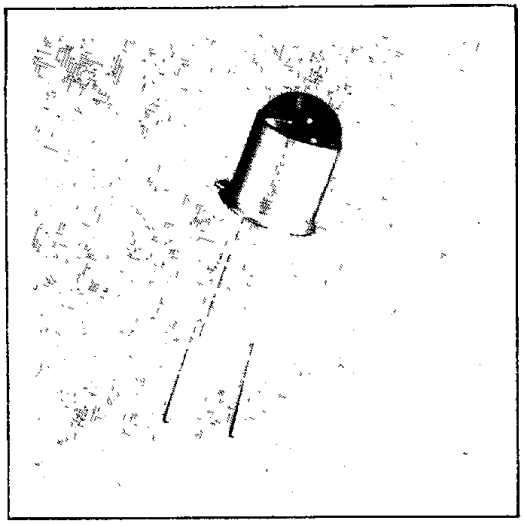
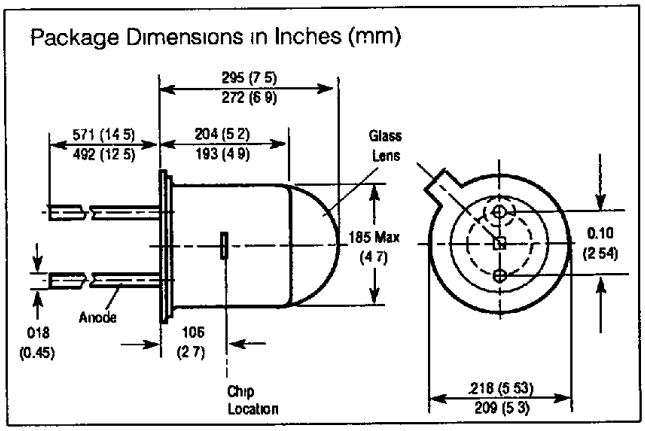
SIEMENS

SFH480 SERIES

GaAlAs INFRARED EMITTER

T-41-13





FEATURES

- **TO-18 Hermetic Package**
- **Round Glass Lens**
- **Very Narrow Beam, 12°**
- **Very High Power, 10 mW Typical at 100 mA**
- **Three Radiant Intensity Selections**
  SFH480-1, ≥25 mW/sr
  SFH480-2, ≥40 mW/sr
  SFH480-3, ≥63 mW/sr

DESCRIPTION

The SFH 480 series are infrared emitting diodes which emit radiation in the near infrared range (880 nm peak). The emitted radiation, which can be modulated, is generated by forward flowing current The case (18A 2 DIN 41876—similar to TO-18) is topped by a glass lens. The cathode lead is nearest the tab on the rim of the case The anode is electrically connected to the case

Maximum Ratings

Reverse Voltage	V_R	5	V
Forward Current ($T_c \leq 25°C$)	I_F	200	mA
Surge Current ($\tau \leq 10\mu s$)	I_{FS}	2 5	A
Junction Temperature	T_j	100	°C
Storage Temperature	T_s	− 55 to + 100	°C
Power Dissipation ($T_c \leq 25°C$)	P_{tot}	470	mW
Thermal Resistance			
Junction to Air	R_{thJamb}	450	K/W
Junction to Case	R_{thJG}	160	K/W
Soldering Temperature (Distance from casing-solder tab ≥2 mm)			
Dip Soldering Time ≤ 5 sec	T_{SOLD}	260	°C
Iron Soldering Time ≤ 3 sec	T_{SOLD}	300	°C

Characteristics ($T_{amb} = 25°C$)

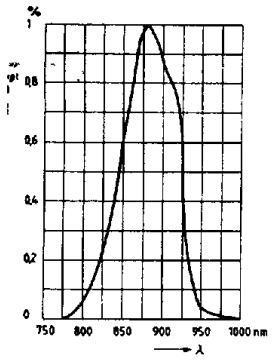
Wavelength at peak emission at $I_F = 10$ mA;	λpeak	880	nm
Wavelength at peak emission at $I_F = 100$ mA, $t_{pulse} = 20$ ms Duty cycle = 1 12	λpeak	883	nm
Wavelength at peak emission at $I_F = 1A$ $t_{pulse} = 100$ µs, Duty cycle = 1 200	λpeak	886	nm
Spectral bandwidth at 50% of I_{max} at $I_F = 10$ mA	Δλ	80	nm
Half angle	φ	±6	Deg
Active chip area	A	0.16	mm²
Dimensions of active chip area	L x W	0 4 x 0 4	mm
Distance chip surface to case surface	D	4 0 4 8	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
Typical Radiant Flux ($I_F = 100$ mA $T_P = 20$ ms)	Φ_E	10	mW

