

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



## 552-0xxx



Dimensions in mm [inches]

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:  $\pm 0.04$  mm [ $\pm 0.016$ ]
- CBI Housing:  $\pm 0.02$ mm [ $\pm 0.008$ ]



-010 Ordering Code Suffix required ONLY for Reverse Polarity Option

### PART NO.

### COLOR\*

#### HIGH EFFICIENCY, LED TYPE 02

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.

## Typical Operating Characteristics (T<sub>A</sub>=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	I <sub>v</sub> mcd	V <sub>F</sub> Volts	Test Current (mA)	Viewing Angle 2Θ <sub>½</sub>	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	I <sub>v</sub> mcd	Test Voltage	Forward Current (mA)	Viewing Angle 2Θ <sub>½</sub>	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	I <sub>v</sub> mcd	Test Voltage	Forward Current (mA)	Viewing Angle 2Θ <sub>½</sub>	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	I <sub>v</sub> mcd	V <sub>F</sub> Volts	Test Current (mA)	Viewing Angle 2Θ <sub>½</sub>	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	I <sub>v</sub> mcd	V <sub>F</sub> Volts	Test Current (mA)	Viewing Angle 2Θ <sub>½</sub>	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	I <sub>v</sub> mcd	V <sub>F</sub> Volts	Test Current (mA)	Viewing Angle 2Θ <sub>½</sub>	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

# Dialight

## 521-9183, -9284



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

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

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A=25^\circ\text{C}$ )	Red	Yellow
	<b>-9183</b>	<b>-9284</b>
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 seconds, 1.6 mm from case	

Solder Adherence per MIL-STD-202E, Method 208C

<b>OPERATING CHARACTERISTICS</b> ( $T_A=25^\circ\text{C}$ )		Red	Yellow
		<b>-9183</b>	<b>-9284</b>
Luminous Intensity (mcd)	Min.	2	2
	Typical	8	8
Peak Wavelength (nm)	Typical	635	583
Viewing Angle ( $2\theta^{1/2}$ )	Typical	60°	60°
Forward Current (I)	Typical	10	10
	Max	15	15
Reverse Voltage (V), $I_R=100\mu\text{A}$	Min.	5	5

$\theta^{1/2}$  is the off axis angle at which the luminous intensity is half the axial luminous intensity

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**5mm Discrete LED**  
**Low Current, 2mA**  
**Diffused**

**Dialight**

**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 <b>-9320</b>	Yellow <b>-9321</b>	Green <b>-9327</b>
Power Dissipation (mW)	27	36	24
Derating (mA/°C) <i>From 92°C</i>	1	1	1
Forward Current (mA)	7	7	7
Peak Current (mA) <i>Pulse width = 10 μs</i>	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 from case		

*Solder Adherence per MIL-STD-202E, Method 208C*

**OPERATING CHARACTERISTICS** (TA=25°C)

		Red <b>-9320</b>	Yellow <b>-9321</b>	Green <b>-9327</b>
Luminous Intensity (mcd)	Min.	1.2	1.2	1.2
	Typical	2	1.8	1.8
Peak Wavelength (nm) $\lambda$ Peak	Typical	635	583	565
Viewing Angle ( $2\theta$ °)	Typical	50°	50°	50°
Forward Voltage (V)	Typical	1.8	1.9	1.8
	Max.	2.2	2.7	2.2
Reverse Voltage (V), $I_R=50\mu A$	Min.	5	5	5

$\theta$  is the off axis angle at which the luminous intensity is half the axial luminous intensity

**5mm Discrete LED**  
**High Efficiency**  
**Diffused**

**Dialight**

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



PART NO.	COLOR
521-9246	Red
521-9248	Yellow
521-9250	Green
521-9704	Orange

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

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A=25^\circ\text{C}$ )	Red <b>-9246</b>	Yellow <b>-9248</b>	Green <b>-9250</b>	Orange <b>-9704</b>
Power Dissipation (mW)	135	85	135	135
Derating (mW/ $^\circ\text{C}$ ) From 25 $^\circ\text{C}$ 1. (mA/ $^\circ\text{C}$ ) From 50 $^\circ\text{C}$	1.8	1.6	1.8	.5'
Forward Current (mA)	25	20	25	30
Peak Current (mA) Pulse width = 10 $\mu\text{s}$	500	500	500	500
Operating Temperature ( $^\circ\text{C}$ )	-55/+100	-55/+100	-20/+100	-55/+100
Storage Temperature ( $^\circ\text{C}$ )	-55/+100	-55/+100	-55/+100	-55/+100
Soldering Temperature	260 $^\circ\text{C}$ , 5 seconds, 1.6 mm from case			

