

5mm

LED CBI® Circuit Board Indicator Vertical, Various Heights

Dialight

561-xx0x-xxx



Features

- Multiple CBIs form horizontal LED arrays on 7.24mm (0.285") center-lines.
- 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
- High Contrast, UL 94 V-0 rated, black housing
- Oxygen index: 29%(all sizes)

Custom Devices

- Contact factory for other LED types or alternate heights

Tolerance note: As noted, otherwise:

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

PART NO.

INTEGRAL RESISTOR, 5 VOLTS

561-0104-xxx

COLOR

Red

LOW CURRENT

561-1101-xxx

Red

561-1201-xxx

Yellow

561-1301-xxx

Green

HIGH EFFICIENCY

561-0901-xxx

Orange

561-2101-xxx

Red

561-2201-xxx

Green

561-2301-xxx

Yellow

HIGH EFFICIENCY, TINTED, NON DIFFUSED

561-2401-xxx

Red

561-2501-xxx

Green

561-2601-xxx

Yellow

SUPER BRIGHT, DIFFUSED

561-5101-xxx

Red

561-5201-xxx

Green

561-5301-xxx

Yellow

SUPER BRIGHT, WATER CLEAR (Non-Tinted, Non-Diffused)

561-5501-xxx

Red

561-5601-xxx

Green

561-5701-xxx

Yellow

BI-COLOR

561-3001-xxx

Red/Green

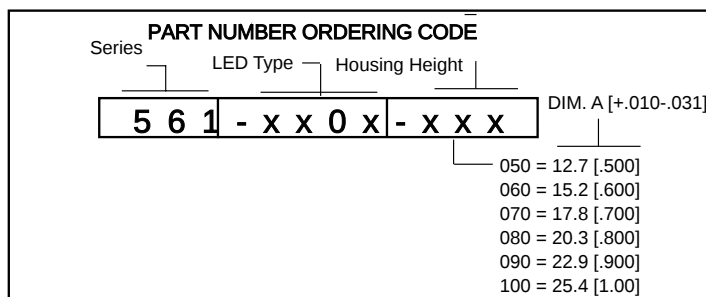
561-3101-xxx

Yellow/Green

6

NEW

NEW



Typical Operating Characteristics (T_A=25°C)

See LED data sheet for additional information

INTEGRAL RESISTOR, 5 VOLTS See page 6-55 and 6-56 for Reference Only LED Drive Circuit Examples. See page 6-57 for Pin Out

Part Number	Color	Peak Wavelength nm	I _v mcd	Test Voltage	Forward Current (mA)	Viewing Angle 2Θ _½	LED Data sheet	Page #
561-0104-xxx	Red	635	8	5	10	60°	521-9183	6-41

LOW CURRENT

Part Number	Color	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2Θ _½	LED Data sheet	Page #
561-1101-xxx	Red	635	2	1.8	2	50°	521-9320	6-42
561-1201-xxx	Yellow	583	1.8	1.9	2	50°	521-9321	6-42
561-1301-xxx	Green	565	1.8	1.8	2	50°	521-9327	6-42

HIGH EFFICIENCY

Part Number	Color	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2Θ _½	LED Data sheet	Page #
561-0901-xxx	Orange	600	7	1.9	10	60°	521-9704	6-43
561-2101-xxx	Red	635	7	2.2	10	60°	521-9246	6-43
561-2201-xxx	Green	565	32	2*	10	50°	5HD-9270-2	6-49
561-2301-xxx	Yellow	590	10	2.4*	10	70°	5HD-9271-2	6-49

* I_F = 20mA

HIGH EFFICIENCY, TINTED, NON-DIFFUSED

Part Number	Color	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2Θ _½	LED Data sheet	Page #
561-2401-xxx	Red	635	60	2.2	10	35°	521-9247	6-44
561-2501-xxx	Green	565	70	2.3	10	24°	521-9251	6-44
561-2601-xxx	Yellow	583	50	2.2	10	35°	521-9249	6-44

SUPER BRIGHT, DIFFUSED

Part Number	Color	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2Θ _½	LED Data sheet	Page #
561-5101-xxx	Red	650	34	2.1	20	50°	5SD-9441	6-53
561-5201-xxx	Green	563	34	2.2	20	50°	5SD-9456	6-53
561-5301-xxx	Yellow	585	34	2.2	20	50°	5SD-9455	6-53

SUPER BRIGHT, WATER CLEAR (NON-TINTED, NON-DIFFUSED)

