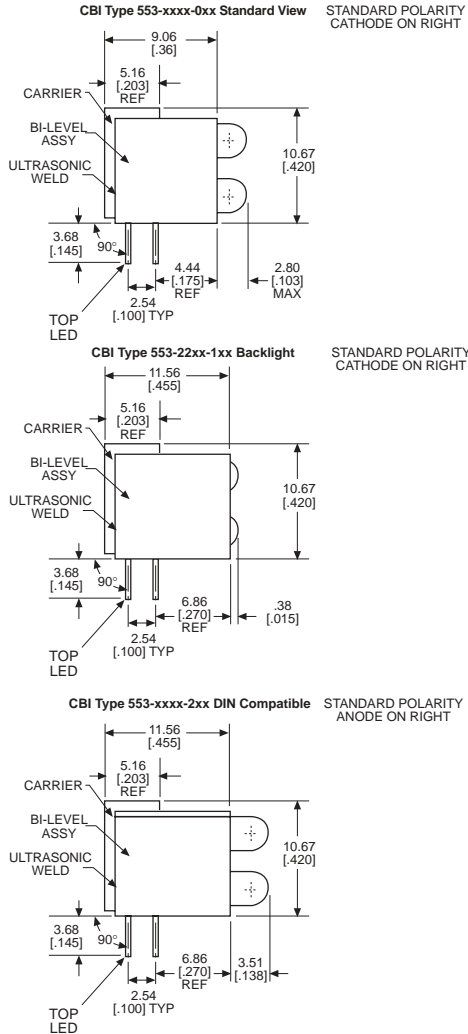


3mm LED CBI Circuit Board Indicator Ganged Arrays

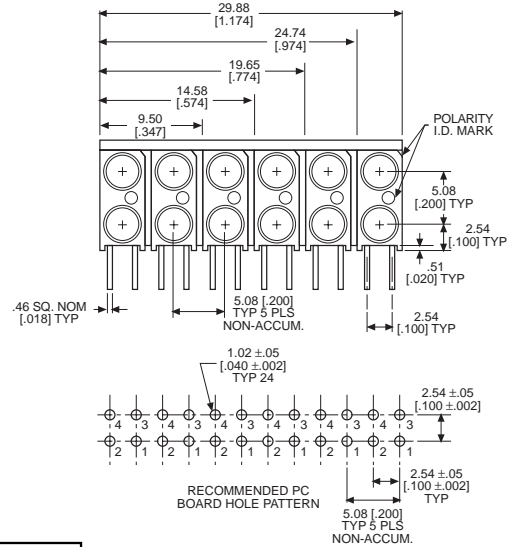


Features

- 2 through 12 LEDs
- Mount on .200 center lines
- Standard View: 553-xxxx-0xx compatible with: 553-xxxx single bi-level
- Backlight: 553-22xx-1xx compatible with: 553-22xx-100 single backlighting bi-level
- DIN Compatible: 553-xxxx-2xx compatible with: 553-xxxx-200 single DIN41494 bi-level
- Reduces insertion labor cost
- Welded angle bracket construction assures rigidity
- Carrier and housing material meets UL 94 V-0

Custom Combinations

- Consult factory for color or LED variations
- Narrow .185 mounting pitches available, consult factory



Standard Polarity Shown in Above Drawings

PART NUMBER ORDERING CODE

LED Type	Top LED Color	Bottom LED Color
01 - High Efficiency		
02 - Low Current, 2mA		
03 - Integral Resistor, 5V		
07 - Bi-color		
22 - Non-diffused		
Series	CBI Type	# of Positions 2-6
	0 - Standard View	
	1 - Backlight	
	2 - DIN 41494 Compatible	

5 5 3 - X X X X - X X X

Polarity Option	1) Reverse Polarity
0) Standard Polarity	Cathode Left Standard View
Cathode Right Standard View	Cathode Left Backlight
Cathode Right Backlight	Anode Left DIN Compatible
Anode Right DIN Compatible	

Colors: 0) Blank 1) Red or Red/Green Bi-Color 2) Green 3) Yellow 4) Yellow/Green Bi-Color 7) Orange 8) Blue³

Tolerance note: As noted, otherwise:

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



Typical Operating Characteristics (T_A = 25°C)

See LED data sheet for additional information

STANDARD VIEW

See page 4-70 and 4-71 for Reference Only LED Drive Circuit Examples. See page 4-72 for Pin Out

