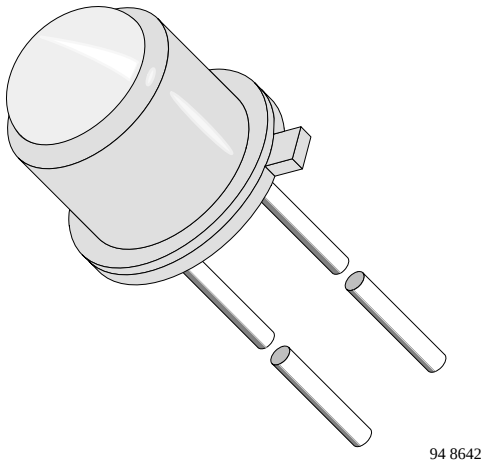
Silicon PIN Photodiode

Description

BPW24R is a high sensitive silicon planar photodiode in a standard TO–18 hermetically sealed metal case with a glass lens.
A precise alignment of the chip gives a good coincidence of mechanical and optical axes. The device features a low capacitance and high speed even at low supply voltages.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Features

- Hermetically sealed TO–18 case
- Exact central chip alignment
- Cathode connected to case
- Angle of half sensitivity $\varphi = \pm 12^{\circ}$
- Extra fast response times at low operating voltages
- High photo sensitivity
- Radiant sensitive area A=0.78 mm^2
- Suitable for visible and near infrared radiation
- For photodiode and photovoltaic cell operation

Applications

High speed photo detector

Absolute Maximum Ratings

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Reverse Voltage		V_R	60	V
Power Dissipation	$T_{amb} \leqq 25$ ˚C	P_V	210	mW
Junction Temperature		T_j	125	˚C
Operating Temperature Range		T_{amb}	–55...+125	˚C
Storage Temperature Range		T_{stg}	–55...+125	˚C
Soldering Temperature	t ≦ 5 s	T_{sd}	260	˚C
Thermal Resistance Junction/Ambient		R_{thJA}	350	K/W

Basic Characteristics

T_{amb} = 25°C

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Breakdown Voltage	I_R = 100 µA, E = 0	$V_{(BR)}$	60	200		V
Reverse Dark Current	V_R = 50 V, E = 0	I_{ro}		2	10	nA
Diode Capacitance	V_R = 0 V, f = 1 MHz, E = 0	C_D		11		pF
Diode Capacitance	V_R = 5 V, f = 1 MHz, E = 0	C_D		3.8		pF
Diode Capacitance	V_R = 20 V, f = 1 MHz, E = 0	C_D		2.5		pF
Open Circuit Voltage	E_e = 1 mW/cm^2, λ = 950 nm	V_o		450		mV
Temp. Coefficient of V_o	E_e = 1 mW/cm^2, λ = 950 nm	TK_{Vo}		–2		mV/K
Short Circuit Current	E_e = 1 mW/cm^2, λ = 950 nm	I_k		55		µA
Temp. Coefficient of I_k	E_A = 1 klx	TK_{Ik}		0.1		%/K
Reverse Light Current	E_e = 1 mW/cm^2, λ = 950 nm, V_R = 20 V	I_{ra}	45	60		µA
Absolute Spectral Sensitivity	V_R = 5 V, λ = 870 nm	s(λ)		0.60		A/W
Absolute Spectral Sensitivity	V_R = 5 V, λ = 900 nm	s(λ)		0.55		A/W
Angle of Half Sensitivity		φ		±12		deg
Wavelength of Peak Sensitivity		λ_p		900		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		600...1050		nm
Rise Time	V_R=20V, R_L=50Ω, λ=820nm	t_r		7		ns
Fall Time	V_R=20V, R_L=50Ω, λ=820nm	t_f		7		ns

Typical Characteristics (T_{amb} = 25°C unless otherwise specified)