Radiant Intensity I_E in Axial Direction Measured at a Solid Angle of Ω = 0.01sr

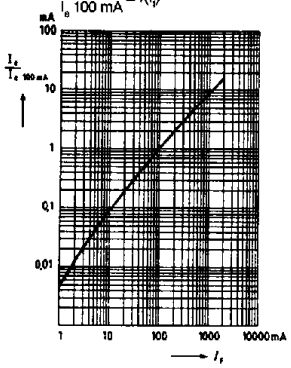
Group	SFH 480-1	SFH 480-2	SFH 480-3	
Radiant Intensity I_E				
($I_F = 100$ mA $T_P = 20$ ms)	25-50	40-80	≥63	mW/sr
($I_F = 1$ A, $T_P = 100$ µs)	280	450	525	mW/sr

T-41-13

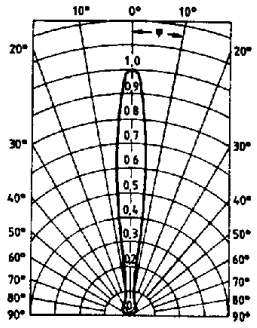
Relative spectral emission
$I_{rel} = f(\lambda)$



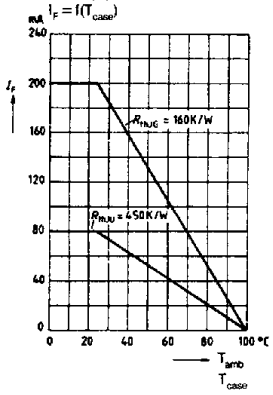
Radiant intensity
$\frac{I_e}{I_e\ 100\ mA} = f(I_F)$



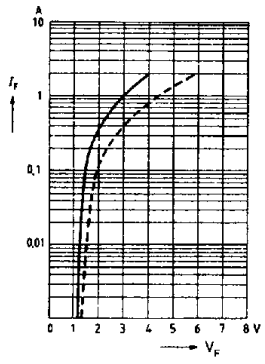
Radiant characteristics
$I_{rel} = f(\varphi)$



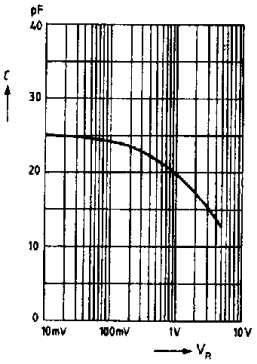
Maximum permissable forward current
$I_F = f(T_{amb})$
$I_F = f(T_{case})$



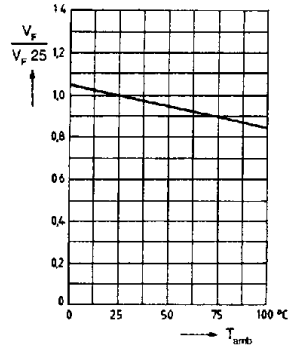
Forward current
$I_F = f(V_F)$



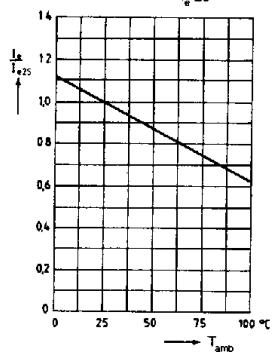
Capacitance
$C = f(V_R)$



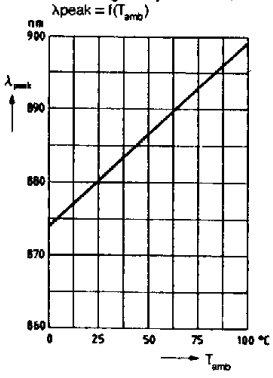
Forward voltage $\frac{V_F}{V_F\ 25} = f(T_{amb})$



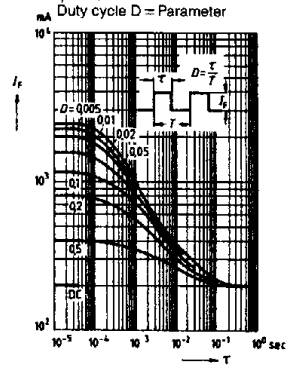
Radiant intensity $\frac{I_e}{I_e\ 25} = f(T_{amb})$



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



Permissable pulse load
$I_F = f(r)$
Duty cycle D = Parameter



Infrared Emitters

SFH 480