Part Number	Color**	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2θ _½	LED Data sheet	Page #
553-0111-0xx	Red	650	10	2	10	45°	521-9427	4-64
553-0122-0xx	Green	563	16	2.1	10	45°	521-9408	4-64
553-0133-0xx	Yellow	585	6.3	2.1	10	45°	521-9428	4-64
553-0177-0xx	Orange	600	7	2.2	10	60°	521-9498	4-58
553-0188-0xx	Blue	428	12	3.5	10	70°	521-9831	4-57
553-0211-0xx	Red	635	1.6	1.7	2	60°	521-9324	4-60
553-0222-0xx	Green	565	1.6	1.9	2	60°	521-9326	4-60
553-0233-0xx	Yellow	585	1.6	1.8	2	60°	521-9325	4-60
553-0311-0xx	Red	635	29	5†	10††	60°	521-9215	4-59
553-0322-0xx	Green	565	19	5†	10††	60°	521-9323	4-59
553-0333-0xx	Yellow	585	12.6	5†	10††	60°	521-9322	4-59
553-0711-0xx	Red/Green	635/565	4.7/10	2/2.1	10	50°	521-9459	4-63
553-0744-0xx	Yellow/Green	585/565	4.3/6.3	2.1*/2.1*	10	80°	521-9478	4-62
553-2211-0xx	Red	635	29	2*	10	45°	521-9432	4-61
553-2222-0xx	Green	565	50	2.1*	10	45°	521-9430	4-61
553-2233-0xx	Yellow	585	20	2.1*	10	45°	521-9431	4-61

BACKLIGHT

Part Number	Color**	Peak Wavelength nm	I _v mcd	V _F Volts*	Test Current (mA)	Viewing Angle 2θ _½	LED Data sheet	Page #
553-2211-1xx	Red-Red	635/635	29/29	2/2	10	45°	521-9432	4-61
553-2222-1xx	Green-Green	565/565	50/50	2.1/2.1	10	45°	521-9430	4-61
553-2223-1xx	Green-Yellow	565/585	50/20	2.1/2.1	10	45°	521-9430/-9431	4-61
553-2232-1xx	Yellow-Green	585/565	20/50	2.1/2.1	10	45°	521-9431/-9430	4-61
553-2233-1xx	Yellow-Yellow	585/585	20/20	2.1/2.1	10	45°	521-9431	4-61

DIN COMPATIBLE

Part Number	Color**	Peak Wavelength nm	I _v mcd	V _F Volts	Test Current (mA)	Viewing Angle 2θ _½	LED Data sheet	Page #
553-0111-2xx	Red	635	10	2*	10	60°	521-9216	4-58
553-0122-2xx	Green	565	12.6	2.1*	10	60°	521-9210	4-58
553-0133-2xx	Yellow	585	10	2.1*	10	60°	521-9211	4-58
553-0177-2xx	Orange	600	7	2.2	10	60°	521-9498	4-58
553-0188-2xx	Blue	428	12	3.5	10	70°	521-9831	4-57
553-0211-2xx	Red	635	1.6	1.7	2	60°	521-9324	4-60
553-0222-2xx	Green	565	1.6	1.9	2	60°	521-9326	4-60
553-0233-2xx	Yellow	585	1.6	1.8	2	60°	521-9325	4-60
553-0311-2xx	Red	635	29	5†	10††	60°	521-9215	4-59
553-0322-2xx	Green	565	19	5†	10††	60°	521-9323	4-59
553-0333-2xx	Yellow	585	12.6	5†	10†	60°	521-9322	4-59
553-0711-2xx	Red/Green	635/565	4.7/10	2/2.1	10	50°	521-9459	4-63
553-0744-2xx	Yellow/Green	585/565	4.3/6.3	2.1*/2.1*	10	80°	521-9478	4-62
553-2211-2xx	Red	635	29	2*	10	45°	521-9432	4-61
553-2222-2xx	Green	565	50	2.1*	10	45°	521-9430	4-61
553-2233-2xx	Yellow	585	20	2.1*	10	45°	521-9431	4-61

* I_F = 20mA † Test Voltage †† Forward Current mA ** Top-Bottom LED



3mm Discrete LED Tinted, Diffused

Dialight

521-9831



PART NO. 521-9831
COLOR Blue³

MOUNTING CLIP: 515-0006
located on page 4-65



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
SENSITIVE
DEVICES

4

ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

Blue
-9831

Power Dissipation (mW)	100
Forward Current (mA)	20
Derating (mA/°C) From 55°C	.44
Operating Temperature (°C)	-40/+100
Storage Temperature (°C)	-40/+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)

Blue
-9831

Luminous Intensity (mcd)	Min.	6.3
I _F =10mA	Typical	12
Peak Wavelength (nm)	Typical	428
λ Peak		
Viewing Angle (2Θ _{1/2})	Typical	70°
Forward Voltage (V)	Typical	3.5
I _F =10mA	Max.	4.2
Reverse Voltage (V) I _R =10μA	Min.	3

