

PRODUCT SPECIFICATION

Series Number
PAC402SM-CxDxxx

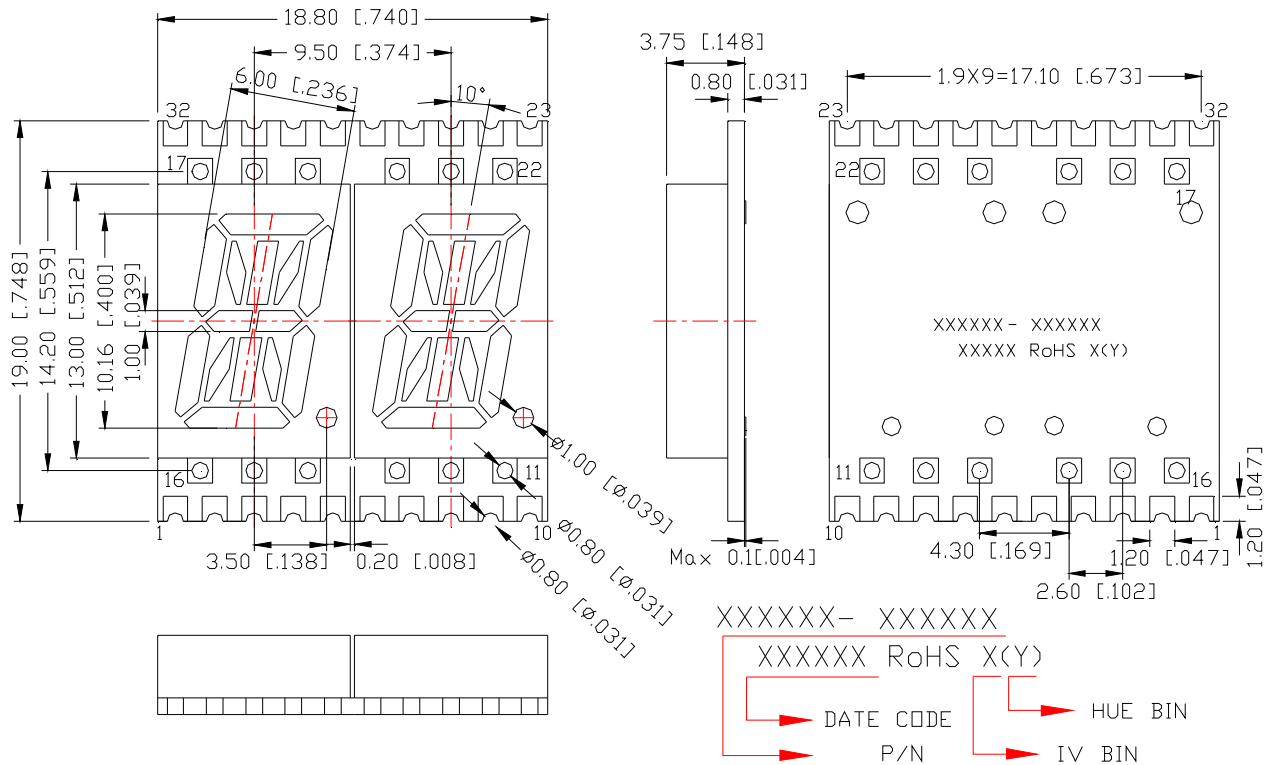
Details

- 0.40" SMD Alphanumeric LED Display
- 2 Digit, 14 Segments
- Common Anode or Common Cathode
- AlInGaP or InGaN chip material

Features

- Low power consumption
- RoHS Compliant
- Gray or Black Face with White Segments
- Easy mounting on PCB or socket

Mechanical Dimensions



Notes:

1. Dimensions in millimeters [inch], and tolerance is ± 0.25 [0.010] unless otherwise noted.
2. Bending \leq Length*1%
3. All pins are $\varnothing 0.51$ [0.020] ± 0.1 [0.004]
4. Specifications subject to change without notice