Solder Adherence per MIL-STD-202E, Method 208C

<b>OPERATING CHARACTERISTICS</b> ( $T_A=25^\circ\text{C}$ )		Red <b>-9246</b>	Yellow <b>-9248</b>	Green <b>-9250</b>	Orange <b>-9704</b>
Luminous Intensity (mcd) $I_F=10\text{mA}$	Min.	4	4	4.2	4
	Typical	7	8	5.2	7
Peak Wavelength (nm) $\lambda_{\text{Peak}}$	Typical	635	583	565	600
Viewing Angle ( $2\theta$ °)	Typical	60°	60°	60°	60°
Forward Voltage (V) $I_F=10\text{mA}$	Typical	2.2	2.2	2.3	1.9
	Max.	3	3	3	2.4
Reverse Voltage (V), $I_R=100\mu\text{A}$	Min.	5	5	5	5

$\theta$  is the off axis angle at which the luminous intensity is half the axial luminous intensity

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

**Dialight**

**521-9651, -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** ( $T_A=25^\circ\text{C}$ )

	Red/Green <b>-9651</b>	Yellow/Green <b>-9724</b>
Power Dissipation (mW)	100/100	60/100
Forward Current (mA)	40/30	20/30
Derating (mA/°C) From 50°C	.5/.4	.25/.40
Peak Current (mA) <i>Pulse width = 100 μs</i>	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	

Solder Adherence per MIL-STD-202E, Method 208C

**OPERATING CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ )

		Red/Green <b>-9651</b>	Yellow/Green <b>-9724</b>
Luminous Intensity (mcd)	Min.	29/12.6	2.5/2.5
	Typical	90/40	8.7/8.7
Peak Wavelength (nm) $\lambda_{\text{Peak}}$	Typical	660/565	585/565
Viewing Angle ( $2\theta^{\circ}$ )	Typical	60°	50°
Forward Voltage (V)	Typical	1.8/2.1	2.1/2.1
	Max.	2.4/2.8	2.8/2.8

$\theta^{\circ}$  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. COLOR**

521-9464	Red
521-9465	Green
521-9466	Yellow

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

**ABSOLUTE MAXIMUM RATINGS** ( $T_A=25^\circ\text{C}$ )

	Red <b>-9464</b>	Green <b>-9465</b>	Yellow <b>-9466</b>
Power Dissipation (mW)	135	135	85
Derating (mW/°C) From 25°C 1. From 50 °C	1.8	1.8	1.6 <sup>1</sup>
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 mm from case		

Solder Adherence per MIL-STD-202E, Method 208C

**OPERATING CHARACTERISTICS** ( $T_A=25^\circ\text{C}$ )

		Red <b>-9464</b>	Green <b>-9465</b>	Yellow <b>-9466</b>
Luminous Intensity (mcd)	Min.	80	80	80
	Typical	125	120	140
Peak Wavelength (nm)	Typical	635	565	583
Viewing Angle ( $2\theta^{1/2}$ )	Typical	24°	24°	24°
Forward Voltage (V)	Typical	2.2	2.3	2.2
	Max.	3	3	3
Reverse Voltage (V), $I_R=100\mu\text{A}$	Min.	5	5	5

$\theta^{1/2}$  is the off axis angle at which the luminous intensity is half the axial luminous intensity

**6**

5mm  
High Efficiency  
Diffused

**Dialight**

5HD-xxxx

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

TYPE	COLOR
*5HD-9269	Red
*5HD-9270-2	Green
*5HD-9270-5	Green
*5HD-9271-2	Yellow
*5HD-9271-5	Yellow

**ABSOLUTE MAXIMUM RATINGS**

(T <sub>A</sub> =25°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 <sup>1</sup>	140	75 .66 <sup>1</sup>	200	60 .66 <sup>1</sup>
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				

Solder Adherence per MIL-STD-202E, Method 208C

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**OPERATING CHARACTERISTICS**

(T <sub>A</sub> =25°C)		Red -9269	Green -9270-2	Green -9270-5	Yellow -9271-2	Yellow -9271-5
Luminous Intensity (mcd)	Min.	2.2	4	3.6	4	2.2
	Typical	7	32	10	10	6.3
Peak Wavelength (nm)	Typical	650	565	563	590	585
	λ Peak					
Viewing Angle (2Θ °)	Typical	50°	50°	65°	70°	50°
Forward Voltage (V)	Typical	2.2	2*	2.1	2.4*	2.1
	Max.	2.5	2.6*	3	3*	3
Reverse Voltage (V),	Min.	5	5*	3*	5*	3
	I <sub>R</sub> =100μA *I <sub>R</sub> =10μA					

