SE4540PDD-TR2
4.4*3.9mm,Photodiode
Silicon Planar PIN Photodiode

Technical Data Sheet

Features:

- Daylight filrer.
- High sensitivity.
- Low capacitance.
- Short switching time
- Wide temperature range
- Small package.

Descriptions:

The SE4540PDD is high sensitivity, fast switching times, low capacitance, compact size, and lack of measurable degradation make it suitable for diverse applications, such as TV and appliance remote control, I sound transmission, video recorders, and measurement and control.

Applications:

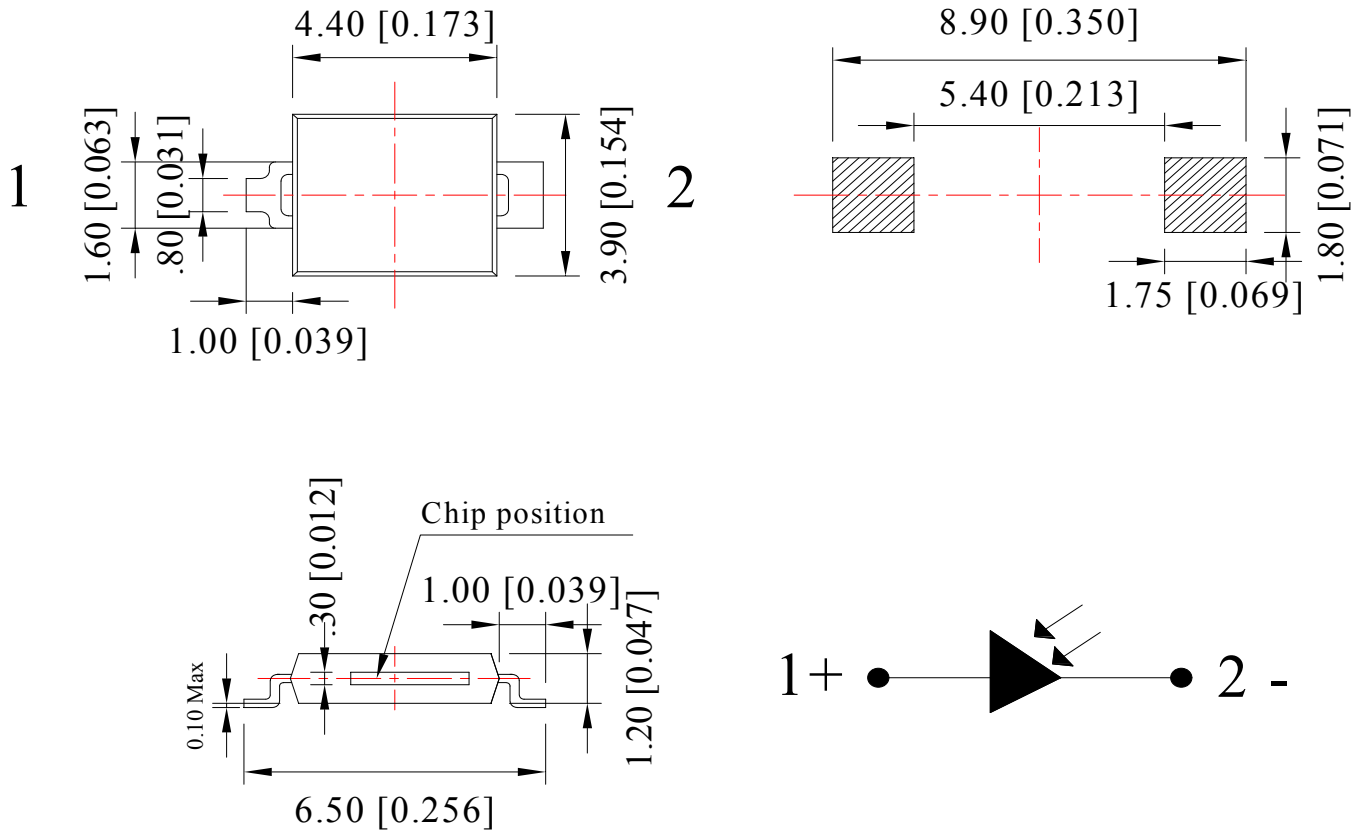
- Access Control & Security
- Factory Automation
- Appliances & Tools
- Home & Building Automation

Device Selection Guide

Part No.	Emitting Color	Lens Color
SE4540PDD-TR2	Photodiode	Black

Technical Data Sheet

Package Dimension:



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25 mm (.010″) unless otherwise noted.
3. Protruded resin under flange is 1.00mm (.039″) max.