Device Selection Guide

| Model Number | | Chip | | Note |
|-----------------|-----------------|----------|----------------|--|
| Common Anode | Common Cathode | Material | Emitting Color | |
| PAC402SM-CADG05 | PAC402SM-CCDG05 | InGaN | Pure Green | Add "BW" to end of part number for Black Face, White Segment version |
| PAC402SM-CADG17 | PAC402SM-CCDG17 | AlInGaP | Yellow Green | |
| PAC402SM-CADY04 | PAC402SM-CCDY04 | | Yellow | |
| PAC402SM-CADA11 | PAC402SM-CCDA11 | | Amber | |
| PAC402SM-CADR02 | PAC402SM-CCDR02 | | Orange-Red | |
| PAC402SM-CADR11 | PAC402SM-CCDR11 | | Red | |
| PAC402SM-CADR21 | PAC402SM-CCDR21 | | Deep Red | |

Absolute Maximum Ratings at Ta=25 °C

| Parameter | Symbol | Rating | | Unit |
|---|--------|-------------------------|------|-------|
| | | G17/Y04/A11/R02/R11/R21 | G05 | |
| Power Dissipation per Dice | PAD | 70 | 114 | mW |
| Derating Liner from 25°C per Dice | -- | 0.33 | 0.4 | mA/°C |
| Continuous Forward Current Per Dice | IAF | 25 | 30 | mA |
| Peak Current Per Dice (duty cycle 1/10, 1KHz) | IPF | 90 | 100 | mA |
| Reverse Voltage Per Dice | VR | 5 | 5 | V |
| Electrostatic Discharge (HBM) | ESD | / | 1000 | V |
| Operating Temperature | Topr | -40~+105 | | °C |
| Storage Temperature | Tstg | -40~+105 | | °C |



Electrical and Optical Characteristics at Ta=25 °C

| Parameter | Symbol | Chip | Min. | Typ. | Max. | Unit | Condition |
|--|-----------------------|-----------------------------|------|---------|------|---------|-----------|
| Forward Voltage Per Segment | VF | G05 | -- | 3.2 | 3.8 | V | IF=20mA |
| | | G17/Y04/A11/ R02/R11/R21 | -- | 2 | 2.8 | | |
| Luminous Intensity Per Segment | Iv | G05 | -- | 56 | -- | mcd | IF=10mA |
| | | G17 | -- | 3 | -- | | |
| | | Y04 | -- | 15 | -- | | |
| | | A11 | -- | 7 | -- | | |
| | | R02 | -- | 6 | -- | | |
| | | R11 | -- | 7 | -- | | |
| | | R21 | -- | 4 | -- | | |
| Peak Emission Wavelength / Dominant Wavelength | $\lambda P/\lambda d$ | G05 | -- | */525 | -- | nm | IF=20mA |
| | | G17 | -- | 572/570 | -- | | |
| | | Y04 | -- | 592/590 | -- | | |
| | | A11 | -- | 612/605 | -- | | |
| | | R02 | -- | 632/625 | -- | | |
| | | R11 | -- | 644/630 | -- | | |
| | | R21 | -- | 660/645 | -- | | |
| Reverse Current | IR | | -- | -- | 100 | μ A | VR=5V |
| Luminous Intensity Matching Ratio | Iv-m | | -- | -- | 2:1 | -- | IF=10mA |



Luminous General lv Bin Grade (IF = 10mA)

Color Rank Limits (IF=20mA)

Remark: Unit=mcd *Tolerance: ±20%

Remark: Unit=nm *Tolerance: ±1

● Pure Green (G05)

| M | N | P |
|--------|--------|---------|
| 27.559 | 44.096 | 70.555 |
| I | I | I |
| 44.095 | 70.554 | 112.888 |

| 1 | 2 | 3 | 4 | 5 |
|-------|-------|-------|-------|-------|
| 515.0 | 517.0 | 519.0 | 521.0 | 523.0 |
| I | I | I | I | I |
| 517.0 | 519.0 | 521.0 | 523.0 | 525.0 |

