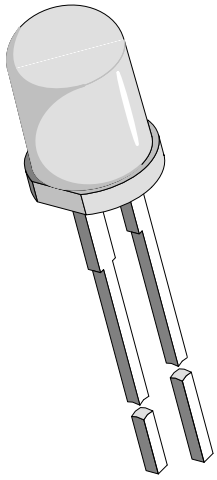
# Silicon PIN Photodiode

## Description

BPW43 is a very high speed PIN photodiode in a standard T–1¾ plastic package. Due to its waterclear epoxy the device is sensitive to visible and infrared radiation.
It features low capacitance and high speed even at low supply voltages.



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## Features

- Extra fast response times
- Radiant sensitive area A=0.78mm$^2$
- Standard T–1¾ (ø 5 mm ) clear package
- Angle of half sensitivity $\varphi = \pm 25^\circ$
- Suitable for visible and near infrared radiation

## Applications

High speed photo detector

## Absolute Maximum Ratings

$T_{amb}$ = 25°C

| Parameter | Test Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| Reverse Voltage | | $V_R$ | 32 | V |
| Power Dissipation | $T_{amb} \leqq 25$ ˚C | $P_V$ | 215 | mW |
| Junction Temperature | | $T_j$ | 100 | ˚C |
| Storage Temperature Range | | $T_{stg}$ | –25...+100 | ˚C |
| Soldering Temperature | t ≦ 3 s | $T_{sd}$ | 245 | ˚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 | $V_{(BR)}$ | 32 | | | V |
| Reverse Dark Current | $V_R$ = 10 V, E = 0 | $I_{ro}$ | | 1 | 10 | nA |
| Diode Capacitance | $V_R$ = 0 V, f = 1 MHz, E = 0 | $C_D$ | | 4 | | pF |
| Diode Capacitance | $V_R$ = 5 V, f = 1 MHz, E = 0 | $C_D$ | | 1.5 | | pF |
| Diode Capacitance | $V_R$ = 10 V, f = 1 MHz, E = 0 | $C_D$ | | 1.3 | | pF |
| Open Circuit Voltage | $E_A$ = 1 klx | $V_o$ | | 320 | | mV |
| Short Circuit Current | $E_A$ = 1 klx | $I_k$ | | 12 | | µA |
| Short Circuit Current | $E_e$ = 1 mW/cm$^2$, λ = 950 nm | $I_k$ | | 6 | | µA |
| Reverse Light Current | $E_A$ = 1 klx, $V_R$ = 5 V | $I_{ra}$ | | 15 | | µA |
| Reverse Light Current | $E_e$ = 1 mW/cm$^2$, λ = 950 nm, $V_R$ = 5 V | $I_{ra}$ | 4 | 8 | | µA |
| Angle of Half Sensitivity | | φ | | ±25 | | deg |
| Wavelength of Peak Sensitivity | | $\lambda_p$ | | 900 | | nm |
| Range of Spectral Bandwidth | | $\lambda_{0.5}$ | | 550...1000 | | nm |
| Rise Time | $V_R$=10V, $R_L$=50Ω, λ=820nm | $t_r$ | | 4 | | ns |
| Fall Time | $V_R$=10V, $R_L$=50Ω, λ=820nm | $t_f$ | | 4 | | ns |

