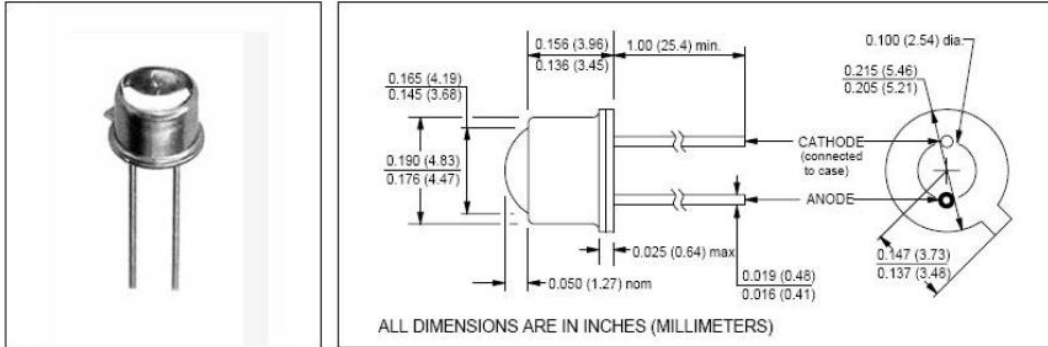


SE-135

# High Efficiency Gallium Arsenide IRED



**features**

- high power output
- 945nm wavelength
- TO-46 hermetic package
- cathode connected to case

**description**

135 is an advanced, high-efficiency, GaAs infrared emitting diode. Output power is comparable to standard AlGaAs emitters. The TO-46 header provides the thermal environment for reliable operation over a wide temperature range. The lens is designed to provide a collimated radiation pattern in the range of 0.10° to 0.20° from the tip of the lens.

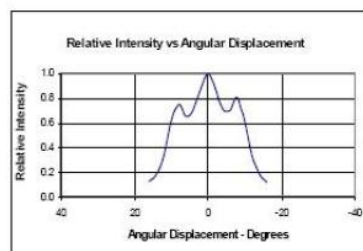
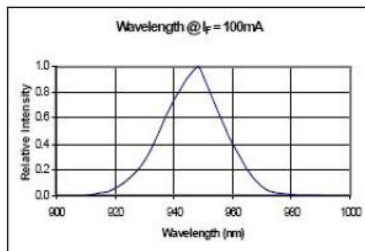
**absolute maximum ratings** (T<sub>A</sub> = 25°C unless otherwise stated)

storage temperature	-65°C to +150°C
operating temperature	-55°C to +125°C
junction temperature <sup>(1)</sup>	+150°C
lead soldering temperature <sup>(2)</sup>	240°C
continuous forward current <sup>(3)</sup>	100mA
peak forward current <sup>(4)</sup>	3A
reverse voltage <sup>(5)</sup>	5V
power dissipation <sup>(5)</sup>	200mW

**notes:**

1. Maximum operating temperature of the metallurgical junction.
2. 0.06" (1.5mm) from the header for 5 seconds maximum. Maximum temperature can be 260°C if wave soldering.
3. Derate linearly 0.80mA/°C from 25°C free air temperature to T<sub>A</sub> = +125°C.
4. Pulsed condition only. Maximum pulse width is 2.0µs at 2% duty cycle. Use good judgement when operating this device under these conditions. Thermal transients exceeding these restrictions can cause irreversible damage.
5. Derate linearly 1.60mW/°C from 25°C free air temperature to T<sub>A</sub> = +125°C.

**fundamental characteristics**



## High Efficiency Gallium Arsenide IRED

electrical characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)					
symbol	parameter	min	max	units	test conditions
$P_O$	Total power output <sup>(6)</sup>	7.0	-	mW	$I_F = 100\text{mA}$
$E_e$	Irradiance <sup>(7)</sup>	450	-	$\mu\text{W}/\text{cm}^2$	$I_F = 20\text{mA}$
$V_F$	Forward voltage	-	1.4	V	$I_F = 20\text{mA}$
$I_R$	Reverse current	-	10	$\mu\text{A}$	$V_R = 3\text{V}$

notes: 6. Total power output measured in an integrating sphere.

7.  $E_e$  is a measure of irradiance (power/unit area) within a 0.444" (1.128cm) diameter area, centered on the mechanical axis of the device and spaced 2.54" (6.45cm) from the lens side of the tab. This is geometrically equivalent to a 10° cone.

typical characteristics at $T_A = 25^\circ\text{C}$ (not guaranteed by test)				
symbol	parameter	value	units	conditions
$P_O$	Total power output <sup>(6)</sup>	11	mW	$I_F = 100\text{mA}$
$E_e$	Typical irradiance <sup>(7)</sup>	2.5	$\text{mW}/\text{cm}^2$	$I_F = 100\text{mA}$
$\lambda_p$	Peak emission wavelength	945	nm	$I_F = 100\text{mA}$
BW	Spectral bandwidth at half power points	30	nm	$I_F = 100\text{mA}$
$\Theta_{HP}$	Emission angle at half power points	22	deg.	$I_F = 100\text{mA}$
$V_F$	Forward voltage	1.35	V	$I_F = 100\text{mA}$
$t_r$	Radiation rise time	500	ns	$I_{F(PK)} = 100\text{mA}$ , $f = 1\text{kHz}$ , D.C. = 50%
$t_f$	Radiation fall time	500	ns	$I_{F(PK)} = 100\text{mA}$ , $f = 1\text{kHz}$ , D.C. = 50%

