

# PRODUCT SPECIFICATION

*Series Number*  
**PDC180**

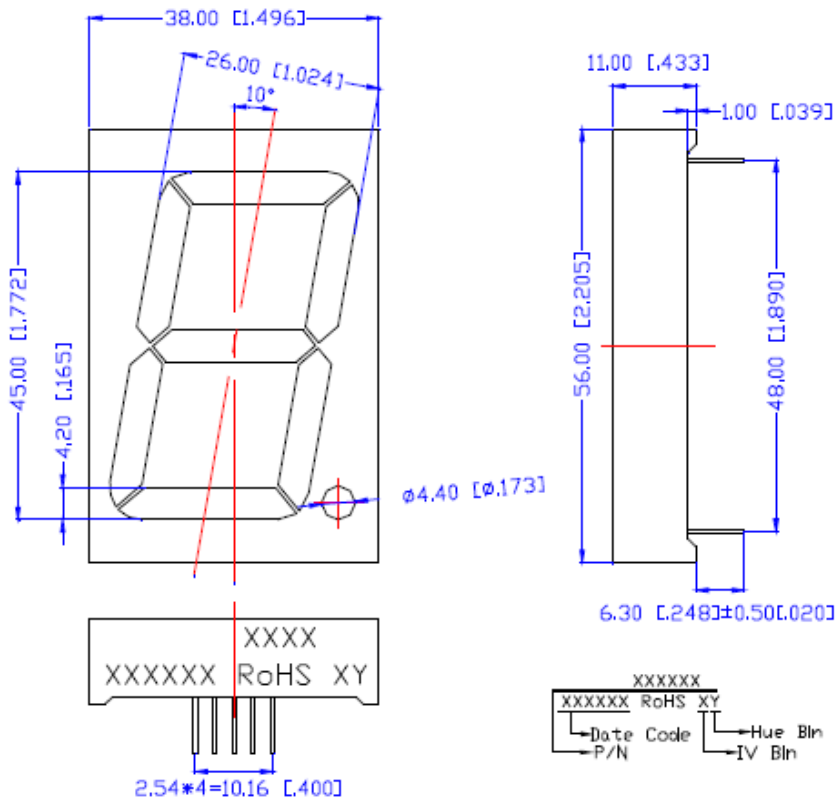
## *Details*

- 1.8" (45mm) LED Display
- Single Digit, Seven Segment
- Common Anode and Common Cathode
- AlInGaP or InGaN chip material

## *Features*

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

## *Mechanical Dimensions*



### Notes:

1. Dimensions in millimeters [inch], and tolerance is  $\pm 0.25$  [.010] unless otherwise noted.
2. Bending  $\leq$  Length\*1%
3. All pins are  $\phi 0.51$  [.020]  $\pm 0.1$  [.004]
4. Specifications subject to change without notice





**Device Selection Guide**

Model Number		Chip		Note
Common Anode	Common Cathode	Material	Emitting Color	Add "BW" to end of part number for Black Face, White Segment version
PDC180-CADG05	PDC180-CCDG05	InGaN	Pure Green	
PDC180-CADG17	PDC180-CCDG17	AlInGaP	Yellow Green	
PDC180-CADY04	PDC180-CCDY04		Yellow	
PDC180-CADA11	PDC180-CCDA11		Amber	
PDC180-CADR02	PDC180-CCDR02		Orange-Red	
PDC180-CADR11	PDC180-CCDR11		Red	
PDC180-CADR21	PDC180-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	-35~+85		°C
Storage Temperature	Tstg	-35~+85		°C

Solder Conditions: 1/16 inch below seating plane for 3 -5 seconds at 260°C.



**Electrical and Optical Characteristics at Ta=25 °C**

Parameter	Symbol	Chip	Min.	Typ.	Max.	Unit	Condition
Forward Voltage Per Segment (DP)	VF	G05	--	9.6(3.2)	11.4(3.8)	V	IF=20mA
		G17/Y04/A11/ R02/R11/R21	--	6(2)	8.4(2.8)		
Luminous Intensity Per Segment	Iv	G05	--	1329	--	mcd	IF=10mA
		G17	--	70	--		
		Y04	--	193	--		
		A11	--	270	--		
		R02	--	130	--		
		R11	--	100	--		
		R21	--	71	--		
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	$\mu$ 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)

U	V	W
739.836	1183.738	1893.982
1183.737	1893.981	3030.371

1	2	3	4	5
515.0	518.0	520.0	522.0	524.0
518.0	520.0	522.0	524.0	527.0

● Yellow Green(G17)

M	N	P
27.559	44.096	70.555
44.095	70.554	112.888

0	1	2	3	4
567.5	569.5	570.5	571.5	573.0
569.5	570.5	571.5	573.0	575.0

● Yellow (Y04)

