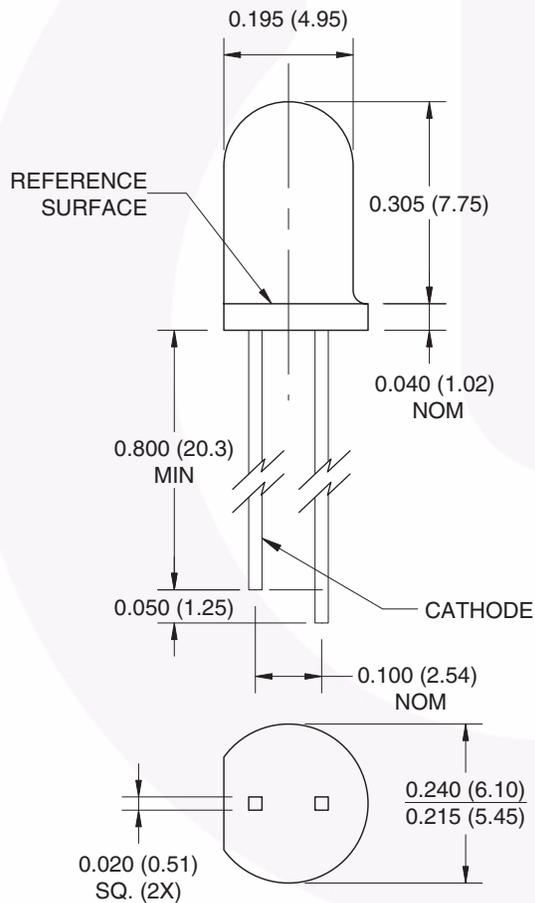


QSD2030 Plastic Silicon Photodiode

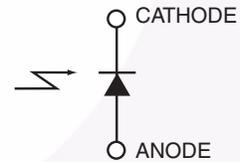
Features

- PIN photodiode
- Package type: T-1 3/4 (5mm lens diameter)
- Wide reception angle, 40°
- Package material and color: clear epoxy
- High sensitivity
- Peak sensitivity $\lambda = 880\text{nm}$
- Radiant sensitive area: 1.245mm x 1.245mm

Package Dimensions



Schematic



Notes:

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of ± 0.010 (0.25) on all non-nominal dimensions unless otherwise specified.

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Symbol	Parameter	Rating	Unit
T_{OPR}	Operating Temperature	-40 to +100	$^\circ\text{C}$
T_{STG}	Storage Temperature	-40 to +100	$^\circ\text{C}$
T_{SOL-I}	Soldering Temperature (Iron) ^(2,3,4)	240 for 5 sec	$^\circ\text{C}$
T_{SOL-F}	Soldering Temperature (Flow) ^(2,3)	260 for 10 sec	$^\circ\text{C}$
V_{BR}	Reverse Breakdown Voltage	50	V
P_D	Power Dissipation ⁽¹⁾	100	mW

Notes:

1. Derate power dissipation linearly 1.33mW/ $^\circ\text{C}$ above 25 $^\circ\text{C}$.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron 1/16" (1.6mm) minimum from housing.

Electrical/Optical Characteristics ($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
λ_{PS}	Peak Sensitivity Wavelength			880		nm
λ_{SR}	Wavelength Sensitivity Range		400		1100	nm
Θ	Reception Angle			± 20		$^\circ$
V_F	Forward Voltage	$I_F = 80\text{mA}$		1.3		V
I_D	Reverse Dark Current	$V_R = 10\text{V}, E_e = 0$			10	nA
I_L	Reverse Light Current	$E_e = 0.5\text{mW}/\text{cm}^2, V_R = 5\text{V}, \lambda = 950\text{nm}$	15	25		μA
V_O	Open Circuit Voltage	$E_e = 0.5\text{mW}/\text{cm}^2, \lambda = 880\text{nm}$		420		mV
TC_V	Temperature Coefficient of V_O			+0.6		mV / K
I_{SC}	Short Circuit Current	$E_e = 0.5\text{mW}/\text{cm}^2, \lambda = 880\text{nm}$		50		μA
TC_I	Temperature Coefficient of I_{SC}			+0.3		% / K
C	Capacitance	$V_R = 0, f = 1\text{MHz}, E_e = 0$		60		pF
t_r	Rise Time	$V_R = 5\text{V}, R_L = 50\Omega, \lambda = 950\text{nm}$		5		ns
t_f	Fall Time			5		

