

# SMD Emitter Component

## OP181



### Features:

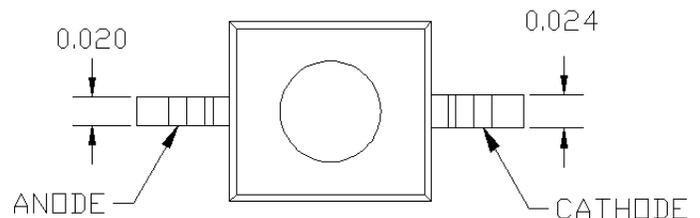
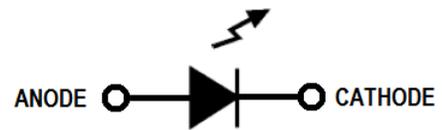
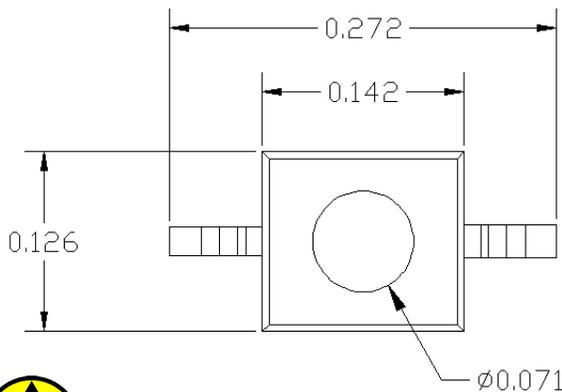
- 940nm Wavelength
- Up to 256kbps Operation
- Compliant with Smart Power Meter Standard ANSI C12.18
- Lensed for Maximum Performance
- Reverse Gull Wing Design
- Compatible with OPL6000 Receiver Component

### Description:

The **OP181** is a surface mount emitter component incorporating a high power 940nm LED. The LED die is lead frame mounted and overmolded, incorporating a lens to achieve excellent beam angle characteristics. The final product provides superior output irradiance at low drive currents. While this part has been designed specifically for the smart power meter industry, other applications are certainly possible.

### Applications:

- Smart power meter optical port
- Over the air communications



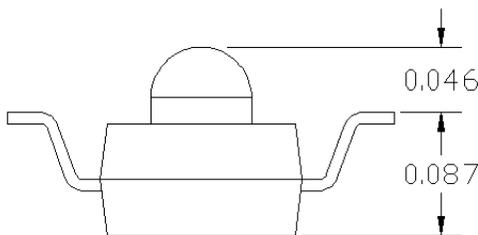
**ESD**  
(Human Body Model)



**MOISTURE**  
(Level-4)



**Pb-Free**  
(RoHS)



Note: The cathode lead is the wider of the two leads as indicated above but also has red strip indicator on the bottom of the lead.

Dimensions are  $\pm 0.005$  unless otherwise specified

### General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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### Electrical Specifications

#### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Storage Temperature Range	-55° C to +100° C
Operating Temperature Range	-40° C to +85° C
Reverse Voltage	5 V
Continuous Forward Current <sup>(1)</sup>	50 mA
Peak Forward Current (1 $\mu\text{s}$ pulse width, 10% duty cycle)	1 A
Power Dissipation <sup>(2)</sup>	130 mW
Solder Reflow Temperature <sup>(3)</sup>	260° C

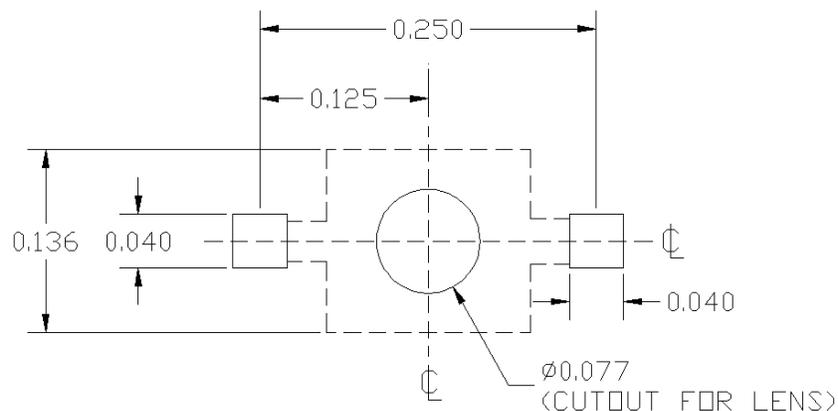
#### Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$P_O$	Total Output Power	0.4	1.0		mW	$I_F = 20\text{ mA}$
$\lambda_P$	Wavelength at Peak Emission	-	940	-	nm	
$V_F$	Forward Voltage	-	1.55	1.65	V	$I_F = 20\text{ mA}$
$I_R$	Reverse Leakage Current	-	-	10	$\mu\text{A}$	$V_R = 5\text{V}$
$\theta_{HP}$	Emission Angle at Half Power Points	-	10	15	Degree	
$t_r, t_f$	Rise Time, Fall Time	-	0.5	1	$\mu\text{s}$	$f = 1\text{ kHz}, 10\% - 90\%, I_{F(PK)} = 100\text{ mA}$