Technical Data Sheet

Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Max.	Unit
Power Dissipation	PD	150	mW
Reverse Voltage	VR	32	V
Operating Temperature Range	Topr	-40℃ to +85℃	
Storage Temperature Range	Tstg	-40℃ to +85℃	
Lead Soldering Temperature [4mm (.157″) From Body]	Tsld	260℃ for 5 Seconds	

Electrical Optical Characteristics at Ta=25℃

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Reverse Breakdown voltage	Bvr	32	170	---	V	Ir=100uA, Ee=0mW/cm^2
Dark Current	I_D	---	5	30	nA	Ee=0mW/cm^2 V_R=10V
Total Capacitance	Ct	---	25	---	pF	Ee=0mW/cm^2, VR=3V, f=1MHZ
Rise Time (10% to 90%)	Tr	---	50	---	nS	V_R=10V, R_L=1kΩ,
Fall Time (90% to 10%)	Tf	---	50	---		
Wavelength of Peak Sensitivity	λp	---	940	---	nm	
Rang of Spectral Bandwidth	λ0.5	730	---	1100	nm	
Open-circuit Voltage	Vo	---	0.35	---	V	Ee=5mW/cm^2 Λp=940nm
Short-Circuit Current	Isc	---	35	---	uA	Ee=1mW/cm^2 Λp=940nm
Viewing Angle	2θ1/2	---	120	---	Deg	
Reverse Light Current	IL	17	25	---	uA	Ee=1mW/cm^2 Λp=870nm Vr=5v
		25	37	---	UA	Ee=1mW/cm^2 Λp=940nm Vr=5v

Technical Data Sheet

Typical Electrical / Optical Characteristics Curves
(25℃ Ambient Temperature Unless Otherwise Noted)