Typical Performance Characteristics

Figure 1. Reverse Light Current vs. Emitter Output Power

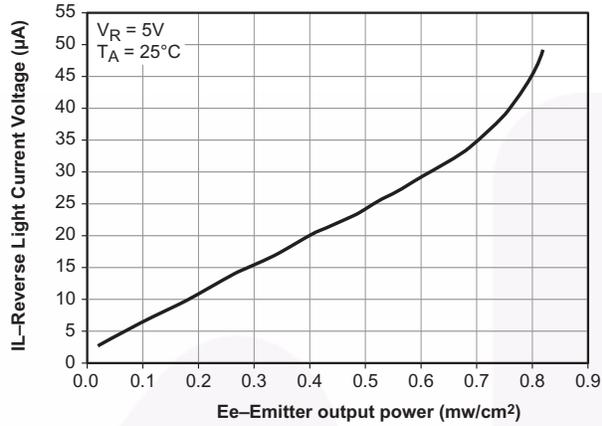


Figure 2. Angular Response

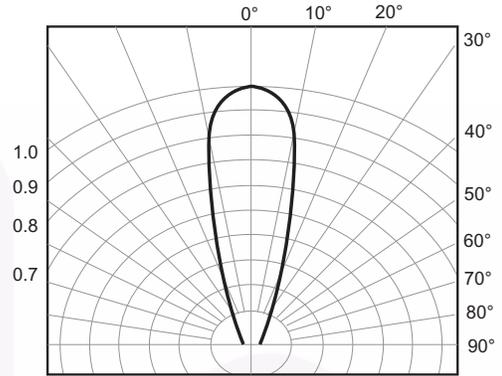


Figure 3. Capacitance vs. Reverse Voltage

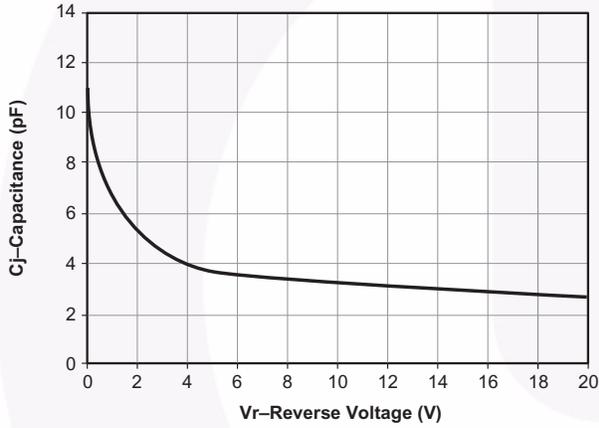
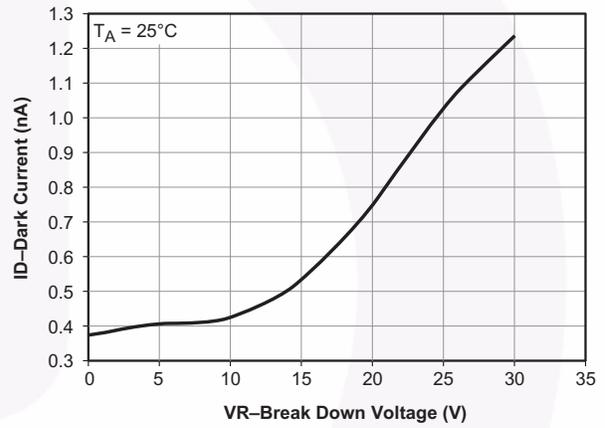


Figure 4. Dark Current vs. Reverse Voltage





TRADEMARKS

The following includes registered and unregistered trademarks and service marks, owned by Fairchild Semiconductor and/or its global subsidiaries, and is not intended to be an exhaustive list of all such trademarks.

