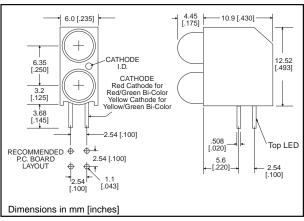
5mm LED CBI® Circuit Board Indicator **Bi-level**





Standard Polarity shown in drawing: Cathode right

Features

- Multiple CBIs form horizontal LED arrays on 6.35mm (0.250") center-lines.
- · High Contrast, UL 94 V-0 rated, black housing
- Oxygen index: 32%
- Polymer content: PBT, 0.710 g
- · Housing stand-offs facilitate PCB cleaning
- Solderability per MIL-STD-202F, method 208F
- LEDs are safe for direct viewing per IEC 825-1, EN-60825-1

Custom Combinations

· Contact factory for information on custom color combinations and ganged arrays

Tolerance note: As noted, otherwise:

- LED Protrusion: ±0.04 mm [±0.016]
- CBI Housing: ±0.02mm[±0.008]



COLOR*

HIGH EFFICIENCY, LED TYPE 02

PART NO.

552-0211	Red
552-0222	Green
552-0233	Yellow
552-0277	Orange

INTEGRAL RESISTOR 5 VOLTS, LED TYPE 03

552-0311	Red
552-0322	Green
552-0333	Yellow

INTEGRAL RESISTOR 12 VOLTS, LED TYPE 04



552-0422 Green 552-0433 Yellow

BI-COLOR, LED TYPE 07

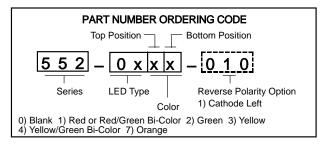
552-0711	Red/Green
552-0744	Yellow/Green

SUPER BRIGHT, LED TYPE 08

552-0811	Red
552-0822	Green
552-0833	Yellow

LOW CURRENT. LED TYPE 09

552-0911	Red
552-0922	Green
552-0933	Yellow



To order any of the 552-0xxx part numbers with Reverse Polarity (Cathode Left), please add -010 to the part numbers shown above.

⁻⁰¹⁰ Ordering Code Suffix required ONLY for Reverse Polarity Option

Typical Operating Characteristics (T_A=25°C)

See LED data sheet for additional information

HIGH EFFICIENCY

See page 6-55 and 6-56 for Reference Only LED Drive Circuit Examples. See page 6-58 for Pin Out

Part Number	Color	Peak Wavelength nm	l√ mcd	V _F Volts	Test Current (mA)	Viewing Angle 2⊖ _%	LED Data sheet	Page #
552-0211	Red	650	7	2.2	10	50°	5HD-9269	6-49
552-0222	Green	563	10	2.1	10	65°	5HD-9270-5	6-49
552-0233	Yellow	585	6.3	2.1	10	50°	5HD-9271-5	6-49
552-0277	Orange	600	7	1.9	10	60°	521-9704	6-43

INTEGRAL RESISTOR, 5 VOLTS

Part Number	Color	Peak Wavelength nm	ly mcd	Test Voltage	Forward Current (mA)	Viewing Angle 2⊖ _%	LED Data sheet	Page #
552-0311	Red	655	2	5	13	60°	5RD-9422	6-52
552-0322	Green	565	8	5	12	60°	5RD-9423	6-52
552-0333	Yellow	583	8	5	10	60°	521-9284	6-41

INTEGRAL RESISTOR, 12 VOLTS

Part Number	Color	Peak Wavelength nm	ly mcd	Test Voltage	Forward Current (mA)	Viewing Angle 2⊖ _%	LED Data sheet	Page #
552-0422	Green	565	4	12	13	60°	5RD-9378	6-52
552-0433	Yellow	583	4	12	13	60°	5RD-9379	6-52