Fig.1 Power Dissipation vs. Ambient Temperature

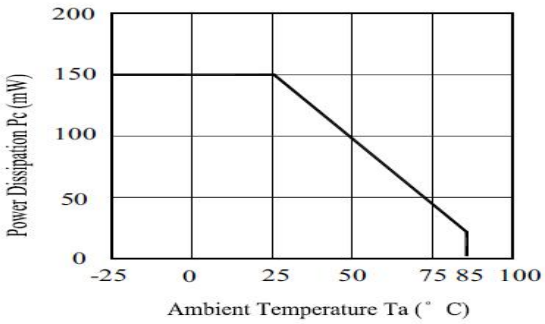


Fig.2 Spectral Sensitivity

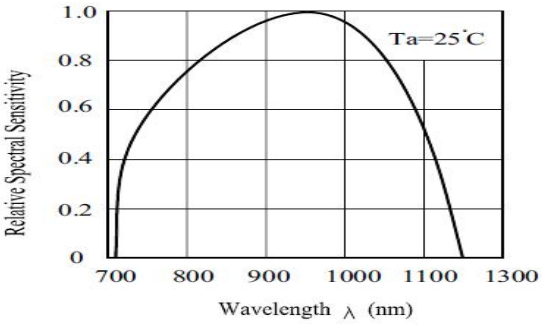


Fig.3 Dark Current vs. Ambient Temperature

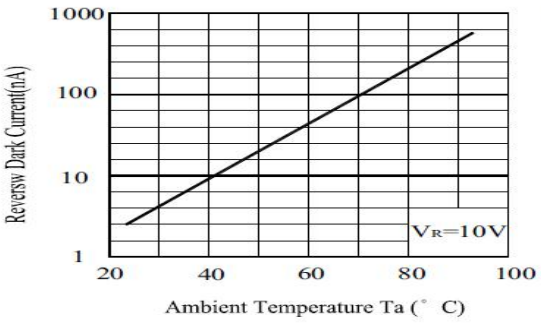


Fig. 4 Reverse Light Current vs. Ee

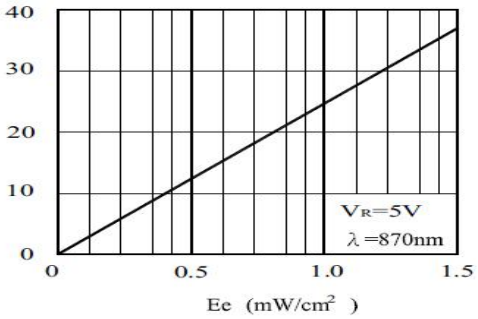


Fig.5 Terminal Capacitance vs. Reverse Voltage

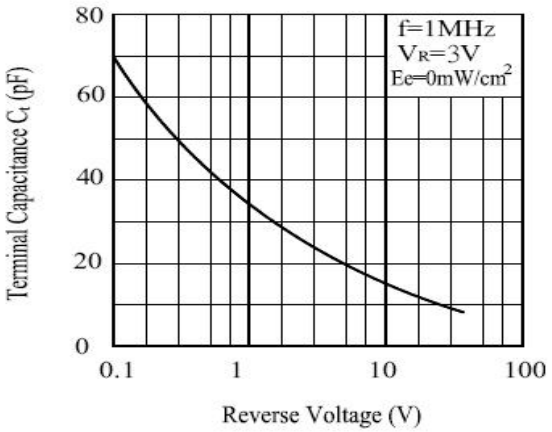
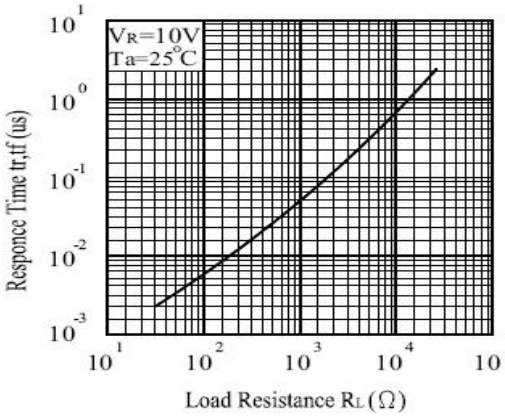
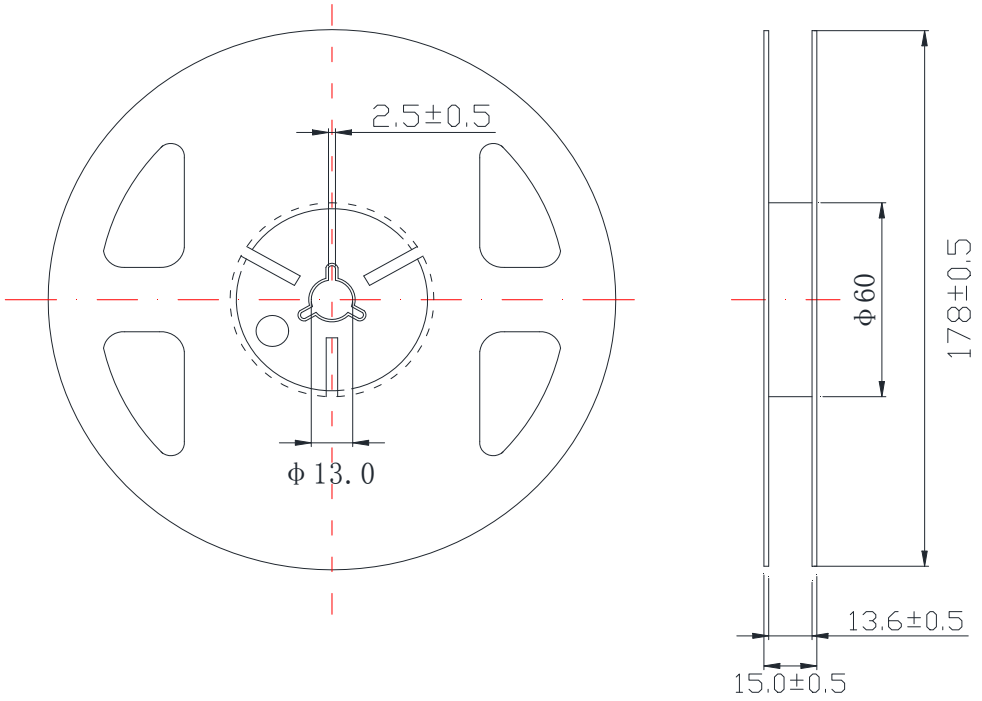


