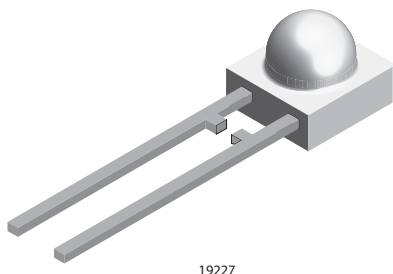




## Sideview LED, Ø 5 mm Tinted Diffused Package



19227

### FEATURES

- Even luminance of the emitting surface
- Wide viewing angle
- Yellow and green color categorized
- For DC and pulse operation
- Material categorization:  
For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm side view
- Product series: standard
- Angle of half intensity:  $\pm 80^\circ$

### APPLICATIONS

- Indicating and illumination purposes

### PARTS TABLE

| PART           | COLOR      | LUMINOUS INTENSITY (mcd) |      |      | at $I_F$ (mA) | WAVELENGTH (nm) |      |      | at $I_F$ (mA) | FORWARD VOLTAGE (V) |      |      | at $I_F$ (mA) | TECHNOLOGY   |
|----------------|------------|--------------------------|------|------|---------------|-----------------|------|------|---------------|---------------------|------|------|---------------|--------------|
|                |            | MIN.                     | TYP. | MAX. |               | MIN.            | TYP. | MAX. |               | MIN.                | TYP. | MAX. |               |              |
| TLPR5600       | Red        | 1                        | 3.5  | -    | 10            | -               | 630  | -    | 10            | -                   | 2    | 3    | 20            | GaAsP on GaP |
| TLPR5600-AS12Z | Red        | 1                        | 3.5  | -    | 10            | -               | 630  | -    | 10            | -                   | 2    | 3    | 20            | GaAsP on GaP |
| TLPH5600       | Red        | 0.63                     | 3.5  | -    | 10            | 612             | -    | 625  | 10            | -                   | 2    | 3    | 20            | GaAsP on GaP |
| TLPY5600       | Yellow     | 0.63                     | 2.25 | -    | 10            | 581             | -    | 594  | 10            | -                   | 2.4  | 3    | 20            | GaAsP on GaP |
| TLPY5600-ASZ   | Yellow     | 0.63                     | 2.25 | -    | 10            | 581             | -    | 594  | 10            | -                   | 2.4  | 3    | 20            | GaAsP on GaP |
| TLPG5600       | Green      | 0.63                     | 2.25 | -    | 10            | 562             | -    | 575  | 10            | -                   | 2.4  | 3    | 20            | GaP on GaP   |
| TLPG5600-AS12Z | Green      | 0.63                     | 2.25 | -    | 10            | 562             | -    | 575  | 10            | -                   | 2.4  | 3    | 20            | GaP on GaP   |
| TLPP5600       | Pure green | 0.63                     | 1.6  | -    | 10            | 555             | -    | 565  | 10            | -                   | 2.4  | 3    | 20            | GaP on GaP   |
| TLPP5600-AS12Z | Pure green | 0.63                     | 1.6  | -    | 10            | 555             | -    | 565  | 10            | -                   | 2.4  | 3    | 20            | GaP on GaP   |

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified) TLPR5600, TLPH5600, TLPY5600, TLPG5600, TLPP5600

| PARAMETER                   | TEST CONDITION                  | PART     | SYMBOL    | VALUE         | UNIT             |
|-----------------------------|---------------------------------|----------|-----------|---------------|------------------|
| Reverse voltage             |                                 |          | $V_R$     | 6             | V                |
| DC forward current          |                                 | TLPR5600 | $I_F$     | 20            | mA               |
|                             |                                 | TLPH5600 | $I_F$     | 30            | mA               |
|                             |                                 | TLPY5600 | $I_F$     | 30            | mA               |
|                             |                                 | TLPG5600 | $I_F$     | 30            | mA               |
|                             |                                 | TLPP5600 | $I_F$     | 30            | mA               |
| Surge forward current       | $t_p \leq 10 \mu\text{s}$       |          | $I_{FSM}$ | 1             | A                |
| Power dissipation           | $T_{amb} \leq 60^\circ\text{C}$ | TLPR5600 | $P_V$     | 60            | mW               |
|                             |                                 | TLPH5600 | $P_V$     | 100           | mW               |
|                             |                                 | TLPY5600 | $P_V$     | 100           | mW               |
|                             |                                 | TLPG5600 | $P_V$     | 100           | mW               |
|                             |                                 | TLPP5600 | $P_V$     | 100           | mW               |
| Junction temperature        |                                 |          | $T_J$     | 100           | $^\circ\text{C}$ |
| Operating temperature range |                                 |          | $T_{amb}$ | - 40 to + 100 | $^\circ\text{C}$ |
| Storage temperature range   |                                 |          | $T_{stg}$ | - 55 to + 100 | $^\circ\text{C}$ |



## ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) TLPR5600, TLPH5600, TLPY5600, TLPG5600, TLPP5600

| PARAMETER                           | TEST CONDITION                       | PART     | SYMBOL     | VALUE | UNIT               |
|-------------------------------------|--------------------------------------|----------|------------|-------|--------------------|
| Soldering temperature               | $t \leq 5\text{ s}$ , 2 mm from body |          | $T_{sd}$   | 260   | $^{\circ}\text{C}$ |
| Thermal resistance junction/ambient |                                      | TLPR5600 | $R_{thJA}$ | 500   | K/W                |
|                                     |                                      | TLPH5600 | $R_{thJA}$ | 400   | K/W                |
|                                     |                                      | TLPY5600 | $R_{thJA}$ | 400   | K/W                |
|                                     |                                      | TLPG5600 | $R_{thJA}$ | 400   | K/W                |
|                                     |                                      | TLPP5600 | $R_{thJA}$ | 400   | K/W                |

## OPTICAL AND ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) TLPR5600, RED

| PARAMETER                         | TEST CONDITION                          | SYMBOL      | MIN. | TYP.     | MAX. | UNIT |
|-----------------------------------|---|-------------|------|----------|------|------|
| Luminous intensity <sup>(1)</sup> | $I_F = 10\text{ mA}$                    | $I_V$       | 1    | 3.5      | -    | mcd  |
| Dominant wavelength               | $I_F = 10\text{ mA}$                    | $\lambda_d$ | -    | 630      | -    | nm   |
| Peak wavelength                   | $I_F = 10\text{ mA}$                    | $\lambda_p$ | -    | 640      | -    | nm   |
| Angle of half intensity           | $I_F = 10\text{ mA}$                    | $\phi$      | -    | $\pm 80$ | -    | deg  |
| Forward voltage                   | $I_F = 20\text{ mA}$                    | $V_F$       | -    | 2        | 3    | V    |
| Reverse voltage                   | $I_R = 10\text{ }\mu\text{A}$           | $V_R$       | 6    | 15       | -    | V    |
| Junction capacitance              | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ | $C_j$       | -    | 50       | -    | pF   |

### Note

<sup>(1)</sup> In one packing unit  $I_{Vmin.}/I_{Vmax.} \leq 0.5$

## OPTICAL AND ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) TLPH5600, RED

| PARAMETER                         | TEST CONDITION                          | SYMBOL      | MIN. | TYP.     | MAX. | UNIT |
|-----------------------------------|---|-------------|------|----------|------|------|
| Luminous intensity <sup>(1)</sup> | $I_F = 10\text{ mA}$                    | $I_V$       | 0.63 | 3.5      | -    | mcd  |
| Dominant wavelength               | $I_F = 10\text{ mA}$                    | $\lambda_d$ | 612  | -        | 625  | nm   |
| Peak wavelength                   | $I_F = 10\text{ mA}$                    | $\lambda_p$ | -    | 635      | -    | nm   |
| Angle of half intensity           | $I_F = 10\text{ mA}$                    | $\phi$      | -    | $\pm 80$ | -    | deg  |
| Forward voltage                   | $I_F = 20\text{ mA}$                    | $V_F$       | -    | 2        | 3    | V    |
| Reverse voltage                   | $I_R = 10\text{ }\mu\text{A}$           | $V_R$       | 6    | 15       | -    | V    |
| Junction capacitance              | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ | $C_j$       | -    | 50       | -    | pF   |

### Note

<sup>(1)</sup> In one packing unit  $I_{Vmin.}/I_{Vmax.} \leq 0.5$

## OPTICAL AND ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) TLPY5600, YELLOW

| PARAMETER                         | TEST CONDITION                          | SYMBOL      | MIN. | TYP.     | MAX. | UNIT |
|-----------------------------------|---|-------------|------|----------|------|------|
| Luminous intensity <sup>(1)</sup> | $I_F = 10\text{ mA}$                    | $I_V$       | 0.63 | 2.25     | -    | mcd  |
| Dominant wavelength               | $I_F = 10\text{ mA}$                    | $\lambda_d$ | 581  | -        | 594  | nm   |
| Peak wavelength                   | $I_F = 10\text{ mA}$                    | $\lambda_p$ | -    | 585      | -    | nm   |
| Angle of half intensity           | $I_F = 10\text{ mA}$                    | $\phi$      | -    | $\pm 80$ | -    | deg  |
| Forward voltage                   | $I_F = 20\text{ mA}$                    | $V_F$       | -    | 2.4      | 3    | V    |
| Reverse voltage                   | $I_R = 10\text{ }\mu\text{A}$           | $V_R$       | 6    | 15       | -    | V    |
| Junction capacitance              | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ | $C_j$       | -    | 50       | -    | pF   |

