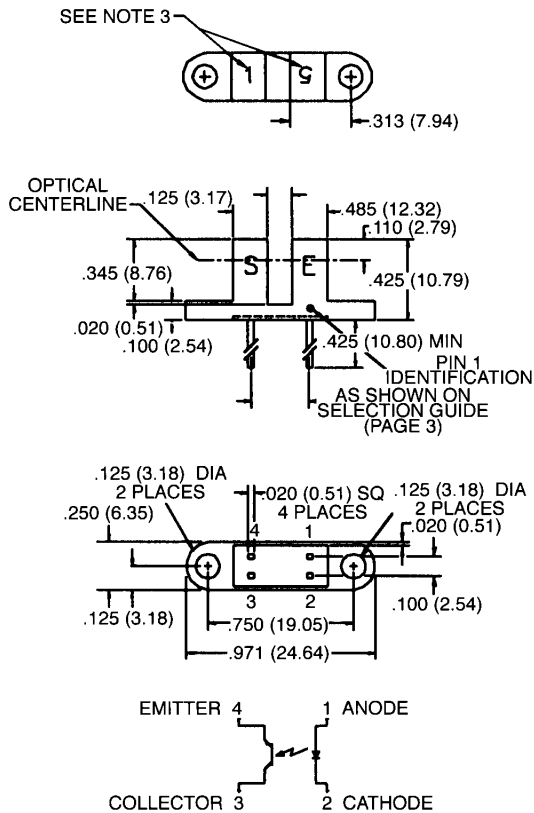


PACKAGE DIMENSIONS



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")

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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. ^(2,3,4) |
| Lead Temperature (Flow) | 260°C for 10 sec. ^(2,3) |
| INPUT DIODE | |
| Continuous Forward Current | 50 mA |
| Reverse Voltage | 5.0 Volts |
| Power Dissipation | 100 mW ⁽¹⁾ |
| OUTPUT TRANSISTOR | |
| Collector-Emitter Voltage | 30 Volts |
| Emitter-Collector Voltage | 5.0 Volts |
| Collector Current | 40 mA |
| Power Dissipation | 100 mW ⁽¹⁾ |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless Otherwise Specified)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNITS | TEST CONDITIONS |
|-----------------------------|---------------|-----------------------------|------|------|---------------|--|
| INPUT DIODE | | | | | | |
| Forward voltage | V_F | — | | 1.70 | V | $I_F = 20\text{ mA}$ |
| Reverse Leakage Current | I_R | — | | 100 | μA | $V_R = 2.0\text{ V}$ |
| OUTPUT TRANSISTOR | | | | | | |
| Emitter-Collector Breakdown | BV_{ECO} | 5 | | — | V | $I_E = 100\ \mu\text{A}$, $E_e = 0$ |
| Collector-Emitter Breakdown | BV_{CEO} | 30 | | — | V | $I_C = 1.0\text{ mA}$, $E_e = 0$ |
| Collector-Emitter Leakage | I_{CEO} | — | | 100 | nA | $V_{CE} = 10.0\text{ V}$, $E_e = 0$ |
| COUPLED | | | | | | |
| On-State Collector Current | $I_{C(ON)}$ | See selection guide page 3. | | | mA | $I_F = 20\text{ mA}$, $V_{CE} = 5\text{ V}$ |
| Saturation Voltage | $V_{CE(SAT)}$ | — | | 0.40 | V | $I_F = 20\text{ mA}$, $I_C = 0.1\text{ mA}$ |

NOTES

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

| QVBXXX OPTICAL SWITCH SELECTION GUIDE | | | | | | |
|--|---------------------|------------------|---------------|-------------------------|------------|--|
| PART NUMBER | LEAD SPACING | APERTURES | | I_(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 | — | |



SLOTTED OPTICAL SWITCH

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