Fig.6 Response Time vs. Load Resistance



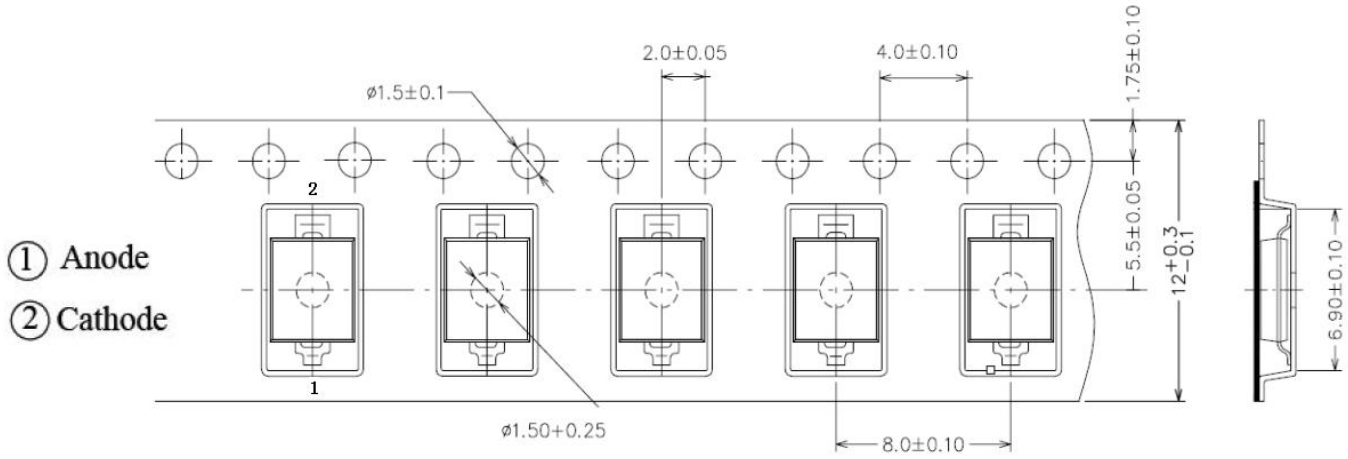
Technical Data Sheet

Reel Dimensions:



Carrier Tape Dimensions:

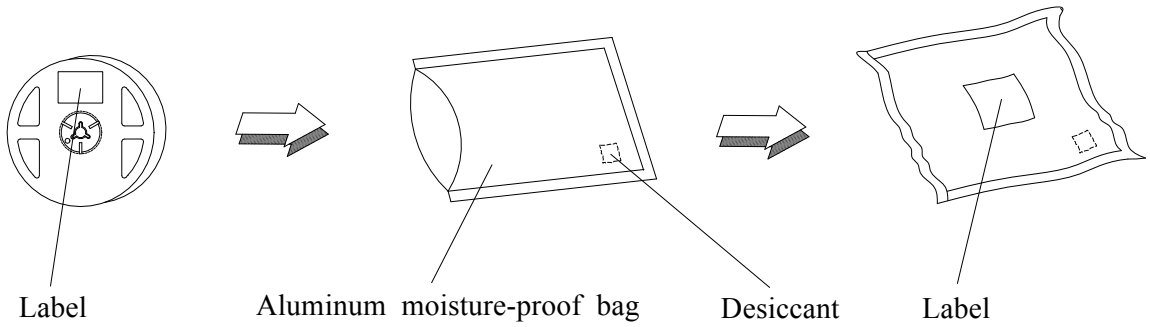
Loaded quantity 1000 pcs per reel.