● Yellow Green (G17)

| F | G | H |
|-------|-------|-------|
| 1.641 | 2.627 | 4.204 |
| I | I | I |
| 2.626 | 4.203 | 6.726 |

| 0 | 1 | 2 | 3 | 4 |
|-------|-------|-------|-------|-------|
| 567.5 | 569.5 | 570.5 | 571.5 | 573.0 |
| I | I | I | I | I |
| 569.4 | 570.4 | 571.4 | 572.9 | 575.0 |

● Yellow (Y04)

| J | K | L |
|--------|--------|--------|
| 6.727 | 10.764 | 17.224 |
| I | I | I |
| 10.763 | 17.223 | 27.558 |

| 1 | 2 | 3 | 4 | 5 |
|-------|-------|-------|-------|-------|
| 583.0 | 585.0 | 587.0 | 589.0 | 591.0 |
| I | I | I | I | I |
| 585.0 | 587.0 | 589.0 | 591.0 | 593.0 |

● Amber (A11)

| H | J | K |
|-------|--------|--------|
| 4.204 | 6.727 | 10.764 |
| I | I | I |
| 6.726 | 10.763 | 17.223 |

● Orange-Red (R02)

| G | H | J |
|-------|-------|--------|
| 2.627 | 4.204 | 6.727 |
| I | I | I |
| 4.203 | 6.726 | 10.763 |

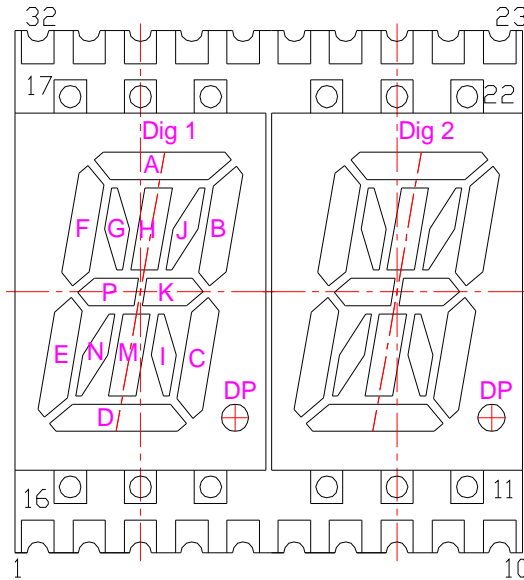
● Red (R11)

| H | J | K |
|-------|--------|--------|
| 4.204 | 6.727 | 10.764 |
| I | I | I |
| 6.726 | 10.763 | 17.223 |

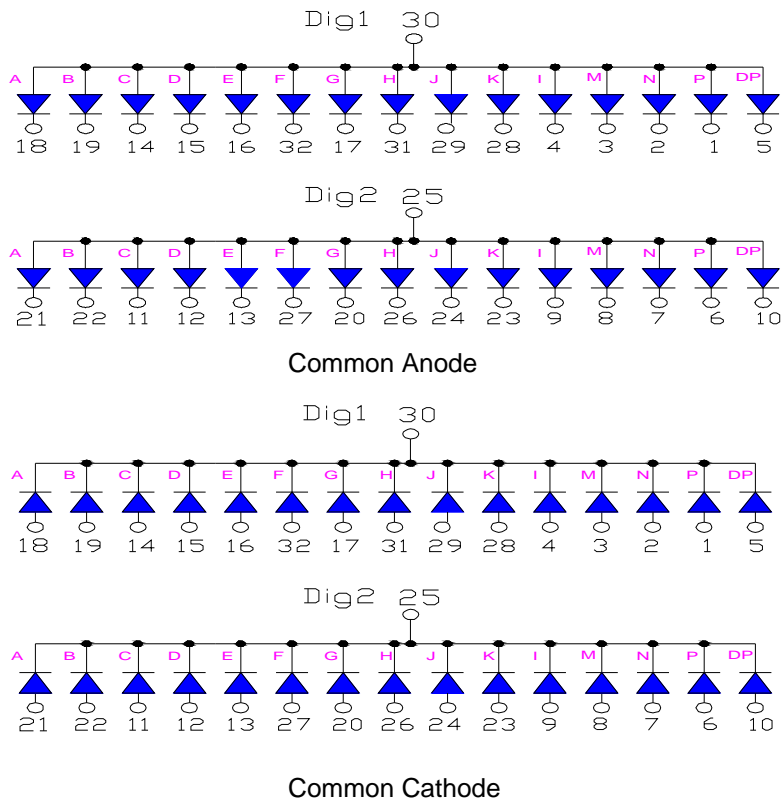
● Deep Red (R21)