Q	R	S
112.889	180.623	288.997
180.622	288.996	462.396

1	2	3	4	5
583.0	585.0	587.0	589.0	591.0
585.0	587.0	589.0	591.0	593.0

● Amber (A11)

Q	R	S
112.889	180.623	288.997
180.622	288.996	462.396

● Orange (R02)

P	Q	R
70.555	112.889	180.623
112.888	180.622	288.996

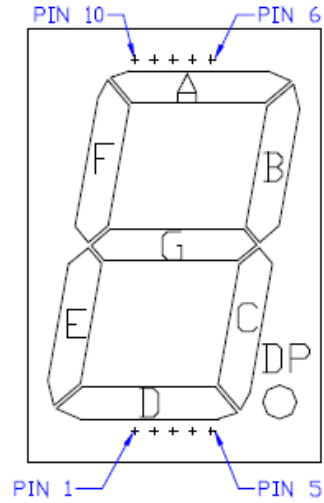
● Red (R11)

N	P	Q
44.096	70.555	112.889
70.554	112.888	180.622

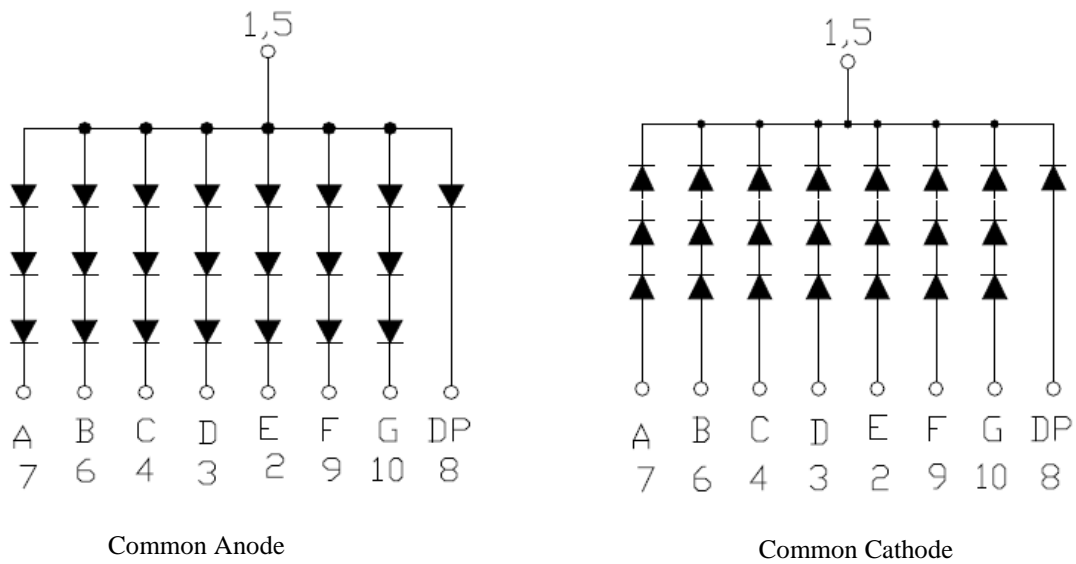
● Deep Red(R21)

N	P	Q
44.096	70.555	112.889
70.554	112.888	180.622

**All Light-On Segments Feature & Pad Position**



**Internal Circuit Diagram**



### Typical Electrical / Optical Characteristic Curves

- (Ta = 25°C Unless Otherwise Noted)

