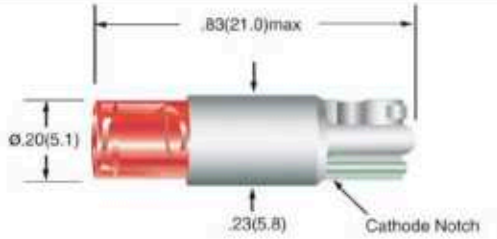
Available with Center Cathode

MS200, NFX Series (75°)



Available with Center Cathode

WB201, NFX Series (75°)



All dimensions are in inches (mm)

Tolerances: .xx"(.x) ±.025"(.63) / .xxx"(.xx)±.010"(.25)
Specifications are subject to change without notice.

Series	LED	Voltage	Operating Temp (°C)	Storage Temp (°C)
T-1 3/4 Sub-miniature LED lamp	NFR	-	-30 to +60	-40 to +100
	NFA	-	-30 to +60	-40 to +100
	NFG	-	-30 to +60	-40 to +100
	NFW	-	-30 to +60	-40 to +100
	NFB	-	-30 to +60	-40 to +100
	NWR	24H	-40 to +100	-40 to +100
	NWR	28H	-40 to +100	-40 to +120
	NWW	24H	-30 to +85	-40 to +100
	NWW	28H	-30 to +80	-40 to +100
	NWG	24H	-30 to +85	-40 to +100
	NWG	28H	-20 to +80	-30 to +100
	NWA	24H	-40 to +100	-40 to +100
	NWA	28H	-40 to +100	-40 to +120
	NWB	24H	-30 to +85	-40 to +100
	NWB	28H	-20 to +80	-30 to +100
	BCG	-	-20 to +100	-55 to +100
	BCR	-	-55 to +100	-55 to +100
	BCA	-	-55 to +100	-55 to +100

***MF200-NFA120:** Operating voltage: 120VAC, Max Voltage: 130VAC, Forward current: 3.4~3.6mA, Max current: 4.0mA

* For operating temperature of a specific part number contact VCC

Incandescent Lamp #	Design Voltage	Base Description	VCC Model #	Suggested VCC Part Number
2314	28	Sub-Miniature Bi-Pin	BP202	BP202-NFX28H
2324	28	Sub-Miniature Bi-Pin	BP202	BP202-NFX28H
2335	14	Sub-Miniature Bi-Pin	BP202	BP202-NFX15H
2337	6.3VAC	Sub-Miniature Bi-Pin	BP202	BP202-NFX6H
3149	5	Sub-Miniature Bi-Pin	BP202	BP202-NFX5H
7001	24	Sub-Miniature Bi-Pin	BP202	BP202-NFX24H
7003	24	Sub-Miniature Bi-Pin	BP202	BP202-NFX24H
7327	28	Sub-Miniature Bi-Pin	BP202	BP202-NFX28H
7328	6	Sub-Miniature Bi-Pin	BP202	BP202-NFX6H
7330	14	Sub-Miniature Bi-Pin	BP202	BP202-NFX15H
7349	6.3VAC	Sub-Miniature Bi-Pin	BP202	BP202-NFX6H
7361	5	Sub-Miniature Bi-Pin	BP202	BP202-NFX5H
7371	12	Sub-Miniature Bi-Pin	BP202	BP202-NFX12H
7373	14	Sub-Miniature Bi-Pin	BP202	BP202-NFX15H
7376	28	Sub-Miniature Bi-Pin	BP202	BP202-NFX28H
7377	6.3VAC	Sub-Miniature Bi-Pin	BP202	BP202-NFX6H
7380	6.3VAC	Sub-Miniature Bi-Pin	BP202	BP202-NFX6H
7381	6.3VAC	Sub-Miniature Bi-Pin	BP202	BP202-NFX6H
7382	14	Sub-Miniature Bi-Pin	BP202	BP202-NFX15H
7387	28	Sub-Miniature Bi-Pin	BP202	BP202-NFX28H
7876	28	Sub-Miniature Bi-Pin	BP202	BP202-NFX28H
7945	6	Sub-Miniature Bi-Pin	BP202	BP202-NFX6H
327	28	Sub-Miniature Flange	MF200	MF200-NFX28H
328	6	Sub-Miniature Flange	MF200	MF200-NFX6H
330	14	Sub-Miniature Flange	MF200	MF200-NFX15H
345	6	Sub-Miniature Flange	MF200	MF200-NFX6H
349	6.3VAC	Sub-Miniature Flange	MF200	MF200-NFX6H
350	6.3VAC	Sub-Miniature Flange	MF200	MF200-NFX6H
370	18	Sub-Miniature Flange	MF200	MF200-NFX24H
376	28	Sub-Miniature Flange	MF200	MF200-NFX28H
377	6.3VAC	Sub-Miniature Flange	MF200	MF200-NFX6H
380	6.3VAC	Sub-Miniature Flange	MF200	MF200-NFX6H
381	6.3VAC	Sub-Miniature Flange	MF200	MF200-NFX6H
382	14	Sub-Miniature Flange	MF200	MF200-NFX15H
385	28	Sub-Miniature Flange	MF200	MF200-NFX28H
387	28	Sub-Miniature Flange	MF200	MF200-NFX28H
394	12	Sub-Miniature Flange	MF200	MF200-NFX12H
459	22	Sub-Miniature Flange	MF200	MF200-NFX24H
7332	5	Sub-Miniature Flange	MF200	MF200-NFX5H
7333	5	Sub-Miniature Flange	MF200	MF200-NFX5H
7335	5	Sub-Miniature Flange	MF200	MF200-NFX5H
7341	28	Sub-Miniature Flange	MF200	MF200-NFX28H
8918	14	Sub-Miniature Flange	MF200	MF200-NFX15H