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

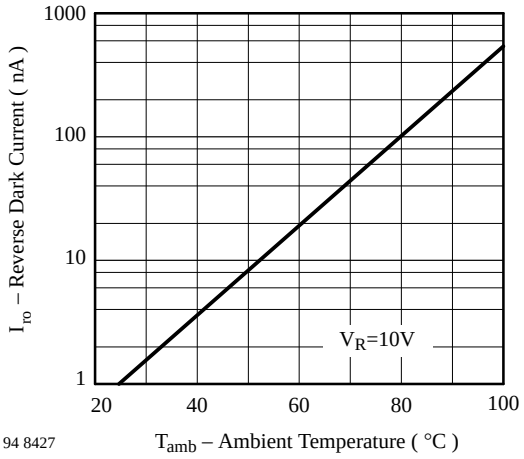



**Figure 1 : Reverse Dark Current vs. Ambient Temperature**

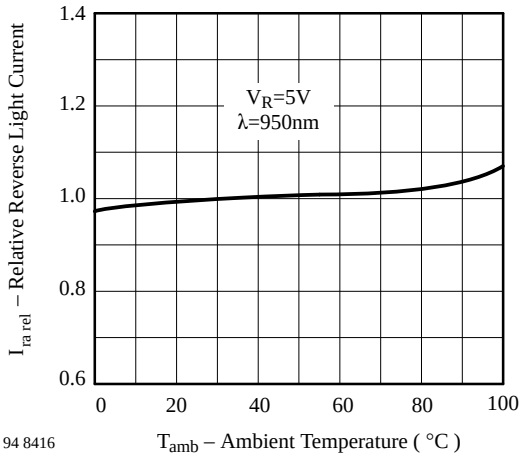



**Figure 2 : Relative Reverse Light Current vs. Ambient Temperature**

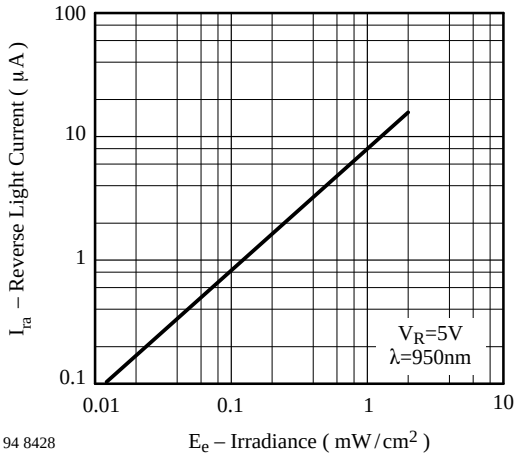



**Figure 3 : Reverse Light Current vs. Irradiance**

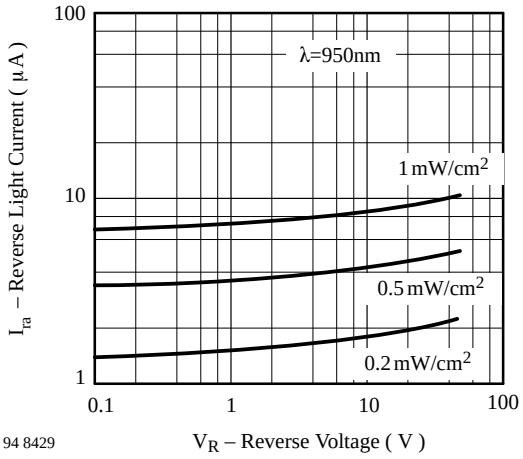



