ASDL-4360

High Power and High Speed Infrared Emitter (885nm) in PLCC-2 Package

AVAGO TECHNOLOGIES

Data Sheet

Description

ASDL-4360 Infrared emitter is encapsulated in the Industry Standard PLCC-2 SMT package that is designed for application that requires high radiant intensity and fast switching at wide viewing angle. This device optimizes at emissive wavelength of 885nm.

Applications

- High-Speed Machine Automated System
- Medical Applications
- Non-Contact Position Sensing
- Optical Sensing
- Security Applications

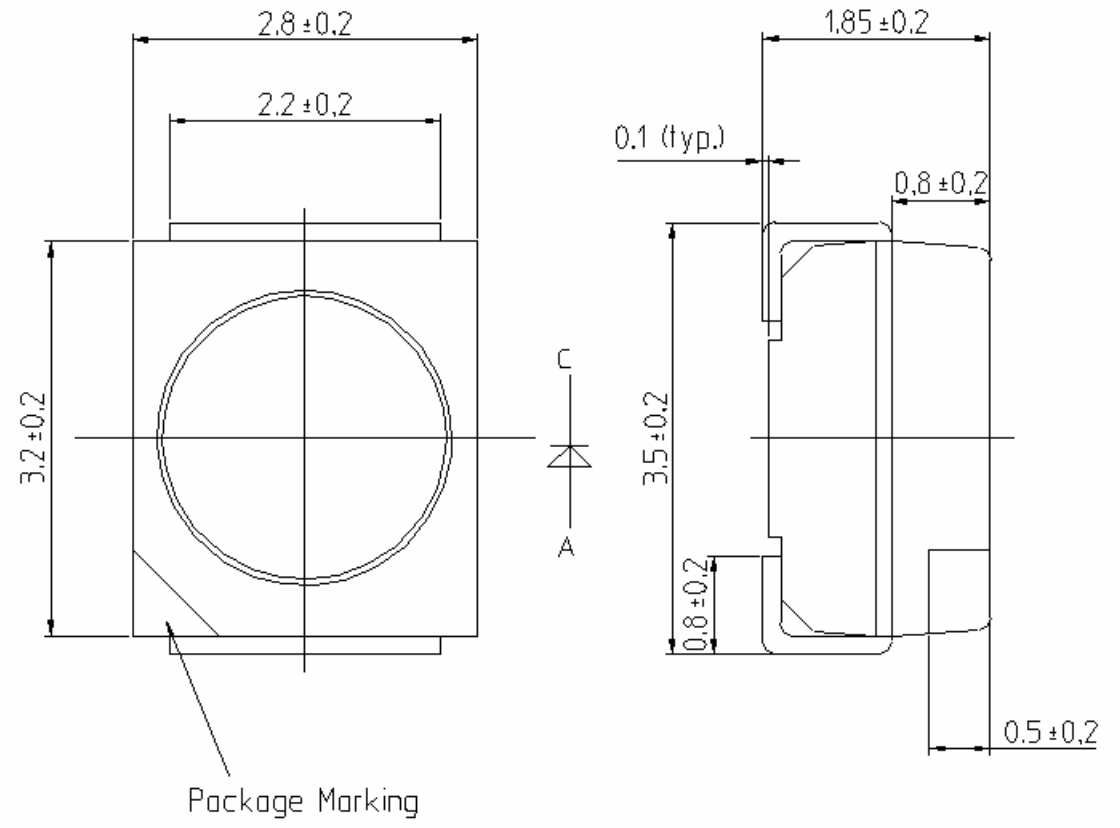
Features

- 885nm Wavelength
- Industry Standard Footprint: PLCC-2 SMT Package
- High Speed
- High Power
- Low Forward Voltage
- High Pulse Rate
- Lead Free and ROHS Compliant
- Tape & Reel for automation placement