### Note

<sup>(1)</sup> In one packing unit  $I_{Vmin.}/I_{Vmax.} \leq 0.5$



## OPTICAL AND ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}C$ , unless otherwise specified) TLPG5600, GREEN

| PARAMETER                         | TEST CONDITION                          | SYMBOL      | MIN. | TYP.     | MAX. | UNIT |
|-----------------------------------|---|-------------|------|----------|------|------|
| Luminous intensity <sup>(1)</sup> | $I_F = 10\text{ mA}$                    | $I_V$       | 0.63 | 2.25     | -    | mcd  |
| Dominant wavelength               | $I_F = 10\text{ mA}$                    | $\lambda_d$ | 562  | -        | 575  | nm   |
| Peak wavelength                   | $I_F = 10\text{ mA}$                    | $\lambda_p$ | -    | 565      | -    | nm   |
| Angle of half intensity           | $I_F = 10\text{ mA}$                    | $\varphi$   | -    | $\pm 80$ | -    | deg  |
| Forward voltage                   | $I_F = 20\text{ mA}$                    | $V_F$       | -    | 2.4      | 3    | V    |
| Reverse voltage                   | $I_R = 10\text{ }\mu\text{A}$           | $V_R$       | 6    | 15       | -    | V    |
| Junction capacitance              | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ | $C_j$       | -    | 50       | -    | pF   |

### Note

<sup>(1)</sup> In one packing unit  $I_{Vmin.}/I_{Vmax.} \leq 0.5$

## OPTICAL AND ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}C$ , unless otherwise specified) TLPP5600, PURE GREEN

| PARAMETER                         | TEST CONDITION                          | SYMBOL      | MIN. | TYP.     | MAX. | UNIT |
|-----------------------------------|---|-------------|------|----------|------|------|
| Luminous intensity <sup>(1)</sup> | $I_F = 10\text{ mA}$                    | $I_V$       | 0.63 | 1.6      | -    | mcd  |
| Dominant wavelength               | $I_F = 10\text{ mA}$                    | $\lambda_d$ | 555  | -        | 565  | nm   |
| Peak wavelength                   | $I_F = 10\text{ mA}$                    | $\lambda_p$ | -    | 555      | -    | nm   |
| Angle of half intensity           | $I_F = 10\text{ mA}$                    | $\varphi$   | -    | $\pm 80$ | -    | deg  |
| Forward voltage                   | $I_F = 20\text{ mA}$                    | $V_F$       | -    | 2.4      | 3    | V    |
| Reverse voltage                   | $I_R = 10\text{ }\mu\text{A}$           | $V_R$       | 6    | 15       | -    | V    |
| Junction capacitance              | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ | $C_j$       | -    | 50       | -    | pF   |

### Note

<sup>(1)</sup> In one packing unit  $I_{Vmin.}/I_{Vmax.} \leq 0.5$

## LUMINOUS INTENSITY CLASSIFICATION

| GROUP | LIGHT INTENSITY (mcd) |      |
|-------|-----------------------|------|
|       | MIN.                  | MAX. |
| K     | 0.63                  | 1.25 |
| L     | 1                     | 2    |
| M     | 1.6                   | 3.2  |
| N     | 2.5                   | 5    |
| P     | 4                     | 8    |
| Q     | 6.3                   | 12.5 |
| R     | 10                    | 20   |
| S     | 16                    | 32   |
| T     | 25                    | 50   |
| U     | 40                    | 80   |

### Note

- Luminous intensity is tested at a current pulse duration of 25 ms. These type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each bag (there will be no mixing of two groups on each bag). In order to ensure availability, single brightness groups will not be orderable. In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped on any one bag. In order to ensure availability, single wavelength groups will not be orderable.

## COLOR CLASSIFICATION

| GROUP | DOM. WAVELENGTH (nm) |      |       |      |            |      |
|-------|----------------------|------|-------|------|------------|------|
|       | YELLOW               |      | GREEN |      | PURE GREEN |      |
|       | MIN.                 | MAX. | MIN.  | MAX. | MIN.       | MAX. |
| 0     |                      |      |       |      | 555        | 559  |
| 1     | 581                  | 584  |       |      | 558        | 561  |
| 2     | 583                  | 586  |       |      | 560        | 563  |
| 3     | 585                  | 588  | 562   | 565  | 562        | 565  |
| 4     | 587                  | 590  | 564   | 567  |            |      |
| 5     | 589                  | 592  | 566   | 569  |            |      |
| 6     | 591                  | 594  | 568   | 571  |            |      |
| 7     |                      |      | 570   | 573  |            |      |
| 8     |                      |      | 572   | 575  |            |      |

### Note

- Wavelengths are tested at a current pulse duration of 25 ms.



## TYPICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

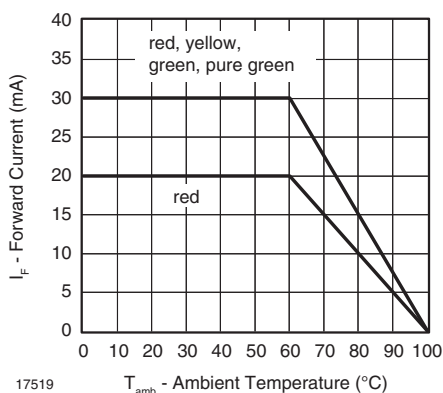


Fig. 1 - Forward Current vs. Ambient Temperature

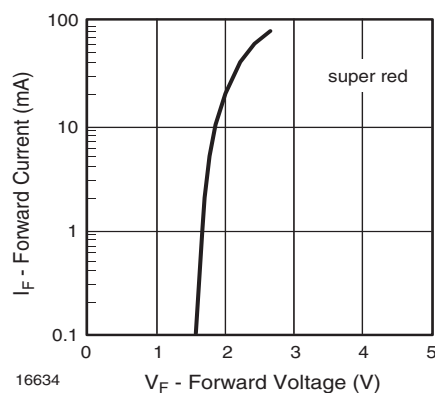


Fig. 4 - Forward Current vs. Forward Voltage

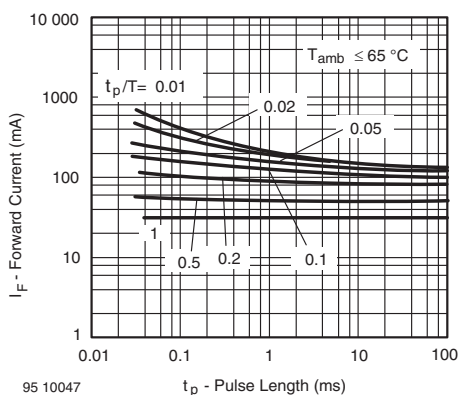


Fig. 2 - Forward Current vs. Pulse Length

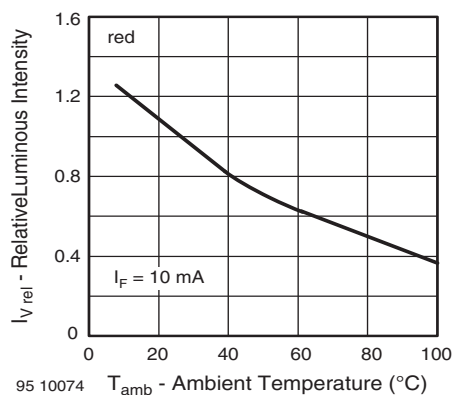


Fig. 5 - Relative Luminous Intensity vs. Ambient Temperature

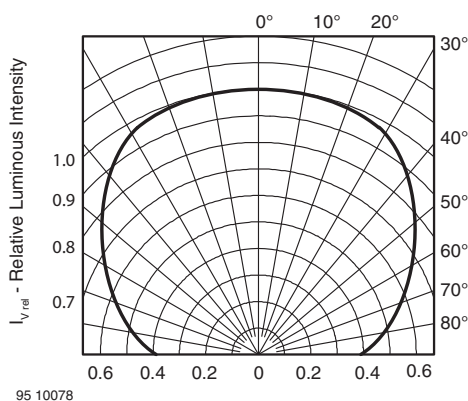


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

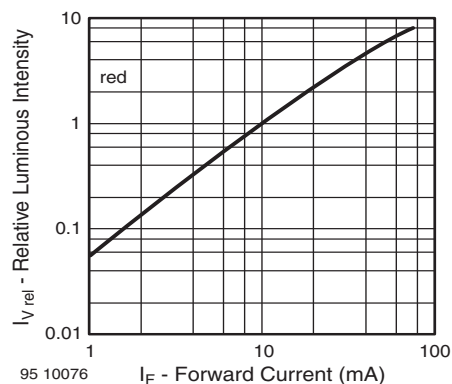


Fig. 6 - Relative Luminous Intensity vs. Forward Current

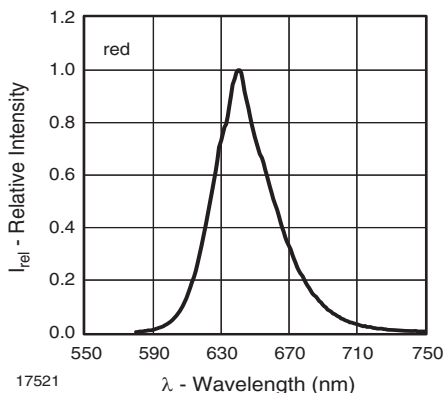