**Figure 4 : Reverse Light Current vs. Reverse Voltage**

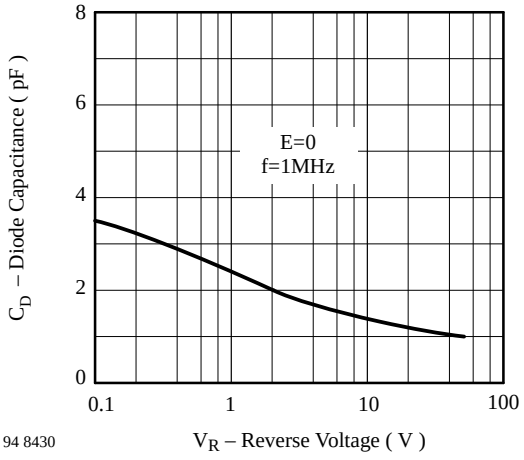



**Figure 5 : Diode Capacitance vs. Reverse Voltage**

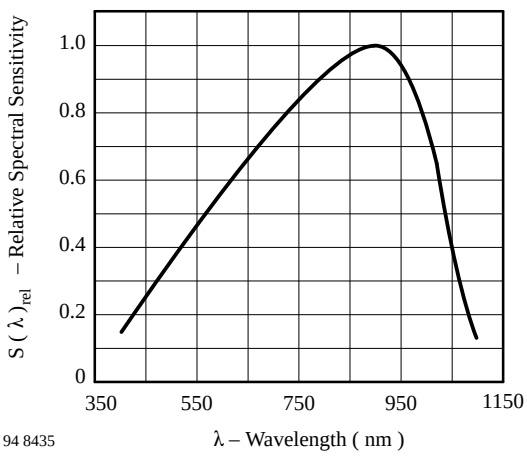



**Figure 6 : Relative Spectral Sensitivity vs. Wavelength**

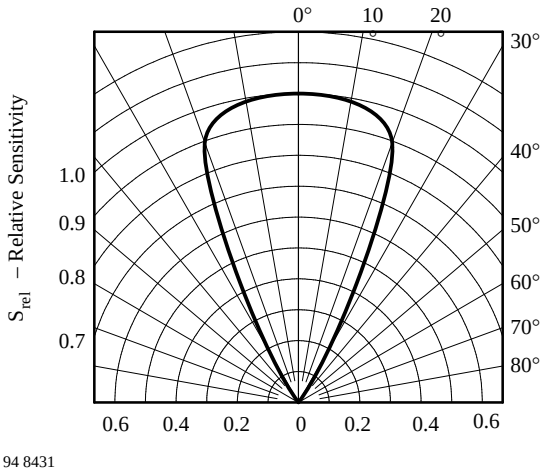
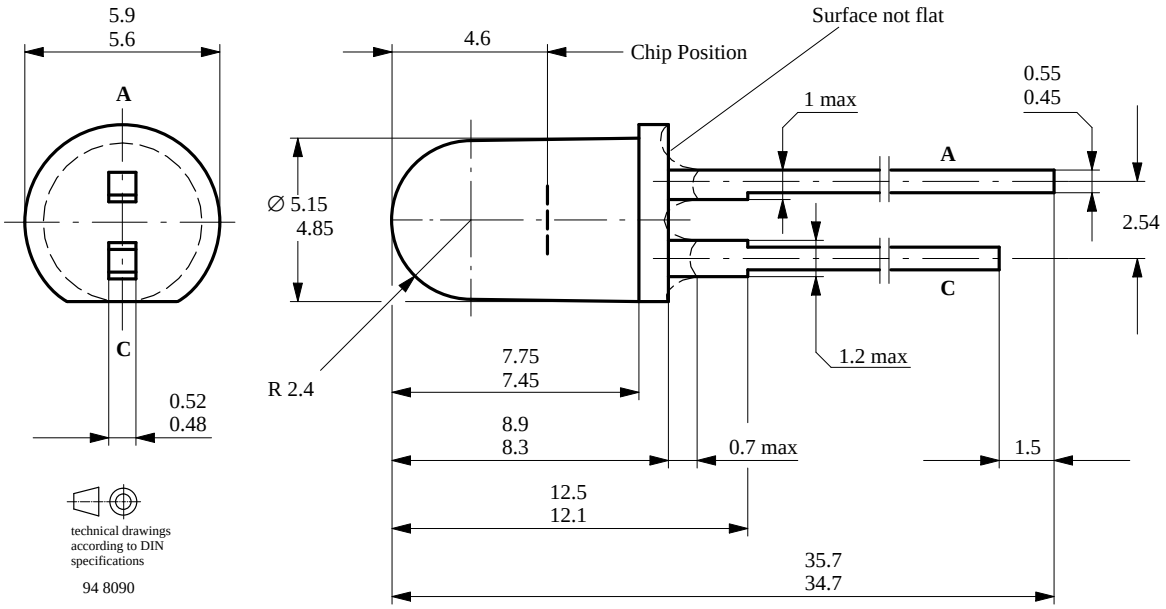



**Figure 7 : Relative Radiant Sensitivity vs. Angular Displacement**

## Dimensions in mm



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