#### Notes:

- Derate 0.66 mA/°C above 25°C.
- Derate 1.73 mW/°C above 25°C.
- Solder time less than 5 seconds at temperature extreme. Solder time within 5° of peak temperature is 20 to 40 seconds.

### Recommended PCB Layout

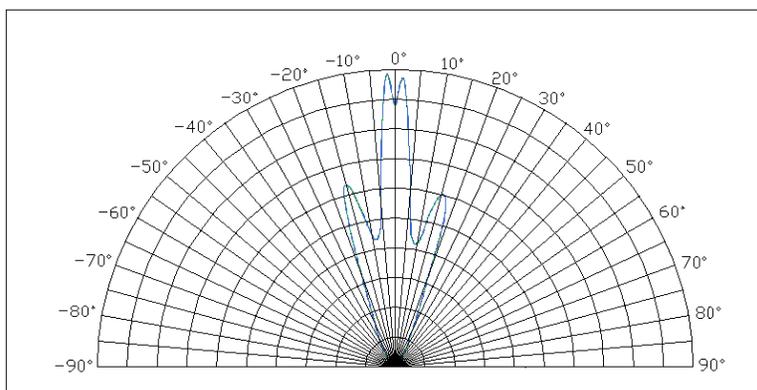
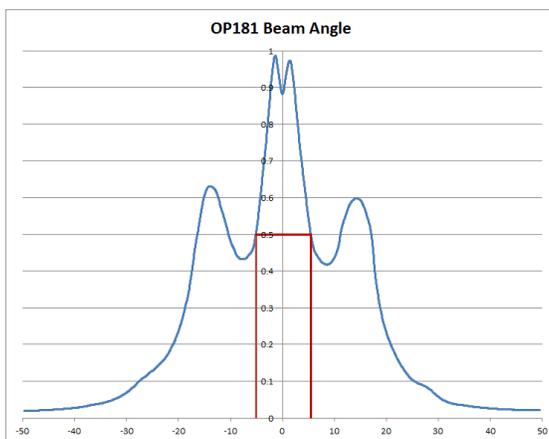
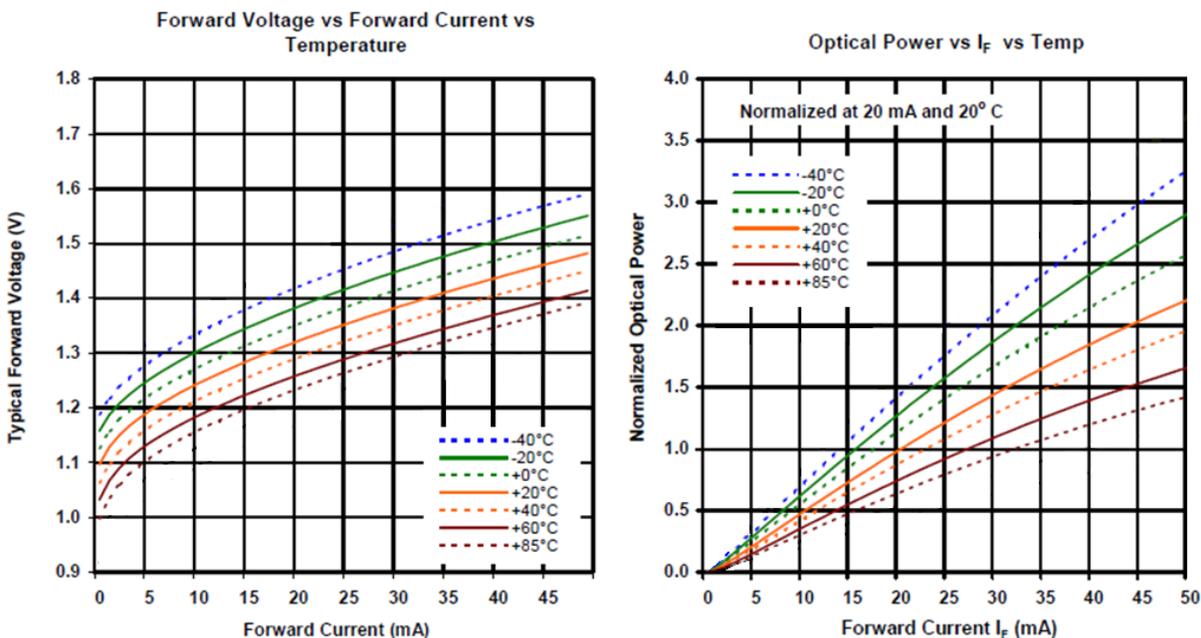


