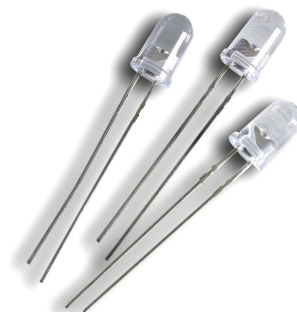


Agilent HSDL-4261 High-Power T-1 $\frac{3}{4}$ (5mm) AlGaAs Infrared (870nm) Lamp Data Sheet



Description

The HSDL-4261 Infrared emitter was designed for applications that require high power, low forward voltage and high speed. It utilizes Aluminum Gallium Arsenide (AlGaAs) LED technology and is optimized for speed and efficiency at emission

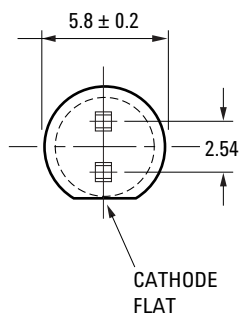
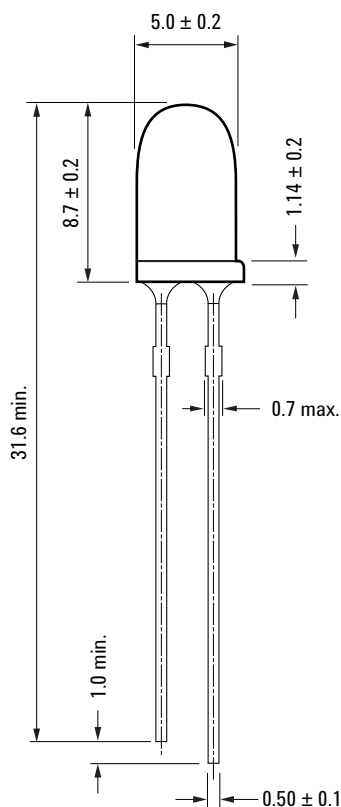
wavelengths of 870nm. The material used produces high radiant efficiency over a wide range of currents. The emitter is packaged in clear T-1 $\frac{3}{4}$ (5mm) package.

Features

- Very High Power AlGaAs LED Technology
- 870nm Wavelength
- T-1 $\frac{3}{4}$ Package
- Low Cost
- Low Forward Voltage: 1.4V at 20mA
- High Speed: 15ns Rise Times

Applications

- Industrial IR Equipments
- IR Portable Instruments
- Consumer Electronics (Optical mouse etc)
- High Speed IR Communications (IR LANs, IR Modems, IR Dongles etc)
- IR Audio
- IR Telephones



Part Number	Lead Form	Shipping Option
HSDL-4261	Straight	Bulk



Absolute Maximum Ratings at 25°C

Parameter	Symbol	Min.	Max	Unit	Reference
DC Forward Current	I_{FDC}	-	100	mA	[1], Fig. 2
Power Dissipation	P_{DISS}	-	190	mW	
Reverse Voltage	V_R	5	-	V	
Operating Temperature	T_O	-40	70	°C	
Storage Temperature	T_S	-40	100	°C	
LED Junction Temperature	T_J	-	110	°C	
Lead Soldering Temperature		-	260 for 5 sec	°C	

Notes:

1. Derate as shown in Figure 6.

Electrical Characteristics at 25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	Reference
Forward Voltage	V_F	-	1.4 1.7	1.5 1.9	V	$I_{FDC}=20mA$ $I_{FDC}=100mA$	Fig. 2 Fig. 3
Forward Voltage Temperature Coefficient	$\Delta V/\Delta T$	-	-1.5 -1.3	-	mV/°C	$I_{FDC}=20mA$ $I_{FDC}=100mA$	Fig. 4
Series Resistance	R_S	-	4.1	-	Ohms	$I_{FDC}=100mA$	
Diode Capacitance	C_O	-	80	-	pF	0V, 1MHz	
Reverse Voltage	V_R	3	14	-	V	$I_R=100\mu A$	
Thermal Resistance, Junction to Ambient	RO_{ja}	-	280	-	°C/W		

