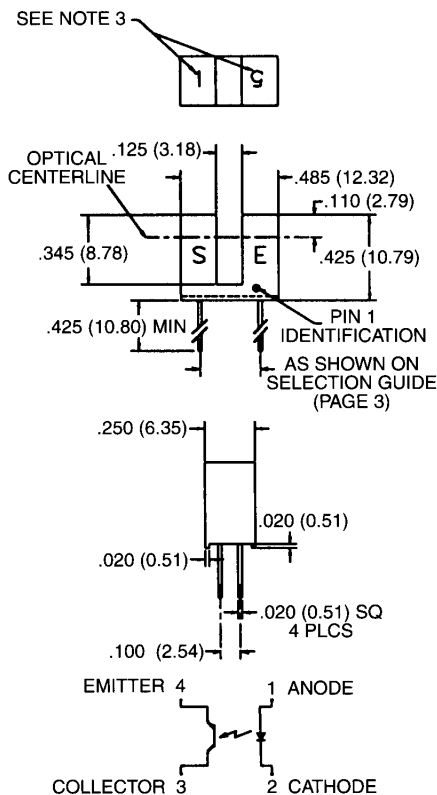




SLOTTED OPTICAL SWITCH

QVA SERIES

PACKAGE DIMENSIONS



ST2174

DESCRIPTION

The QVA series of switches is designed to allow the user maximum flexibility in applications. Each switch consists of an infrared emitting diode facing an NPN phototransistor 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".
- .010" and .050" apertures.

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 ($T_A = 25^\circ\text{C}$ 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 | 30.0 Volts |
| Emitter-Collector Voltage | 5.0 Volts |
| 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_{ECC} | 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 | $I_F = 20 \text{ mA}, I_C = 0.25 \text{ mA}$ |

NOTES

1. Derate power dissipation linearly 1.67 mW/°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" (1.6 mm) from housing.



SLOTTED OPTICAL SWITCH

| QVAXXXX OPTICAL SWITCH SELECTION GUIDE | | | | | | |
|---|--------------|-----------|--------|------------|-----|--|
| PART NUMBER | LEAD SPACING | APERTURES | | I_{CLOW} | | |
| | | LED | SENSOR | MIN | MAX | |
| QVA11123 | .220" | 0.050" | 0.010" | 0.20 | — | |
| QVA11124 | .220" | 0.050" | 0.010" | 0.50 | — | |
| QVA11223 | .300" | 0.050" | 0.010" | 0.20 | — | |
| QVA11224 | .300" | 0.050" | 0.010" | 0.50 | — | |
| QVA11323 | .320" | 0.050" | 0.010" | 0.20 | — | |
| QVA11324 | .320" | 0.050" | 0.010" | 0.50 | — | |
| QVA11133 | .220" | 0.050" | 0.050" | 0.50 | — | |
| QVA11134 | .220" | 0.050" | 0.050" | 1.00 | — | |
| QVA11233 | .300" | 0.050" | 0.050" | 0.50 | — | |
| QVA11234 | .300" | 0.050" | 0.050" | 1.00 | — | |
| QVA11333 | .320" | 0.050" | 0.050" | 0.50 | — | |
| QVA11334 | .320" | 0.050" | 0.050" | 1.00 | — | |
| QVA21113 | .220" | 0.010" | 0.010" | 0.10 | — | |
| QVA21114 | .220" | 0.010" | 0.010" | 0.20 | — | |
| QVA21213 | .300" | 0.010" | 0.010" | 0.10 | — | |
| QVA21214 | .300" | 0.010" | 0.010" | 0.20 | — | |
| QVA21313 | .320" | 0.010" | 0.010" | 0.10 | — | |
| QVA21314 | .320" | 0.010" | 0.010" | 0.20 | — | |