Ordering Information

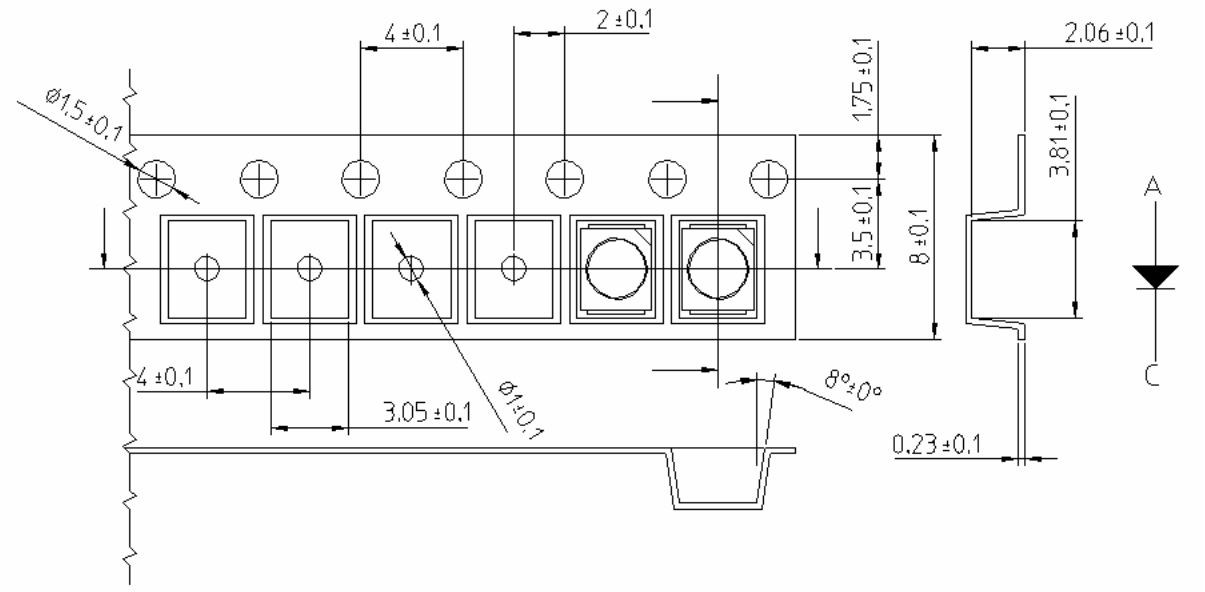
Part Number	Packaging	Shipping Option
ASDL-4360-C22	Tape & Reel	2000pcs

Package Outline



All Dimensions are in Millimeters

Tape and Reel Dimension



All Dimensions are in Millimeters

Absolute Maximum Ratings at 25°C

Parameter	Symbol	Min.	Max	Unit	Reference
Peak Forward Current	I_{FPK}		500	mA	T_p=500ns T_w = 100ns Duty Cycle = 20%
Continuous Forward Current	I_{FDC}		100	mA	
Power Dissipation	P_{DISS}		200	mW	
Reverse Voltage	V_r	11		V	I_r=100uA
Operating Temperature	T_O	-40	85	°C	
Storage Temperature	T_S	-40	100	°C	
LED Junction Temperature	T_J		110	°C	
Lead Soldering Temperature			260 for 5 sec	°C	

Electrical Characteristics at 25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Forward Voltage	V_F		1.4 1.6	1.7 2.0	V V	I_F=20mA I_F=100mA
Reverse Voltage	V_r	11			V	I_R=10uA
Thermal Resistance			250		°C/W	
Diode Capacitance	C_O		90		pF	Vr=0V, f=1MHz

Optical Characteristics at 25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Radiant On-Axis Intensity	I_E	1.0 5.1	2.0 10.0		mW/Sr	I_F = 20mA I_F =100mA
Viewing Angle	$2\theta_{1/2}$		120		deg	
Peak wavelength	λ_{PK}		885		nm	I_F = 20mA
Spectral Width	$\Delta\lambda$		55		nm	I_F = 20mA
Optical Rise Time	t_r		20		ns	I_{FPK}=500mA Duty Factor=20% Pulse Width=100ns
Optical Fall Time	t_f		17		ns	I_{FPK}=500mA Duty Factor=20% Pulse Width=100ns