- | | | | |
|--------------------------|-------------------------------------|---------------------------------------|---|
| AccuPower™ | F-PFS™ | Power-SPM™ | <p>SYSTEM GENERAL
The Power Franchise®
the power™ franchise
TinyBoost™
TinyBuck™
TinyCalc™
TinyLogic™
TINYOPTO™
TinyPower™
TinyPWM™
TinyWire™
TriFault Detect™
TRUECURRENT™*
"SerDes"™
 SerDes™
UHC™
Ultra FRFET™
UniFET™
VCX™
VisualMax™
XS™</p> |
| Auto-SPM™ | FRFET® | PowerTrench® | |
| Build it Now™ | Global Power Resource SM | PowerXS™ | |
| CorePLUS™ | Green FPS™ | Programmable Active Droop™ | |
| CorePOWER™ | Green FPS™ e-Series™ | QFET® | |
| CROSSVOLT™ | Gmax™ | QS™ | |
| CTL™ | GTO™ | Quiet Series™ | |
| Current Transfer Logic™ | IntelliMAX™ | RapidConfigure™ | |
| DEUXPEED® | ISOPANAR™ | ™ | |
| Dual Cool™ | MegaBuck™ | Saving our world, 1mW/W/kW at a time™ | |
| EcoSPARK® | MICROCOUPLER™ | SignalWise™ | |
| EfficientMax™ | MicroFET™ | SmartMax™ | |
| ESBC™ | MicroPak™ | SMART START™ | |
| Fairchild® | MicroPak2™ | SPM® | |
| Fairchild Semiconductor® | MillerDrive™ | STEALTH™ | |
| FACT Quiet Series™ | MotionMax™ | SuperFET™ | |
| FACT® | Motion-SPM™ | SuperSOT™-3 | |
| FAST® | OptoHIT™ | SuperSOT™-6 | |
| FastvCore™ | OPTOLOGIC® | SuperSOT™-8 | |
| FETBench™ | OPTOPLANAR® | SupreMOS® | |
| FlashWriter®* | ™ | SyncFET™ | |
| FPS™ | PDP SPM™ | Sync-Lock™ | |

* Trademarks of System General Corporation, used under license by Fairchild Semiconductor.

DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION, OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS. THESE SPECIFICATIONS DO NOT EXPAND THE TERMS OF FAIRCHILD'S WORLDWIDE TERMS AND CONDITIONS, SPECIFICALLY THE WARRANTY THEREIN, WHICH COVERS THESE PRODUCTS.

LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION.

As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

ANTI-COUNTERFEITING POLICY

Fairchild Semiconductor Corporation's Anti-Counterfeiting Policy. Fairchild's Anti-Counterfeiting Policy is also stated on our external website, www.fairchildsemi.com, under Sales Support.

Counterfeiting of semiconductor parts is a growing problem in the industry. All manufacturers of semiconductor products are experiencing counterfeiting of their parts. Customers who inadvertently purchase counterfeit parts experience many problems such as loss of brand reputation, substandard performance, failed applications, and increased cost of production and manufacturing delays. Fairchild is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. Fairchild strongly encourages customers to purchase Fairchild parts either directly from Fairchild or from Authorized Fairchild Distributors who are listed by country on our web page cited above. Products customers buy either from Fairchild directly or from Authorized Fairchild Distributors are genuine parts, have full traceability, meet Fairchild's quality standards for handling and storage and provide access to Fairchild's full range of up-to-date technical and product information. Fairchild and our Authorized Distributors will stand behind all warranties and will appropriately address any warranty issues that may arise. Fairchild will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. Fairchild is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative / In Design	Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

Rev. 149