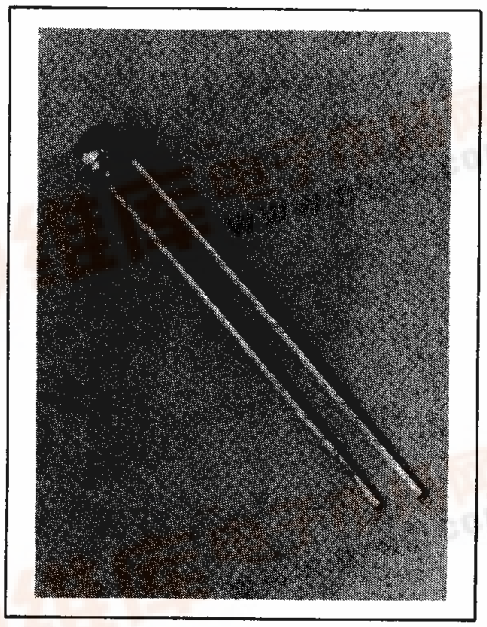
SIEMENS

SFH 487P

GaAlAs INFRARED EMITTER

T-41-13



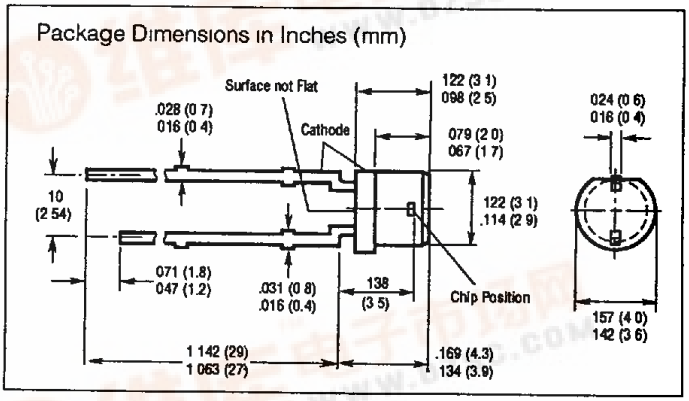
FEATURES

- **Radiant Intensity Selections**
  SFH487P-1 2–4
  SFH487P-2 ≥3.15
- **Perfect Spectral Match with Silicon Photo Detector**
- **Gallium Aluminum Arsenide Material**
- **Low Cost**
- **T1 Package**
- **Flat Plastic Lens**
- **Long-Term Stability**
- **Very Wide Beam, 130°**
- **Very High Power, 20 mW Typical at 100 mA**

DESCRIPTION

SFH 487P, an infrared emitting diode, emits radiation in the near infrared range (880 nm peak). The emitted radiation, which can be modulated, is generated by forward flowing current. The device is enclosed in a 3 mm diameter plastic package with a flat lens. Typical applications are in digital shaft encoders and light interruptors for DC and AC operation.

Package Dimensions in Inches (mm)



Maximum Ratings

Storage temperature	T_{stg}	−55 to +100	°C
Soldering temperature at dip soldering (≥ 2 mm distance from the case bottom, soldering time t ≤ 5 sec)	T_{sold}	260	°C
Soldering temperature at iron soldering (≥ 2 mm distance from the case bottom, soldering time t ≤ 3 sec)	T_{sold}	300	°C
Junction temperature	T_j	100	°C
Reverse voltage	V_R	5	V
Forward current	I_F	100	mA
Surge current ($\tau = 10$ µs)	I_{FS}	2.5	A
Power dissipation ($T = 25$°C)	P_{tot}	200	mW
Thermal resistance*	R_{thA}	375	K/W

Characteristics ($T_{amb} = 25$°C)

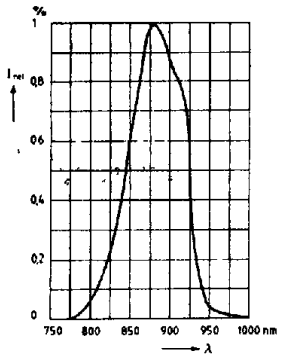
Wavelength at peak emission at $I_F = 10$ mA	λpeak	880	nm
Wavelength at peak emission at $I_F = 100$ mA, $t_{pulse} = 20$ ms, Duty cycle = 1 12	λpeak	883	nm
Wavelength at peak emission at $I_F = 1$ A, $t_{pulse} = 100$ µs, Duty cycle = 1 100	λpeak	886	nm
Spectral bandwidth at $I_F = 10$ mA	Δλ	80	nm
Half angle	φ	±65	Deg
Active chip area	A	0 16	mm²
Dimensions of active chip area	L × W	0 4 × 0 4	mm
Distance chip surface to case surface	D	0 4 to 0 7	mm
Switching time (I_e from 10% to 90%, and from 90% to 10%, I_F = 100 mA)	t_r, t_f	0 6/0 5	µs
Capacitance ($V_R = 0$ V, f = 1 MHz)	C_o	25	pF
Forward Voltage ($I_F = 100$ mA, $t_{pulse} = 20$ ms)	V_F	1.5 (≤ 1 8)	V
($I_F = 1$ A, $t_{pulse} = 100$ µs)	V_F	3 0 (≤ 3 8)	V
Breakdown voltage ($I_R = 10$ µA)	V_{BR}	30 (≥ 5)	V
Reverse current ($V_R = 5$ V)	I_R	0 01 (≤ 1)	µA
Temperature coefficient of I_e or Φ_e	TC	−0.5	%/K
Temperature coefficient of V_F	TC	−0 2	%/K
Temperature coefficient of λpeak	TC	0 25	nm/K