Typical Electrical / Optical Characteristics Curve (T_A = 25°C Unless Otherwise Stated)

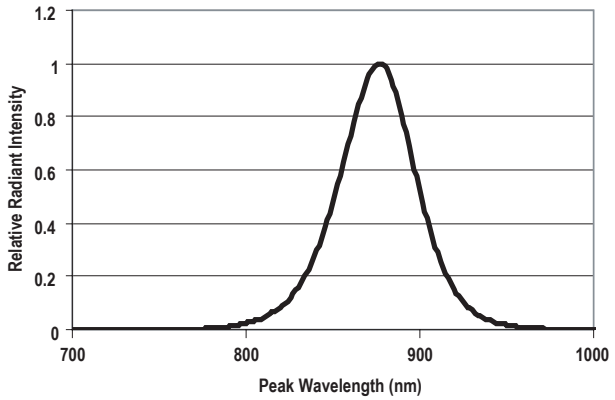


Figure 1. Peak Wavelength Vs Relative Radiant Intensity

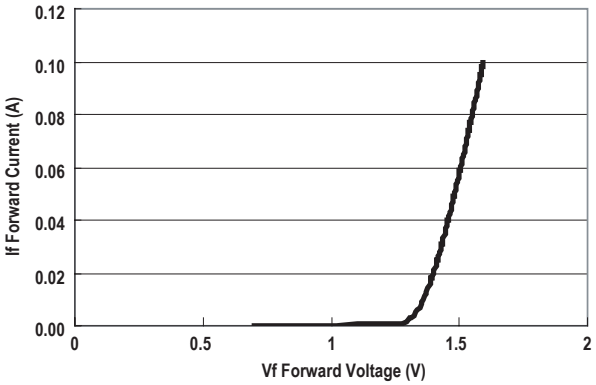


Figure 2. Forward Current Vs Forward Voltage

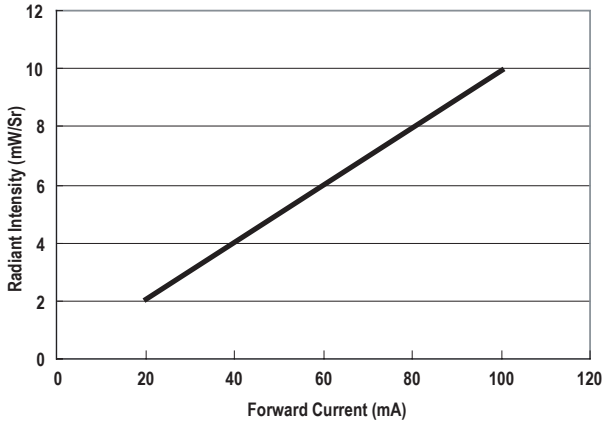


Figure 3. Forward Current Vs Radiant Intensity

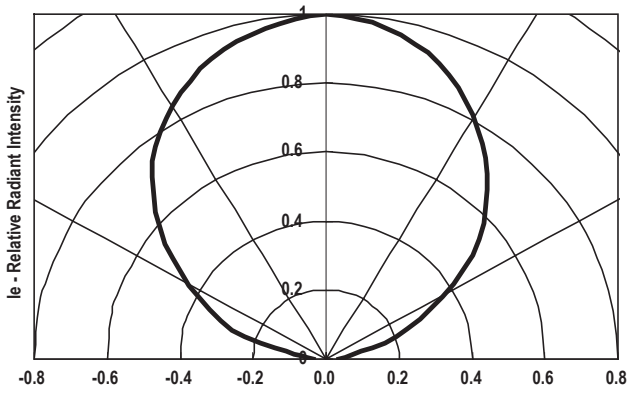


Figure 4. Angular Displacement Vs Relative Radiant Intensity

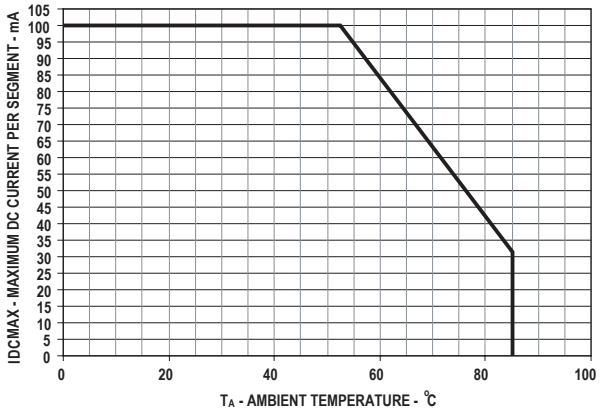
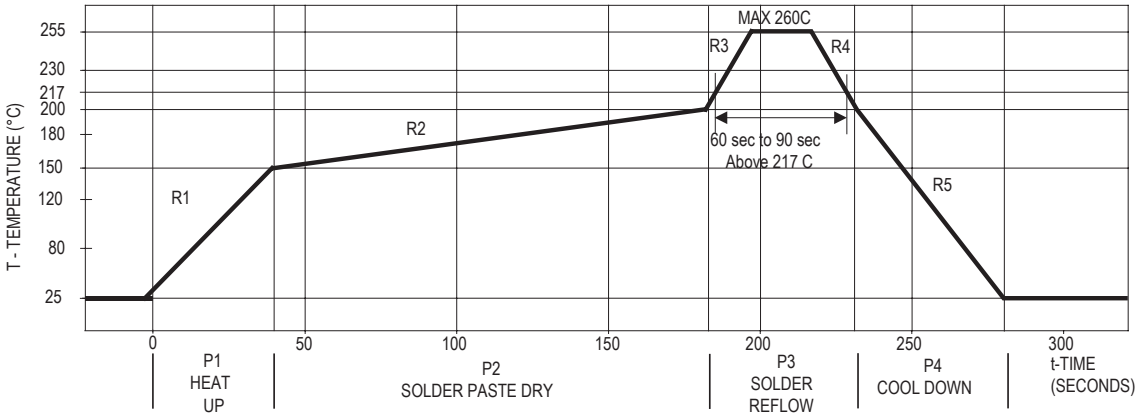


Figure 5. Forward Current Vs Ambient Temperature derated based on Tj – 110 °C and thermal resistance at 250 °C/W

Recommended Reflow Profile



Process Zone	Symbol	ΔT	Maximum ΔT/Δtime or Duration
Heat Up	P1, R1	25°C to 150°C	3°C/s
Solder Paste Dry	P2, R2	150°C to 200°C	100s to 180s
Solder Reflow	P3, R3 P3, R4	200°C to 260°C 260°C to 200°C	3°C/s -6°C/s
Cool Down	P4, R5	200°C to 25°C	-6°C/s
Time maintained above liquidus point , 217°C		> 217°C	60s to 90s
Peak Temperature		260°C	-
Time within 5°C of actual Peak Temperature		-	20s to 40s
Time 25°C to Peak Temperature		25°C to 260°C	8mins

The reflow profile is a straight-line representation of a nominal temperature profile for a convective reflow solder process. The temperature profile is divided into four process zones, each with different ΔT/Δtime temperature change rates or duration. The ΔT/Δtime rates or duration are detailed in the above table. The temperatures are measured at the component to printed circuit board connections.

In process zone P1, the PC board and component pins are heated to a temperature of 150°C to activate the flux in the solder paste. The temperature ramp up rate, R1, is limited to 3°C per second to allow for even heating of both the PC board and component pins.

