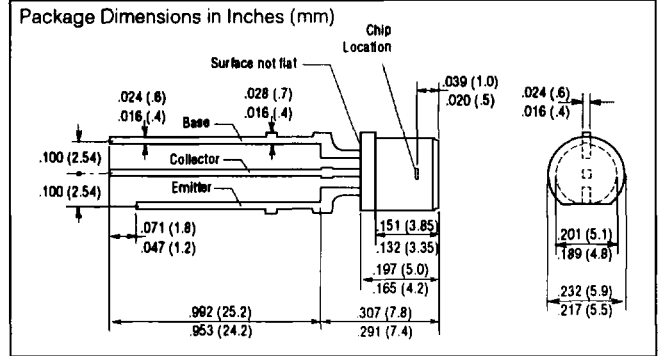
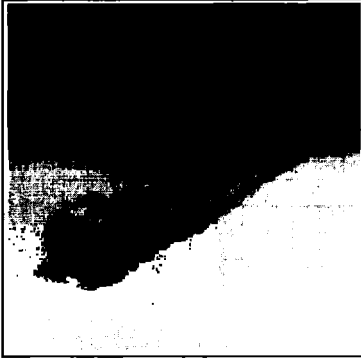


# SIEMENS

## SFH317 DAYLIGHT FILTER SFH317F SILICON NPN PHOTOTRANSISTOR



### FEATURES

- Daylight Filter—SFH317F
- Wide Acceptance Angle, 120°
- High Reliability
- High Rise and Fall Time
- Good Linearity
- High Photosensitivity
- No Testable Degradation
- Base Connection

### FEATURES

The SFH317/317F are highly sensitive silicon planar phototransistors with base connection in a standard T1 $\frac{3}{4}$  (5 mm) package. The SFH317 comes in a water-clear, no-lens package; the SFH317F comes in black epoxy.

The emitter is the shorter lead; the collector lead is the middle lead.

### Maximum Ratings

Operating and Storage Temperature Range ( $T_{OP}$ , $T_{STG}$ )	.....	-55° to +100°C
Soldering Temperature ( $\geq 2$ mm from case bottom)		
Dip Soldering Time ( $T_S$ ) $t \leq 5$ s	.....	260°C
Iron Soldering Time ( $T_A$ ) $t \leq 3$ s	.....	300°C
Collector Emitter Voltage ( $V_{CEO}$ )	.....	50 V
Emitter Base Voltage ( $V_{EB}$ )	.....	7 V
Collector Current ( $I_C$ )	.....	50 mA
Collector Peak Current ( $I_{PK}$ ) $t < 10 \mu s$	.....	100 mA
Power Dissipation ( $P_{TOT}$ ) $T_A = 25^\circ C$	.....	200 mW
Thermal Resistance ( $R_{THJA}$ )	.....	375 K/W

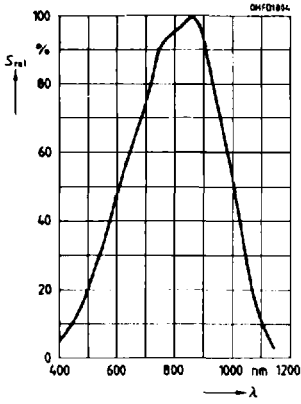
### Characteristics ( $T_A = 25^\circ C$ )

Parameter	Symbol	Value	Unit
Maximum Sensitivity Wavelength, SFH317	$\lambda_{Smax}$	860	nm
	SFH317F	870	nm
Spectral Range, Photosensitivity, SFH317	$\lambda$	450 to 1100	nm
( $S = 10\%$ of $S_{max}$ )	SFH317F	720 to 1100	nm
Radiant Sensitive Area	A	0.30	mm <sup>2</sup>
Die Area Dimensions	L x W	0.75 x 0.75	mm
Distance, Die Surface to Case Surface	H	0.5 to 1.0	mm
Half Angle	$\phi$	$\pm 75$	Deg.
Photocurrent, Collector Base Diode			
( $E_0 = 0.5 mW/cm^2$ , $\lambda = 950$ nm, $V_{CB} = 5$ V)	$I_{PCB}$	0.65	$\mu A$
( $E_0 = 1000$ lux, $V_{CB} = 5$ V)	$I_{PCB}$	2.5	$\mu A$
Capacitance ( $V_{CE} = 0$ V, $f = 1$ MHz, $E = 0$ lx)	$C_{CE}$	10	pF
( $V_{CB} = 0$ V, $f = 1$ MHz, $E = 0$ lx)	$C_{CB}$	22	pF
( $V_{EB} = 0$ V, $f = 1$ MHz, $E = 0$ lx)	$C_{EB}$	21	pF
Leakage Current ( $V_{CEO} = 10$ V, $E = 0$ )	$I_{CEO}$	2 ( $\leq 50$ )	nA