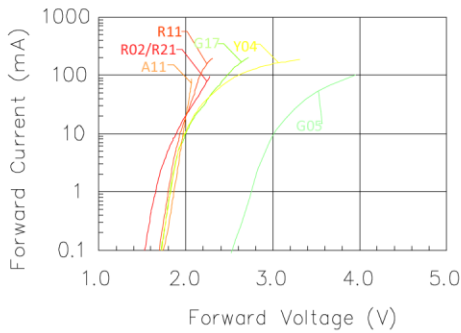


Fig 1. Forward Current vs. Forward Voltage

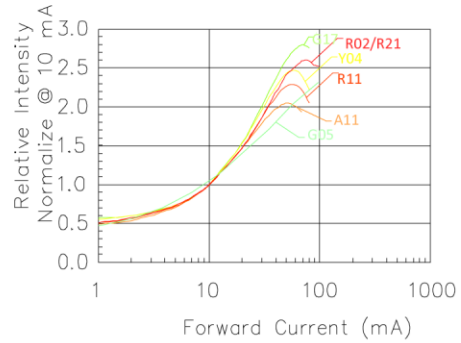


Fig 2. Relative Intensity vs. Forward Current

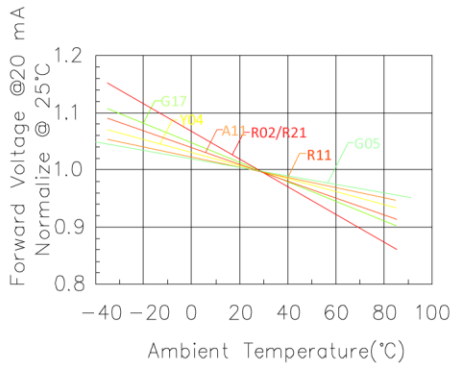


Fig 3. Forward Voltage vs. Temperature

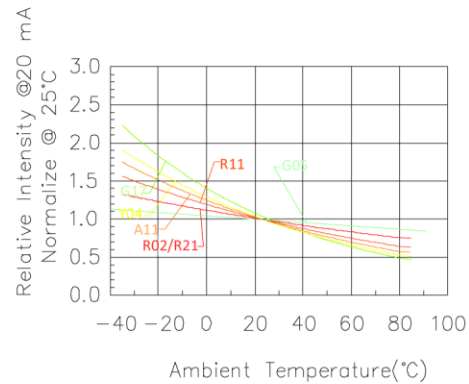


Fig 4. Relative Intensity vs. Temperature

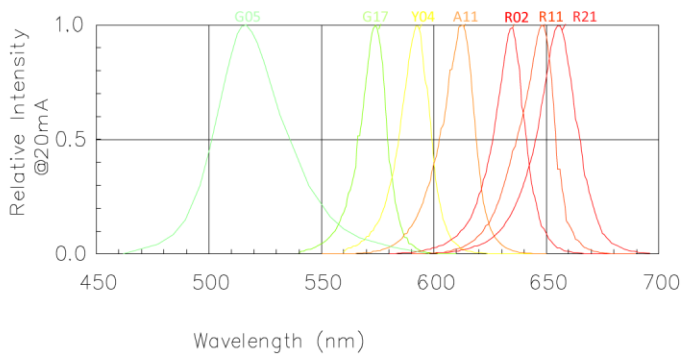


Fig 5. Relative Intensity vs. Wavelength

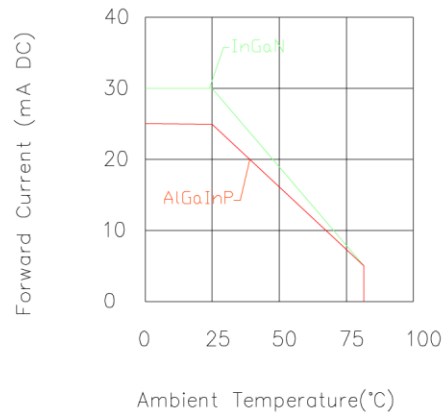


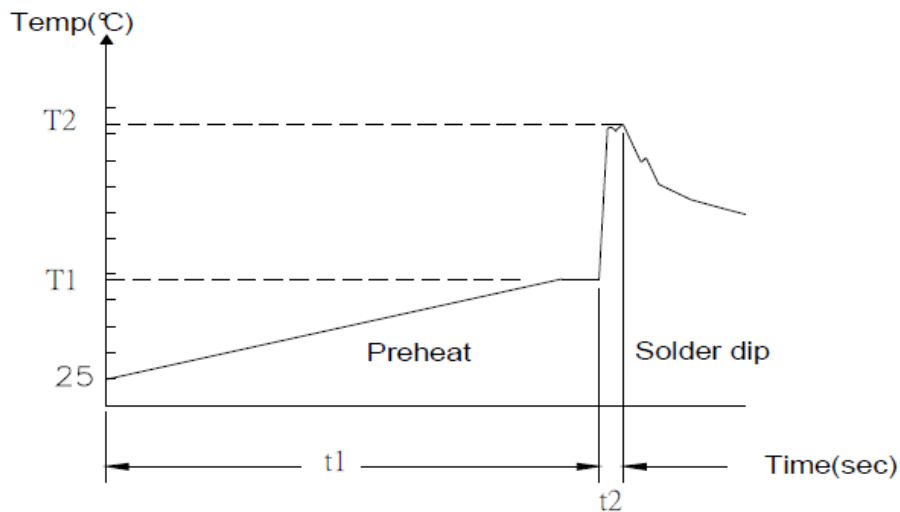
Fig 3. Forward Current vs. Ambient Temperature

## Precautions for Use

### 1. Recommended soldering conditions

- a. Wave soldering
  - i. Distance:1.6mm min(From seating plane)

