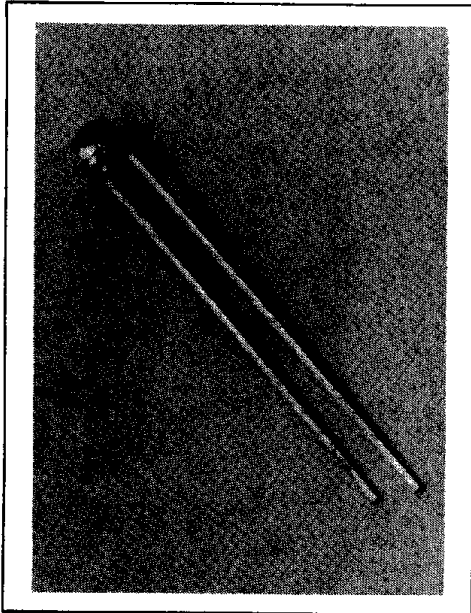


SIEMENS**SFH 487P****GaAlAs INFRARED EMITTER**

T-41-13

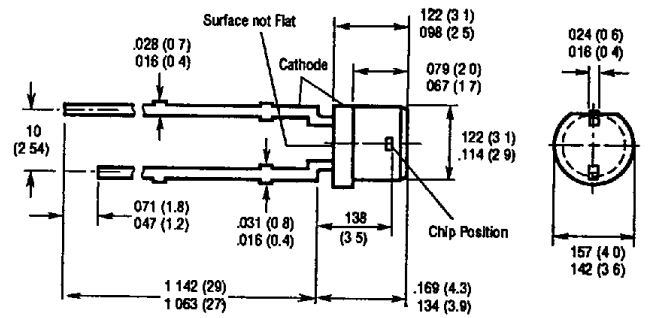
**FEATURES**

- **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 $t \leq 5$ sec)	T_{sold}	260	°C
Soldering temperature at iron soldering (≥ 2 mm distance from the case bottom, soldering time $t \leq 3$ 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 ($\tau = 10$ μ s)	I_{FS}	2.5	A
Power dissipation ($T = 25^\circ\text{C}$)	P_{tot}	200	mW
Thermal resistance*	R_{thA}	375	K/W

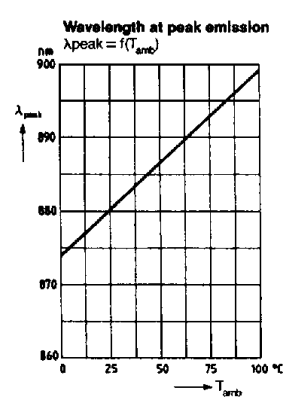
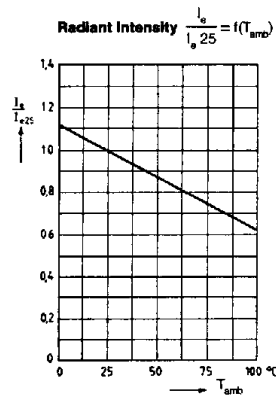
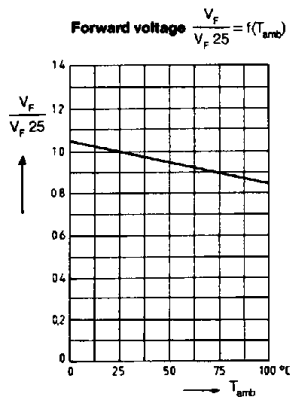
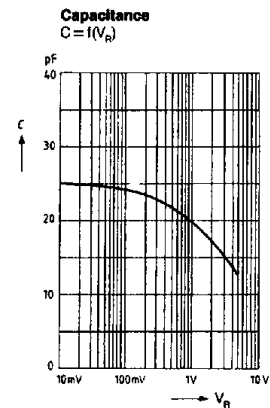
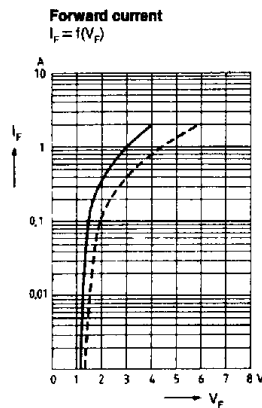
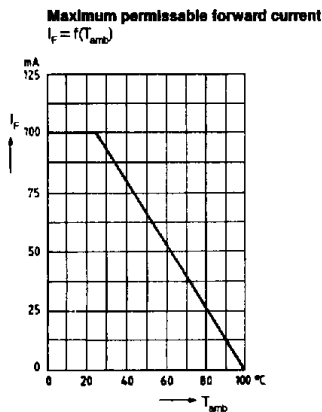
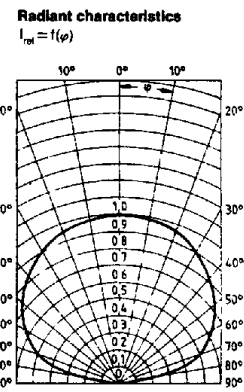
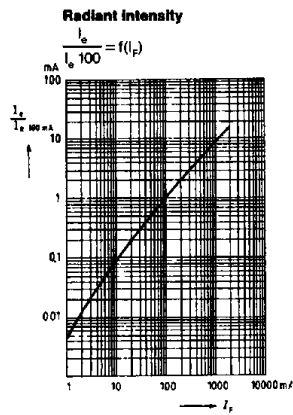
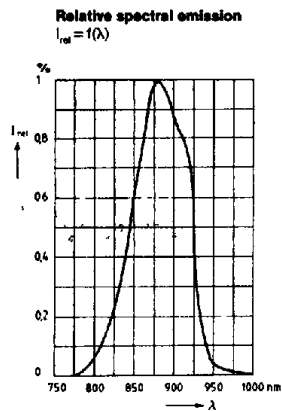
Characteristics ($T_{amb} = 25^\circ\text{C}$)