Fig. 7 - Relative Intensity vs. Wavelength

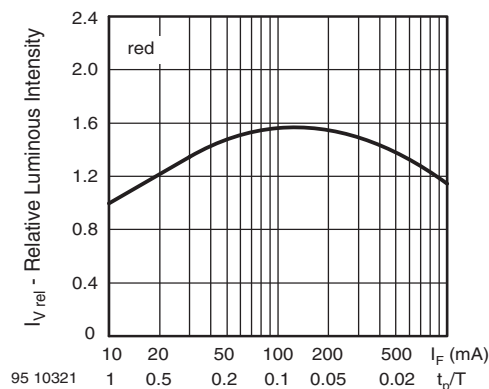


Fig. 10 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

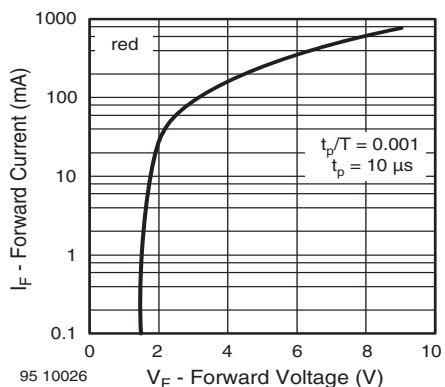


Fig. 8 - Forward Current vs. Forward Voltage

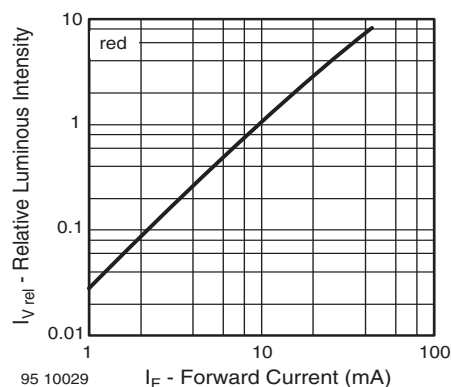


Fig. 11 - Relative Luminous Intensity vs. Forward Current

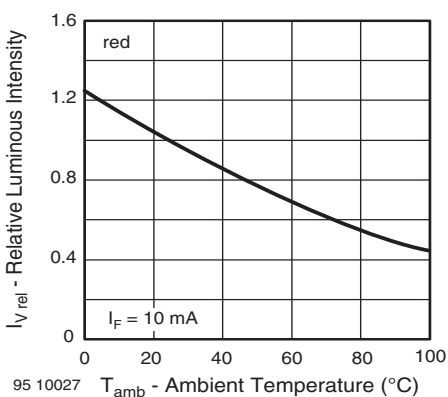


Fig. 9 - Relative Luminous Intensity vs. Ambient Temperature

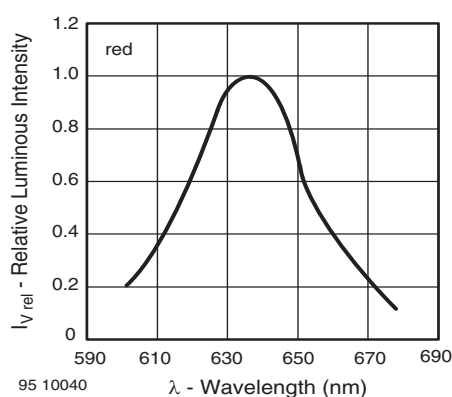


Fig. 12 - Relative Intensity vs. Wavelength

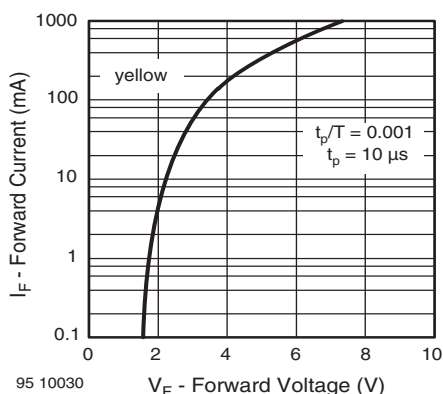


Fig. 13 - Forward Current vs. Forward Voltage

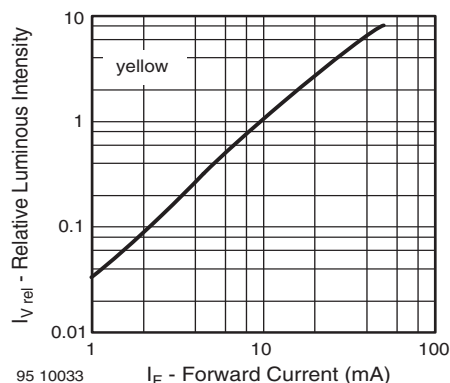


