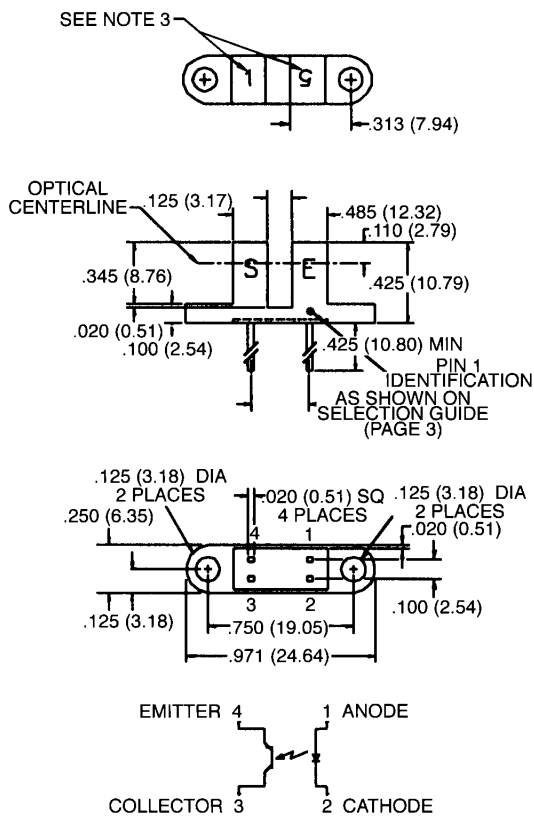




## SLOTTED OPTICAL SWITCH

### QVB SERIES

#### PACKAGE DIMENSIONS



#### DESCRIPTION

The QVB series of switches is designed to allow the user maximum flexibility in applications. Each switch consists of an infrared emitting diode facing an NPN photo-transistor across a .125" (3.18 mm) gap. A unique housing design provides a smooth external surface to prevent dust and dirt buildup while molded internal apertures give precise positioning and also provide protection from ambient light interference.

#### FEATURES

- Ambient light and dust protection.
- Lead spacing available at .220", .300", or .320".
- .050" and .010" apertures available.

ST2175

#### NOTES:

1. DIMENSIONS ARE IN INCHES (mm).
2. TOLERANCE IS  $\pm .010$  (.25) UNLESS OTHERWISE SPECIFIED.
3. NUMBER INDICATES APERTURE SIZE. (5 = .050", 1 = .010")



## SLOTTED OPTICAL SWITCH

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C Unless Otherwise Specified)

Storage Temperature	-40°C to + 85°C
Operating Temperature	-40°C to + 85°C
Soldering:	
Lead Temperature (Iron)	240°C for 5 sec. <sup>(2,3,4)</sup>
Lead Temperature (Flow)	260°C for 10 sec. <sup>(2,3)</sup>

#### INPUT DIODE

Continuous Forward Current	50 mA
Reverse Voltage	5.0 Volts
Power Dissipation	100 mW <sup>(1)</sup>

#### OUTPUT TRANSISTOR

Collector-Emitter Voltage	30 Volts
Emitter-Collector Voltage	5.0 Volts
Collector Current	40 mA
Power Dissipation	100 mW <sup>(1)</sup>

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C Unless Otherwise Specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
<b>INPUT DIODE</b>						
Forward voltage	V <sub>F</sub>	—		1.70	V	I <sub>F</sub> = 20 mA
Reverse Leakage Current	I <sub>R</sub>	—		100	μA	V <sub>R</sub> = 2.0 V
<b>OUTPUT TRANSISTOR</b>						
Emitter-Collector Breakdown	BV <sub>ECC</sub>	5		—	V	I <sub>E</sub> = 100 μA, E <sub>e</sub> = 0
Collector-Emitter Breakdown	BV <sub>CEO</sub>	30		—	V	I <sub>C</sub> = 1.0 mA, E <sub>e</sub> = 0
Collector-Emitter Leakage	I <sub>CEO</sub>	—		100	nA	V <sub>CE</sub> = 10.0 V, E <sub>e</sub> = 0
<b>COUPLED</b>						
On-State Collector Current	I <sub>C(ON)</sub>	See selection guide page 3.			mA	I <sub>F</sub> = 20 mA, V <sub>CE</sub> = 5 V
Saturation Voltage	V <sub>CE(SAT)</sub>	—		0.40	V	I <sub>F</sub> = 20 mA, I <sub>C</sub> = 0.1 mA

### NOTES

- Derate power dissipation linearly 1.67 mW/°C above 25°C.
- RMA flux is recommended.
- Methanol or Isopropanol alcohols are recommended as cleaning agents.
- Soldering iron tip 1/16" (1.6 mm) from housing.



## SLOTTED OPTICAL SWITCH

<b>QVBXXX OPTICAL SWITCH SELECTION GUIDE</b>						
PART NUMBER	LEAD SPACING	APERTURES		$I_{C(ON)}$		
		LED	SENSOR	MIN	MAX	
QVB11123	.220"	0.050"	0.010"	0.20	—	
QVB11124	.220"	0.050"	0.010"	0.50	—	
QVB11223	.300"	0.050"	0.010"	0.20	—	
QVB11224	.300"	0.050"	0.010"	0.50	—	
QVB11323	.320"	0.050"	0.010"	0.20	—	
QVB11324	.320"	0.050"	0.010"	0.50	—	
QVB11133	.220"	0.050"	0.050"	0.50	—	
QVB11134	.220"	0.050"	0.050"	1.00	—	
QVB11233	.300"	0.050"	0.050"	0.50	—	
QVB11234	.300"	0.050"	0.050"	1.00	—	
QVB11333	.320"	0.050"	0.050"	0.50	—	
QVB11334	.320"	0.050"	0.050"	1.00	—	
QVB21113	.220"	0.010"	0.010"	0.10	—	
QVB21114	.220"	0.010"	0.010"	0.20	—	
QVB21213	.300"	0.010"	0.010"	0.10	—	
QVB21214	.300"	0.010"	0.010"	0.20	—	
QVB21313	.320"	0.010"	0.010"	0.10	—	
QVB21314	.320"	0.010"	0.010"	0.20	—	