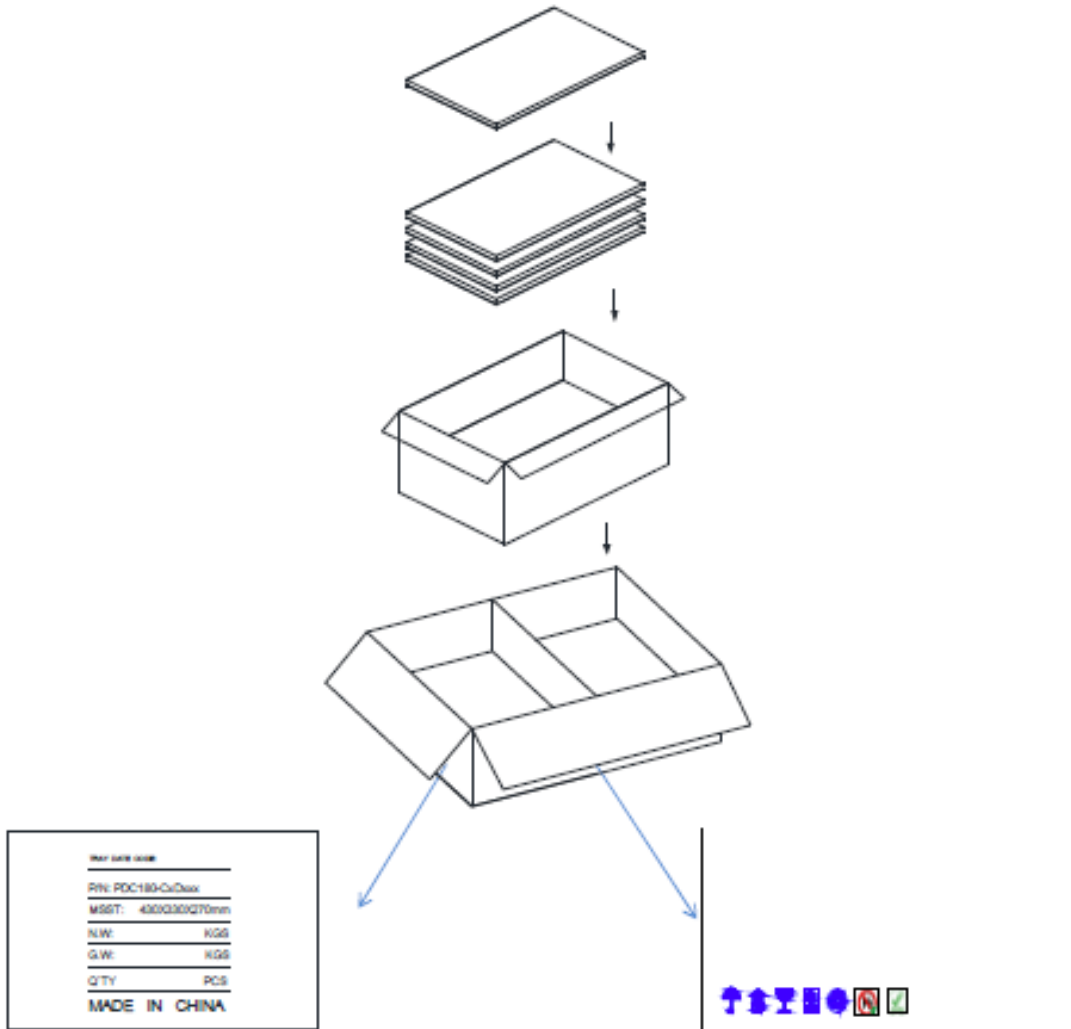
Item	Condition		Note
Preheat	Temperature T1	80 – 120°C	PWB temperature (Soldering side surface)
	Time t1	60 – 180sec	
Solder Dip	Temperature T2	230 – 260°C	Bath temperature
	Time t2	2 – 4sec	Solder tank passage time



### 2. Hand Soldering (Iron Condition)

- a. Soldering Iron:30W Max
- b. Temperature 350°C Max
- c. Soldering Time:3 Seconds Max(One Time)
- d. Distance:1.6mm min(From seating plane)

### Packing Dimensions



Package Name	Size	Unit	Amount	Unit	Amount	Unit	Note
Sponge	L295*W195*H15	mm	1	Sponge	25	pcs	
Inner Box	L205*W305*H240	mm	9	Sponge	225	pcs	
Outer Box	L430*W330*H270	mm	2	Inner Box	450	pcs	



<b>PDC180-CxDxx Customer Approval Signatures</b>	<b>Approved By</b>	<b>Checked By</b>	<b>Prepared By</b>

<b>Record Of Revisions</b>			
<b>Rev.</b>	<b>Comments</b>	<b>Page</b>	<b>Date</b>
0	Released Spec	--	03/02/16