Optical Characteristics at 25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	Reference
Radiant Optical Power	P_O	-	9 45	-	mW	$I_{FDC}=20mA$ $I_{FDC}=100mA$	
Radiant On-Axis Intensity	I_E	-	36 180	-	mW/Sr	$I_{FDC}=20mA$ $I_{FDC}=100mA$	Fig. 5
Radiant On-Axis Intensity Temperature Coefficient	$\Delta I_E/\Delta T$	-	-0.22	-	%/°C	$I_{FDC}=100mA$	
Viewing Angle	$2\theta_{1/2}$	-	26	-	deg	$I_{FDC}=20mA$	Fig. 7
Peak wavelength	λ_{PK}	-	870	-	nm	$I_{FDC}=20mA$	Fig. 1
Peak wavelength Temperature Coefficient	$\Delta \lambda/\Delta T$	-	0.18	-	nm/°C	$I_{FDC}=20mA$	
Spectral Width	$\Delta \lambda$	-	47 52	-	nm	$I_{FDC}=20mA$ $I_{FDC}=100mA$	Fig. 1
Optical Rise and Fall Time	t_r/t_f	-	15	-	ns	$I_{FPK}=500mA$	
Bandwidth	f_c	-	23	-	MHz	Duty Factor=33% Pulse Width=125ns	