BI-COLOR

Part Number	Color	Peak Wavelength nm	ly mcd	V _F Volts	Test Current (mA)	Viewing Angle 2⊖ _%	LED Data sheet	Page #
552-0711	Red/Green	660/565	90/40	1.8/2.1	20	60°	521-9651	6-46
552-0744	Yellow/Green	585/565	8.7/8.7	2.1/2.1	20	50°	521-9724	6-46

SUPER BRIGHT

Part Number	Color	Peak Wavelength nm	ly mcd	V _F Volts	Test Current (mA)	Viewing Angle 2⊖ _%	LED Data sheet	Page #
552-0811	Red	650	34	2.1	20	50°	5SD-9441	6-53
552-0822	Green	563	34	2.2	20	50°	5SD-9456	6-53
552-0833	Yellow	585	34	2.2	20	50°	5SD-9455	6-53

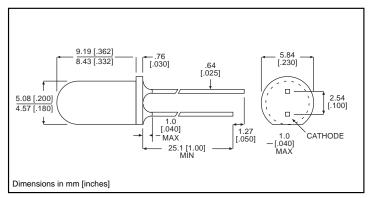
LOW CURRENT

Part Number	Color	Peak Wavelength nm	ly mcd	V _F Volts	Test Current (mA)	Viewing Angle 2⊖ _%	LED Data sheet	Page #
552-0911	Red	635	2	1.8	2	50°	521-9320	6-42
552-0922	Green	565	1.8	1.8	2	50°	521-9327	6-42
552-0933	Yellow	583	1.8	1.9	2	50°	521-9321	6-42

5mm Discrete LED Integral Resistor, 5 Volts **Diffused**



521-9183, -9284



PART NO. LED COLOR 521-9183 Red 521-9284 Yellow

MOUNTING CLIP: 515-0004 located on page 6-48

ABSOLUTE MAXIMUM RATINGS (T _A =25°C)	Red -9183	Yellow -9284
Forward Voltage (V)	7.5	7.5
Derating (V/°C) From 50°C	.071	.071
Operating Temperature (°C)	-40/+85	-40/+85
Storage Temperature (°C)	-55/+100	-55/+100
Soldering Temperature	260°C, 5 second	s, 1.6 mm from case

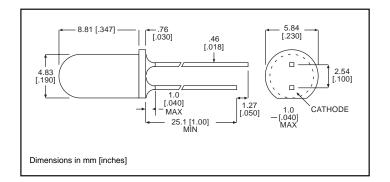
		Red	Yellow
OPERATING CHARACTERIST	ICS (T _A =25°C)	-9183	-9284
Luminous Intensity (mcd)	Min.	2	2
$V_F = 5V$	Typical	8	8
Peak Wavelength (nm) λ Peak	Typical	635	583
Viewing Angle (2Θ %)	Typical	60°	60°
Forward Current (I)	Typical	10	10
VF = 5V	Max	15	15
Reverse Voltage (V), $I_R=100\mu A$	Min.	5	5

 $[\]Theta^{\perp}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5mm Discrete LED Low Current, 2mA Diffused



521-9320, -9321, -9327



<u>PART NO.</u>	<u>COLOR</u>
521-9320	Red
521-9321	Yellow
521-9327	Green

MOUNTING CLIP: 515-0004 located on page 6-48

ABSOLUTE MAXIMUM RATINGS (TA=25°C)	Red -9320	Yellow -9321	Green -9327
Power Dssipation (mW) Derating (mA/°C) From 92°C	27 1	36 1	24 1
Forward Current (mA)	7	7	7
Peak Current (mA) Pulse width = 10 µs	500	500	500
Operating Temperature (°C)	-55/+100	-55/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100
Soldering Temperature	260°C, 5	seconds, 1.6 mm	n from case