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

3mm Discrete LED

High Efficiency

Diffused

521-9210, -9211, -9216, -9498, -9636



PART NO. COLOR

521-9210 Green

521-9211 Yellow

521-9216 Red

521-9498 Orange

521-9636 Red



MOUNTING CLIP: 515-0006

located on page 4-65

ABSOLUTE MAXIMUM RATINGS (T _A =25°C)	Green -9210	Yellow -9211	Red -9216	Orange -9498	Red -9636
Power Dissipation (mW)	100	60	100	135	100
Forward Current (mA)	30	20	30	25	40
Derating (mA/°C) From 50°C 1 from 25°C	.4	.25	.4	.5	.5 ¹
Operating Temperature (°C)	-55/+100	-55/+100	-55/+100	-55/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100	-55/+100	-55/+100
Soldering Temperature	260°C, 5 seconds, 1.6 mm from body				

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

OPERATING CHARACTERISTICS (T _A =25°C)		Green -9210	Yellow -9211	Red -9216	Orange -9498	Red -9636
Luminous Intensity (mcd)	Min.	4.7	7.4	7.4	3.4	8.7 ¹
	I _F =10mA 1 I _F =20mA	Typical	12.6	10	10	7
Peak Wavelength (nm)	Typical	565	585	635	600	660
λ Peak						
Viewing Angle (2θ °)	Typical	60°	60°	60°	60°	60°
Forward Voltage (V)	Typical	2.1 ¹	2.1 ¹	2 ¹	2.2	1.8 ¹
	I _F =10mA 1 I _F =20mA	Max.	2.8 ¹	2.8 ¹	2.8 ¹	3
Reverse Voltage (V), I _R =100µA	Max.	5	5	5	5	4

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

**3mm Discrete LED
Integral Resistor, 5V
Diffused**

Dialight

521-9215, -9322, -9323



PART NO.	COLOR
521-9215	Red
521-9322	Yellow
521-9323	Green

MOUNTING CLIP: 515-0006
located on page 4-65

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)	Red	Yellow	Green
	-9215	-9322	-9323
Forward Voltage (V)	7.5	7.5	7.5
Derating ($V/^\circ\text{C}$) From 50°C	.086	.086	.071
Operating Temperature ($^\circ\text{C}$)	-40/+85	-40/+85	-20/+85
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	Yellow	Green
		-9215	-9322	-9323
Luminous Intensity (mcd)	Min.	8.7	3.7	5.6
	Typical	29	12.6	19
Peak Wavelength (nm)	Typical	635	585	565
λ Peak				
Viewing Angle ($2\theta_{1/2}$)	Typical	60 $^\circ$	60 $^\circ$	60 $^\circ$
Forward Current (mA)	Typical	10	10	10
	Max.	20	20	20
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

4

3mm Discrete LED
Low Current
Diffused

Dialight

521-9324, -9325, -9326



<u>PART NO.</u>	<u>COLOR</u>
521-9324	Red
521-9325	Yellow
521-9326	Green

MOUNTING CLIP: 515-0006
 located on page 4-65

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

	Red -9324	Yellow -9325	Green -9326
Power Dissipation (mW)	20	20	20
Forward Current (mA)	7	7	7
Derating (mA/ $^\circ\text{C}$) From 90 $^\circ\text{C}$.7	.7	.7
Peak Current (mA) Pulse width = 10 μs	500	500	500
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 -9324	Yellow -9325	Green -9326
Luminous Intensity (mcd) $I_F=2\text{mA}$	Min.	1	1	1
	Typical	1.6	1.6	1.6
Peak Wavelength (nm) λ Peak	Typical	635	585	565
Viewing Angle (2θ $^\circ$)	Typical	60 $^\circ$	60 $^\circ$	60 $^\circ$
Forward Voltage (V) $I_F=2\text{mA}$	Typical	1.7	1.8	1.9
	Max.	2.2	2.7	2.2
Reverse Voltage (V), $I_R=50\mu\text{A}$	Min.	5	5	5

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

3mm Discrete LED
High Efficiency
Tinted, Non-Diffused

Dialight

521-9430, -9431, -9432



PART NO.

COLOR

521-9430
 521-9431
 521-9432

Green
 Yellow
 Red

MOUNTING CLIP: 515-0006
 located on page 4-65

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

	Green -9430	Yellow -9431	Red -9432
Power Dissipation (mW)	100	60	100
Forward Current (mA)	30	20	30
Derating (mA/°C) From 50°C	.4	.25	.4
Peak Current (mA) Pulse width = 100µs	120	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 ($T_A=25^\circ\text{C}$)

		Green -9430	Yellow -9431	Red -9432
Luminous Intensity (mcd) $I_F=10\text{mA}$	Min.	32	10	8.7
	Typical	50	20	29
Peak Wavelength (nm) λ Peak	Typical	565	585	635
Viewing Angle ($2\theta_{1/2}$)	Typical	45°	45°	45°
Forward Voltage (V) $I_F=20\text{mA}$	Typical	2.1	2.1	2
	Max.	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

