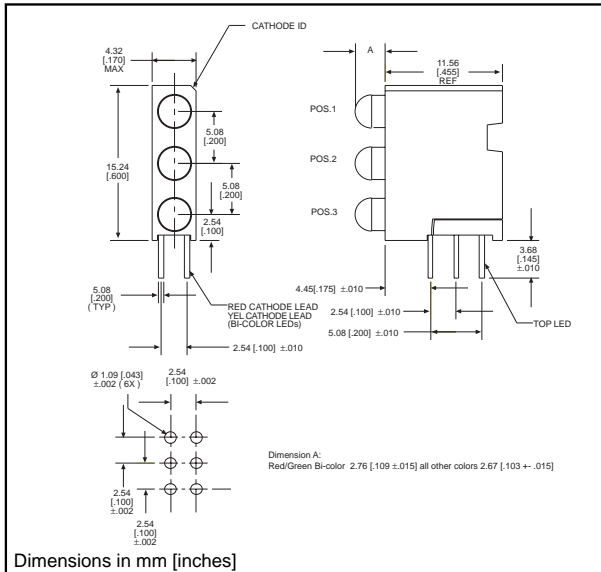


3mm LED CBI® Circuit Board Indicator Tri-Level

Dialight

564-0x00-xxx



Features

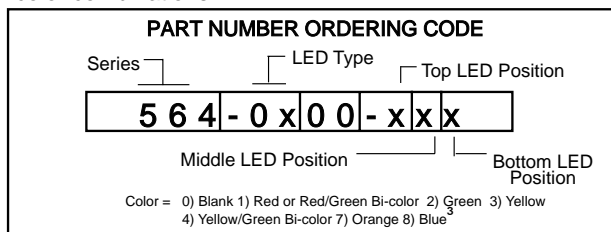
- Multiple CBIs form horizontal LED arrays on 4.45mm (0.175") center-lines.
- High Contrast, UL 94 V-0 rated, black housing
- Oxygen index: 29%
- Polymer content: PBT, 0.078 g
- Housing stand-offs facilitate PCB cleaning
- Solderability per MIL-STD-202F, method 208F
- LEDs are safe for direct viewing per IEC 825-1, EN-60825-1

Tolerance note: As noted, otherwise:

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

Custom Combinations

- Contact factory for information on custom color combinations



PART NO.

COLOR*

HIGH EFFICIENCY - LED TYPE 01

- 564-0100-111 Red-Red-Red
- 564-0100-132 Red-Yellow-Green
- 564-0100-222 Green-Green-Green
- 564-0100-777 Orange-Orange-Orange
- 564-0100-999 Blue-Blue-Blue



LOW CURRENT - LED TYPE 02

- 564-0200-111 Red-Red-Red
- 564-0200-132 Red-Yellow-Green
- 564-0200-222 Green-Green-Green

INTEGRAL RESISTOR, 5 VOLTS - LED TYPE 03

- 564-0300-111 Red-Red-Red
- 564-0300-132 Red-Yellow-Green
- 564-0300-222 Green-Green-Green

BI-COLOR - LED TYPE 07

- 564-0700-111 Red/Green-Red/Green-Red/Green
- 564-0700-444 Yellow/Green-Yellow/Green-Yellow/Green

* Top-Middle-Bottom LED

4



ATTENTION
OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
SENSITIVE
DEVICES

Typical Operating Characteristics (T_A=25°C)

See LED data sheet for additional information
 See Pages 4-73 and 4-74 for LED Drive Circuit Examples
 See Page 4-72 for Pin Out

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 # |
|--------------|--------|--------------------|--------------------|----------------------|-------------------|-------------------------------|----------------|--------|
| 564-0100-xxx | Red | 635 | 10 | 2* | 10 | 60° | 521-9216 | 4-58 |
| | Green | 565 | 12.6 | 2.1* | 10 | 60° | 521-9210 | 4-58 |
| | Yellow | 585 | 10 | 2.1* | 10 | 60° | 521-9211 | 4-58 |
| | Orange | 600 | 7 | 2.2 | 10 | 60° | 521-9498 | 4-58 |
| | Blue | 428 | 12 | 3.5 | 10 | 70° | 521-9831 | 4-57 |

* I_F = 20mA

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 # |
|--------------|--------|--------------------|--------------------|----------------------|-------------------|-------------------------------|----------------|--------|
| 564-0200-xxx | Red | 635 | 1.6 | 1.7 | 2 | 60° | 521-9324 | 4-60 |
| | Green | 565 | 1.6 | 1.9 | 2 | 60° | 521-9326 | 4-60 |
| | Yellow | 585 | 1.6 | 1.8 | 2 | 60° | 521-9325 | 4-60 |

