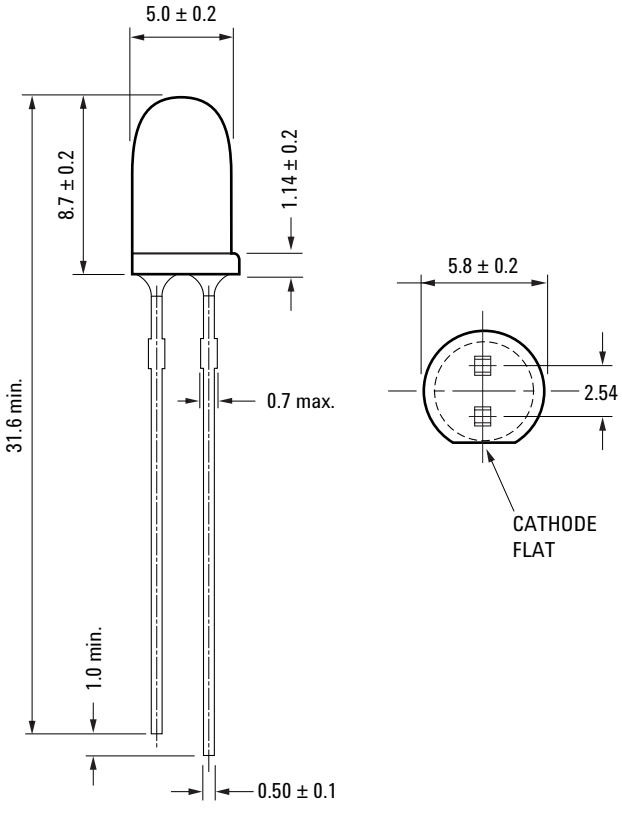
HSDL - 4261

High-Power T-1¾ (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 Galium 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-1¾ (5mm) package.



Features

- Very High Power AlGaAs LED Technology
- 870nm Wavelength
- T-1¾ 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

	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 VoltageTemperature Coefficient	DV/DT	-	-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=100uA	
Thermal Resistance, Junction to Ambient	Rq_{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	DI_E/DT	-	-0.22	-	%/°C	I_{FDC}=100mA	
Viewing Angle	$2q_{1/2}$	-	26	-	deg	I_{FDC}=20mA	Fig. 7
Peak wavelength	l_{PK}	-	870	-	nm	I_{FDC}=20mA	Fig. 1
Peak wavelengthTemperature Coefficient	Dl/DT	-	0.18	-	nm/°C	I_{FDC}=20mA	
Spectral Width	Dl	-	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 Duty Factor=33% Pulse Width=125ns	
Bandwidth	f_c	-	23	-	MHz		