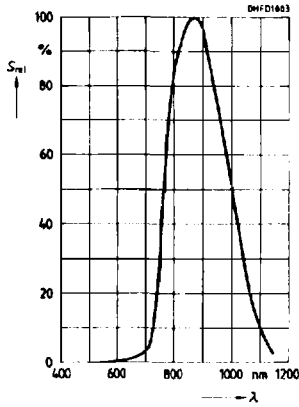
Parameter	Symbol	-2	-3	-4	Unit
Photocurrent, Collector-Emitter ( $E_0 = 0.5 mW/cm^2$ , $V_{CE} = 5$ V, $\lambda = 950$ nm)	$I_{PCE}$	.16 to .32	.25 to .5	$\geq 4$	$\mu A$
SFH317: ( $E_0 = 1000$ lx, $V_{CE} = 5$ V)	$I_{PCE}$	.9	1.4	2.3	$\mu A$
Rise/Fall Time ( $I_C = 1$ mA, $V_{CC} = 5$ V, $R_L = 1$ k $\Omega$ )	$t_R, t_F$	11	13	15	$\mu s$
Collector Emitter Saturation Voltage ( $I_C = I_{PCEmin}^{(1)} \cdot 0.3$ , $E_0 = 0.5 mW/cm^2$ , $\lambda = 950$ nm)	$V_{CEsat}$	130	130	130	mV
Current Gain ( $E_0 = 0.5 mW/cm^2$ , $V_{CE} = 5$ V, $\lambda = 950$ nm)	$\frac{I_{PCE}}{I_{PCB}}$	370	570	920	

Note: 1.  $I_{PCEmin}$  = minimum photocurrent of the specified group.

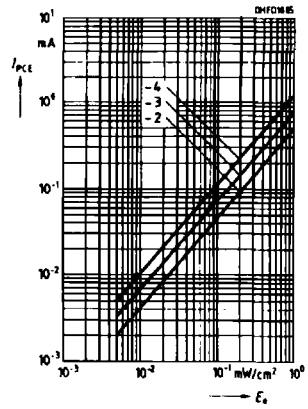
**Relative spectral sensitivity—SFH317**  
 $S_{REL}=f(\lambda)$



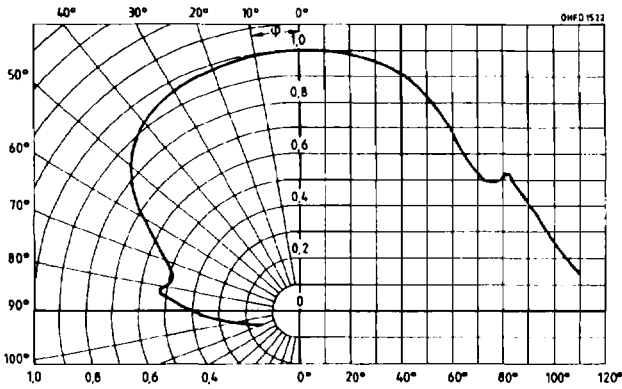
**Relative spectral sensitivity—SFH317F**  
 $S_{REL}=f(\lambda)$



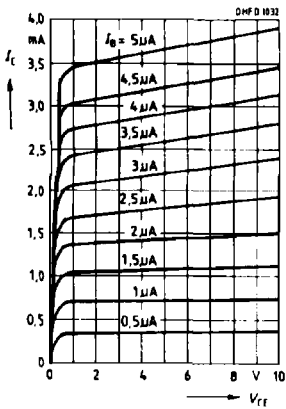
**Photocurrent  $I_{PCE}=f(E_e), V_{CE}=5V$**



**Directional characteristic**  
 $S_{REL}=f(\varphi)$



**Output characteristics**  
 $I_C=f(V_{CE}), I_B=Parameter$



**Capacitance**  
 $C_{CE}=f(V), f=1MHz, E=0$