Radiant Intensity I_E in Axial Direction Measured at a Solid Angle of $\Omega = 0.01$sr

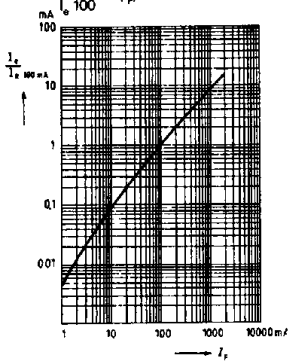
Group	SFH 487P-1	SFH 487P-2	
Radiant Intensity I_E ($I_F = 100$ mA, $T_P = 20$ ms)	2-4	≥ 3 15	mW/sr
($I_F = 1$ A, $T_P = 100$ µs)	25	35	mW/sr
Total Radiant Flux Φ_E ($I_F = 100$ mA, $T_P = 20$ ms)	21	23	mW

T-41-13

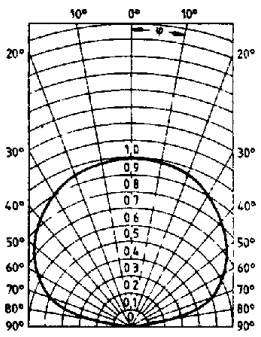
Relative spectral emission
$I_{rel} = f(\lambda)$



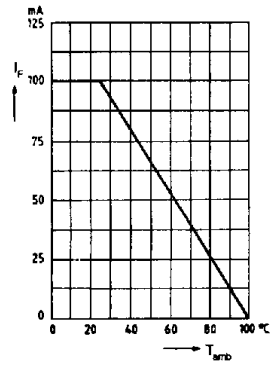
Radiant intensity
$\frac{I_e}{I_e\ 100} = f(I_F)$



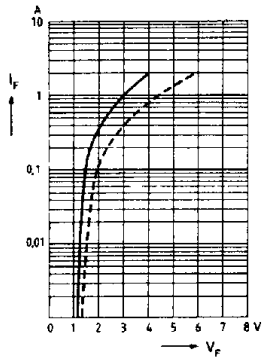
Radiant characteristics
$I_{rel} = f(\varphi)$



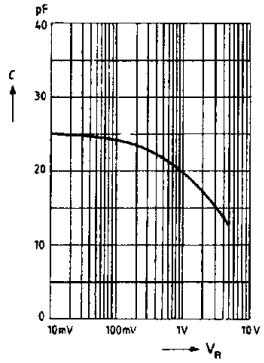
Maximum permissable forward current
$I_F = f(T_{amb})$



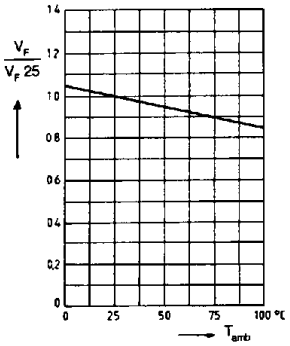
Forward current
$I_F = f(V_F)$



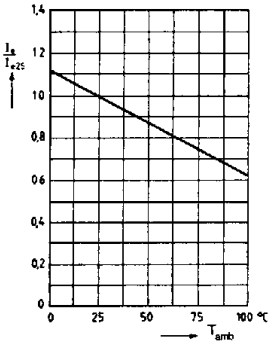
Capacitance
$C = f(V_R)$



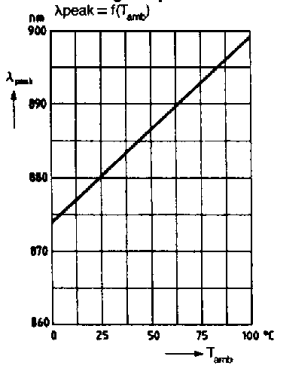
Forward voltage $\frac{V_F}{V_F\ 25} = f(T_{amb})$



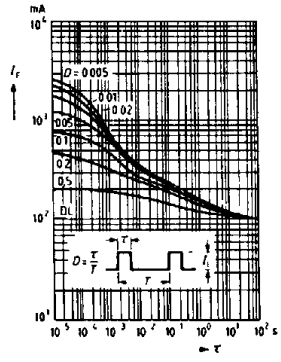
Radiant Intensity $\frac{I_e}{I_e\ 25} = f(T_{amb})$



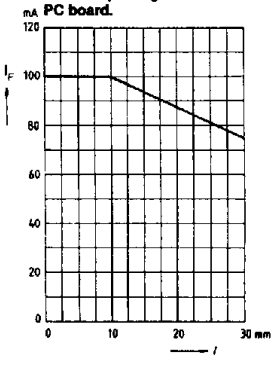
Wavelength at peak emission
$\lambda peak = f(T_{amb})$



Permissable Pulse Load
$I_F = f(\tau)$
Duty cycle D = Parameter



Forward current (max): dependent upon the lead length from the package bottom to the PC board.



Infrared Emitters

SFH 487P