Part Number	Color	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2Θ _½	LED Data sheet	Page #
561-5501-xxx	Red	635	125	2.2	20	24°	521-9464	6-47
561-5601-xxx	Green	565	120	2.3	20	24°	521-9465	6-47
561-5701-xxx	Yellow	583	140	2.2	20	24°	521-9466	6-47

BI-COLOR

Part Number	Color	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2Θ _½	LED Data sheet	Page #
561-3001-xxx	Red/Green	660/565	90/40	1.8/2.1	20	60°	521-9651	6-46
561-3101-xxx	Yellow/Green	585/565	8.7/8.7	2.1/2.1	20	50°	521-9724	6-46

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

ABSOLUTE MAXIMUM RATINGS (T _A =25°C)	Red -9183	Yellow -9284
	7.5	7.5
Forward Voltage (V)	.071	.071
Derating (V/°C) From 50°C		
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

OPERATING CHARACTERISTICS (T _A =25°C)		Red -9183	Yellow -9284
		2	2
Luminous Intensity (mcd)	Min.	8	8
V _F = 5V	Typical	635	583
Peak Wavelength (nm)	Typical	60°	60°
λ Peak		10	10
Viewing Angle (2θ ¹)	Typical	15	15
Forward Current (I)	Typical	5	5
V _F = 5V	Max		
Reverse Voltage (V), I _R =100μA	Min.		

θ¹ is the off axis angle at which the luminous intensity is half the axial luminous intensity

5mm Discrete LED

Low Current, 2mA

Diffused

Dialight

521-9320, -9321, -9327



PART NO.

521-9320

521-9321

521-9327

COLOR

Red

Yellow

Green

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

ABSOLUTE MAXIMUM RATINGS (TA=25°C)

	Red -9320	Yellow -9321	Green -9327
Power Dissipation (mW)	27	36	24
Derating (mA/°C) From 92°C	1	1	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 from case		

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

OPERATING CHARACTERISTICS (TA=25°C)

		Red -9320	Yellow -9321	Green -9327
Luminous Intensity (mcd)	Min.	1.2	1.2	1.2
I _F =2mA	Typical	2	1.8	1.8
Peak Wavelength (nm)	Typical	635	583	565
λ Peak				
Viewing Angle (2Θ ^{1/2})	Typical	50°	50°	50°
Forward Voltage (V)	Typical	1.8	1.9	1.8
I _F =2mA	Max.	2.2	2.7	2.2
Reverse Voltage (V), I _R =50μA	Min.	5	5	5

Θ¹ 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

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)	Red -9246	Yellow -9248	Green -9250	Orange -9704
Power Dissipation (mW)	135	85	135	135
Derating (mW/ $^\circ\text{C}$) From 25°C 1. (mA/ $^\circ\text{C}$) From 50°C	1.8	1.6	1.8	.5 ¹
Forward Current (mA)	25	20	25	30
Peak Current (mA) Pulse width = 10 μs	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

OPERATING CHARACTERISTICS ($T_A=25^\circ\text{C}$)		Red -9246	Yellow -9248	Green -9250	Orange -9704
Luminous Intensity (mcd)	Min.	4	4	4.2	4
	Typical	7	8	5.2	7
Peak Wavelength (nm) λ Peak	Typical	635	583	565	600
Viewing Angle (2θ °)	Typical	60°	60°	60°	60°
Forward Voltage (V)	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

θ ¹ 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.

521-9651

521-9724

LED COLOR

Red/Green

Yellow/Green

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

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

	Red/Green -9651	Yellow/Green -9724
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) 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	

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

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

		Red/Green -9651	Yellow/Green -9724
Luminous Intensity (mcd)	Min.	29/12.6	2.5/2.5
	Typical	90/40	8.7/8.7
Peak Wavelength (nm)	Typical	660/565	585/565
λ_{Peak}			
Viewing Angle ($2\theta_{1/2}$)	Typical	60°	50°
Forward Voltage (V)	Typical	1.8/2.1	2.1/2.1
	Max.	2.4/2.8	2.8/2.8

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

5mm Discrete LED

High Brightness

Non-Diffused

Dialight

521-9247, -9249, -9251



PART NO.