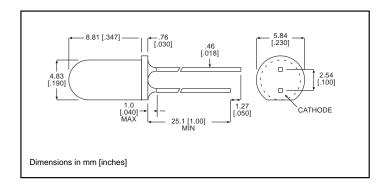
OPERATING CHARACTERISTICS (TA=25°C)		Red -9320	Yellow -9321	Green -9327
Luminous Intensity (mcd) I _F =2mA	Min. Typical	1.2 2	1.2 1.8	1.2 1.8
Peak Wavelength (nm) λ Peak	Typical	635	583	565
Viewing Angle (2Θ ½)	Typical	50°	50°	50°
Forward Voltage (V) I _F =2mA	Typical Max.	1.8 2.2	1.9 2.7	1.8 2.2
Reverse Voltage (V), I _R =50µA	Min.	5	5	5

 $[\]Theta^{\perp}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5mm Discrete LED **High Efficiency** Diffused



521-9246, -9248, -9250, -9704



<u>PART NO.</u>	<u>COLOR</u>
521-9246	Red
521-9248	Yellow
521-9250	Green
521-9704	Orange

MOUNTING CLIP: 515-0004 located on page 6-48

	Red	Yellow	Green	Orange
ABSOLUTE MAXIMUM RATINGS $(T_A=25^{\circ}C)$	-9246	-9248	-9250	-9704
Power Dissipation (mW)	135	85	135	135
Derating (mW/°C) From 25°C 1. (mA/°C) From 50°C	1.8	1.6	1.8	.5¹
Forward Current (mA)	25	20	25	30
Peak Current (mA)	500	500	500	500
Pulse width = 10μs				
Operating Temperature (°C)	-55/+100	-55/+100	-20/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100	-55/+100
Soldering Temperature	26	0°C, 5 seconds,	1.6 mm from case)

OPERATING CHARACTERISTICS ((T _A =25°C)	Red -9246	Yellow -9248	Green -9250	Orange -9704
Luminous Intensity (mcd) I _F =10mA	Min. Typical	4 7	4 8	4.2 5.2	4 7
Peak Wavelength (nm) λ Peak	Typical	635	583	565	600
Viewing Angle (2Θ ½)	Typical	60°	60°	60°	60°
Forward Voltage (V) I _F =10mA	Typical Max.	2.2 3	2.2 3	2.3 3	1.9 2.4
Reverse Voltage (V), I _R =100μA	Min.	5	5	5	5

 $[\]Theta^{\, |}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5mm Discrete LED Bi-Color Non-Tinted, Diffused



521-9651, -9724

1.50 [.059] MAX 5.59 [.220] 0.51 [.020] 8.64[.340] 5.00 [.197] [.100] CATHODE GREEN, 22.1 [.87] MIN. RED/GREEN BI-COLOR 521-9651 CATHODE YELLOW, YELLOW/GREEN **BI-COLOR** Dimensions in mm [inches] 521-9724

PART NO. LED COLOR 521-9651 Red/Green 521-9724 Yellow/Green

MOUNTING CLIP: 515-0005 located on page 6-48

ABSOLUTE MAXIMUM RATINGS $(T_A=25^{\circ}C)$	Red/Green -9651	Yellow/Green -9724
Power Dissipation (mW)	100/100	60/100
Forward Current (mA) Derating (mA/°C) From 50°C	40/30 .5/.4	20/30 .25/.40
Peak Current (mA) Pulse width = 100 µs	200/120	80/120
Operating Temperature (°C)	-55/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100
Soldering Temperature	260°C, 5 seconds	, 1.6 mm from case

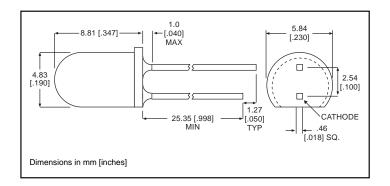
OPERATING CHARACTERISTICS (T _A =25°C)		Red/Green -9651	Yellow/Green -9724
Luminous Intensity (mcd) I _F =20mA	Min. Typical	29/12.6 90/40	2.5/2.5 8.7/8.7
Peak Wavelength (nm) λ Peak	Typical	660/565	585/565
Viewing Angle (2Θ ½)	Typical	60°	50°
Forward Voltage (V)	Typical	1.8/2.1	2.1/2.1
I _F =20mA	Max.	2.4/2.8	2.8/2.8