Wavelength at peak emission at $I_F = 10$ mA	λ_{peak}	880	nm
Wavelength at peak emission at $I_F = 100$ mA, $t_{pulse} = 20$ ms, Duty cycle = 1/12	λ_{peak}	883	nm
Wavelength at peak emission at $I_F = 1$ A, $t_{pulse} = 100$ μ s, Duty cycle = 1/100	λ_{peak}	886	nm
Spectral bandwidth at $I_F = 10$ mA	$\Delta\lambda$	80	nm
Half angle	φ	± 65	Deg
Active chip area	A	0.16	mm ²
Dimensions of active chip area	L x W	0.4 x 0.4	mm
Distance chip surface to case surface	D	0.4 to 0.7	mm
Switching time (I_o from 10% to 90%, and from 90% to 10% $I_F = 100$ mA)	t_r, t_f	0.6/0.5	μ s
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, $t_{pulse} = 100$ μ s)	V_F	3.0 (≤ 3.8)	V
Breakdown voltage ($I_R = 10$ μ A)	V_{BR}	30 (≥ 5)	V
Reverse current ($V_R = 5$ V)	I_R	0.01 (≤ 1)	μ A
Temperature coefficient of I_o or Φ_o	TC	-0.5	%/K
Temperature coefficient of V_F	TC	-0.2	%/K
Temperature coefficient of λ_{peak}	TC	0.25	nm/K

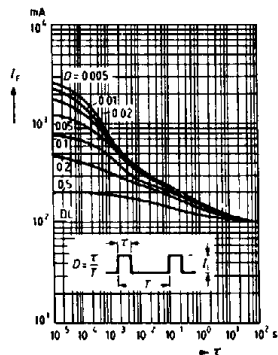
Radiant Intensity I_E in Axial Direction Measured at a Solid Angle of $\Omega = 0.01$ sr

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, $T_p = 100$ μ s)	25	35	mW/sr
Total Radiant Flux Φ_E ($I_F = 100$ mA, $T_p = 20$ ms)	21	23	mW

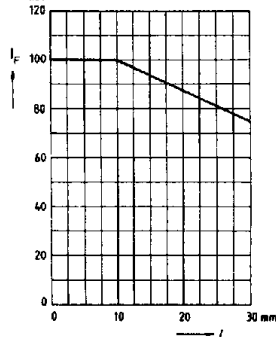
T-4413



Permissible Pulse Load
 $I_F = f(t)$
Duty cycle $D = \text{Parameter}$



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



Infrared
Emitters