521-9247

521-9249

521-9251

COLOR

Red

Yellow

Green

MOUNTING CLIP: 515-0004

located on page 6-48

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

	Red -9247	Yellow -9249	Green -9251
Power Dissipation (mW)	135	85	135
Derating (mW/ $^\circ\text{C}$)	1.8	1.6 ¹	1.8
Forward Current (mA)	30	20	30
Peak Current (mA)	500	500	500
Pulse width = 10 μs			
Operating Temperature ($^\circ\text{C}$)	-55/+100	-55/+100	-20/+100
Storage Temperature ($^\circ\text{C}$)	-55/+100	-55/+100	-55/+100
Soldering Temperature	260 $^\circ\text{C}$, 5 seconds, 1.6 mm from case		

¹Solder Adherence per MIL-STD-202E, Method 208C

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

		Red -9247	Yellow -9249	Green -9251
Luminous Intensity (mcd)	Min.	25	25	25
	Typical	60	50	70
Peak Wavelength (nm)	Typical	635	583	565
λ Peak				
Viewing Angle ($2\theta^{1/2}$)	Typical	35 $^\circ$	35 $^\circ$	24 $^\circ$
Forward Voltage (V)	Typical	2.2	2.2	2.3
	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

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

Dialight

521-9464,-9465,-9466



PART NO.

521-9464

521-9465

521-9466

COLOR

Red

Green

Yellow

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

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

	Red -9464	Green -9465	Yellow -9466
Power Dissipation (mW)	135	135	85
Derating (mW/°C) From 25°C 1. From 50 °C	1.8	1.8	1.6 ¹
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 -9464	Green -9465	Yellow -9466
Luminous Intensity (mcd)	Min.	80	80	80
	Typical	125	120	140
Peak Wavelength (nm)	Typical	635	565	583
λ Peak				
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 _A =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 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				

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

OPERATING CHARACTERISTICS

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

Θ¹ is the off axis angle at which the luminous intensity is half the axial luminous intensity

6

5mm
General Purpose
Diffused

Dialight

5ND-xxxx

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

TYPE

*5ND-9672
*5ND-9673
*5ND-9674

COLOR

Red
Yellow
Green

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

	Red -9672	Yellow -9673	Green -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 ($T_A=25^\circ\text{C}$)

		Red -9672	Yellow -9673	Green -9674
Luminous Intensity (mcd)	Min.	3.5	3.5	3.5
$I_F=20\text{mA}$	Typical	12.3	12.3	12.3
Peak Wavelength (nm)	Typical	635	585	565
λ_{Peak}				
Viewing Angle ($2\theta_{\frac{1}{2}}$)	Typical	60°	60°	60°
Forward Voltage (V)	Typical	2	2.1	2.1
$I_F=20\text{mA}$	Max.	2.8	2.8	2.8
Reverse Voltage (V), $I_R=100\mu\text{A}$	Min.	5	5	5

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

6

5mm
Integral Resistor
Diffused

Dialight

5RD-XXXX

*** NOT A VALID PART
NUMBER. THIS SHEET IS FOR
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<u>TYPE</u>	<u>COLOR</u>	<u>VOLTS</u>
*5RD-9378	Green	12
*5RD-9379	Yellow	12
*5RD-9422	Red	5
*5RD-9423	Green	5

ABSOLUTE MAXIMUM RATINGS

(T_A=25°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			

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

OPERATING CHARACTERISTICS

(T_A=25°C)

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

θ¹ 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.**

TYPE
*5SD-9441
*5SD-9455
*5SD-9456

COLOR
Red
Yellow
Green

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)	Red -9441	Yellow -9455	Green -9456
Power Dissipation (mW)	75	75	75
Forward Current (mA)	25	25	25
Derating (mA/ $^{\circ}\text{C}$) <i>From 50$^{\circ}\text{C}$</i> *($\text{mW}/^{\circ}\text{C}$) <i>From 40$^{\circ}\text{C}$</i>	.66*	.5	.5
Peak Current (mA) <i>Pulse width = 1 ms</i>	60	60	60
Operating Temperature ($^{\circ}\text{C}$)	-55/+100	-55/+100	-55/+100
Storage Temperature ($^{\circ}\text{C}$)	-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

OPERATING CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)		Red -9441	Yellow -9455	Green -9456
Luminous Intensity (mcd) $I_F=20\text{mA}$	Min.	17	17	17
	Typical	34	34	34
Peak Wavelength (nm) λ Peak	Typical	650	585	563
Viewing Angle ($2\theta^{1/2}$)	Typical	50 $^{\circ}$	50 $^{\circ}$	50 $^{\circ}$
Forward Voltage (V) $I_F=20\text{mA}$	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

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

6