 $[\]Theta^{\perp}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5mm Discrete LED Super Bright, Water Clear Non-Tinted, Non-Diffused

Dialight

521-9464,-9465,-9466



PART NO.	<u>COLOR</u>
521-9464	Red
521-9465	Green
521-9466	Yellow

MOUNTING CLIP: 515-0004 located on page 6-48

ABSOLUTE MAXIMUM RATINGS $(T_A=25^{\circ}C)$	Red -9464	Green -9465	Yellow -9466
Power Dissipation (mW) Derating (mW/°C) From 25°C 1. From 50 °C	135 1.8	135 1.8	85 1.6¹
Forward Current (mA)	30	30	20
Peak Current (mA) Pulse width = 10 μs	500	500	500
Operating Temperature (°C)	-55/+100	-20/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100
Soldering Temperature	260 °C,	5 seconds, 1.6 mr	n from case

OPERATING CHARACTERISTICS (T _A =25°C	C)	Red -9464	Green -9465	Yellow -9466
Luminous Intensity (mcd) I _F =20mA	Min. Typical	80 125	80 120	80 140
Peak Wavelength (nm) λ Peak	Typical	635	565	583
Viewing Angle (2Θ ½)	Typical	24°	24°	24°
Forward Voltage (V) I _F =20mA	Typical Max.	2.2 3	2.3 3	2.2
Reverse Voltage (V), I _R =100μA	Min.	5	5	5

 $[\]Theta^{\perp}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5_mm **High Efficiency Diffused**



* NOT A VALID PART NUMBER. THIS SHEET IS FOR REFERENCE ONLY.

<u>TYPE</u>	<u>COLOR</u>
*5HD-9269	Red
*5HD-9270-2	Green
*5HD-9270-5	Green
*5HD-9271-2	Yellow
*5HD-9271-5	Yellow

ABSOLUTE MAXIMUM RATINGS $(T_A=25^{\circ}C)$	Red -9269	Green -9270-2	Green -9270-5	Yellow -9271-2	Yellow -9271-5
Power Dissipation (mW) Derating (mW/°C) From 50°C 1. From 40°C	60 .66 ¹	140	75 .66 ¹	200	60 .66 ¹
Forward Current (mA) Derating (mA/°C) From 25°C	20	40 .6	25	60 .8	20
Peak Current (mA) Pulse width = 1µs	60	500	60	1000	60
Operating Temperature (°C)	-25/+85	-55/+100	-25/+85	-55/+100	-25/+85
Storage Temperature (°C)	-30/+100	-55/+100	-30/+100	-55/+100	-30/+100
Soldering Temperature	260°C, 5 seconds, 1.6 mm from case				

OPERATING CHARACT (T _A =25°C)	ERISTICS	Red -9269	Green -9270-2	Green -9270-5	Yellow -9271-2	Yellow -9271-5
Luminous Intensity (mcd) I _F =10mA	Min. Typical	2.2 7	4 32	3.6 10	4 10	2.2 6.3
Peak Wavelength (nm) λ Peak	Typical	650	565	563	590	585
Viewing Angle (2Θ ^½)	Typical	50°	50°	65°	70°	50°
Forward Voltage (V) I _F =10mA, *I _F =20mA	Typical Max.	2.2 2.5	2* 2.6*	2.1 3	2.4* 3*	2.1
Reverse Voltage (V), I _R =100µA *I _R =10µA	Min.	5	5*	3*	5*	3

 $[\]Theta^{\perp}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5_mm **General Purpose** Diffused



* NOT A VALID PART NUMBER. THIS SHEET IS FOR REFERENCE ONLY.