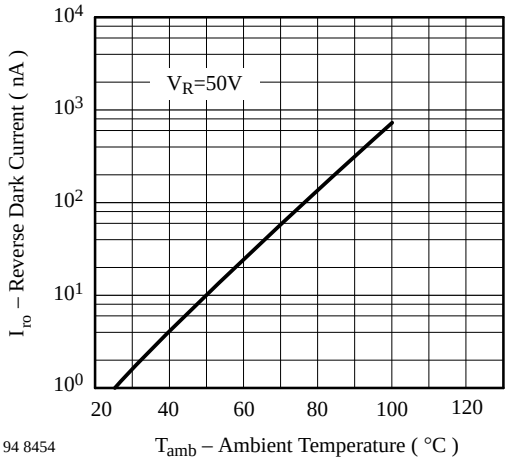


Figure 1 : Reverse Dark Current vs. Ambient Temperature

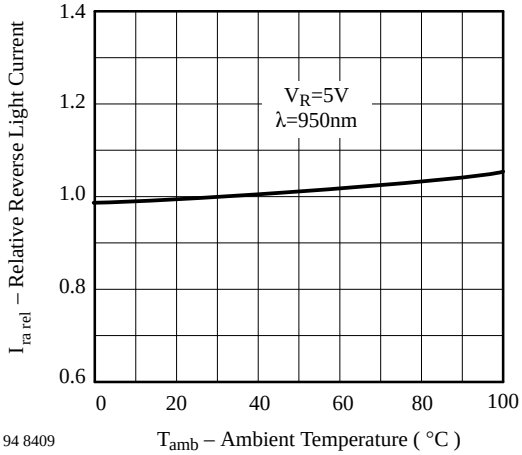


Figure 2 : Relative Reverse Light Current vs. Ambient Temperature

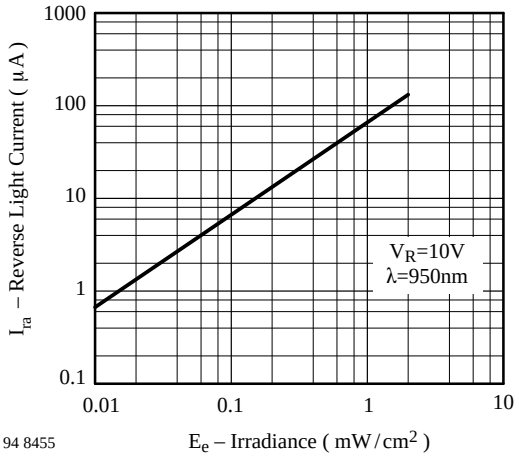


Figure 3 : Reverse Light Current vs. Irradiance

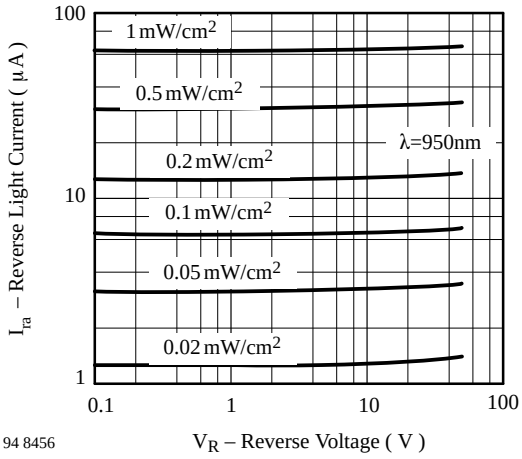


Figure 4 : Reverse Light Current vs. Reverse Voltage