Fig. 16 - Relative Luminous Intensity vs. Forward Current

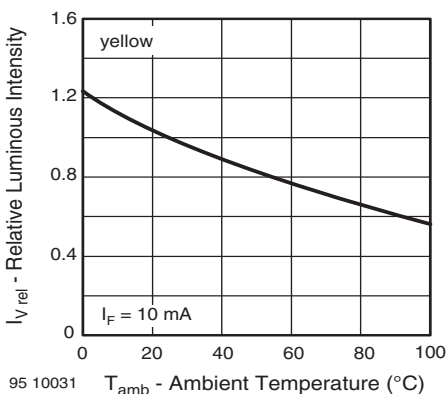


Fig. 14 - Relative Luminous Intensity vs. Ambient Temperature

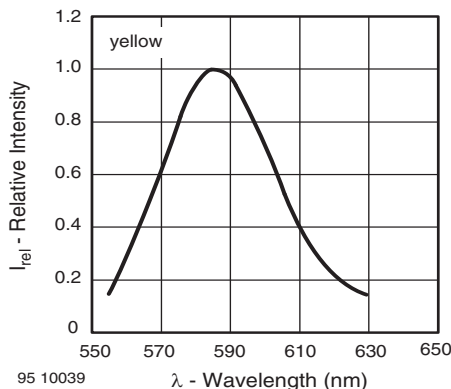


Fig. 17 - Relative Intensity vs. Wavelength

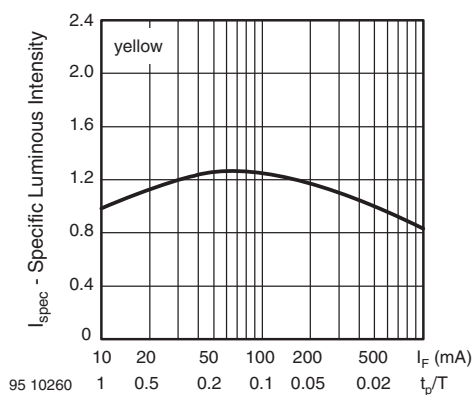


Fig. 15 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

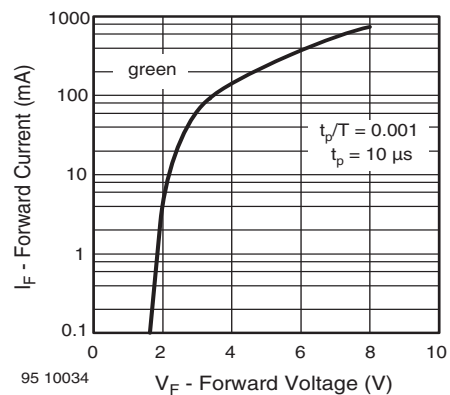


Fig. 18 - Forward Current vs. Forward Voltage

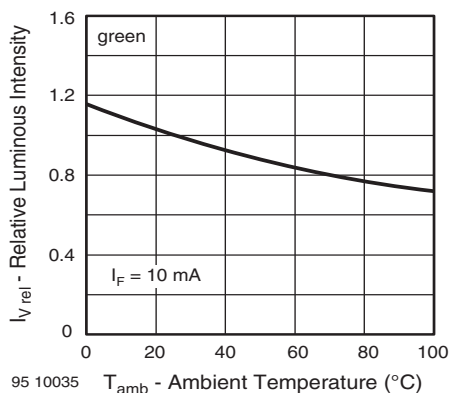


Fig. 19 - Relative Luminous Intensity vs. Ambient Temperature

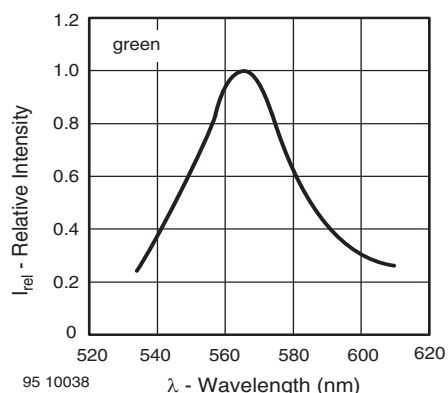


Fig. 22 - Relative Intensity vs. Wavelength