| F | G | H |
|-------|-------|-------|
| 1.641 | 2.627 | 4.204 |
| I | I | I |
| 2.626 | 4.203 | 6.726 |

All Light-On Segments Feature & Pad Position



Internal Circuit Diagram



Typical Electrical / Optical Characteristic Curves

- (Ta = 25°C Unless Otherwise Noted)

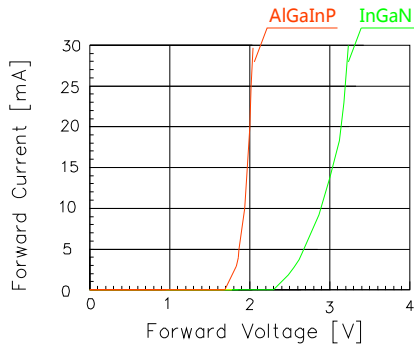


Fig 1. Forward Current vs. Forward Voltage

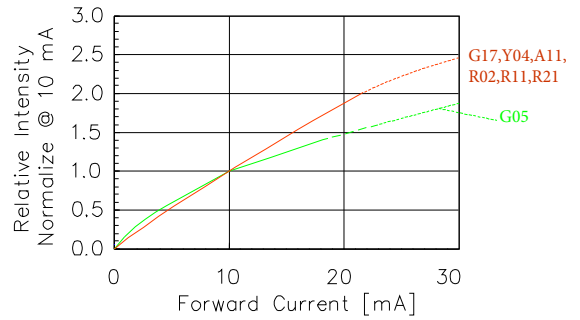