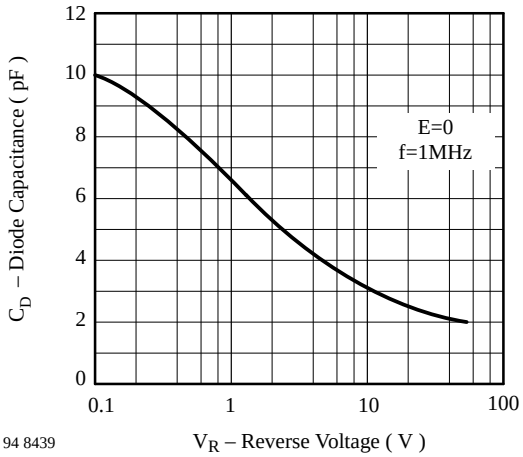


Figure 5 : Diode Capacitance vs. Reverse Voltage

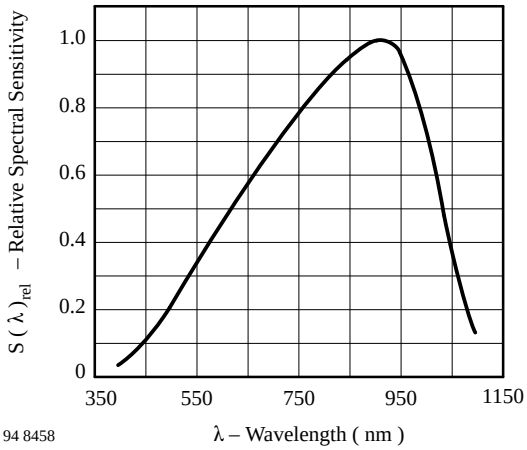


Figure 6 : Relative Spectral Sensitivity vs. Wavelength

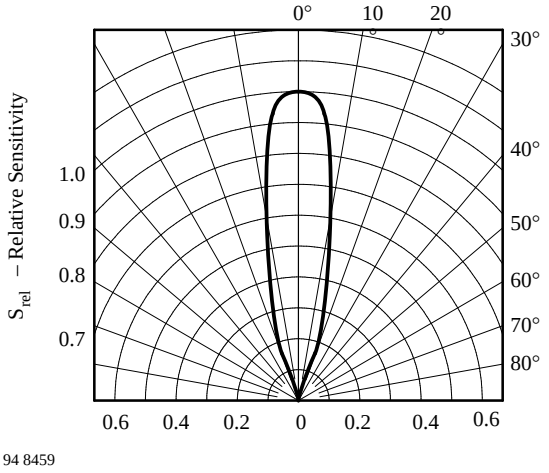
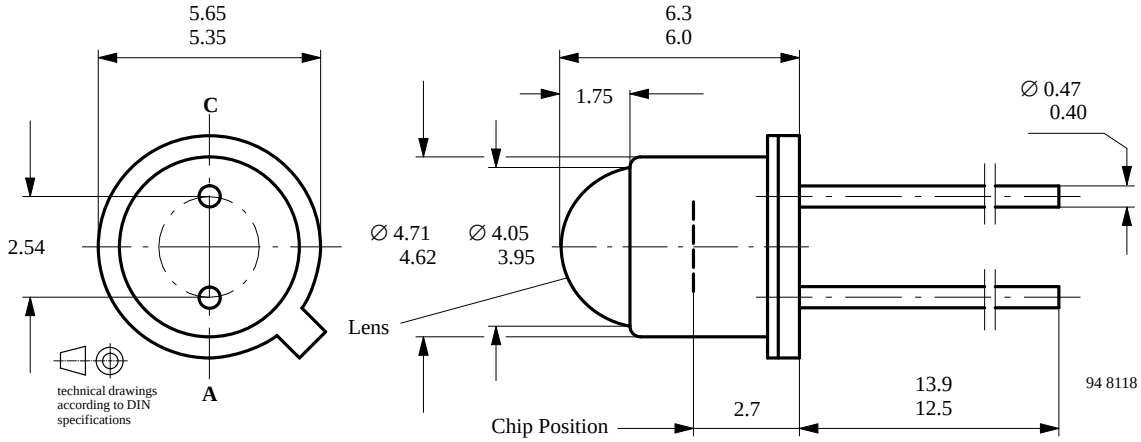


Figure 7 : Relative Radiant Sensitivity vs. Angular Displacement

Dimensions in mm



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