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Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

FAIRCHILD SEMICONDUCTOR®

August 2012

QVE11233
Slotted Optical Switch

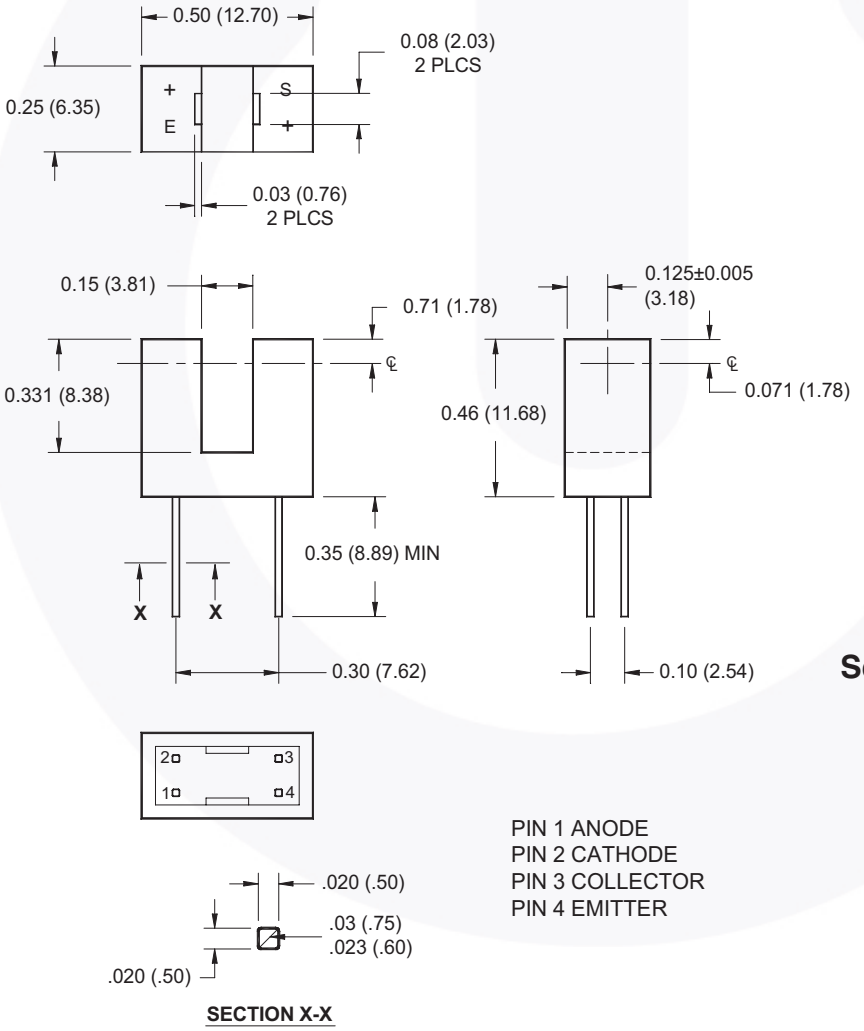
Features

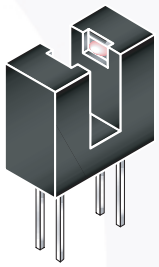
- Lead spacing 0.300”
- Gap width of 0.150”
- Printed circuit board mounting
- 2mm aperture width

Description

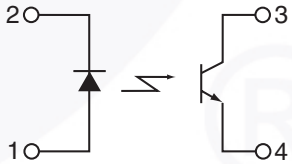
The QVE11233 is designed to allow the user maximum flexibility in applications. Each switch consists of an infrared emitting diode facing an NPN phototransistor across a 0.150” (3.81mm) gap.

Package Dimensions





Schematic



PIN 1 ANODE
PIN 2 CATHODE
PIN 3 COLLECTOR
PIN 4 EMITTER

Notes:

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

Absolute Maximum Ratings (T_A = 25°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	Units
T_{OPR}	Operating Temperature	-40 to +85	°C
T_{STG}	Storage Temperature	-40 to +85	°C
T_{SOL-I}	Soldering Temperature (Iron)[2][3][4]	240 for 5 sec	°C
T_{SOL-F}	Soldering Temperature (Flow)[2][4]	260 for 10 sec	°C
INPUT (EMITTER)			
I_F	Continuous Forward Current	50	mA
V_R	Reverse Voltage	6	V
P_D	Power Dissipation[1]	100	mW
OUTPUT (SENSOR)			
V_{CEO}	Collector to Emitter Voltage	30	V
V_{ECO}	Emitter to Collector Voltage	4.5	V
I_C	Collector Current	20	mA
P_D	Power Dissipation[1]	150	mW

Notes:

1. Derate power dissipation linearly, on each component, 1.67mW/°C above 25°C.
2. RMA flux is recommended.
3. Methanol or isopropyl alcohols are recommended as cleaning agents.
4. Soldering iron tip 1/16” (1.6mm) from housing.

Electrical/Optical Characteristics (T_A = 25°C)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
INPUT (EMITTER)						
V_F	Forward Voltage	I_F = 20mA			1.7	V
I_R	Reverse Leakage Current	V_R = 2V			100	µA
OUTPUT (SENSOR)						
BV_{ECO}	Emitter to Collector Breakdown	I_E = 100µA, E_e = 0	5.0			V
BV_{CEO}	Collector to Emitter Breakdown	I_C = 1mA, E_e = 0	30			V
I_{CEO}	Collector to Emitter Leakage	V_{CE} = 10V, E_e = 0			100	nA
COUPLED						
$I_{C(ON)}$	On-State Collector Current	I_F = 20mA, V_{CE} = 5V	0.5			mA
$V_{CE\ (SAT)}$	Saturation Voltage	I_F = 20mA, I_C = 0.25mA			0.40	V

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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.

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