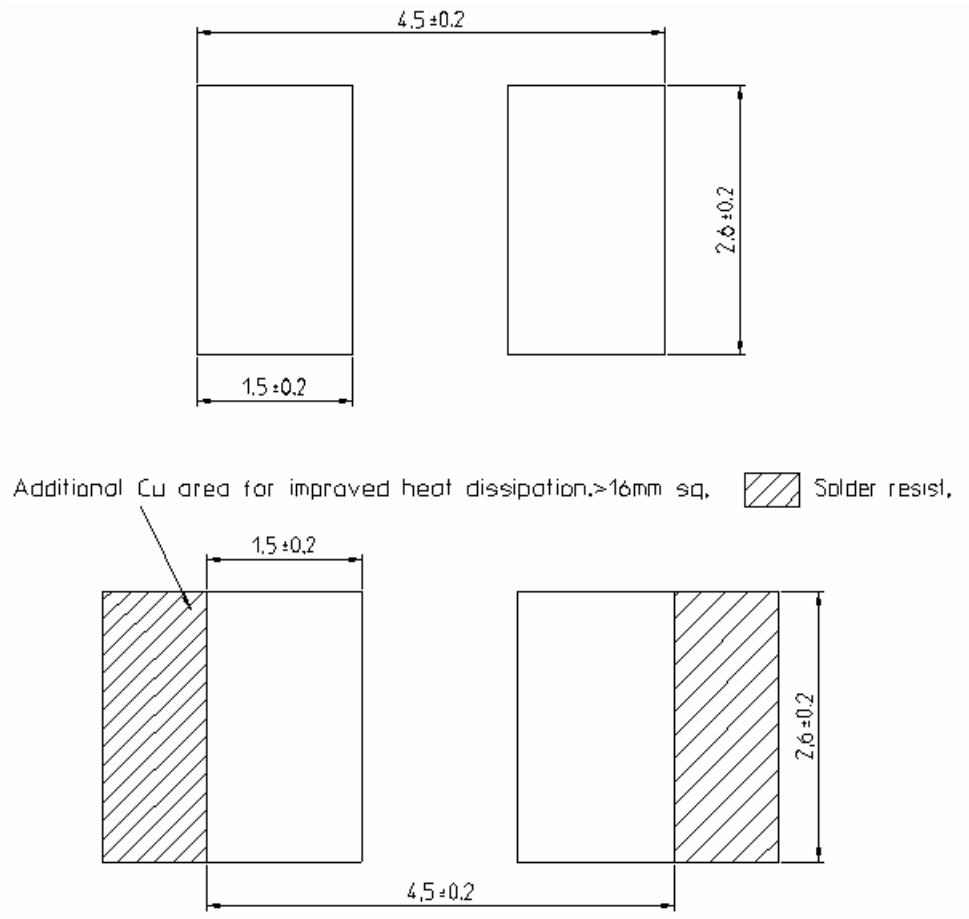
Process zone P2 should be of sufficient time duration (100 to 180 seconds) to dry the solder paste. The temperature is raised to a level just below the liquidus point of the solder.

Process zone P3 is the solder reflow zone. In zone P3, the temperature is quickly raised above the liquidus point of solder to 260°C (500°F) for optimum results. The dwell time above the liquidus point of solder should be between 60 and 90 seconds. This is to assure proper coalescing of the solder paste into liquid solder and the formation of good solder connections. Beyond the recommended dwell time the intermetallic growth within the solder connections becomes excessive, resulting in the formation of weak and unreliable connections. The temperature is then rapidly reduced to a point below the solidus temperature of the solder to allow the solder within the connections to freeze solid.

Process zone P4 is the cool down after solder freeze. The cool down rate, R5, from the liquidus point of the solder to 25°C (77°F) should not exceed 6°C per second maximum. This limitation is necessary to allow the PC board and component pins to change dimensions evenly, putting minimal stresses on the component.

It is recommended to perform reflow soldering no more than twice.

Recommended Land Pattern



All Dimensions are in Millimeters

For product information and a complete list of distributors, please go to our web site: **www.avagotech.com**

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