INTEGRAL RESISTOR, 5 VOLTS

| Part Number | Color | Peak Wavelength nm | I _v mcd | Test Voltage | Forward Current (mA) | Viewing Angle 2Θ _½ | LED Data sheet | Page # |
|--------------|--------|--------------------|--------------------|--------------|----------------------|-------------------------------|----------------|--------|
| 564-0300-xxx | Red | 635 | 29 | 5 | 10 | 60° | 521-9215 | 4-59 |
| | Green | 565 | 19 | 5 | 10 | 60° | 521-9323 | 4-59 |
| | Yellow | 585 | 12.6 | 5 | 10 | 60° | 521-9322 | 4-59 |

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 # |
|--------------|--------------|--------------------|--------------------|----------------------|-------------------|-------------------------------|----------------|--------|
| 564-0700-111 | Red/Green | 635/565 | 4.7/10 | 2/2.1 | 10 | 50° | 521-9459 | 4-63 |
| 564-0700-444 | Yellow/Green | 585/565 | 4.3/6.3 | 2.1*/2.1* | 10 | 80° | 521-9478 | 4-62 |

* I_F = 20mA





3mm Discrete LED Tinted, Diffused



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) IR=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 |
| 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



PART NO. COLOR

| | |
|----------|--------|
| 521-9324 | Red |
| 521-9325 | Yellow |
| 521-9326 | Green |

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

ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

| | Red -9324 | Yellow -9325 | Green -9326 |
|--|------------------------------------|-----------------|----------------|
| Power Dissipation (mW) | 20 | 20 | 20 |
| Forward Current (mA) | 7 | 7 | 7 |
| Derating (mA/°C) From 90°C | .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 (T_A=25°C)

| | | Red -9324 | Yellow -9325 | Green -9326 |
|---|---------|--------------|-----------------|----------------|
| Luminous Intensity (mcd) I _F =2mA | Min. | 1 | 1 | 1 |
| | Typical | 1.6 | 1.6 | 1.6 |
| Peak Wavelength (nm) λ Peak | Typical | 635 | 585 | 565 |
| Viewing Angle (2Θ ^{1/2}) | Typical | 60° | 60° | 60° |
| Forward Voltage (V) I _F =2mA | Typical | 1.7 | 1.8 | 1.9 |
| | Max. | 2.2 | 2.7 | 2.2 |
| Reverse Voltage (V), I _R =50μA | Min. | 5 | 5 | 5 |

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

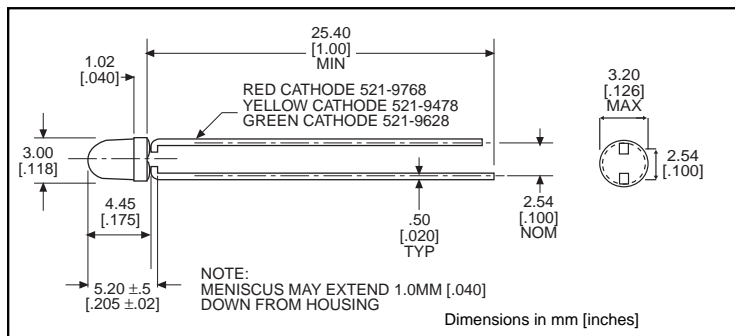
3mm Discrete LED

Bi-Color

Non-Tinted, Diffused



521-9478, -9628, -9768



| PART NO. | COLOR |
|----------|--------------|
| 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) λ Peak | Typical | 585/565 | 660/565 | 630/585 |
| 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) $I_R=100\mu\text{a}$ | Min. | 5 | 5 | 5 |

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

3mm Discrete LED 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°C)

Red/Green
-9459

| | |
|----------------------------|------------------------------------|
| Power Dissipation (mW) | 140 |
| Forward Current (mA) | 45 |
| Derating (mA/°C) From 25°C | .6 |
| Peak Current (mA) | 1000 |
| Pulse width = 10µs | |
| 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°C)

Red/Green
-9459

| | | |
|------------------------------------|---------|---------|
| Luminous Intensity (mcd) | Min. | 2.5/3.7 |
| I _F =10mA | Typical | 4.7/10 |
| Peak Wavelength (nm) | Typical | 635/565 |
| λ Peak | | |
| Viewing Angle (2Θ _{1/2}) | Typical | 50° |
| Forward Voltage (V) | Typical | 2/2.1 |
| I _F =10mA | Max. | 2.8/2.8 |

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