Θ is the off axis angle at which the luminous intensity is half the axial luminous intensity



5mm  
General Purpose  
Diffused

**Dialight**

5ND-xxxx

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

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

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> =25°C)	Red	Yellow	Green
	-9672	-9673	-9674
Power Dissipation (mW)	80	60	100
Forward Current (mA)	40	20	30
Derating (mA/°C) <i>From 25°C</i>	.5	.25	.4
Peak Current (mA) <i>Pulse width = 10 μs</i>	200	80	120
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		

*Solder Adherence per MIL-STD-202E, Method 208C*

OPERATING CHARACTERISTICS (T <sub>A</sub> =25°C)		Red	Yellow	Green
		-9672	-9673	-9674
Luminous Intensity (mcd)	Min.	3.5	3.5	3.5
	Typical	12.3	12.3	12.3
Peak Wavelength (nm)	Typical	635	585	565
Viewing Angle (2θ <sup>½</sup> )	Typical	60°	60°	60°
Forward Voltage (V)	Typical	2	2.1	2.1
	Max.	2.8	2.8	2.8
Reverse Voltage (V), I <sub>R</sub> =100μA	Min.	5	5	5

θ<sup>½</sup> is the off axis angle at which the luminous intensity is half the axial luminous intensity

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5mm  
Integral Resistor  
Diffused

**Dialight**  
5RD-xxxx

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

TYPE	COLOR	VOLTS
*5RD-9378	Green	12
*5RD-9379	Yellow	12
*5RD-9422	Red	5
*5RD-9423	Green	5

**ABSOLUTE MAXIMUM RATINGS**

(T <sub>A</sub> =25°C)	Green 12V -9378	Yellow 12V -9379	Red 5V -9422	Green 5V -9423
Forward Voltage (V) *(T <sub>A</sub> =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			

Solder Adherence per MIL-STD-202E, Method 208C

**OPERATING CHARACTERISTICS**

(T <sub>A</sub> =25°C)		Green 12V -9378	Yellow 12V -9379	Red 5V -9422	Green 5V -9423
Luminous Intensity (mcd)	Min.	1.5*	1.5*	1	2
	Typical	4*	4*	2	8
V <sub>F</sub> =5V, *V <sub>F</sub> =12V					
Peak Wavelength (nm)	Typical	565	583	655	565
λ Peak					
Viewing Angle (2θ *)	Typical	60°	60°	60°	60°
Forward Current (mA), V <sub>F</sub> =5V	Typical	13*	13*	13	12
*V <sub>F</sub> =12V	Max.	20*	20*	20	15
Reverse Voltage (V), I <sub>R</sub> =100μA	Typical	5	5	5	5

θ<sup>1</sup> is the off axis angle at which the luminous intensity is half the axial luminous intensity

5mm  
Super Bright LED  
Diffused

**Dialight**

**5SD-XXXX**

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

<u>TYPE</u>	<u>COLOR</u>
*5SD-9441	Red
*5SD-9455	Yellow
*5SD-9456	Green

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_A=25^\circ\text{C}$ )	Red <b>-9441</b>	Yellow <b>-9455</b>	Green <b>-9456</b>
Power Dissipation (mW)	75	75	75
Forward Current (mA)	25	25	25
Derating (mA/°C) <i>From 50°C</i> * (mW/°C) <i>From 40°C</i>	.66*	.5	.5
Peak Current (mA) <i>Pulse width = 1 ms</i>	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		

*Solder Adherence per MIL-STD-202E, Method 208C*

<b>OPERATING CHARACTERISTICS</b> ( $T_A=25^\circ\text{C}$ )		Red <b>-9441</b>	Yellow <b>-9455</b>	Green <b>-9456</b>
Luminous Intensity (mcd)	Min.	17	17	17
	Typical	34	34	34
Peak Wavelength (nm)	Typical	650	585	563
Viewing Angle ( $2\theta_{\frac{1}{2}}$ )	Typical	50°	50°	50°
Forward Voltage (V)	Typical	2.1	2.2	2.2
	Max.	2.55	3	3
Reverse Voltage (V), $I_R=10\mu\text{A}$	Min.	3	3	3

$\theta_{\frac{1}{2}}$  is the off axis angle at which the luminous intensity is half the axial luminous intensity

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