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### Performance



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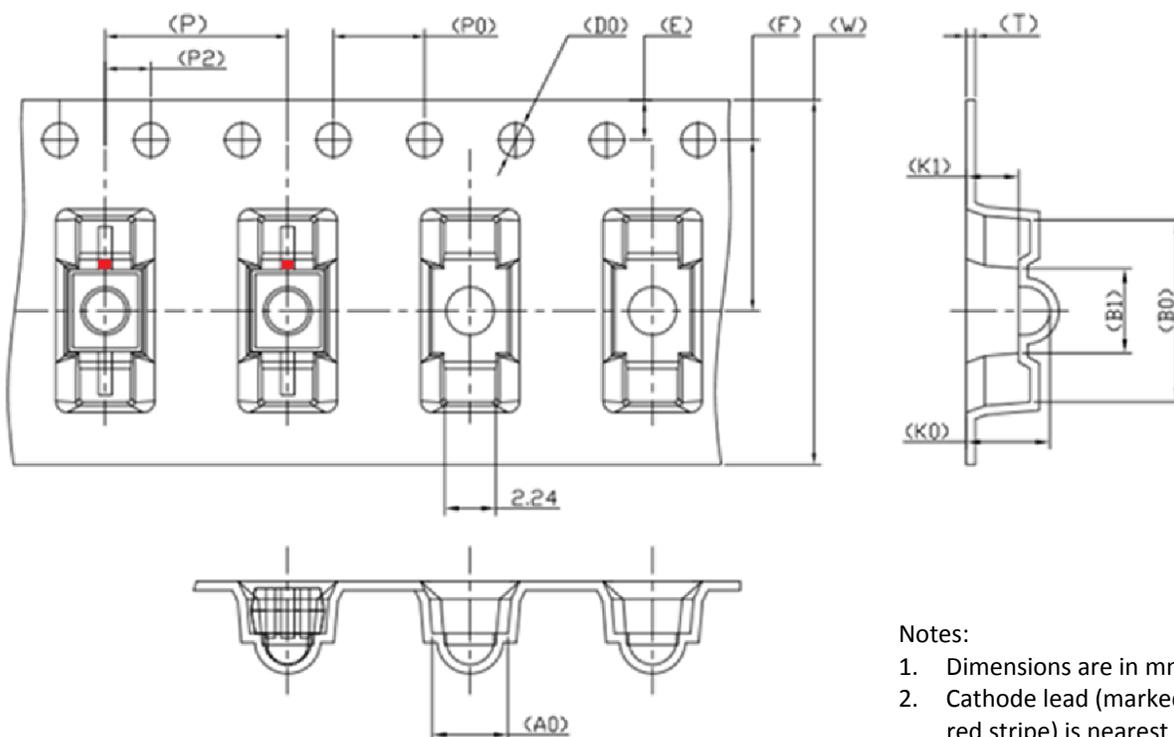
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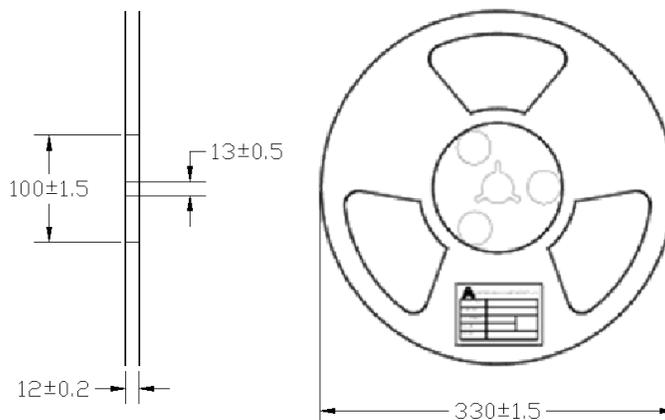
## Packaging



Notes:

1. Dimensions are in mm.
2. Cathode lead (marked with red stripe) is nearest sprocket holes.

W	16.00±0.30	P	8.00±0.10	A0	3.33±0.10	B0	8.00±0.10
E	1.75±0.10	P0	4.00±0.10	K0	3.66±0.10	B1	3.73±0.10
F	7.50±0.10	P2	2.00±0.10	K1	2.30±0.10		
T	0.40±0.05	D0	∅1.50±0.10				



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