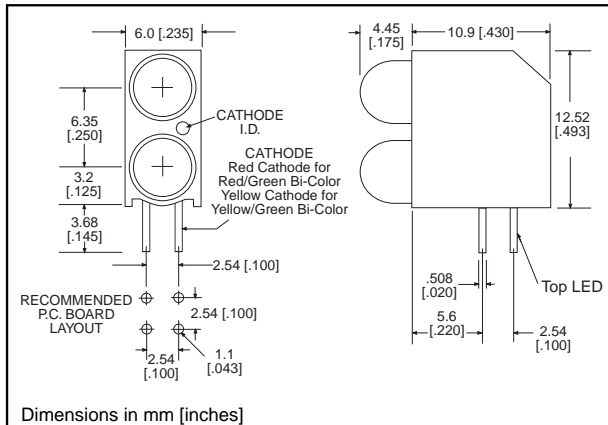


5mm LED CBI® Circuit Board Indicator Bi-level

Dialight

552-0xxx



Standard Polarity shown in drawing: Cathode right

Features

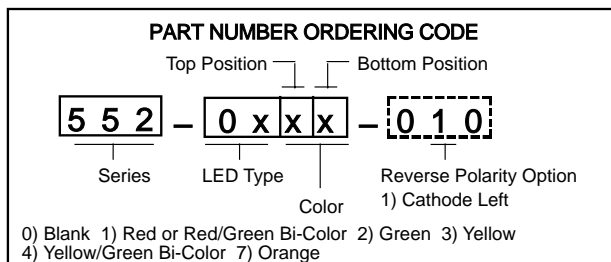
- Multiple CBIs form horizontal LED arrays on 6.35mm (0.250") center-lines.
- High Contrast, UL 94 V-0 rated, black housing
- Oxygen index: 32%
- Polymer content: PBT, 0.710 g
- Housing stand-offs facilitate PCB cleaning
- Solderability per MIL-STD-202F, method 208F
- LEDs are safe for direct viewing 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: ± 0.02 mm [± 0.008]



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.

-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 | I _v mcd | V _F Volts | Test Current (mA) | Viewing Angle 2Θ _½ | 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 _v mcd | Test Voltage | Forward Current (mA) | Viewing Angle 2Θ _½ | 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 _v mcd | Test Voltage | Forward Current (mA) | Viewing Angle 2Θ _½ | 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 _v mcd | V _F Volts | Test Current (mA) | Viewing Angle 2Θ _½ | 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 _v mcd | V _F Volts | Test Current (mA) | Viewing Angle 2Θ _½ | 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 _v mcd | V _F Volts | Test Current (mA) | Viewing Angle 2Θ _½ | 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



| <u>PART NO.</u> | <u>LED COLOR</u> |
|-----------------|------------------|
| 521-9183 | Red |
| 521-9284 | Yellow |

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

| ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$) | 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 seconds, 1.6 mm from case | |

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

| OPERATING CHARACTERISTICS ($T_A=25^\circ\text{C}$) | | Red -9183 | Yellow -9284 |
|---|---------|---------------------|------------------------|
| 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

6

5mm Discrete LED
Low Current, 2mA
Diffused

Dialight

521-9320, -9321, -9327



| PART NO. | COLOR |
|----------|--------|
| 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 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 |
| | Typical | 2 | 1.8 | 1.8 |
| Peak Wavelength (nm) λ Peak | Typical | 635 | 583 | 565 |
| Viewing Angle (2θ ½) | Typical | 50° | 50° | 50° |
| Forward Voltage (V) IF=2mA | Typical | 1.8 | 1.9 | 1.8 |
| | Max. | 2.2 | 2.7 | 2.2 |
| Reverse Voltage (V), IR=50μA | Min. | 5 | 5 | 5 |

θ ½ 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/°C) From 25°C 1. (mA/°C) From 50°C | 1.8 | 1.6 | 1.8 | .5' |
| Forward Current (mA) | 25 | 20 | 25 | 30 |
| Peak Current (mA) Pulse width = 10µs | 500 | 500 | 500 | 500 |
| Operating Temperature (°C) | -55/+100 | -55/+100 | -20/+100 | -55/+100 |
| 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 ($T_A=25^\circ\text{C}$) | | 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 |

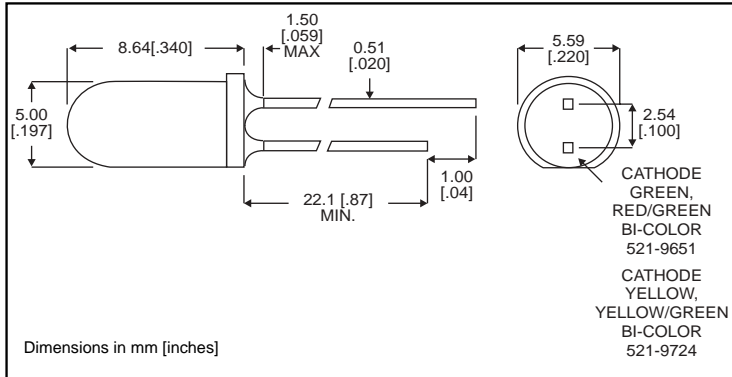
θ is the off axis angle at which the luminous intensity is half the axial luminous intensity

6

**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 -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) <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 -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) λ_{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 |

θ° 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 -9464 | Green -9465 | Yellow -9466 |
|---|-------------------------------------|-----------------------|------------------------|
| Power Dissipation (mW) | 135 | 135 | 85 |
| Derating (mW/°C) <i>From 25°C 1. From 50 °C</i> | 1.8 | 1.8 | 1.6 ¹ |
| Forward Current (mA) | 30 | 30 | 20 |
| Peak Current (mA) <i>Pulse width = 10 μs</i> | 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 |
| 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 |

¹ θ 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

6

OPERATING CHARACTERISTICS

| (T _A =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 _R =100μA *I _R =10μA | | | | | |

Θ¹ 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 ($T_A=25^\circ\text{C}$)

| | 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 |
| | Typical | 12.3 | 12.3 | 12.3 |
| Peak Wavelength (nm) | Typical | 635 | 585 | 565 |
| Viewing Angle ($2\theta^{\frac{1}{2}}$) | Typical | 60° | 60° | 60° |
| Forward Voltage (V) | Typical | 2 | 2.1 | 2.1 |
| | 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
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 _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 |
| | Typical | 4* | 4* | 2 | 8 |
| Peak Wavelength (nm) | Typical | 565 | 583 | 655 | 565 |
| Viewing Angle (2θ *) | Typical | 60° | 60° | 60° | 60° |
| Forward Current (mA), V _F =5V *V _F =12V | Typical | 13* | 13* | 13 | 12 |
| | 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 | COLOR |
|-----------|--------|
| *5SD-9441 | Red |
| *5SD-9455 | Yellow |
| *5SD-9456 | 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/°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

| 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 ($2\theta_{\frac{1}{2}}$) | Typical | 50° | 50° | 50° |
| 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 |

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

6