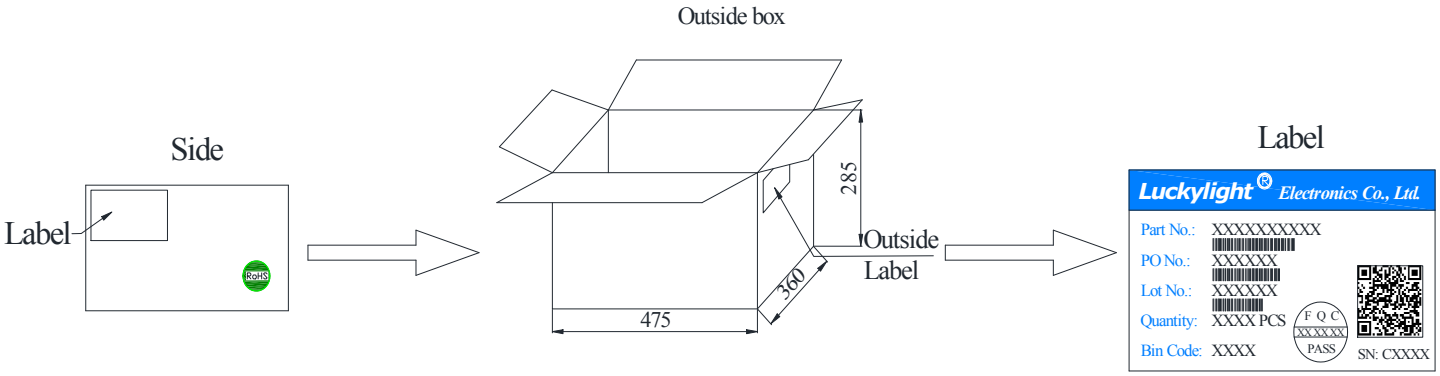


Technical Data Sheet

Packing & Label Specifications:

Moisture Resistant Packaging:





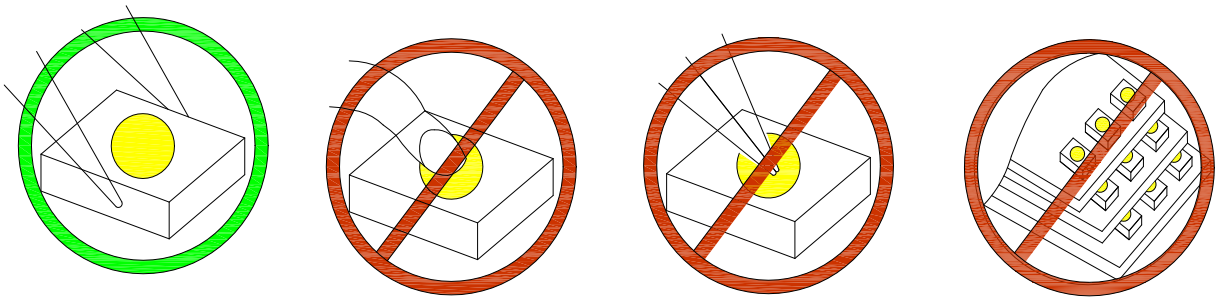
CAUTIONS

1. Handling Precautions:

1.1 Handle the component along the side surfaces by using forceps or appropriate tools.

1.2 Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.

1.3 Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



1.4 Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

2. Storage:

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.