TYPE COLOR *5ND-9672 Red Yellow *5ND-9673 *5ND-9674 Green

ADCOLUTE MAYIMIM DATINGS (T. 25°C)	Red	Yellow	Green
ABSOLUTE MAXIMUM RATINGS (T _A =25°C)	-9672	-9673	-9674
Power Dissipation (mW)	80	60	100
Forward Current (mA)	40	20	30
Derating (mA/°C) From 25°C	.5	.25	.4
Peak Current (mA)	200	80	120
Pulse width = 10 μs			
Operating Temperature (°C)	-55/+100	-55/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100
Soldering Temperature	260°C, 5 seconds, 1.6 mm from case		

OPERATING CHARACTERISTICS (T _A =	=25°C)	Red -9672	Yellow -9673	Green -9674
Luminous Intensity (mcd) I _F =20mA	Min. Typical	3.5 12.3	3.5 12.3	3.5 12.3
Peak Wavelength (nm) λ Peak	Typical	635	585	565
Viewing Angle (2Θ ½)	Typical	60°	60°	60°
Forward Voltage (V) I _F =20mA	Typical Max.	2 2.8	2.1 2.8	2.1 2.8
Reverse Voltage (V), I _R =100μA	Min.	5	5	5

 $[\]Theta^{\perp}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5_mm **Integral Resistor** Diffused



* NOT A VALID PART NUMBER. THIS SHEET IS FOR REFERENCE ONLY.

<u>TYPE</u>	<u>COLOR</u>	VOLTS
*5RD-9378	Green	12
*5RD-9379	Yellow	12
*5RD-9422	Red	5
*5RD-9423	Green	5

ABSOLUTE MAXIMUM RATINGS $(T_A=25^{\circ}C)$	Green 12V -9378	Yellow 12V -9379	Red 5V -9422	Green 5V -9423	
Forward Voltage (V) *(T _A =70°C)	15*	15	7.5	7.5	
Operating Temperature (°C)	-20/+85	-40/+85	-40/+85	-20/+85	
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100	-55/+100	
Soldering Temperature	260°C, 5 seconds, 1.6 mm from case				

OPERATING CHARACTERI $(T_A=25^{\circ}C)$	STICS	Green 12V -9378	Yellow 12V -9379	Red 5V -9422	Green 5V -9423
Luminous Intensity (mcd) V _F =5V, *V _F =12V	Min. Typical	1.5* 4*	1.5* 4*	1 2	2 8
Peak Wavelength (nm) λ Peak	Typical	565	583	655	565
Viewing Angle (2Θ %)	Typical	60°	60°	60°	60°
Forward Current (mA), V _F =5V *V _F =12V	Typical Max.	13* 20*	13* 20*	13 20	12 15
Reverse Voltage (V), I _R =100µA	Typical	5	5	5	5

 $[\]Theta^{\perp}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5_{mm} Super Bright LED **Diffused**



* NOT A VALID PART NUMBER. THIS SHEET IS FOR REFERENCE ONLY.

TYPE COLOR *5SD-9441 Red *5SD-9455 Yellow *5SD-9456 Green

ABSOLUTE MAXIMUM RATINGS $(T_A=25^{\circ}C)$	Red -9441	Yellow -9455	Green -9456
Power Dissipation (mW)	75	75	75
Forward Current (mA) Derating (mA/°C) From 50°C *(mW/°C) From 40°C	25 .66*	25 .5	25 .5
Peak Current (mA) Pulse width = 1 ms	60	60	60
Operating Temperature (°C)	-55/+100	-55/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100
Soldering Temperature	260°C, 5 seconds, 1.6 mm from case		

OPERATING CHARACTERISTICS (T _A =25°C)		Red -9441	Yellow -9455	Green -9456
Luminous Intensity (mcd) I _F =20mA	Min. Typical	17 34	17 34	17 34
Peak Wavelength (nm) λ Peak	Typical	650	585	563
Viewing Angle (2Θ ^½)	Typical	50°	50°	50°
Forward Voltage (V) I _F =20mA	Typical Max.	2.1 2.55	2.2 3	2.2
Reverse Voltage (V), I _R =10µA	Min.	3	3	3

 $[\]Theta^{\, |}$ is the off axis angle at which the luminous intensity is half the axial luminous intensity