Fig 2. Relative Intensity vs. Forward Current

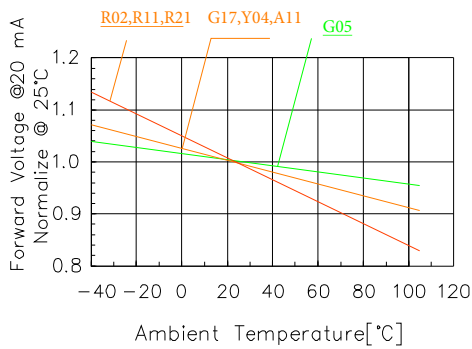


Fig 3. Forward Voltage vs. Temperature

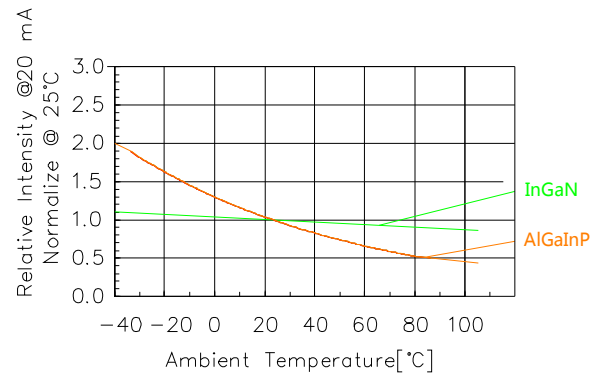


Fig 4. Relative Intensity vs. Temperature

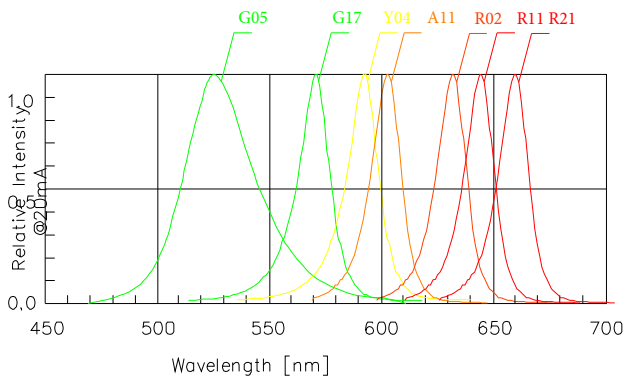


Fig 5. Relative Intensity vs. Wavelength

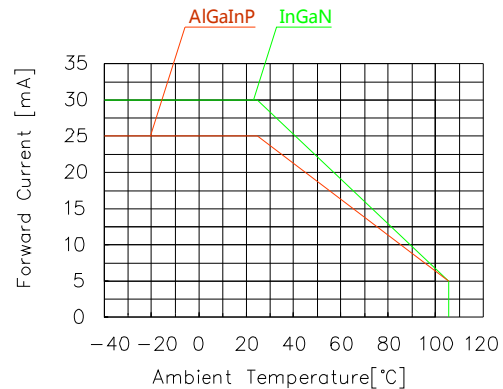
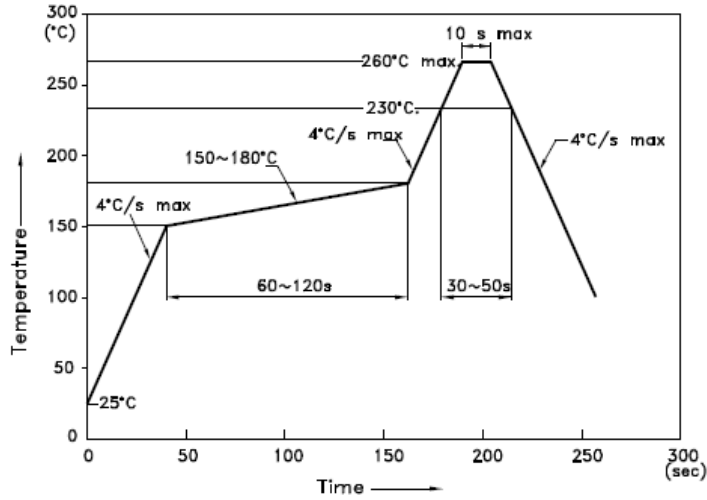