2.3 The LEDs should be used within a year.

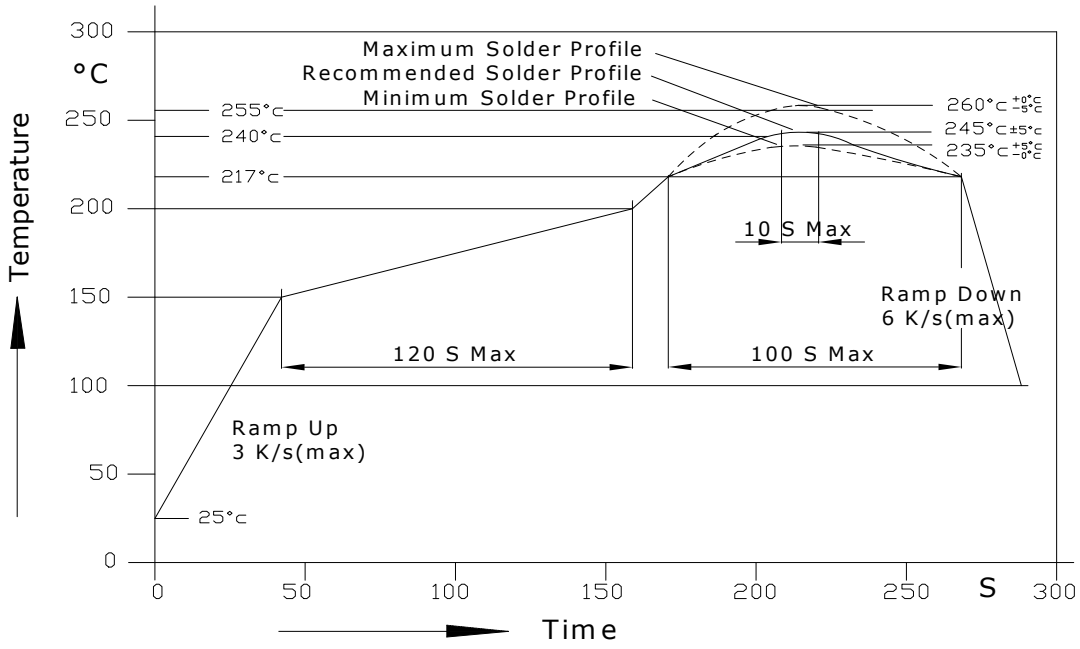
2.4 After opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.

2.5 The LEDs should be used within 24 hours after opening the package.

2.6 If the moisture adsorbent material has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 65±5°C for 24 hours.

3. Soldering Condition:

3.1 Pb-free solder temperature profile.



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

3.4 After soldering, do not warp the circuit board.

3.5 Recommended soldering conditions:

Reflow soldering		Soldering iron	
Pre-heat	150~200°C	Temperature	300°C Max.
Pre-heat time	120 sec. Max.	Soldering time	3 sec. Max.
Peak temperature	260°C Max.		(one time only)
Soldering time	10 sec. Max. (Max. two times)		

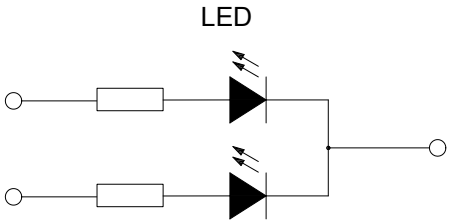
3.6 Because different board designs use different number and types of devices, solder pastes, reflow ovens, and circuit boards, no single temperature profile works for all possible combinations.

However, you can successfully mount your packages to the PCB by following the proper guidelines and PCB-specific characterization.

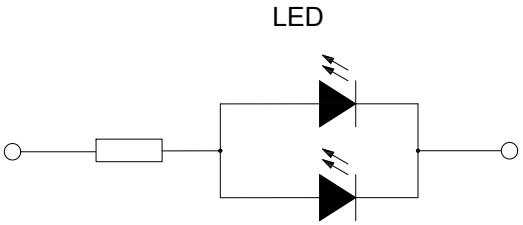
4. Drive Method:

4.1 An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.

Circuit model A



Circuit model B



(A) Recommended circuit.

(B) The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

5. ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

- Use of a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- All devices, equipment, and machinery must be properly grounded.
- Work tables, storage racks, etc. should be properly grounded.
- Use ion blower to neutralize the static charge which might have built up on surface of the LED's plastic lens as a result of friction between LEDs during storage and handling.

ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or "no lightup" at low currents. To verify for ESD damage, check for "lightup" and Vf of the suspect LEDs at low currents. The Vf of "good" LEDs should be >2.0V@0.1mA for InGaN product and >1.4V@0.1mA for AlInGaP product.

Technical Data Sheet

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