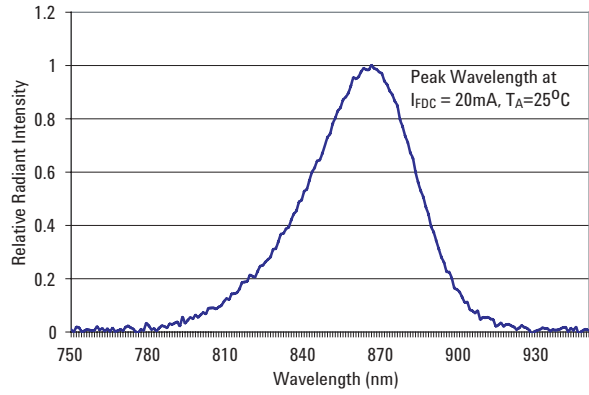


Figure 1. Relative Radiant Intensity vs. Wavelength

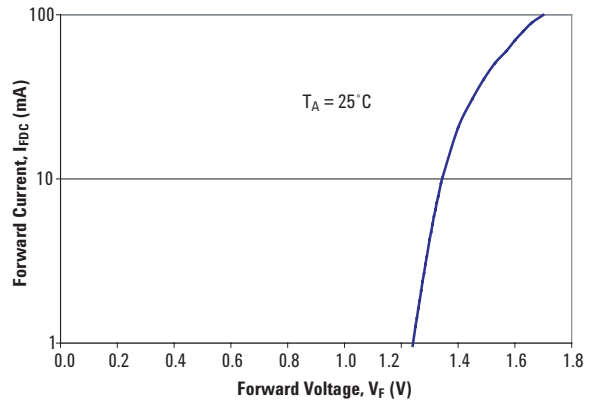


Figure 2. DC Forward Current vs. Forward Voltage

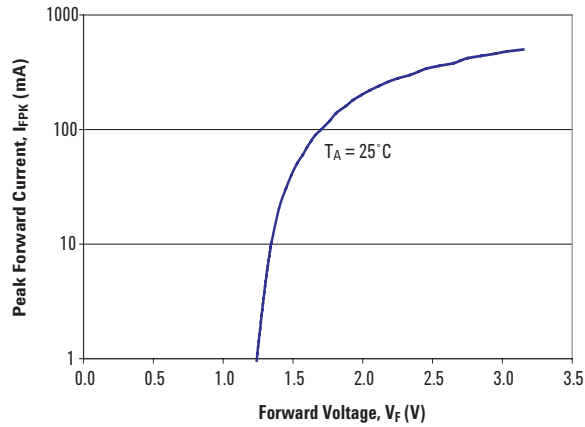


Figure 3. Peak Forward Current vs. Forward Voltage

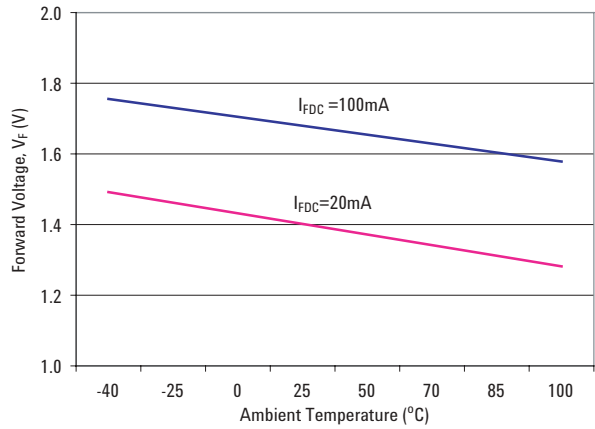


Figure 4. Forward Voltage vs. Ambient Temperature

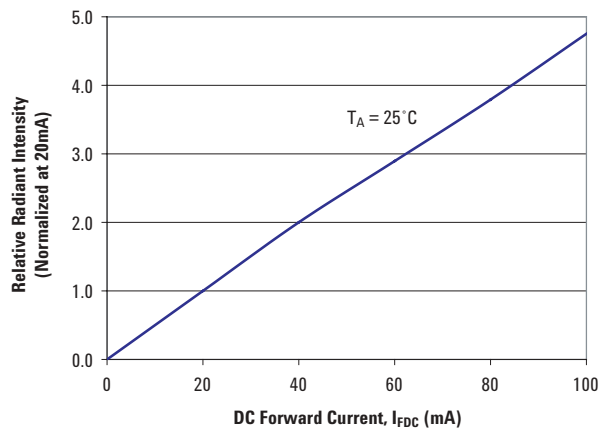


Figure 5. Relative Radiant Intensity vs. DC Forward Current

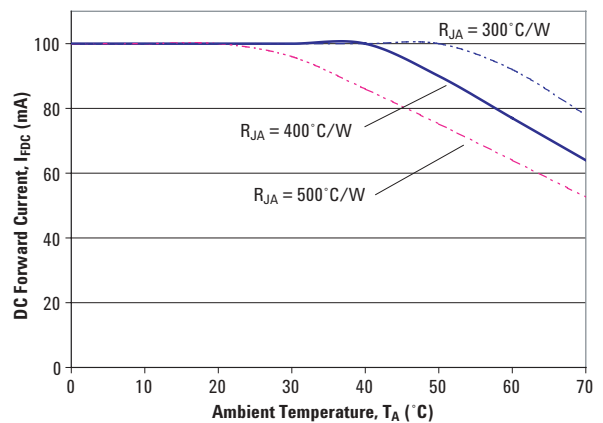


Figure 6. DC Forward Current vs. Ambient Temperature

Derated Based on $T_{JMAX}=110^{\circ}\text{C}$

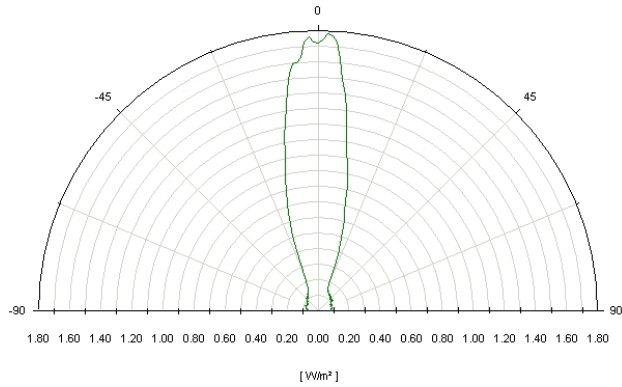


Figure 7. Radiant Intensity vs. Angular Displacement

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August 19, 2004

5989-1534EN



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