Incandescent Lamp #	Design Voltage	Base Description	VCC Model #	Suggested VCC Part Number
334	28	Sub-Miniature Groove	MG200	MG200-NFX28H
336	14	Sub-Miniature Groove	MG200	MG200-NFX15H
337	6	Sub-Miniature Groove	MG200	MG200-NFX6H
379	6.3VAC	Sub-Miniature Groove	MG200	MG200-NFX6H
386	14	Sub-Miniature Groove	MG200	MG200-NFX15H
388	28	Sub-Miniature Groove	MG200	MG200-NFX28H
398	6.3VAC	Sub-Miniature Groove	MG200	MG200-NFX6H
335	28	Sub-Miniature Screw	MS200	MS200-NFX28H
342	6	Sub-Miniature Screw	MS200	MS200-NFX6H
369	28	Sub-Miniature Screw	MS200	MS200-NFX28H
373	14	Sub-Miniature Screw	MS200	MS200-NFX15H
378	6.3VAC	Sub-Miniature Screw	MS200	MS200-NFX6H
383	14	Sub-Miniature Screw	MS200	MS200-NFX15H
399	28	Sub-Miniature Screw	MS200	MS200-NFX28H
17	28	Sub-Miniature Groove	WB201	WB201-NFX28H
18	14	Sub-Miniature Screw	WB201	WB201-NFX15H
37	14	Sub-Miniature Screw	WB201	WB201-NFX15H
56	5	Sub-Miniature Screw	WB201	WB201-NFX5H
73	14	Sub-Miniature Screw	WB201	WB201-NFX15H
74	14	Sub-Miniature Screw	WB201	WB201-NFX15H
79	6	Sub-Miniature Screw	WB201	WB201-NFX6H
84	6.3VAC	Sub-Miniature Screw	WB201	WB201-NFX6H
85	28	Sub-Miniature Screw	WB201	WB201-NFX28H
86	6.3VAC	Sub-Miniature Screw	WB201	WB201-NFX6H

Note: The X in the part number represent the LED color (Ex. WB201-NFA6H is with an Amber LED)