4

3mm Discrete LED
Bi-Color
Non-Tinted, Diffused



521-9478, -9628, -9768



<u>PART NO.</u>	<u>COLOR</u>
521-9478	Yellow/Green
521-9628	Red/Green
521-9768	Red/Yellow

MOUNTING CLIP: 515-0006
 located on page 4-65

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$)	Yellow/Green -9478	Red/Green -9628	Red/Yellow -9768
Power Dissipation (mW)	60/100	140/100	100/60
Forward Current (mA)	20/30	40/30	30/20
Derating (mA/°C) From 25°C From 50°C	.25 ¹ /.40 ¹	.5/.4	.4 ¹ /.25 ¹
Peak Current (mA) Pulse width = 10µs	80/120	200/120	120/80
Operating Temperature (°C)	-55/+100	-55/+100	-55/+100
Storage Temperature (°C)	-55/+100	-55/+100	-55/+100
Soldering Temperature	260°C, 5 seconds, 1.66 mm from case		

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

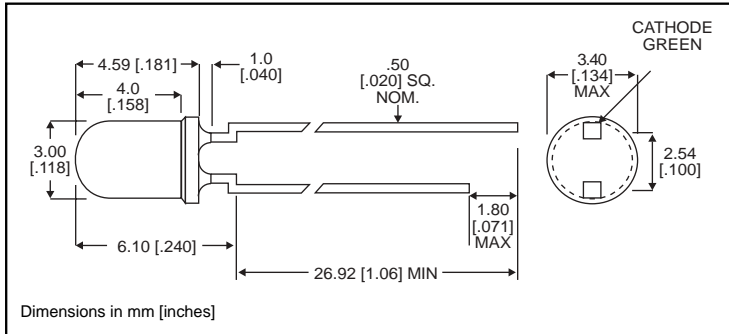
OPERATING CHARACTERISTICS ($T_A=25^\circ\text{C}$)		Yellow/Green -9478	Red/Green -9628	Red/Yellow -9768
Luminous Intensity (mcd)	Min.	2.5/2.5	3.7*/1.1*	1.7*/1.7*
	Typical	4.3/6.3	12.6*/3.7*	5.6*/5.6*
Peak Wavelength (nm)	Typical	585/565	660/565	630/585
λ Peak				
Viewing Angle (2θ °)	Typical	80°	200°	80°
Forward Voltage (V)	Typical	2.1/2.1	1.8/2.1	2/2.1
	Max.	2.8/2.8	2.4/2.8	2.8/2.8
Reverse Voltage (V) $I_R=100\text{ua}$	Min.	5	5	5

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

**3mm Discrete LED
Bi-Color
Non-Tinted, Diffused**

Dialight

521-9459



PART NO. 521-9459
COLOR Red/Green

MOUNTING CLIP: 515-0006
located on page 4-65

4

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

Red/Green
-9459

Power Dissipation (mW)	140
Forward Current (mA)	45
Derating (mA/°C) From 25°C	.6
Peak Current (mA) <i>Pulse width = 10µs</i>	1000
Operating Temperature (°C)	-55/+100
Storage Temperature (°C)	-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
-9459

Luminous Intensity (mcd) $I_F=10\text{mA}$	Min. Typical	2.5/3.7 4.7/10
Peak Wavelength (nm) λ_{Peak}	Typical	635/565
Viewing Angle ($2\theta_{1/2}$)	Typical	50°
Forward Voltage (V) $I_F=10\text{mA}$	Typical Max.	2/2.1 2.8/2.8

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

3mm Discrete LED High Efficiency Diffused

Dialight

521-94xx



TYPE
521-9408
521-9427
521-9428

COLOR
Green
Red
Yellow

MOUNTING CLIP: 515-0006
located on page 4-65

ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

	Green -9408	Red -9427	Yellow -9428
Power Dissipation (mW)	75	60	60
Forward Current (mA)	25	20	20
Derating (mA/°C) From 50°C	.5	.5	.5
Peak Current (mA)	60	60	60
Operating Temperature (°C)	-25/+85	-25/+85	-25/+85
Storage Temperature (°C)	-30/+100	-30/+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)

		Green -9408	Red -9427	Yellow -9428
Luminous Intensity (mcd)	Min.	5.6	3.6	2.2
	Typical	16	10	6.3
Peak Wavelength (nm)	Typical	563	650	585
Viewing Angle (2θ ^{1/2})	Typical	45°	45°	45°
Forward Voltage (V)	Typical	2.1	2	2.1
	Max.	3	3	3
Reverse Voltage (V), I _R =10μA	Min.	3	3	3

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