Fig 6. Forward current vs. Temperature

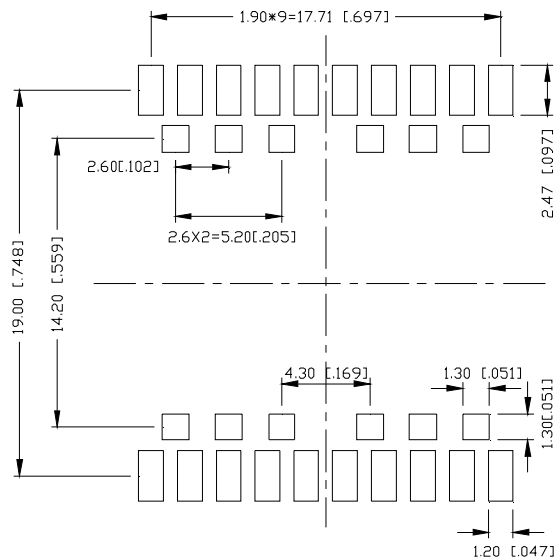
Precautions for Use



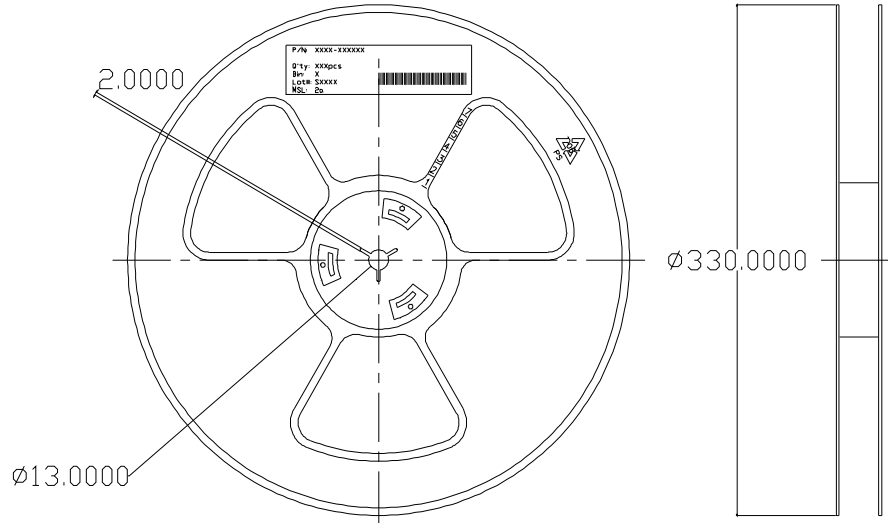
NOTES:

1. We recommend the reflow temperature 245°C(+/-5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

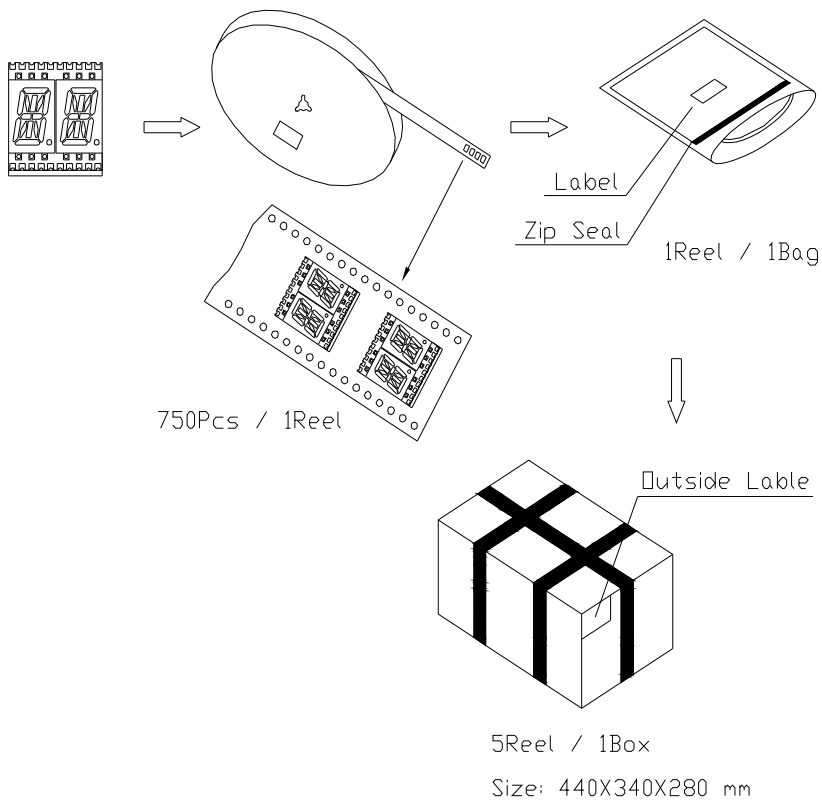
Soldering Pad Size



Reel Dimensions



Packing Dimensions





| Customer Approval Signatures | Approved By | Approved Part Number | Notes |
|---------------------------------|-------------|----------------------|-------|
| | | | |

| Record Of Revisions | | | |
|---------------------|---------------|------|----------|
| Rev. | Comments | Page | Date |
| 0 | Released Spec | -- | 08/29/18 |
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