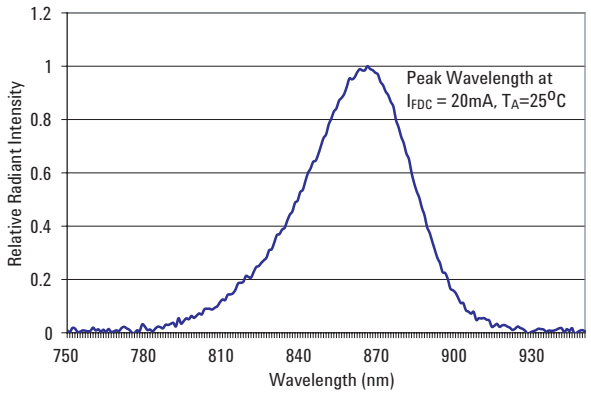


Figure 1. Relative Radiant Intensity vs. Wavelength

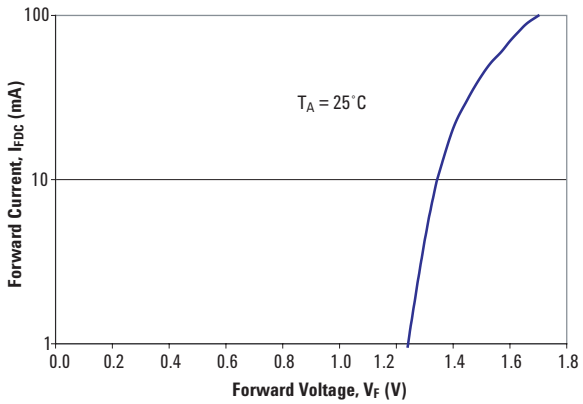


Figure 2. DC Forward Current vs. Forward Voltage

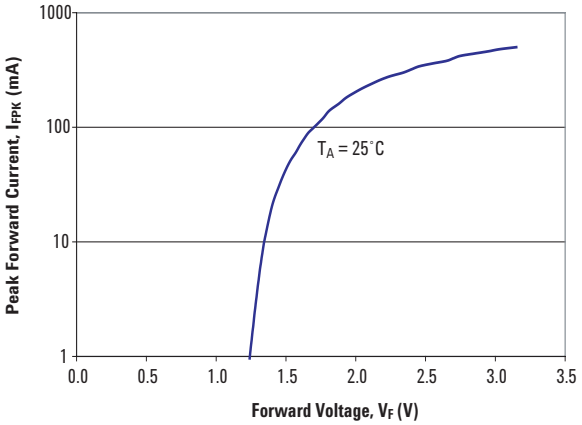


Figure 3. Peak Forward Current vs. Forward Voltage

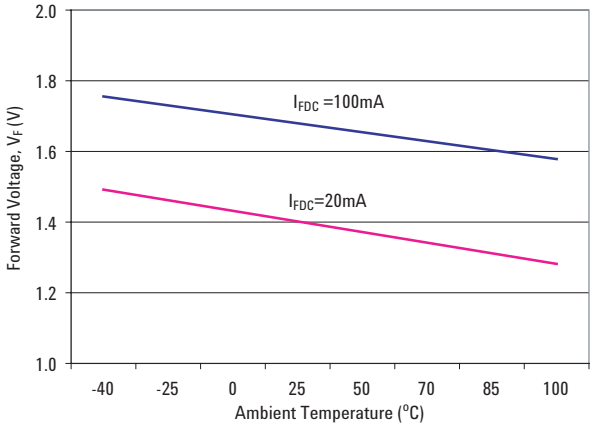


Figure 4. Forward Voltage vs. Ambient Temperature

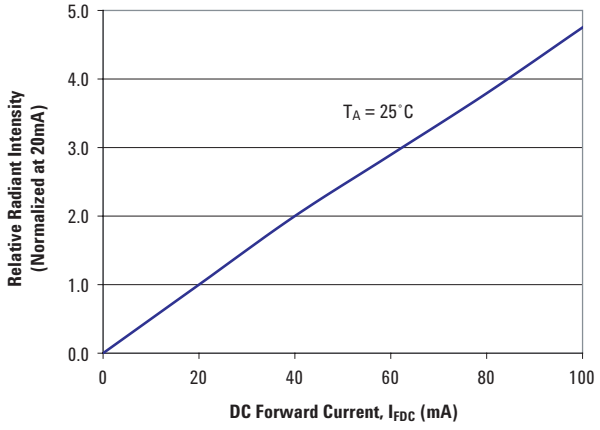


Figure 5. Relative Radiant Intensity vs. DC Forward Current

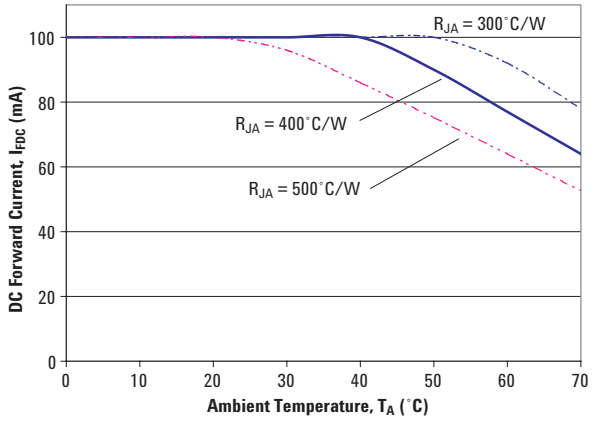


Figure 6. DC Forward Current vs. Ambient Temperature Derated Based on TJMAX=110°C

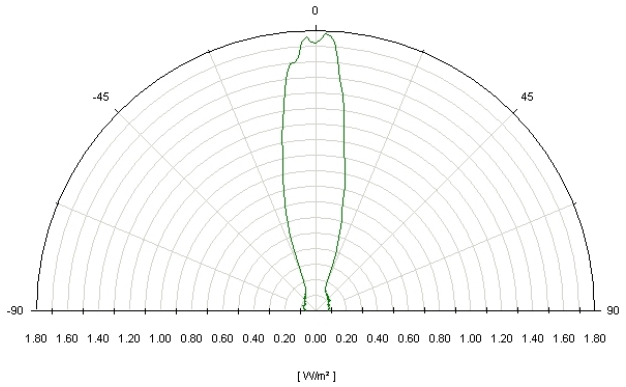


Figure 7. Radiant Intensity vs. Angular Displacement