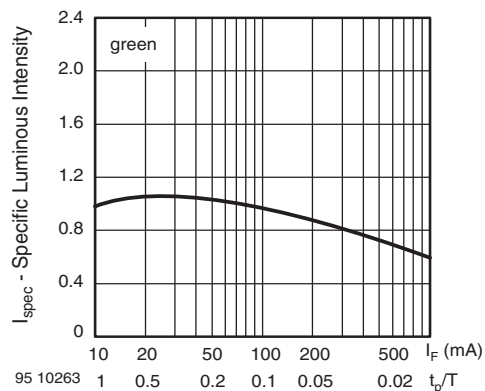


Fig. 20 - Specific Luminous Intensity vs. Forward Current

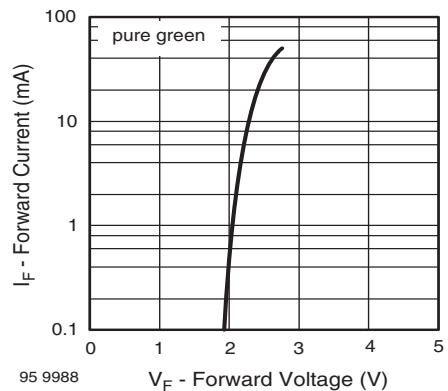


Fig. 23 - Forward Current vs. Forward Voltage

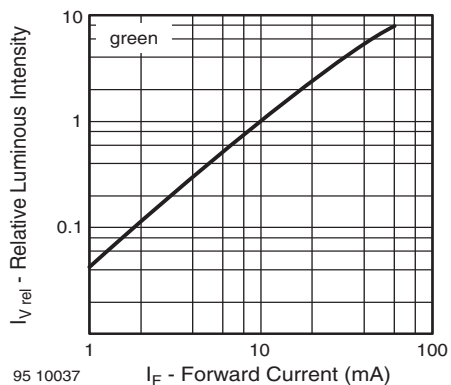


Fig. 21 - Relative Luminous Intensity vs. Forward Current

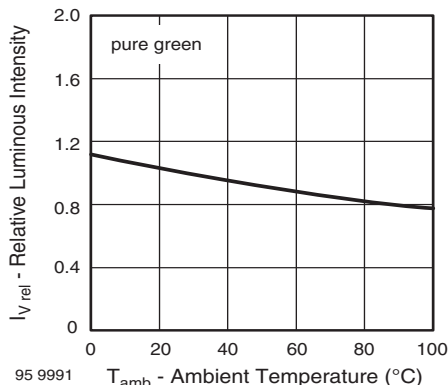


Fig. 24 - Relative Luminous Intensity vs. Ambient Temperature

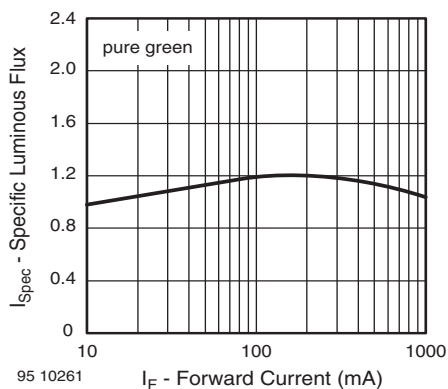


Fig. 25 - Specific Luminous Intensity vs. Forward Current

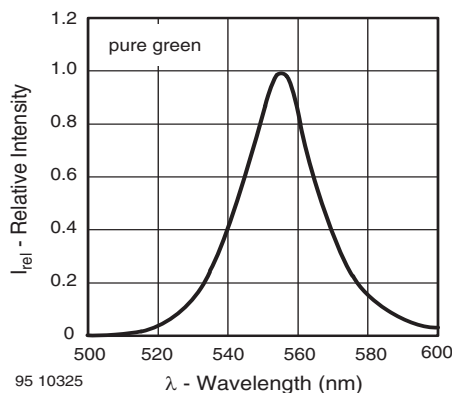


Fig. 27 - Relative Intensity vs. Wavelength

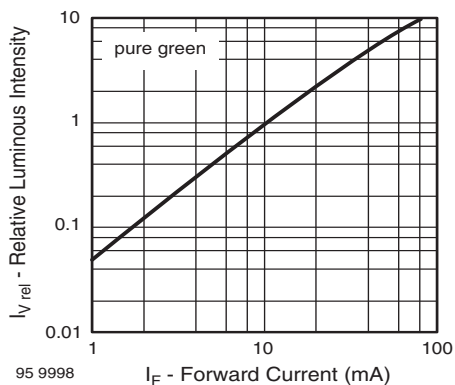
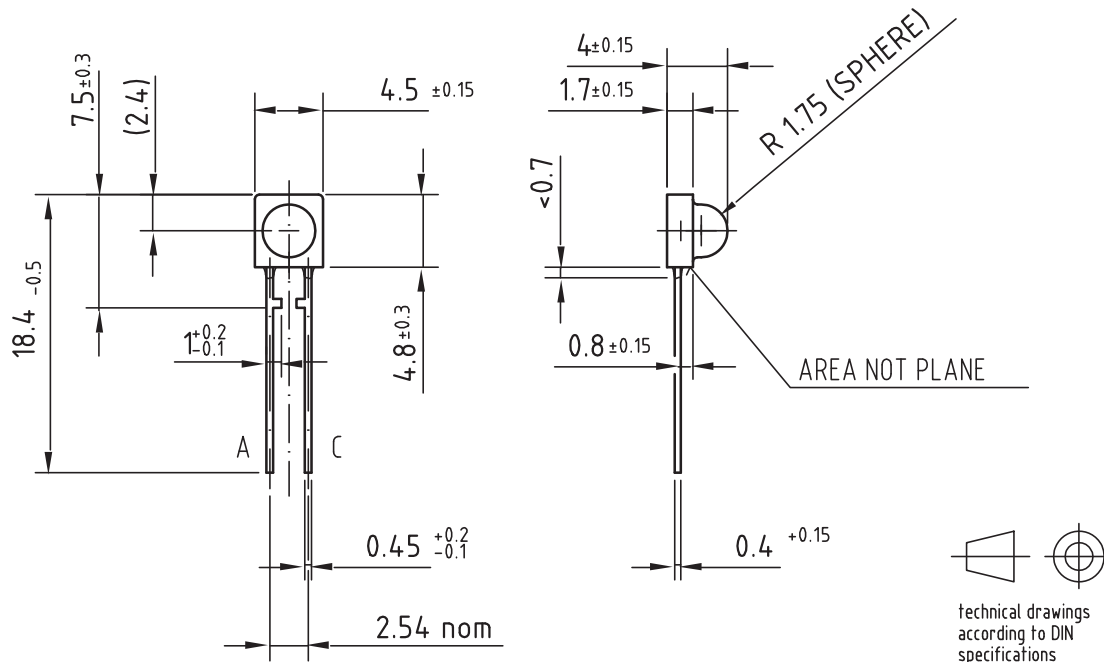


Fig. 26 - Relative Luminous Intensity vs. Forward Current





## PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5127.01-4

Issue: 1; 15.11.95

95 11321

## AMMOPACK (Z)

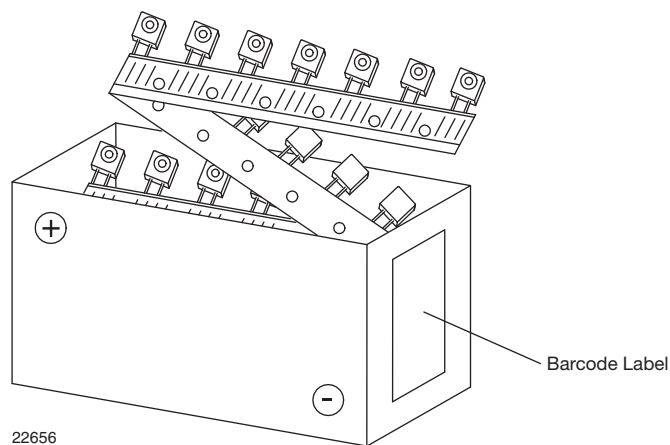


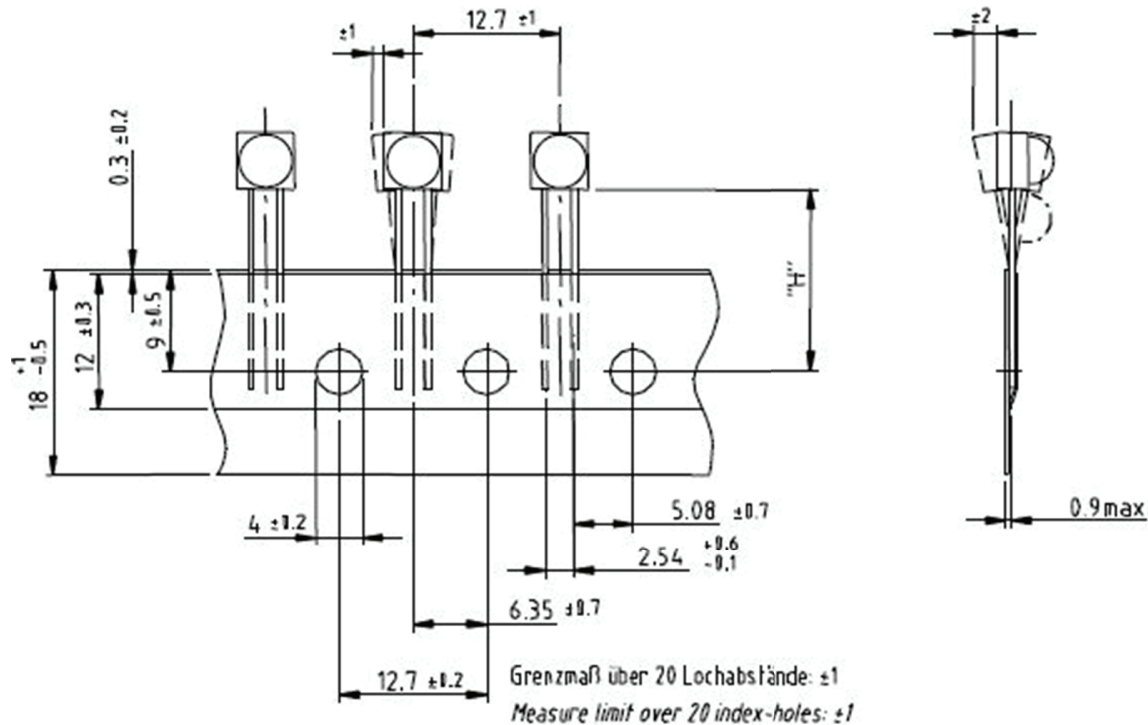
Fig. 28 - Tape Direction

### Note

- The new nomenclature for ammpack is ASZ only, without suffix for the LED orientation. The carton box has to be turned to the desired position: "+" for anode first, or "-" for cathode first. AS12Z and AS21Z are still valid for already existing types, BUT NOT FOR NEW DESIGN.



**TAPE DIMENSIONS** in millimeters



| OPTION | DIMENSION "H" $\pm 0.5$ mm |
|--------|----------------------------|
| AS     | 16                         |



## Disclaimer

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